

INTERNATIONAL COURT OF JUSTICE

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CASE

CONCERNING THE GABČÍKOVO-NAGYMAROS

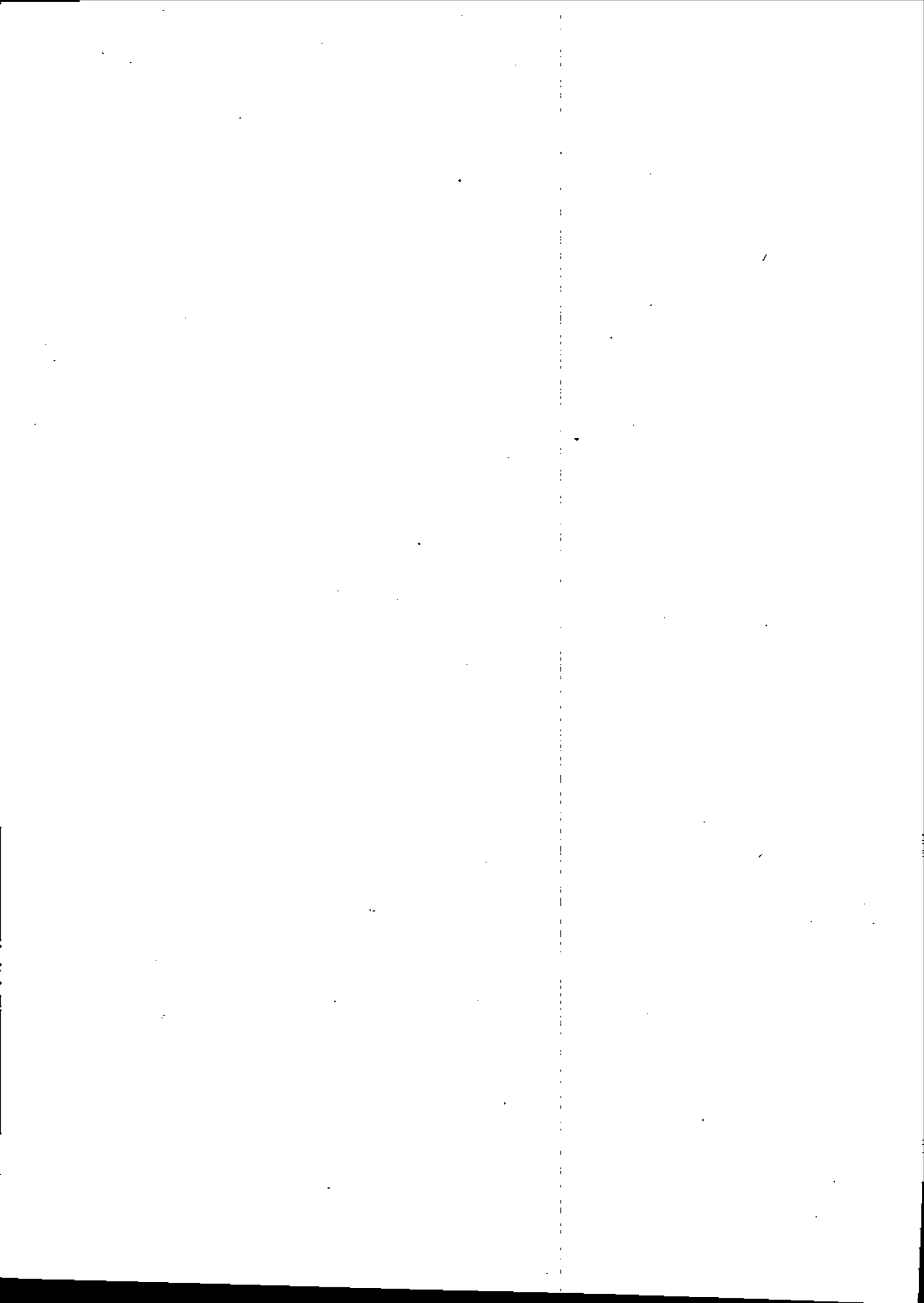
PROJECT

(HUNGARY/SLOVAKIA)

**COUNTER-MEMORIAL  
OF THE REPUBLIC OF HUNGARY**

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## INTRODUCTION

1. On 14 July 1993 the Court made an Order fixing 5 December 1994 as the time-limit for the filing by each of the Parties of a Counter-Memorial. This Counter-Memorial of the Republic of Hungary is presented in accordance with the Order of the Court. It responds to the Slovak Memorial, and presents further evidence and argument in support of the Hungarian position in this case.

### *Claims of the Slovak Memorial*

2. The Slovak Memorial is unusually emotional, linking the dispute with a thousand year-old-history.<sup>1</sup> It is sometimes unexpectedly and unnecessarily offensive.<sup>2</sup>

3. Slovakia's approach to the political evolution which took place in Central and Eastern European countries between 1977 and 1992 suggests that for it the clock has stopped in many respects. The Slovak Memorial strives to blur the profound differences between the period preceding 1989-1990 and the period since,<sup>3</sup> implying the maintenance of continuity and treating changes in the attitude of Hungary to the Project as due to short-term economic motives.<sup>4</sup> It fails to mention that even in the 1980s

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<sup>1</sup> SM, paras 17-18.

<sup>2</sup> See e.g., SM, para 6.103: "The ecological absurdity of Hungary's supposed termination surpasses even its economic absurdity"; SM, para 7.62: "This claim can only be described as surrealistic"; SM, para 8.114: "It is extraordinary, arrogant and unacceptable for Hungary to declare in its 1992 Declaration that Hungary's perception of 'imminent peril' is equally true for the Slovak side of the Danube..."; SM, para 8.89: "It finds it breathtaking that Hungary should claim material breach by Slovakia", etc.

<sup>3</sup> See e.g., SM, para 4.53. By contrast the extent of change was recognised, for example in the context of mineral resources management, in the CSFR Report to the Rio Conference:

"The breaking point came in 1989, when the irrational, ideology-driven economy came to a halt and was slowly replaced by a rational use of the 'pitiful remains' of the mineral treasure."

Czechoslovak Academy of Sciences & Federal Committee for the Environment, *National Report of the Czech and Slovak Federal Republic to the United Nations Conference on Environment and Development, Brazil, June 1992* (Prague, March 1992), p 40 (hereafter referred to as *CSFR Rio Report* (1992)).

<sup>4</sup> SM, paras 3.04, 3.32, 3.50.

the doctrine of the party's domination over science precluded the independence of scientific research, the task of which was to justify the preconceptions of power.

4. Developments in Hungarian public opinion which began to protest against the Project in the early 1980s are also wilfully misunderstood. At that time Hungary was a "socialist" country where a progressive transition towards democracy was developing. This evolution was parallel to a growing awareness of the need to protect the environment and of the environmental problems which were generally hidden from the public. For the first time since the national insurrection in 1956, public demonstrations took place, precisely in order to stop the construction of the Nagymaros barrage. The "Danube Circle" was a focus for a large movement which found echoes in other countries under Soviet domination. Speaking in such conditions of the "good deal of manipulation of public opinion"<sup>5</sup> is a major historical error. Nor does the role of a parliament in a democratic state appear to be clearly understood.<sup>6</sup>

5. Public opinion and Parliament were not alone in expressing a new awareness of the importance of environmental protection. Hungary participated increasingly in international co-operation in this field. Between 1977 and 1989, i.e., during the period between the conclusion of the 1977 Treaty<sup>7</sup> and the temporary suspension of its implementation, Hungary ratified or acceded to 12 major international instruments related to environmental protection.<sup>8</sup> During this period it also signed two

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<sup>5</sup> SM, paras 3.54-3.55.

<sup>6</sup> See e.g., SM, paras 3.24, 4.01 *in fine*, 4.69-4.71, 6.83, 6.84, 6.88, 7.07, 8.44.

<sup>7</sup> Hungary-Czechoslovakia, Treaty concerning the Construction and Operation of the Gabčíkovo-Nagymaros System of Locks, Budapest, 16 September 1977, 1109 UNTS 236; 32 ILM 1247; HM, Annexes, vol 3, annex 21 (hereafter referred to as "the 1977 Treaty").

<sup>8</sup> These are the following (date of Hungarian ratification etc in parentheses):

- \* Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris, UNESCO, 16 November 1972 (14 November 1977);
- \* Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, 3 March 1973 (29 May 1985);
- \* Protocol Additional to the Geneva Convention of 12 August 1949 and Relating to the Protection of Victims of International Armed Conflicts, (Protocol I), Bern, 8 June 1977 (12 April 1989);
- \* Convention on the Conservation of Migratory Species, Bonn, 23 June 1979 (12 July 1983);

conventions with a world-wide scope, the UN Convention on the Law of the Sea and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. This attests to the growing conviction – both public and governmental – that environmental protection was a priority.

6. The Slovak conception of environment is by contrast strangely outdated. After the political changes of 1989, it was officially confirmed that Czechoslovakia was among those countries whose environments were most harmed during previous decades, in particular by careless industrialisation.<sup>9</sup> Even now, the Slovak Memorial reflects old technocratic approaches to environmental protection, seen as consisting mainly of the protection of the population against flooding. One example illustrates this attitude. In the Slovak Memorial, the map accompanying the Chart that represents the responsibility of each Party to the 1977

- \* Convention on the Conservation of European Wildlife and Natural Habitats, Bern, 19 September 1979 (16 November 1989);
- \* Convention on Long-Range Transboundary Air Pollution, Geneva, 13 November 1979 (22 September 1980); and its protocols: 28 September 1984, Geneva (8 May 1985); 8 July 1985, Helsinki (11 September 1986), 31 October 1988, Sofia (Hungary signed on 3 May 89 and approved this Protocol on 12 November 1991);
- \* Convention for the Protection of the Ozone Layer, 22 March 1985, Vienna (4 May 1988);
- \* Protocol on Substances that Deplete the Ozone Layer, Montreal, 16 September 1987 (24 April 1989);
- \* Convention on Early Notification of a Nuclear Accident, Vienna, 26 September 1986 (10 March 1987);
- \* Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, Vienna, 26 September 1986 (10 March 1987).

<sup>9</sup> The following extracts from the *CSFR Rio Report* (1992) make the point:

“The economic growth characteristics in the CSFR show that it was a very ineffective economy, producing at very high material and energy costs, with heavy dependence on natural resources, and with a large impact on the environment.” (p 31)

“The environment in some regions is catastrophic...Pollution affects the air, water and food; the soil quality is poor; most of the forests are severely damaged; the country is devastated and has lost its ecological stability; its biodiversity has been reduced.” (p 37)

See also: UN Economic and Social Council, Economic Commission for Europe, Senior Advisers to ECE Governments on Environmental and Water Problems, “Czechoslovakia: Economics and the Environment”, ENVWA/WG.2/R.12, EC.AD/WG.1/R.12, 10 November 1992.

Treaty for the costs of the joint investment<sup>10</sup> excludes those relating to the restoration of vegetation both on Hungarian and Slovak territory. For Slovakia, the main environmental degradation results from not filling with water "a huge excavated and reinforced area of over 4,000 hectares". It adds that "[t]he ecological catastrophe of this immense area gouged out of the land, intended to be filled with 196 million cubic metres of waters, but left unfilled, staggers the imagination".<sup>11</sup> Following this logic "[i]t is thus the abandonment of the Project which deals a severe blow to environmental protection".<sup>12</sup> It is not surprising in such circumstances that Slovakia condemns the protection of the environment, as it is generally understood, parodying it as a desire to "return to a mythical pristine past".<sup>13</sup> It is also characteristic that, ignoring the necessity of preventing environmental degradation, Slovakia affirms that all the problems which arise in this field can and will be solved by adequate "monitoring methods",<sup>14</sup> without explaining what is meant by such methods. Elementary and generally accepted principles, such as the assessment of environmental risk, concern for long-term effects, the interrelations between water, soil and biological diversity, the importance of ecological processes and of life-supporting systems, are ignored.

7. The difference between this approach and generally prevailing environmental concepts is striking. The principles of the 1972 Stockholm Conference, repeated in many respects in the Final Act of the 1975 Helsinki Conference on Security and Co-operation in Europe, were reflected in the 1977 Treaty (Articles 5, 19 and 20), but were not applied by the parties, and in particular by Czechoslovakia which had the major contractual responsibility for protection of the environment under the Joint Contractual Plan. Later developments reflected in international declarations, such as the 1982 World Charter for Nature, and the 1992 Rio Declaration on Environment and Development, and in international treaties, in particular the conventions of the UN Economic Commission for Europe, were equally ignored. Variant C was developed during the last months of the preparation of the Rio de Janeiro Conference on Environment and Development and its operation started less than five months after the proclamation of the Rio Declaration and of Agenda 21. There is no indication that Slovakia sought to incorporate into its actions the implementation of principles proclaimed by this Conference, such as

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<sup>10</sup> SM, Illustr No 28 following p 77.

<sup>11</sup> SM, para 6.103. See also SM, paras 6.83, 6.132, 6.140, 7.20, 7.32, 7.33, 8.80.

<sup>12</sup> SM, para 6.132.

<sup>13</sup> SM, para 7.87.

<sup>14</sup> SM, paras 8.47, 8.89.



sustainable development, public participation, prior assessment of foreseeable effects or the precautionary principle. Subsequently, by withholding water from the old Danube, in spite of the conclusions of international bodies and the provisions of Slovak environmental and water law itself, the Slovak Government showed what little respect it had for the environment in general and for the environment of a neighbouring country in particular. Its strategy has been to create unilaterally and step-by-step irreversible situations.

8. Perhaps this lack of awareness of environmental problems and of their importance is at the root of the repeated Slovak assertions that Hungary acted in bad faith:

“Although in fact no more than a pretext, Hungary has with insistence invoked environmental considerations in an attempt to justify its purported termination of the 1977 Treaty.”<sup>15</sup>

“...the environment could conveniently be offered as an argument to bolster the real reason, which was economic in nature.”<sup>16</sup>

9. The evidence which Slovakia submits in order to justify its allegations is a letter addressed by the Hungarian Vice-Prime Minister, Mr Marjai, to the President of the Hungarian Academy of Sciences, dated 19 March 1984.<sup>17</sup> This letter is obviously a fragment of an internal debate, which was current in both countries, and does not justify on its face any assertion of “pretext”. The letter had no practical effect on events; the suspension of work at Nagymaros was decided on only five years later.<sup>18</sup>

10. As will be demonstrated, Slovakia’s accusations that Hungary acted in bad faith have no basis in fact.<sup>19</sup>

11. There are significant factual errors in the Slovak Memorial. According to it “[a] short way downstream of the step [of Nagymaros], the Danube splits into two channels creating a small island called Szentendre”.<sup>20</sup> This “small island” is 25 kilometres long, beginning two kilometres from Nagymaros and reaching the outskirts of Budapest. It is the main source of drinking water for the two million people of Budapest.

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<sup>15</sup> SM, para 6.132.

<sup>16</sup> SM, para 8.38. See also SM, paras 3.56, 8.29, 8.34.

<sup>17</sup> SM, para 3.37 *et seq.* See also SM, annex 29.

<sup>18</sup> For discussion of the Marjai letter see below, paras 2.11-2.16.

<sup>19</sup> See below, paras 2.117-2.127.

<sup>20</sup> SM, para 2.56.

Thus it is inexact to say that "...the wells supplying Budapest were far away from the region whose ground waters would be affected by the G/N project" – unless one thinks of the Project as confined to the Gabčíkovo region, which the Slovak Memorial purports not to do.<sup>21</sup> The protection of Budapest's drinking water from the risk of deterioration caused by the Project was one of the main considerations which led Hungary to suspend the works at Nagymaros. The Slovak Memorial alleges that "the poor quality of Budapest's water is largely the result of pollution from Budapest".<sup>22</sup> In fact, about two-thirds of the total drinking-water demand of Budapest is provided by the upstream Northern Waterworks, which cannot be polluted by Budapest. The centre of those waterworks is the island of Szentendre. In general, the quality of water abstracted by the wells is suitable for human consumption without further treatment.<sup>23</sup>

12. Slovakia presents facts in a way which may lead to incorrect conclusions. Its Memorial alleges that Hungary bases its energy production on nuclear power plants, while Slovakia uses clean hydroelectric energy.<sup>24</sup> It even reproduces a photograph of the Hungarian nuclear power plant on the Danube at Paks.<sup>25</sup> It omits to mention that in 1993 more than half of the electricity production in Slovakia came from nuclear power (53.6%), significantly more than in Hungary (43.3%). In addition, in 1993 Slovakia was constructing four more reactors at Mochovce, which will nearly double its existing nuclear capacity.<sup>26</sup> Hungary has no similar plans to expand its nuclear power capacity, and the necessity is not felt to produce photographs of Slovak nuclear energy plants, existing or under construction.

13. Another example is given by Illustration No 19<sup>27</sup> in the Slovak Memorial which represents the percentage of use of hydroelectric potential. It is intended to demonstrate that Hungary neglects this source of energy with only 5.7% of the global potential used, while Slovakia uses its potential at 52.6%. What is omitted here is a description of the methodology used to establish the so-called "potential", which obviously does not take into account the simple fact that Hungary is a largely flat

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21 SM, para 3.55.

22 SM, paras 2.105-2.106.

23 HM, vol 1, pp 427-428, see also Fig 29 at p 489.

24 SM, paras 1.50-1.56, 2.84.

25 Illustr No 13 at SM, para 1.15.

26 International Atomic Energy Agency, Document PR 94/17, 10 May 1994; HC-M, Annexes, vol 3, annex 94. See further below, para 1.203.

27 SM, p 36.

country, with a terrain mostly useless for the production of hydro-electricity.<sup>28</sup>

14. The Slovak Memorial continues the Slovak policy of saying one thing while doing another, a strategy that can be described as hastening the point of no return. It quotes a letter of 23 September 1992 by the Czechoslovak Prime Minister which emphasises that "Variant 'C' – a 'provisional technical solution' – did not involve 'diverting the Danube'".<sup>29</sup> One month later, the operation of Variant C started with the diversion of almost all the water from the Danube. Elsewhere the Slovak Memorial recognises that two important sets of works are planned in order to optimise the use of the Danube at Čunovo, including the construction of two hydroelectric power plants.<sup>30</sup> It is not clear how such constructions are consistent with a "provisional technical solution".

### *The Slovak Memorial refuted*

15. Against this presentation, which is a travesty of the environmental, scientific and economic debate that has occurred – and continues – Hungary takes the opportunity to restate its position, and to produce additional material in support. The following extracts are intended simply as illustrative of the issues presented to the Court.

16. Although Slovakia asserts that the Original Project would have been positively beneficial to the environment,<sup>31</sup> in truth the Project was an example "of disturbance of unique water and rural ecological systems due to large waterworks...[whereby] the huge and unique volume of underground water is threatened and the systems of mead forests and river tributaries are drastically affected".<sup>32</sup> In the words of another

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<sup>28</sup> See further below, para 1.200. Without seeking to be comprehensive, other factual errors in SM may be mentioned. The total length of the Hungarian sector of the Danube is not 450 km (SM, para 1.04), but 417 km, of which 143 km are shared with Slovakia and 274 km are entirely Hungarian. It is not the case that there are no protected areas of the Szigetköz (SM, para 2.110). A Hungarian decree of 4 April 1987 declared as natural reserve 9158 hectares of the Szigetköz, 5948 hectares (65%) of which are covered by forest; Governmental Decree 1/1987 (III.15), 15 March 1987; HC-M, Annexes, vol 3, annex 42.

<sup>29</sup> SM, para 4.86.

<sup>30</sup> SM, para 5.35.

<sup>31</sup> SM, paras 2.108-2.115.

<sup>32</sup> CSFR *Rio Report* (1992) p 92.

participant, the Original Project was a "totalitarian, gigomaniac monument which is against nature".<sup>33</sup>

17. Although Slovakia asserts that Hungary acted in bad faith in relying on spurious environmental arguments in relation to non-existent risks,<sup>34</sup> such risks undoubtedly exist in relation to dam projects generally and existed in relation to the Original Project. Virtually identical environmental arguments were relied upon by Czechoslovakia in 1984 when it called on Austria not to build a hydro-electric dam at Hainburg,<sup>35</sup> and in 1988 when it cancelled long-standing plans for a dam and hydro-electric plant in the Berounka River Valley, southwest of Prague, on the grounds that it posed "irreversible danger" to the region's natural heritage.<sup>36</sup>

18. The Slovak Memorial suggests that Hungarian concerns about environmental harm from the Barrage System as a whole are in the realm of "science fiction".<sup>37</sup> But the concerns were far from fictional. According to one reputable source of 1988:

"...negative effects can be expected with high probability. In general, negative effects will have a long-lasting, or even permanent character. Undesirable side-effects of [the Barrage System] concern Czechoslovak territory first of all."<sup>38</sup>

19. Although Slovakia has suggested that the environmental impacts of building Nagymaros "would be minimal",<sup>39</sup> another view was that:

"...one of the best solutions could be to abandon the construction of the Nagymaros hydro-project, while perhaps building a low-level weir for navigation of ships, to change fundamentally the running of the Gabčíkovo hydro-project, and

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33 President Vaclav Havel in Hungarian TV programme "Panoráma", 15 February 1991, as reported in BBC, Summary of World Broadcasts, EE/0999 A2/5, 18 February 1991; HC-M, Annexes, vol 3, annex 88.

34 SM, para 6.132.

35 *The Economist* (European Edition), 8 December 1984, p 68; HC-M, Annexes, vol 3, annex 76.

36 Czechoslovak SR/33, 1 September 1988; HC-M, Annexes, vol 3, annex 78; *Reuters Library Report*, 31 March 1988, HC-M, Annexes, vol 3, annex 77.

37 SM, para 4.68.

38 Standpoint of Ecological Section, Czechoslovak Biological Society, at Čs Academy of Sciences, to the Water Dams System Gabčíkovo-Nagymaros, 14 November 1988, Prague, p 6; HC-M, Annexes, vol 3, annex 43.

39 SM, para 2.97.

to adapt the concept of the entire project to the needs of the ecosystem of the region..."<sup>40</sup>

20. Although Slovakia asserts that general international law rules – other than *pacta sunt servanda* – are irrelevant to the present case,<sup>41</sup> and in particular that rules of international law relating to environment protection can be relegated to the category of "soft law",<sup>42</sup> others have pledged to–

"make the environment issue one of the priorities of...foreign policy... We have to reckon with great expenses in connection with the introduction of ecological norms corresponding to the strict standard of the European Community countries".<sup>43</sup>

21. Although Slovakia asserts that the "Bioproject" (1975-1976) was a comprehensive environmental impact study which was "unusual due to the wide nature of its coverage and its detailed approach",<sup>44</sup> the Hydro-Québec Report, commissioned by the Slovak Ministry of Water and Forests in 1990, noted that, as to the "Bioproject":

"Il faut rappeler ici que le concept du projet étant déjà choisi, aucune comparaison de variantes n'était requise par le gouvernement au plan environnemental."<sup>45</sup>

Hydro-Québec was not alone in holding this view: as late as December 1992 it was said that the information then available was inadequate and did not provide a basis upon which to commence operation of Variant C; in particular no study had been prepared on the complex impact of the Gabčíkovo Project on groundwater.<sup>46</sup>

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40 J Vavroušek, Chairman of the Federal Committee for the Czechoslovak Environmental Ministry, quoted in BBC, Summary of World Broadcasts, EE/1146 B/5, 1 August 1991; HC-M, Annexes, vol 3, annex 91.

41 See e.g., SM, para 7.72.

42 See e.g., SM, para 7.74.

43 CSFR Prime Minister Marian Čalfa, quoted in BBC, Summary of World Broadcasts, EE/0809 C1/1, 6 July 1990; HC-M, Annexes, vol 3, annex 85.

44 SM, para 2.20.

45 Hydro-Québec Report (1990) p 88; HM, Annexes, vol 5 (part 1), annex 9. See further below, paras 1.20-1.41.

46 Communiqué of the Slovak Ministry of Environment to the 4 December 1992 Session of the Slovak Government, 4 December 1992; HC-M, Annexes, vol 3, annex 57.

22. Although the Slovak Memorial suggests that the Original Project "constitutes a very thoroughly researched and environmentally sustainable development of this section of the Danube",<sup>47</sup> and that earlier studies "demonstrated to the satisfaction of the parties that the Project would not affect surface or ground water in an unacceptably negative way",<sup>48</sup> another view – expressed for example on 26 October 1990 – was that:

"Ground water is one of the most important sources of water for human life and flora and fauna in Danubian lowland, both in Hungarian and Slovak territory. The trends in the quality of ground water are worrying. Degradation and pollution of ground water is far more serious than we thought and that the quality of the ground water is deteriorating faster than has hitherto been assumed."<sup>49</sup>

According to this view what was needed was a "comprehensive study...to evaluate and verify the effects of previous activities and by the new hydraulic system of hydropower development".<sup>50</sup> By the date of the completion of this Counter-Memorial that study had not produced definitive results, further confirming the scientific uncertainty surrounding the environmental effects of the Original Project and Variant C.

23. Although the Slovak Memorial claims that Variant C "occasions no harm"<sup>51</sup> and that the "idea that a large scale contamination of underground water supplies would be caused by the implementation of the G/N Project may be laid to rest",<sup>52</sup> responsible environmental authorities have expressed a wide range of concerns about Variant C, including the following:

- \* that the standards imposed by Slovak laws aimed at the protection of groundwater and the preservation of ecosystems have not been met;

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<sup>47</sup> SM, para 2.118.

<sup>48</sup> SM, para 2.15.

<sup>49</sup> Draft Agreement on Joint Czecho-Slovak and Hungarian Co-operation on PHARE – Environment Protection: "Surface Water and Ground Water Model of Danubian Lowland Between Bratislava and Komárno: Ecological Model of Water Resources and Management", 26 October 1990. Proposal handed over by Czechoslovakia to Hungary on 26 October 1990; SM, annex 82, p 189; HC-M, Annexes, vol 3, annex 49.

<sup>50</sup> Ibid.

<sup>51</sup> SM, para 7.44.

<sup>52</sup> SM, para 5.56.

- \* that the commencement of operation of Variant C took place without necessary Slovak licenses having been granted;
- \* that the effects of Variant C on the groundwater of the Žitný Ostrov were unresolved;
- \* that no study was prepared on the impact of Variant C on groundwater, and a study prepared by the Bratislava Water Research Institute (VÚVH) and other studies concluded that Variant C was likely to have negative effects on groundwater;
- \* that preliminary results supported the view that the groundwater reservoirs of the Žitný Ostrov region would be destroyed and create an irreversible problem in respect of vital drinking water supplies;
- \* that the impacts of the decrease of waters in the branches of the Danube were not investigated, and that the blocking of the Danube and the filling of the dam has resulted in the blocking and destruction of the connections between river branches and the Danube, large-scale destruction of fish, the liquidation of the ecosystem of the foliage of the internal delta and the destruction and extinction of certain species and the modification of the forest's ecosystem;
- \* that Variant C violates not only Slovak environmental legislation but also international conventions (such as the 1971 Convention on Wetlands of International Importance).<sup>53</sup>

24. One could equally refute the claims of the Slovak Memorial by reference to Hungarian or international sources.

#### *Structure of this Counter-Memorial*

25. This Counter-Memorial is in two Parts. Part I deals primarily with the facts underlying the dispute, responding to Part I of the Slovak Memorial. Chapter 1 analyses the extent to which the Original Project was – as the Slovak Memorial claims – a genuine response to the environmental and other problems of the region, one which was sound both from a scientific, economic and environmental point of view. Chapter 2 discusses the conduct of the parties during the course of the

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<sup>53</sup> Communiqué of the Slovak Ministry of Environment to the 4 December 1992 Session of the Slovak Government; HC-M, Annexes, vol 3, annex 57.

dispute, demonstrating – contrary to the claims of the Slovak Memorial – that Hungary was prepared to negotiate a satisfactory outcome of the dispute, and that its concerns about the environmental and other consequences of the Original Project were genuine and substantial. Chapter 3 discusses Variant C itself, outlining its adverse impacts and the continuing risks imposed by its operation. It also calls into question continued Slovak claims that Variant C is in any sense intended as temporary structure.

26. Part II deals with the legal issues that so far separate the parties, responding to Part II of the Slovak Memorial. Chapter 4 gives an overview of the parties' legal positions, so far as they have been disclosed and are in disagreement.<sup>54</sup> Chapter 5 deals with certain issues relating to the suspension of works and the subsequent termination of the 1977 Treaty, and with the legal effects of termination. Chapter 6 deals with the illegality of Variant C, and of its operation. Chapter 7 deals in a necessarily preliminary way with the remedial issues.

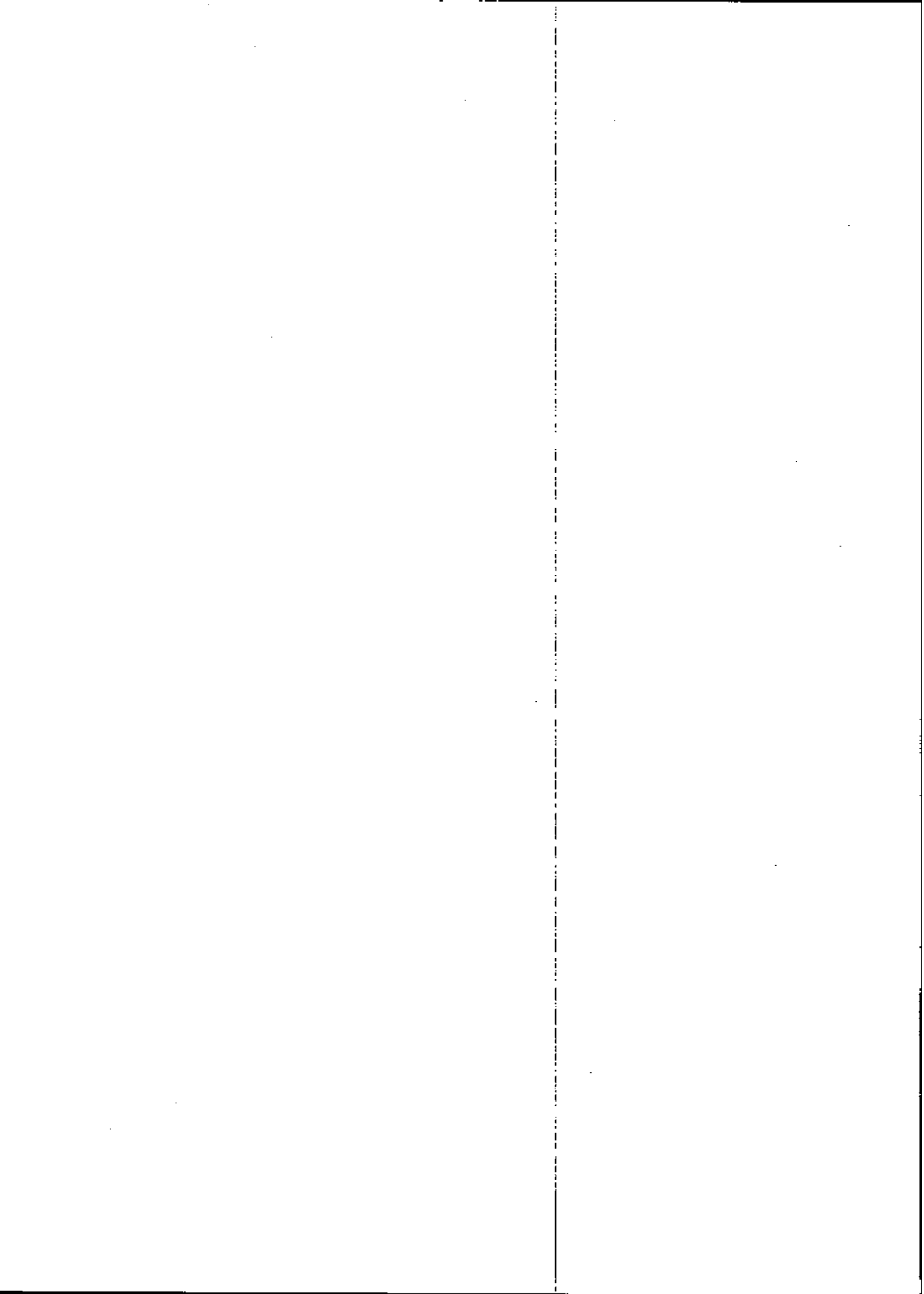
27. In addition, Volume 2 of this Counter-Memorial is an integrated presentation of the scientific issues raised by the dispute, prepared by international and Hungarian scientists. To it are annexed relevant scientific papers and the results of work in progress assessing the impacts of Variant C on the region.

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<sup>54</sup> On a number of legal issues the Slovak Memorial is silent: see below, paragraph 4.01.



## **PART I: THE FACTS**



## CHAPTER 1

## THE AIMS OF THE ORIGINAL PROJECT AND THE PROBLEMS OF THE REGION

1.01. The Slovak Memorial presents the Original Project as *the* solution to a series of "problems requiring remedial action" in the Slovak/Hungarian section of the Danube (at the time it was, of course, the Czechoslovak/Hungarian section). Moreover, according to the Slovak Memorial, the Project satisfied the need for "optimal utilisation" of this section, even by today's standards of economic and environmental rationality, as distinct from those of the COMECON era under which it was conceived and justified. It is not only that the Project was an agreed solution – according to Slovakia it was and remains the *best* solution from every point of view.<sup>1</sup> The Slovak Memorial thus puts in issue not only the fact that the Original Project was provided for in the 1977 Treaty but the merits of the proposal as such.<sup>2</sup>

1.02. There are, no doubt, difficulties for the Court in pronouncing on the merits of any large-scale industrial project. On the other hand many factual, scientific and technical issues relating to the Project as well as to Variant C are in dispute between the parties, and thus fall within the framework of the facts of the case. This Chapter accordingly responds, as briefly as may be, to the substantial treatment of these issues in Chapters I and II of the Slovak Memorial.

1.03. In particular this Chapter deals with the following matters. First, it provides a brief critique of the underlying philosophy and approach of the Slovak Memorial so far as it relates to the Original Project (below, **Section A**, paragraphs 1.04-1.12). Secondly, it contrasts the aims of the Original Project as authoritatively described in the 1977 Treaty with the reinterpretation offered in the Slovak Memorial (below, **Section B**, paragraphs 1.13-1.19). Thirdly, it shows that there was no environment impact assessment procedure carried out in conformity with international standards, whether before or after the conclusion of the 1977 Treaty (below, **Section C**, paragraphs 1.20-1.35). Fourthly, it summarises the key findings of the *Scientific Evaluation*, which is contained in volume 2 of this Counter Memorial, and which is supported by extensive annexes

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<sup>1</sup> See e.g., SM, chaps I & 2, *passim*.

<sup>2</sup> While complaining of the "extraordinary, arrogant and unacceptable" Hungarian concern for the environmental impacts of the Project on both sides of the river (SM, para 8.114), Slovakia suggests that the Project confers "a substantial benefit" on Hungary (SM, para 9.19).

(below, **Section D**, paragraphs 1.36-1.168). It then proceeds to consider those specific issues given prominence in the Slovak Memorial as virtues of the Original Project, namely flood control (below, **Section E**, paragraphs 1.169-1.174), navigation (below, **Section F**, paragraphs 1.175-1.186), the production of electrical energy (below, **Section G**, paragraphs 1.187-1.200). Finally it compares the Original Project with other international hydropower projects, refuting the Slovak claim that it is just another dam (below, **Section H**, paragraphs 1.201-1.210).

### **SECTION A: THE UNDERLYING APPROACH OF THE SLOVAK MEMORIAL**

1.04. Hungary has sought to approach the management and use of the natural resources of the Danube in a manner consistent with the objective of sustainable development, in particular by treating environmental protection as an integral part of the development process. Slovakia mischaracterises the concept of sustainable development, ignoring the integrity of environment and development, the interdependence of natural resources and processes, and the relevance of environmental harm and risk to economic viability. Its approach is reminiscent of that adopted to science and technology in the 1960s. At that time little attention was paid to consequences of technical development, which was viewed as inherently beneficial. Although this approach existed to some extent in all industrialised countries, under the CMEA Charter it was treated as axiomatic that the function of the state was "to promote...the raising of the level of industrialization of the countries", an aim given priority over all other goals.<sup>3</sup> On the other hand the Stockholm Declaration of 1972 recognised the "growing evidence of man-made harm in many regions" and that a "point has been reached in history when we must shape our actions throughout the world with a more prudent care for their environmental consequences".<sup>4</sup> Changes in thinking were reflected in the Helsinki Final Act, which affirmed that "economic development and technological progress must be compatible with the protection of the environment".<sup>5</sup>

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<sup>3</sup> Charter of the Council for Mutual Economic Assistance, Sofia, 14 December 1959, 368 UNTS 237, Art 1.

<sup>4</sup> Stockholm Declaration of the United Nations Conference on the Human Environment, 16 June 1972, Preamble; UN Doc A/CONF.48/14, reprinted in (1972) 11 ILM 1416.

<sup>5</sup> Conference on Security and Co-operation in Europe, Helsinki Final Act, 1 August 1975, Preamble of Section 5, "Environment", reprinted in (1975) 14 ILM 1292 at p 1307.

1.05. This change in thinking has come to be reflected in the concept of sustainable development. Economic development remains a fundamental goal and a basic right of every state. As recognised in Principle 3 of the Rio Declaration, however, that right “must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations”, and “environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it”.<sup>6</sup> The Slovak approach, by contrast, treats economic development and environmental protection as falling within separate realms of decision-making.

1.06. The Slovak Memorial proclaims that the Original Project constituted an “environmentally sustainable development”.<sup>7</sup> Nevertheless, its approach to the Project was – and remains – inconsistent with applicable international standards of sustainable development.

1.07. For development to be sustainable it should satisfy the following criteria:<sup>8</sup>

- (1) environmental protection should constitute an integral part of the development process;
- (2) a prior environmental impact assessment (EIA) should be undertaken for proposed activities that are likely to have a significant adverse impact on the environment; the conclusions of the EIA should be taken into account in decision-making, and there should be systematic observation of major projects;<sup>9</sup>
- (3) decision-making should take into account conservation needs by ensuring the sustainable use of resources so as to protect ecosystems and ecological processes which are shared with other states or which are essential for the functioning of the biosphere and the preservation of biological diversity;<sup>10</sup>

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<sup>6</sup> 1992 Rio Declaration, Principle 4, reprinted in (1992) 31 ILM 874 at p 877.

<sup>7</sup> SM, para 2.118. See also SM, paras 2.14, 2.108, where the concept of sustainability is associated with studies carried out before 1977.

<sup>8</sup> The concept of sustainability is addressed in more detail in *Scientific Evaluation*, HC-M, vol 2, chap 7.3.1.

<sup>9</sup> See below, paragraphs 1.21-1.22, where it is demonstrated that this requirement is well-recognised. See also *Scientific Evaluation*, HC-M, vol 2, chap 7.3.2.

<sup>10</sup> See the Convention on Biological Diversity, Rio de Janeiro, 5 June 1992; in force 29 December 1993, reprinted in (1992) 31 ILM 822, Art 2 of which defines “sustainable use” as “the use of components of biological diversity in a way and at a

- (4) a precautionary approach should be adopted; i.e., where there are threats of serious or irreversible damage, lack of full scientific certainty is not to be used as a reason for postponing cost-effective measures to prevent environmental degradation.<sup>11</sup>

1.08. The actions of Czechoslovakia and subsequently of Slovakia fail to meet these criteria, as shown, *inter alia*, by the following:

- (1) The Slovak Memorial ignores the need to treat economic development and environmental protection in an integrated manner.<sup>12</sup>
- (2) No prior environmental impact assessment was performed either for the Original Project or for Variant C, and none of the studies claimed by Slovakia to have constituted, as it were, an *ex post facto* EIA was adequate for that purpose.<sup>13</sup>
- (3) Slovakia continues to cause harm to the active floodplain of the Szigetköz, limiting water discharge into the main bed of the Danube below Čunovo to little more than 200 m<sup>3</sup>/s.<sup>14</sup>
- (4) Slovakia ignores the precautionary principle; it has repeatedly taken steps in the face of scientific uncertainty and where the consequences could be irreversible.<sup>15</sup> The main line of Slovak

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rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs of and aspirations of present and future generations”.

<sup>11</sup> HM, paras 6.56-6.69.

<sup>12</sup> See below paragraphs 1.20-1.40. See also Hydro-Québec International; HM, Annexes, vol 5, part 1, annex 9, p 290, (hereafter referred to as Hydro-Québec Report): “Mis à part les superficies de forêt à déboiser et le calcul économique du bois à récupérer, l'importance du déboisement en tant que perte globale de forêt alluviale n'a pas été évaluée”. In translation: “Apart from the area of forest to be cleared and the calculated cost to recover the wood, the importance of the deforestation in as much as the global loss of alluvial forest has not been evaluated”.

<sup>13</sup> See discussion below, paragraphs 1.23-1.40. See also *Scientific Evaluation*, HC-M, vol 2, chap 7.5.

<sup>14</sup> See *Scientific Evaluation*, HC-M, vol 2, Table 2.6 and Plate 9.

<sup>15</sup> The implementation of Variant C came suddenly and without specific warning. More than two years later the Slovak Memorial states with respect to flora and fauna, that “[i]t is not yet possible to quantify the impact of the implementation of Variant C... due to the long response time of natural ecosystems”. SM, para 5.57. With respect to agriculture, it states, that “[t]he impact of Variant ‘C’ on Hungarian agricultural production has not yet been assessed”. SM, para 5.60. See SM, para

reasoning stresses that all impacts of the Project can be predicted with adequate certainty to be managed.<sup>16</sup> A branch line asserts that even if the impacts are not predictable now, they can be managed irrespective of their magnitude or their irreversibility.<sup>17</sup> But the studies that might show whether this confidence is or is not well-founded have either not been done, or were started late and have not yet produced substantial results.<sup>18</sup>

1.09. As fully described in the *Scientific Evaluation* appended to this Counter-Memorial, natural ecosystems are characterised by complexity.<sup>19</sup> The maintenance of biological diversity is an outstanding value, developed over millions of years. It is a value the Slovak Memorial fails to mention, let alone take into account. The Hydro-Québec and Bechtel Reports, which are heavily relied upon for other purposes in the Slovak Memorial, state that the effects of the Project on many environmental concerns cannot be determined because of insufficient data.<sup>20</sup> Even when knowledge existed, environmental concerns were "studied almost exclusively in the context of their economic exploitation".<sup>21</sup>

1.10. The Slovak Memorial, while acknowledging that the Project would have irreversible impacts,<sup>22</sup> assumes that these could be eliminated by appropriate technical intervention, and in particular by "monitoring".<sup>23</sup> In addition, while conceding that Variant C's impact in some areas cannot yet be determined,<sup>24</sup> it ignores the crucial importance of time in assessing effects. Transformation in natural and semi-natural ecosystems is a long-term process. Only the most drastic environmental interventions result in immediate effects. Others usually require several generations. For most higher plants, for example, the generation time

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1.72 ("there will be environmental effects, some adverse"); see also below, paragraphs 1.23-1.41, demonstrating that no EIA was ever done.

16 SM, paras 1.72, 2.06, 2.118, 5.54, 5.57, 5.60, 5.61.

17 SM, para 5.57. Cf also SM, paras 2.28, 2.118.

18 See below, paragraphs 1.30-1.36.

19 See *Scientific Evaluation*, HC-M, vol 2, chap 4.2.

20 See below, paragraphs 1.30-1.36.

21 Hydro-Québec Report, p 298 (translated from French); HM, Annexes, vol 5, part 1, annex 9.

22 SM, para 1.72.

23 See SM, paras 2.67, 5.25, 5.26, 5.62, 8.112.

24 SM, paras 5.57, 2.118, 2.28.

extends to several years; for trees it extends to decades. But if in time a "keystone" species disappears, it can lead to collapse of a whole community of species.

1.11. In truth, as the *Scientific Evaluation* annexed to this Counter-Memorial shows, there are serious threats to drinking water resources,<sup>25</sup> including both bank-filtered wells<sup>26</sup> and in the longer term to the aquifer.<sup>27</sup> There is an inevitable loss of flora and fauna due to the destruction of certain habitats, changed water level and flow conditions, etc.<sup>28</sup> These and other impacts are outlined in this Chapter, and are documented in more detail in the *Scientific Evaluation* and in its Annexes.

## SECTION B: AIMS OF THE PROJECT

1.12. The Slovak Memorial identifies the objectives of the Original Project in ways which are significantly different from those specified in the 1977 Treaty itself.<sup>29</sup> It asserts as basic objectives elements which were either incidental to the main purpose or were largely disregarded at the time.

1.13. The Treaty envisaged an economic objective ("mutual interest in the broad utilization of the natural resources of the Bratislava-Budapest section of the Danube river...") and a strategic or political objective (strengthening "fraternal relations" and significantly contributing to "the socialist integration of the States members" of the CMEA).<sup>30</sup> The Slovak Memorial fails altogether to mention the second of these, notwithstanding the role it played in the actual history of the Project.<sup>31</sup> Instead it presents the following as "basic aims" of the 1977 Treaty:

- Protection of the environment<sup>32</sup>
- Improvement of the environment<sup>33</sup>
- Revitalisation of the side-arm system<sup>34</sup>

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<sup>25</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 3.6.5.

<sup>26</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 3.6.5.

<sup>27</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 3.4.2.

<sup>28</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 4.4.

<sup>29</sup> HM, Annexes, vol 3, annex 21.

<sup>30</sup> See HM, paras 4.04-4.08, 10.73-10.74.

<sup>31</sup> As documented in HM, paras 3.02-3.37.

<sup>32</sup> SM, para 6.132.

<sup>33</sup> SM, para 6.132.



- Preventing erosion of the riverbed<sup>35</sup>
- Improvement of surface water<sup>36</sup>
- Improvement of groundwater<sup>37</sup>
- A monitoring system<sup>38</sup>

1.14. The reason for this re-interpretation later becomes clear: without broadening the “basic aims” of the 1977 Treaty it is impossible to justify Variant C by reference to that Treaty, and the “approximate application” argument – Slovakia’s primary legal argument for Variant C – collapses *in limine*.<sup>39</sup>

1.15. By contrast, other benefits referred to in the Treaty (including benefits to agriculture and to “other sectors of the national economy” – e.g., forestry and fisheries) are discussed only briefly, presumably because Slovakia recognises that those activities would have suffered from the Treaty.<sup>40</sup>

1.16. Of the economic objectives listed in the first paragraph of the Preamble, the Slovak Memorial addresses three in detail: **energy**, **navigation** and **flood control**.

1.17. At the time, production of **energy** was considered of dominant importance, but it was the most vulnerable to changes in technology – not to speak of the region’s unforeseen exposure to the world energy market in the late 1980s.

1.18. As to the subordinate Treaty aims of **navigation** and **flood control**, it will be shown that these problems could be addressed by other means; indeed, in certain cases the Project actually *impeded* their solution.<sup>41</sup> Moreover, energy production and navigation were as much related to the second objective of the Treaty – the furtherance of socialist

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34 SM, para 6.132.

35 SM, para 5.26.

36 SM, para 6.132.

37 SM, para 6.132.

38 SM, para 5.26.

39 As shown in paragraphs 6.82-6.104 below, that argument is anyway untenable as a matter of law.

40 See below, paragraphs 1.122-1.155.

41 See below, paragraphs 1.171-1.189.

integration and fraternal relations – which is ignored in the Slovak Memorial. Indeed, the Joint Contractual Plan's Summary Documentation, in its economic analysis states:

“The exploitation of the Danube as a shared Hungarian-Czechoslovak energy resource and the improvement of navigation conditions on this important European traffic route – besides other important achievements – forms part of the mutual close co-operation of the COMECON countries in the area of optimal utilisation of natural – dominantly energy – resources.”<sup>42</sup>

1.19. The second objective is a key to understanding the Original Project's original rationale. The Project had been planned as part of an overall design for the industrial and economic development of Eastern Europe in the context of COMECON relations.<sup>43</sup> COMECON had approved and recommended a comprehensive plan for the Danube Section from Bratislava to the Black Sea including the Original Project in 1961,<sup>44</sup> had adopted compulsory recommendations on the Original Project,<sup>45</sup> and had adopted the Complex Programme for the Further Deepening and Improvement of Co-operation and the Development of Social and Economic Integration of the COMECON which mandated “the construction and operation of joint ventures for the production of electric energy”.<sup>46</sup> The economic viability of the Original Project was premised upon significant Soviet financial support, both because it was intended to reduce the demand for Soviet oil supplied to Eastern Europe under the bartering system of COMECON, and because of Soviet interest in improved navigation (in 1971 the Soviet Union's share of Danubian

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<sup>42</sup> Summary documentation of the Joint Contractual Plan of the Gabčíkovo-Nagymaros Barrage System, 0-6 Economic Part, Budapest, 1978 (In Hungarian and Slovak), Section 3.

<sup>43</sup> For the history of COMECON involvement in the plans for the GNBS; see HM, paras 3.01-3.40. The importance of COMECON involvement is recorded in the Summary Documentation on the Joint Contractual Plan, 1978, SM, annex 3, p 36, where the 1971 “Comprehensive Program” of COMECON was described as a “new incentive” to the Project.

<sup>44</sup> HM, para 3.21.

<sup>45</sup> See discussion in HM, para 3.21. The CMEA Charter provided that “recommendations adopted by member countries of the Council shall be implemented by them through decisions of the Governments or competent authorities of those countries, in conformity with their laws”. Although “the member countries concerned” technically had to “consent...being entitled to state its interest in any question”, in practice, countries normally felt obliged to “consent”. See Charter of the Council for Mutual Economic Assistance, Sofia, 14 December 1959, 368 UNTS 237, Art 4.

<sup>46</sup> See discussion below, paragraphs 1.194-1.199.

traffic was 29.4%). The Soviet Union had a strong interest in shipping military equipment along the Danube. The Project's timetable depended upon the economic assistance of the Soviet Union, but the promised assistance was never provided.<sup>47</sup>

### SECTION C: THE LACK OF AN INTEGRATED ENVIRONMENTAL IMPACT ASSESSMENT

1.20. Environmental impact assessment (EIA) is a project evaluation technique designed to assist in the integration of economic and environmental objectives. An EIA involves acquiring, analysing and reporting on the social, economic and environmental effects of economic development plans, programmes and projects.<sup>48</sup> It also encompasses subsequent monitoring and evaluation to ensure that environmental concerns are addressed and that adverse environmental effects are prevented to the extent possible.<sup>49</sup>

1.21. The use of EIA was endorsed at the international level by Hungary and Czechoslovakia as early as 1975 (i.e., before the 1977 Treaty) in the preamble of the Helsinki Final Act of the Conference on Security and Co-operation in Europe.<sup>50</sup> Hungary and Czechoslovakia also supported the requirement of the 1982 World Charter for Nature that activities which are likely to pose a significant risk to nature "shall be preceded by an exhaustive examination" and their proponents "shall demonstrate that expected benefits outweigh potential damage to nature, and where potential adverse effects are not fully understood, the activities should not proceed".<sup>51</sup> More recently, both signed the 1991

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<sup>47</sup> See 1976 Agreement on the Drafting of the Joint Contractual Plan, Art 3(5); HM, Annexes, vol 3, annex 18. See also HM, paras 3.32-3.40, detailing the history of promised Soviet assistance; HM, paras 4.07-4.08, describing actual Soviet assistance.

<sup>48</sup> Espoo, 25 February 1991, reprinted in (1991) 30 ILM 802. The Convention has been signed by Hungary and Czechoslovakia in 1991.

<sup>49</sup> For more details on the EIA process, see *Scientific Evaluation*, HC-M, vol 2, chap 7, and Hens, HC-M, Annexes, vol 4 (part 2), annex 23.

<sup>50</sup> Helsinki, 1 August 1975, reprinted in (1975) 14 ILM 1292. "The participating States... [a]gree to the following aims of co-operation, in particular... Legal and administrative measures for the protection of the environment including procedures for establishing environmental impact assessments".

<sup>51</sup> UN General Assembly Resolution 37/7, 37 UNGAOR (Supp No 51), 17.

Espoo Convention,<sup>52</sup> and both had by 1992 enacted national EIA legislation.<sup>53</sup>

1.22. EIAs have become accepted requirements during the last 15 years; in addition their content has evolved significantly. Before 1970 project studies principally addressed the economic and technological feasibility of projects, with only limited attention given to efficiency criteria and safety concerns, and little or no possibility for public participation. Around 1970, the technique shifted to a cost-benefit analysis with multiple aims, but still ignored environmental and social consequences of a project. By about 1975, the EIA was introduced, focusing on description and prediction of environmental changes and modifications in land use, and searching for mitigating measures. Public participation in the decision-making was first introduced during this period. In the period 1975-1980 multi-dimensional EIA was encouraged, with more attention paid to risk assessment and analysis of dangerous installations. By the 1980s, EIA becomes closely linked with higher level policy planning and more attention was paid to health aspects. By the 1990s, when Hungary terminated the 1977 Treaty, EIA was accepted as an essential tool for the integration of environment and development.<sup>54</sup>

1.23. No proper EIA was ever performed for the Original Project, either before or after 1977. Slovakia asserts that the large number of studies prepared prior to 1973, as well as those prepared between 1973 and 1990, demonstrate that all possible environmental and other concerns were addressed and resolved in a suitable manner.<sup>55</sup> So far as can be ascertained from the documents available to Hungary, this is not the case.

1.24. The undocumented assertion that "many hundreds of studies were carried out"<sup>56</sup> prior to entering the Project, and that a number of schemes and variants were considered,<sup>57</sup> does not amount to carrying out a proper EIA. What is critical is not the number of studies, but the scope of the issues addressed, the quality of each study, and the extent to which the

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<sup>52</sup> Espoo, 25 February 1991, reprinted in (1991) 30 ILM 802.

<sup>53</sup> Czechoslovak Federal Environmental Act No 17-1992. This is now in force in both successor States of the former Czechoslovakia.

<sup>54</sup> Rio de Janeiro Conference, Agenda 21, chap 18.

<sup>55</sup> SM, paras 1.17, 2.04, 2.14, 2.18, 2.118.

<sup>56</sup> SM, paras 2.10-2.11.

<sup>57</sup> SM, para 2.02.

different studies have been integrated so as to provide a coherent overview of the environmental problems posed.<sup>58</sup>

1.25. According to the Slovak Memorial, “[e]nvironmental impacts had been carefully and extensively studied by both parties to the 1977 Treaty both before and after the conclusion of the Treaty”.<sup>59</sup> “[A] staggering 364 research projects were taken into account in the formulation of the design of the G/N System up to 1974”.<sup>60</sup> In particular, the studies which together formed the BIOPROJECT “showed that the Project was sustainable in environmental terms”.<sup>61</sup>

1.26. These studies were not annexed to the Slovak Memorial, and Slovakia has so far refused to provide them to Hungary despite its requests.<sup>62</sup> In reference to the BIOPROJECT and other scientific studies prepared before and after 1977,<sup>63</sup> Slovakia has stated that the studies...

“are adduced in support of the contention that the G/N Project was indeed very carefully researched. This contention does not relate to the individual findings of specific reports, but to the fact of their existence. The actual contents of the reports are not relevant to the contention.”<sup>64</sup>

This suggests that somehow the *number* of studies is sufficient to satisfy national and international EIA requirements irrespective of their contents, scope, quality or conclusions.

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<sup>58</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 7.5.

<sup>59</sup> SM, para 2.118; see also SM, paras 2.02, 2.28.

<sup>60</sup> SM, para 2.10.

<sup>61</sup> SM, para 2.14.

<sup>62</sup> Hungary first requested this documentation on 27 June 1994. See *Note Verbale* from the Republic of Hungary to the Slovak Republic; HC-M, Annexes, vol 3, annex 14. On 3 August 1994 Slovakia replied that it was inappropriate for requests for documents to be made except through the Registry of the Court. Hungary requested the documents on 6 September 1994. See Letter from Dr G Szénási, Agent of the Republic of Hungary to Mr E Valencia-Ospina, Registrar, International Court of Justice, 6 September 1994; HC-M, Annexes, vol 3, annex 24. See also Letter from Dr G Szénási, Agent of the Republic of Hungary to Dr P Tomka, Agent of the Slovak Republic, 6 September 1994; HC-M, Annexes, vol 3, annex 21.

<sup>63</sup> SM, paras 2.10-2.30.

<sup>64</sup> Letter from Dr P Tomka, Agent of the Slovak Republic to Dr G Szénási, Agent of the Republic of Hungary, 3 August 1994; HC-M, Annexes, vol 3, annex 11.

1.27. Studies which *are* available to Hungary do not support the conclusions "that the Project was sustainable in environmental terms", or that "the G/N Project was indeed very carefully researched" from this point of view.<sup>65</sup>

1.28. Of the 360 studies prepared prior to 1973 and listed in the Slovak Memorial,<sup>66</sup> 16 appear to have addressed the critical issues of water quality, biology and protection of nature; only three of those 16 addressed issues of the natural habitat and nature itself. Of the 118 listed studies conducted between 1973 and 1990,<sup>67</sup> only 11 focus on forest ecosystems, groundwater, location alternatives, protection measures and water quality.

1.29. Carrying out adequate studies would have been made difficult by the lack of accurate data on the extent of bio-diversity in the region. There were no reliable, comprehensive lists of species or of plant populations. Even those species or plants which enjoyed protected status were listed inconsistently. Hungary's "environmental impact statement" of 1985,<sup>68</sup> placed little or no value on any of the region's natural assets. This statement reflected nothing more than an *a priori* attitude of its makers.

1.30. The Bechtel Report and the Hydro-Québec Study, which are heavily relied upon by Slovakia and are described as "important documents",<sup>69</sup> reinforce the conclusion that studies and data pertaining to biological resources were either non-existent or inadequate. Even in 1989 and 1990, when the documents were produced and after construction was suspended at Nagymaros and Dunakiliti, impacts of the Original Project were unknown because of insufficient data and studies.

1.31. Thus the Bechtel Report states that:

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<sup>65</sup> See e.g., the Standpoint of Ecological Section, Czechoslovak Biological Society, Czechoslovak Academy of Sciences, to the water dams system Gabčíkovo-Nagymaros, 14 November 1988; HC-M, Annexes, vol 3, annex 43.

<sup>66</sup> SM, annex 23.

<sup>67</sup> SM, annex 24 (presumably including the BIOPROJECT studies).

<sup>68</sup> See Summary of this in HM, Annexes, vol 5 (part 1), annex 4. This Hungarian study is considered unsatisfactory because of omissions and inadequacies: see L. Hens, *Scientific Evaluation*, HC-M, Annexes, vol 4 (part 2), annex 23; and *Scientific Evaluation*, HC-M, vol 2, chap 7.5.1.

<sup>69</sup> SM, para 2.28.



Upper Danube River  
Gabčíkovo-Nagymaros

AUSTRIA

BRATISLAVA

Dunakiliti-Hrušov Reservoir

DUNAKILITI WEIR

ŽITNÝ

OSTROV

GABČÍKOVO BARRAGE

SLOVAKIA

Mosonmagyaróvár

Mosoni-Duna

ÖN

Vázsky Dunaj

HUNGARY



Edited by:



ECOPLAN Ltd.

1011 Budapest Corvin tér 3.

Data:



Danube  
Environmental  
Monitoring and  
Information  
System



er Section  
Barrage System

Environmental  
Impact Area  
**Original Plan**

Scale: M = 1:300.000

0 10 km



Legend

-  Power canal, reservoir
-  Inundation dike
-  Settlement
-  Danube
-  Forest
-  River gauging station
-  River km
-  State border
-  Barrage
-  Embankment

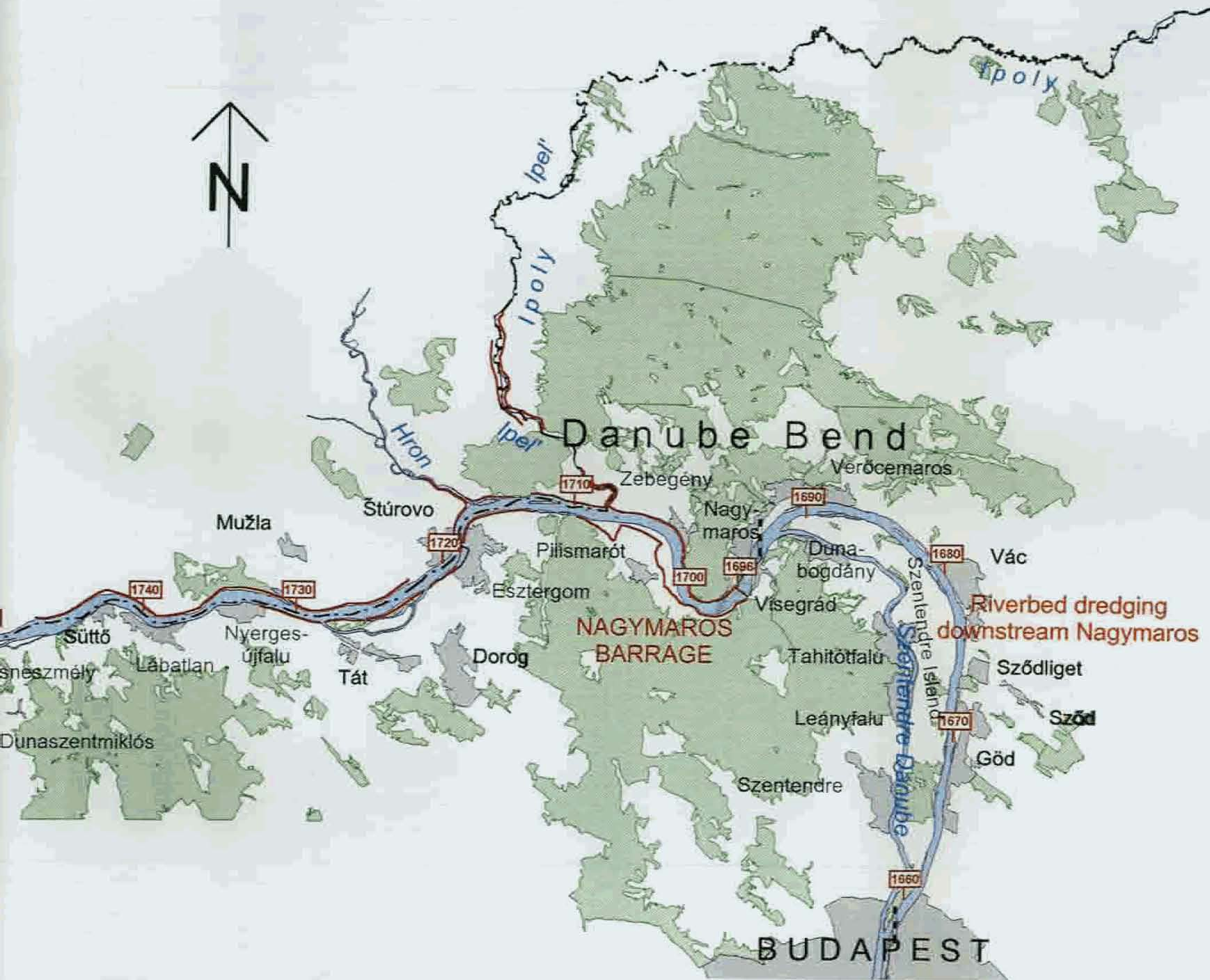


Plate 1



Upper Danube River  
Gabčíkovo-Nagymaros



AUSTRIA

SLOVAKIA

HUNGARY

Edited by:



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1011 Budapest Corvin tér 3.

Data:



Danube  
Environmental  
Monitoring and  
Information  
System



Lower Section  
Barrage System

Environmental  
Impact Area  
**Variant C**

Scale: M = 1:300.000



Legend

-  Power canal, reservoir
-  Inundation dike
-  Settlement
-  Danube
-  Forest
-  River gauging station
-  River km
-  State border
-  Barrage
-  Embankment



Plate 2

"[m]ore limited data and analyses are available regarding project-related impact on biological resources..."<sup>70</sup>

"a definitive impact determination cannot be made because the fauna of the [Szigetköz-Gönyü] area was not surveyed and identified prior to construction."<sup>71</sup>

"Biological resources in the project area are not entirely well defined and the amount of information varies..."<sup>72</sup>

"Additional data are also needed for other wildlife species occurring in the Szigetköz and other portions of the project area before impacts can be determined or mitigations developed."<sup>73</sup>

"Additional pre-operational data are needed to define impacts to biological resources, especially fisheries..."<sup>74</sup>

1.32. The Hydro-Québec Report (1990) states that:

"aucun impact de la gestion de la centrale Gabčíkovo dans cette zone, entre autres sur la forêt alluviale, l'aspect visuel, la qualité de vie des résidents riverains et la pêche sportive, n'a été soulevé."<sup>75</sup>

"... le réseau et le programme de relevés avant la mise en eau du réservoir n'a pas été conçu en vue de bien documenter le régime qualitatif et piézométrique de la nappe dans le voisinage du Danube et sous le futur réservoir Hrušov."<sup>76</sup>

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70 Environmental Evaluation of the Gabčíkovo (Bős)/Nagymaros River Barrage System (hereafter referred to as "Bechtel Report"); HC-M, Annexes, vol 4 (part 1), annex 1, p 1-2.

71 Bechtel Report, HC-M, Annexes, vol 4 (part 1), annex 1, p 2-25. See also below, paragraph 1.35, for statements about the lack of information available in 1989-1990, a situation applicable *a fortiori* to the earlier period.

72 Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-11.

73 Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-12.

74 Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-19.

75 Hydro-Québec Report; HM, Annexes, vol 5 (part 1), annex 9, p 290. In translation this reads:

"none of the impacts of the management of the Gabčíkovo system in this [tailrace canal] zone, on amongst other things the alluvial forest, the visual appearance, the quality of life for the riverside inhabitants and angling, have not been raised".

76 Hydro-Québec Report; HM, Annexes, vol 5 (part 1), annex 9, p 235. In translation this reads:

“Elles montrent que ces failles peuvent jouer vraisemblablement à notre époque. Pour le moment il n’a pas été établi de relation entre ces données et celles de néotectonique.”<sup>77</sup>

“Il est prévu, en particulier, de faire un suivi des piézomètres sur une période d’un avant la mise en eau. Aucun rapport permettant de juger des mesures effectuées sur ces piézomètres mis en place en 1989 n’avait encore été produit.”<sup>78</sup>

“Malheureusement, l’effet sur la solubilité des métaux lourds n’a pas été examiné.”<sup>79</sup>

1.33. In addition to the Bechtel and Hydro-Québec Reports, the INFORT study, the World Wildlife Fund, and the Biological Society of the Czechoslovak Academy of Sciences all confirm Hungary’s conclusion that in 1989 and 1990, when construction was suspended at Nagymaros and subsequently at Dunakiliti, studies and data pertaining to biological resources were still either non-existent or inadequate, or had been ignored. Thus the INFORT study (1989) stated that—

“the process did not follow the rule which we recommend above – that impacts and alternatives be explored thoroughly before action is taken.”<sup>80</sup>

1.34. The World Wildlife Fund (1989) stated:

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“the network and study programme before the inundation of the reservoir was not designed in terms of good documentation of the qualitative regime and the piezometric surface of the water-table beside the Danube and under the future Hrušov reservoir”.

<sup>77</sup> Hydro-Québec Report; HM, Annexes, vol 5 (part 1), annex 9, p 252. In translation this reads:

“[data from the Gabčíkovo region] show that it is likely for these faults to move in our time. For the moment, the relation between this data and the neotectonic data has not been established”.

<sup>78</sup> Hydro-Québec Report; HM, Annexes, vol 5 (part 1), annex 9, p 263. In translation this reads:

“[i]t is predicted, in particular, to follow a piezometric study for a period of one year before inundation. No report has yet been produced to judge the effectiveness of these piezometers put into place in 1989”.

<sup>79</sup> Hydro-Québec Report; HM, Annexes, vol 5 (part 1), annex 9, p 238. In translation this reads:

“[u]nfortunately the consequence of heavy metal solubility has not been examined.”

<sup>80</sup> HM, Annexes, vol 5 (part 1), annex 5, p 59.

"All that we have come to know about the project makes us believe that both the Hungarian and the Czechoslovakian government approved of this concept on the basis of insufficient and, for the problem in question, inadequate information."<sup>81</sup>

1.35. The Czechoslovak Academy of Sciences, Biological Society, (1989) stated:

"Governments of the interested states should reevaluate basically the whole project and... its realisation."<sup>82</sup>

1.36. The Bechtel Report claims to have "followed the philosophy that significant impacts must be identified prior to project construction and operation, and qualified – or, where possible – quantified".<sup>83</sup> That was not the philosophy followed by either of the parties before or after the 1977 Treaty and until 1989.

1.37. The Hydro-Québec Study confirms that plans for the Original Project were finalised before any "environmental studies" were conducted, let alone an EIA:

"En 1975, le groupe URBION... et l'Académie Slovaque des Sciences se voyaient confier le mandat d'analyser le project Gabčíkovo-Nagymaros du point de vue environnemental.

A cette époque, la conception technique était déjà finalisée. Les travaux de déboisement commencèrent en 1976, alors que l'étude d'environnement visait la description et l'analyse de la situation de même que l'élaboration de propositions visant à éliminer les impacts."<sup>84</sup>

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81 HC-M, Annexes, vol 4 (part 1), annex 4, p 5.

82 Standpoint of Ecological Section, Czechoslovak Biological Society at Czechoslovak Academy of Sciences to the Water Dams System Gabčíkovo-Nagymaros (1989), HC-M, Annexes, vol 3, annex 43.

83 Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 2-1.

84 Hydro-Québec Report; HM, Annexes, vol 5 (part 1), annex 9, p 271-278. In translation this reads:

"In 1975, the group URBION (Institute of Urbanisation and Development of the Land of Bratislava) and the Slovak Academy of Sciences, entrusted themselves to analyse the Gabčíkovo-Nagymaros project from an environmental point of view.

At that time the technical design had already been finalised. Deforestation work had begun in 1976, when the environmental study saw the description and analysis of the situation at the same time as proposals were being worked out seeing to eliminate the impacts."

“La solution technique étant déjà choisie, ces études ne portaient pas sur une comparaison de variantes, mais bien plutôt sur l’optimisation du projet retenu... Il convient toutefois de mentionner que ces éléments [la qualité et la propagation de la nappe d’eau souterraine liée à l’agriculture, l’exploitation forestière, l’industrie et l’approvisionnement en eau potable] ont été étudiés presque exclusivement en rapport avec leur exploitation économique. Quant à l’évaluation des impacts du projet, elle ne respecte pas un cadre méthodologique précis. En effet, l’identification des sources d’impacts ainsi que les impacts eux-mêmes ne se retrouvent pas de façon systématique et explicite dans les différents rapports de synthèse consultés. Les impacts se retrouvent plutôt dans la définition de la zone d’étude et dans les mesures proposées. Ces mesures proposées relèvent plus d’un objectif de mise en valeur du milieu que de l’atténuation ou la correction des impacts appréhendés...”<sup>85</sup>

1.38. At the same time as it suspended construction at Nagymaros, Hungary called for a comprehensive environmental study of the entire Project. Czechoslovakia refused to call a halt on construction and ultimately refused to agree to long-term environmental or other studies in co-operation with Hungary. However, at the meeting between Prime Minister Németh and Prime Minister Adamec, the latter expressed himself willing to examine new environmental and seismic factors, and the two Prime Ministers agreed to establish joint study groups to consider ecological, seismological and other aspects.<sup>86</sup> In accordance with prudent management practices, and anxious to ensure that the

<sup>85</sup> Hydro-Québec Report; HM, Annexes, vol 5 (part 1), annex 9, p 298. Also quoted in HM, para 6.34. In translation this reads:

“The technical solution having already been chosen, therefore these studies could not consist of a comparison of alternatives, but rather on the optimisation of the adopted project... Thus in general, the principal governmental risks considered in these studies, treated especially the groundwater quality and the propagation of the groundwater table linked to agriculture, exploitation of forestry, industry and supply of drinking water... It is however advisable to mention that these elements had been studied almost exclusively in the context of their economic exploitation. As to the evaluation of the impacts of the project, it does not have a well-ordered framework. In effect, the identification of the sources of impacts, as well as the impacts themselves, cannot be found systematically and explicitly in the different reports consulted. To some extent, the impacts appear in the definition of the zone of study and in the proposed measures. The measures proposed are concerned more with environmental development than the alleviation or correction of the impacts learnt...”

<sup>86</sup> HM, paras 3.78, 3.79.

Project contributed to the sustainable development of the region, Hungary did not want to take the major and practically irreversible step of blocking the Danube to fill the reservoir (a step which had been planned for 1989) without a proper EIA.

1.39. The Slovak Government itself implicitly recognised that no EIA was performed and no EIS prepared. In its application to the EC PHARE programme for funds to engage in a form of impact assessment study on the Žitný Ostrov region, Slovakia stated that the Gabčíkovo sector required a "thorough and complex study of a proper impact assessment model, enabling authorities to ensure the protection of natural and anthropic resources, balanced ecological development, as well as optimized decision making and management."<sup>87</sup> That study continues.

1.40. Subsequently, the Slovak Ministry of the Environment has confirmed that no EIA has been performed, and that in particular no study had been prepared on the complex impact of the Gabčíkovo Project on groundwater.<sup>88</sup>

1.41. It is useful to summarise the position by adopting the conclusions of the *Scientific Evaluation* annexed to this Counter-Memorial, which are as follows:

- \* Although EIA procedures and contents are continuously being improved as a result of experience gained, there have not been major changes or significant developments in the state of the art of EIA during the 1980s;
- \* Although EIA was not yet introduced in all countries by the end of the 1980s, it was generally available as an instrument for environmental protection. At the end of the 1980s it was generally accepted that large infrastructure projects might cause substantial environmental effects and that EIA can be used to detect and mitigate adverse effects;
- \* No proper EIS has ever been done on the Original Project.<sup>89</sup>

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<sup>87</sup> Czech and Slovak Republic, Federal Committee for the Environment, Response to Invitation of Proposals of EC PHARE Programme, Surface Water and Ground Water Model of Danubian Lowland Between Bratislava and Komárno: Ecological Model of Water Resources and Management, 25 October 1990 (hereafter "CSFR PHARE Application"), title page; HC-M, Annexes, vol 3, annex 48. See also below, paragraphs 2.59-2.63.

<sup>88</sup> See above, Introduction, para 21.

<sup>89</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 7.5.

## SECTION D: THE ORIGINAL PROJECT: A SCIENTIFIC CRITIQUE

### (1) THE POSITIONS OF THE PARTIES

1.42. It is Hungary's position that the Barrage System envisaged by the 1977 Treaty would in all likelihood have caused substantial damage to the environment and in particular have imposed unacceptable risks of damage to water resources and valuable nature interests. This likelihood of damage, and these risks, existed for both parties in respect of the Gabčíkovo sector, but primarily for Hungary with respect to the Nagymaros sector.<sup>90</sup>

1.43. By contrast the Slovak Memorial contends that there were no risks that could not be managed or mitigated, or at the very least that the Project could have always been modified if the need arose.<sup>91</sup>

### (2) THE TASK OF THE COURT

1.44. The Court is called on to resolve the dispute between the parties, notwithstanding that it involves scientific and technical issues. On the other hand the assessment of complex risks in a large unimplemented project of this type is extremely difficult, with many uncertainties. Risks and damage can seldom be proved with 100% certainty. Methodologically, the only way to quantify changes in such a complex set of interrelated processes is through simulation models based on extensive field data, but there are limitations. The applications of integrated models to such complex systems is at the leading edge of research, and it must be recognised that techniques available for uncertainty analysis of such complex models are limited, and that levels of uncertainty may be very high.<sup>92</sup>

1.45. Moreover the issues raised concern not just one field of expertise but a wide range of technical and scientific fields, including in particular seismology, hydrology, hydrobiology, water chemistry, sediment transport, river morphology, the soil sciences, forestry, biology, ecology, fisheries and environmental impact assessment.

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<sup>90</sup> See HM, chap 5, for an initial presentation of the potential damage and risks associated with the Original Project.

<sup>91</sup> See SM, chap 2.

<sup>92</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 3.1.2, describing uncertainty in determining effects.



1.46. Two comments may be made about the resulting situation. Clearly no one can be absolutely certain about the long-term scientific and technical prognosis for a major project such as this, given the many disciplines involved in making any prediction, the interactions between the various elements of the problem, etc.<sup>93</sup> On the other hand these issues *are* in dispute between the parties; it is necessary to address them in order to answer the legal issues set out in Article 2 of the Special Agreement.

1.47. In these circumstances it is submitted that the Court should ask itself:

- (1) whether Hungary was reasonable in believing in 1989 that there was a substantial likelihood of major risks and damages (a) from the operation of the Nagymaros sector, especially in peak power mode; and (b) from closing the Danube at Dunakiliti (so as to allow for the filling of the Dunakiliti-Hrušov reservoir).
- (2) whether Hungary was reasonable in believing in 1992 that there was a substantial likelihood of major risks and damage from implementation of the Original Project.

1.48. These questions assume that the Hungarian Government did in fact have these beliefs at the relevant time, something the Slovak Memorial denies. That issue is addressed in Chapter 2 of this Counter-Memorial.

1.49. In order to assist the Court in performing its task, Hungary has commissioned a group of scientists with the appropriate range of expertise to produce an overall assessment of the Original Project, and of Variant C, from a scientific and interdisciplinary point of view. Their joint report, entitled "Scientific Evaluation of the Gabčíkovo-Nagymaros Barrage System and Variant C" is attached as volume 2 of this Counter-Memorial (hereafter referred to as "*Scientific Evaluation*"). Volume 4 contains a range of scientific and technical annexes referred to or relied on in the *Scientific Evaluation*. These are supplementary to the scientific reports annexed to the Hungarian Memorial. Volume 5 contains maps, figures, graphs and photos to be examined in conjunction with the *Scientific Evaluation*.

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<sup>93</sup> In this context the absolute certainty, extending to allegations of bad faith on the part of opponents of the Original Project, which is displayed in the Slovak Memorial is suspect. Given the inherent scientific uncertainties, such a level of certainty must be artificial.

## (3) A SUMMARY OF RISKS ASSOCIATED WITH THE ORIGINAL PROJECT

1.50. This Section of the Counter-Memorial presents a summary of the risks associated with the Original Project, drawn from the *Scientific Evaluation* and from the various annexes. The Court is respectfully referred to those sources for more detailed discussion, analysis and substantiation of the conclusions summarised in this Section.

1.51. This summary is also presented by way of critique and commentary on the assertions made in the Slovak Memorial, which contends that the "major impact of the G/N Project on the environment of the Danube basin had already been felt by 1989".<sup>94</sup> This impact is defined as constituting the loss of "managed poplar forests" and "hectares of natural vegetation".<sup>95</sup> The Slovak Memorial states "these losses must be kept in perspective" arguing that the serious problems of the region necessitated these losses, with, for example, far more losses occurring from flooding, navigation, lack of water in the side-arm systems, and river bed erosion.<sup>96</sup> Thus, the purpose of this section is two-fold: (1) to demonstrate that the major impact of the Project had not been felt by 1989 and that the subsequent impact would in all likelihood have been substantially greater, and (2) to show that the purported Slovak "losses" are substantially overstated and could be "remedied" by other methods.

1.52. One further preliminary comment must be made. The Slovak Memorial presents an image of flexible project management, and suggests that the Original Project was on the verge of being modified to protect nature precisely at the moment Hungary suspended construction at Nagymaros and Dunakiliti and up through the last meeting of the Plenipotentiaries.<sup>97</sup>

1.53. This is misleading. For example, the Slovak Memorial asserts that "the conclusion had been reached" by 1989 to increase the discharge from the reservoir into the Danube from 50 m<sup>3</sup>/s to 350 m<sup>3</sup>/s.<sup>98</sup> This seems to have been an internal "conclusion", since Hungary was never officially presented with such a proposal.<sup>99</sup> The Slovak Memorial lists a

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<sup>94</sup> SM, para 2.109.

<sup>95</sup> SM, para 2.109.

<sup>96</sup> SM, para 2.109.

<sup>97</sup> In SM, para 2.70 a number of possible modifications are listed.

<sup>98</sup> SM, para 2.69.

<sup>99</sup> Specifically, SM, para 2.69, states that "[a]s of May 1989, the conclusion had been reached that the Dunakiliti weir should channel up to 350 m<sup>3</sup>/s into the Danube riverbed on a continual basis, with the flow being temporarily increased to 1,300 m<sup>3</sup>/s each week in order to prevent the deposition of fine sediment in the riverbed".

number of other modifications which were also foreseen in 1989 – yet, there is no indication of these modifications in the record available to Hungary.<sup>100</sup> In any event, the “foreseen” measures listed in the Slovak Memorial would not have negated the impact to the area.<sup>101</sup> It is also significant that after more than 12 years of technical alterations and treaty modifications, major piece-meal modifications were still “foreseen”.

#### (4) THE CHARACTERISTICS OF THE REGION RECALLED

1.54. As explained in the Hungarian Memorial,<sup>102</sup> the affected region consists of an area extending from just below Bratislava to just above Budapest. Specifically, it comprises two main sectors corresponding to the locations of the two main barrages of the Original Project: Dunakiliti-Gabčíkovo and the surrounding area, in particular the Szigetköz, in the upstream sector, and Nagymaros and its surrounds, including Budapest in the downstream sector.<sup>103</sup>

- \* The Dunakiliti-Gabčíkovo sector contains the unique inland delta, the Hungarian Szigetköz and the Slovak Žitný Ostrov.<sup>104</sup> This inland delta is of international interest and has a patrimonial value.<sup>105</sup> Both are areas of exceptionally high diversity containing flora and fauna uniquely adapted to their environment. The Szigetköz consists of approximately 8,000 hectares of floodplain

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This offer was never made to Hungary, then or since. As will be shown in chap 3, Slovakia turned down the tap from a temporary release of 350 m<sup>3</sup>/s at the end of 1993, coinciding with the termination of the CEC negotiations.

<sup>100</sup> SM, para 2.70. It is not clear that these modifications were ever presented as proposals to the Hungarians within the framework of the Joint Operational Group, since the Slovak Memorial gives no references. Numerous proposals were discussed within the framework of the Joint Operational Group during the years it existed, without ever being formalised or reaching fruition.

<sup>101</sup> For example, a water discharge of 350 m<sup>3</sup>/s instead of the normal 2,000 might have been better than 50 or 200 but still would have caused damage to this valuable area. See *Scientific Evaluation*, chaps 2, 3, 4 and 5; see also paragraphs 1.83-1.89. Weirs are also harmful particularly in the absence of adequate discharge. See paragraphs 3.104-114.

<sup>102</sup> HM, paras 1.06-1.14, 5.10.

<sup>103</sup> See *Plates 1 and 2*.

<sup>104</sup> The size of this area combined with Žitný Ostrov surpasses similar areas along the Rhine and Rhône Rivers.

<sup>105</sup> See, e.g., Dister, *et al*, *A New Solution for the Danube*. WWF Statement on the EC Mission Reports of the “Working Group of Monitoring and Management Experts” (Dec. 1993); HM, Annexes, vol 5 (part 2), annex 20.

biotopes, containing at least 80 different plant communities (associations) comprising thousands of vascular plants. The fauna is even richer comprising thousand of taxa.<sup>106</sup> Also located in the area is the largest potable groundwater reserve in Central Europe.

- \* The Nagymaros sector bank-filtered water provides 64% of the water for Budapest, Hungary's capital with over two million inhabitants. This is also the richest area in Hungary from the perspective of history and archaeology.

1.55. These two sectors, however, can be broken into 3 distinct areas: the Szigetköz region, the Danube Valley, and the Danube Bend. These three areas need to be dealt with separately in any analysis of damage and risks.

### (5) RIVER MORPHOLOGY AND RIVER HYDRAULICS

1.56. Much of the Slovak Memorial's justification for the Original Project rests on the following line of reasoning:

"flood control and navigation measures had led to the lowering of the river water level downstream of Bratislava, leading in turn to a reduction in the level of the groundwater table and therefore to a harmful impact both on the riverine ecosystems and to agricultural and forestry production in Žitný Ostrov and Szigetköz."<sup>107</sup>

1.57. This line of reasoning is based on three assumptions:

- (1) Measures to improve flood control and navigation had to be taken.
- (2) Those measures necessarily lead to the reduction in the level of the groundwater table.
- (3) Only the Treaty can solve problems of flood control, navigation, and the reduction in the level of the groundwater table, and in solving the latter, thereby solve the problems of the environment of the region.

1.58. Of these three assumptions, the second is critical: it is the linkage between the works portrayed as essential for the region's survival and prosperity – those relating to navigation and flood control – and the

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<sup>106</sup> See HM, Mészáros, vol 1, appendix 1.

<sup>107</sup> SM, para 1.57.

environmental problems entailed by those works, which result from the drop in the groundwater table. If this linkage is disproved, much of the reasoning collapses.

1.59. This sub-section seeks to show (1) that the necessary measures for navigation and flood control were not primarily responsible for the reduction in the level of the groundwater table in the 10-15 year period prior to 1977; (2) that the Original Project was and is not the only solution to problems of river bed degradation which affect navigation and help to reduce groundwater levels; and (3) that the Original Project would have presented the region with further and substantial river morphological problems.<sup>108</sup>

1.60. Section E will show that adequate flood protection mechanisms were in place by 1977, independently of the Project.<sup>109</sup> Section F will demonstrate that the assumption that only the Project could solve the problems of navigation is not true and that the relative importance of the navigational improvements offered by the Project was limited and is now even more limited.<sup>110</sup>

*(a) The argument of the Slovak Memorial*

1.61. The Slovak Memorial argues that navigation works, primarily dredging, in conjunction with a decrease in sediment transport due to upstream Austrian dams, resulted in progressive degradation of bed levels in the period before the 1977 Treaty.<sup>111</sup> In fact, however, the decrease in *sediment transport* was not very substantial prior to the mid-1960s, and *navigational dredging* in the 1960s was not nearly as extensive as the Slovak Memorial portrays. Had these been the only factors affecting the river's morphology, no large degradation in bed level, such as occurred in the late 1960s and has continued since, would have taken place.

1.62. As to *sediment transport*, from an engineering point of view there should be an equilibrium between the amount of sediment entering a certain river section and leaving it at its downstream end, in order to maintain a constant bed and water level. The Slovak Memorial suggests that reduced levels of sediment supply from upstream Austrian dams

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<sup>108</sup> For a more extended treatment of these issues, on which this section draws heavily, see *Scientific Evaluation*, vol 2, chap 2.

<sup>109</sup> See below, paragraphs 1.171-1.176.

<sup>110</sup> See below, paragraphs 1.177-1.188.

<sup>111</sup> SM, paras 1.35-1.49, 1.57-1.60.

played a significant part in the degradation of the Danube riverbed.<sup>112</sup> It is true that upstream barrages, due to their retention of the bedload, will often lead to degradation of bed levels downstream. However, this was not the case in the Slovak/Hungarian reaches of the Danube. The first Austrian barrage (Jochenstein) was implemented in the year 1955, and the second one, Ybbs-Persenbeug, was built in 1958. Yet the discharge rating curve of the Bratislava gauge does not indicate any significant change at least until the year 1967.<sup>113</sup> The ten-year period operation of Ybbs-Persenbeug did not significantly affect river morphology in the Slovak/Hungarian reaches.<sup>114</sup> Moreover, any slight effect the upstream barrages may have had, even when coupled with navigational dredging, could not have caused the substantial sinking of the river bed levels later observed.

1.63. As to *navigational dredging*, the Slovak Memorial states that "the maximum annual dredging quotas necessary to ensure the correct navigation channel were 4 million m<sup>3</sup>, which was around 10 times more than the annual deposition of sediment in the region".<sup>115</sup> This statement is exaggerated. Data for the section between Rajka and Gönyü from 1963 to 1979 show that only an average of 0.4 million m<sup>3</sup> of dredged deposit was removed for navigational purposes every year,<sup>116</sup> an amount still less than the arriving bedload from upstream during that same period.

1.64. River regulation works can certainly degrade bed levels, as happened on the Rhine.<sup>117</sup> But the early river regulation on the Danube did not result in channel degradation; instead of erosion, accumulation of sediment continued. Aggradation in the Bratislava-Gönyü region was still prevailing in the early 1960s, despite the fact that excavation for navigational purposes had been occurring.<sup>118</sup> In fact, measured rates of aggradation between rkm 1800 and rkm 1841 amounted to 2.4-2.7 centimetres annually.<sup>119</sup> This is confirmed by the almost stable water level until the mid-1960s, indicating little or no bed degradation was taking

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112 SM, para 1.42.

113 See SM, Illustration No 18, p 31.

114 Kern, *Impacts of the Gabčíkovo-Nagymaros Project on River Morphology, Fluvial Hydraulics and Habitats* (hereafter referred to as "Impacts"); HC-M, Annexes, vol 4 (part 1), annex 6, at p 12.

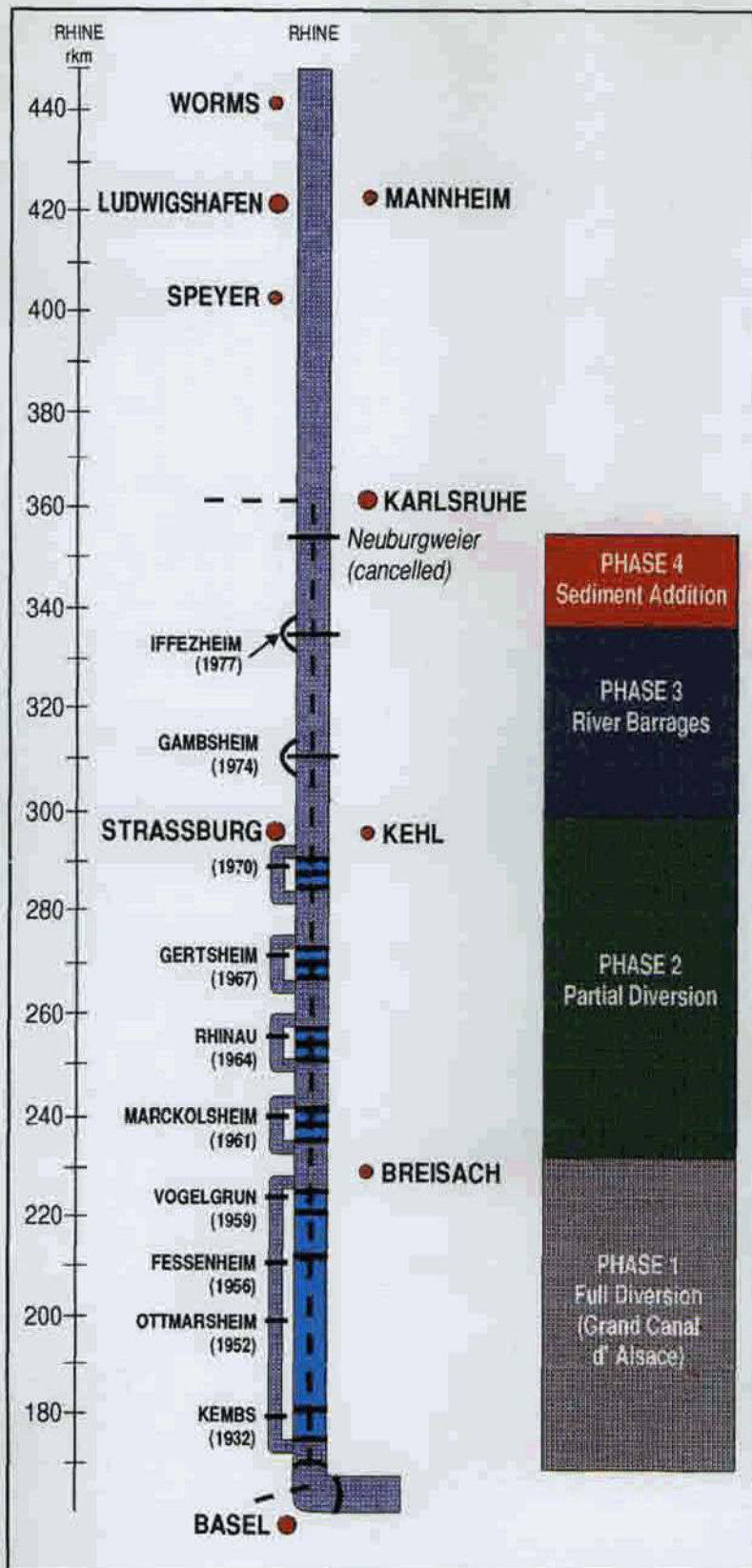
115 SM, para 1.42, note 22.

116 Kern; *Scientific Evaluation*, HC-M, vol 2, chap 2, *Table 2.1*.

117 SM, paras 1.67, 1.68

118 Kern, *Impacts*, HC-M, Annexes, vol 4 (part 1), annex 6.

119 See *Plate 2.1*; HC-M, Annexes, vol 5. See also Kern, *Impacts*, HC-M, Annexes, vol 4 (part 1), annex 6.



Changing attitudes in Upper Rhine barrage building: from full diversion in the 1950s (Phase 1) to sediment addition instead of barrage construction at the end of the 1970s (Phase 4). The projected barrage of Neuburgweier was cancelled for nature conservation in 1982 in an agreement between France and Germany, changing the bilateral treaty of 1969

(K.Kern, *Non-structural solutions to riverbed degradation-experiences from the Upper Rhine and the Austrian Danube*, 1994.)

Plate 3 Upper Rhine Barrage Building

place. Moreover, at that time, the side branch system and the active floodplain of the region were still fully integrated in the fluctuations of discharge and water levels which are vital to the wetland ecosystems.<sup>120</sup>

1.65. There was in fact only one stimulus that coincided with the sudden drop of water levels at Bratislava after the year 1967 – an activity ignored by the Slovak Memorial. Starting in the mid to late 1960s, large scale industrial dredging was carried out in both the Hungarian and Slovak reaches of the Danube. Industrial dredging carried out in the Szigetköz reach amounted to an average excavated gravel volume of more than 700,000 m<sup>3</sup> per year. In some years, dredging in this river stretch actually exceeded 1 million m<sup>3</sup>. Even more industrial dredging was carried out in the reaches downstream of Gönyű, and in the reach of Komárom-Ipoly mouth it exceeded 1.4 million m<sup>3</sup> per year.<sup>121</sup> The exploitation of gravel was not shared equally on all river reaches; the stretch between Gönyű and Komárom was almost exclusively exploited by Slovakia while the lower common Danube reach was intensively excavated by both countries.<sup>122</sup>

1.66. In other words, because of industrial dredging, the amount of excavated gravel exceeded the bedload which could be expected to enter the river section from upstream.

1.67. That this excessive channel dredging, which went far beyond river maintenance, was the principal cause for riverbed degradation is demonstrated in the *Scientific Evaluation*.<sup>123</sup> The point can be made briefly here by pointing to several indicators. Water levels of 1966 reveal that the riverbed remained rather stable until the mid-1960s. Between 1966 and 1970, a considerable drop was registered between Bratislava and Rajka and especially downstream of Dunaremete. Dramatic changes in water level occurred in the period after 1970 as well. If *Plate 5* is examined and account is taken of natural aggradation tendencies of the Danube, the morphological behaviour of the river generally shows a distinct relationship between dredging activities and lowering of the water levels.<sup>124</sup> For instance, between rkm 1850 and rkm 1840, the lowering of the riverbed corresponds to the amount of dredging. Similarly – and most importantly – the lack of dredging at rkm 1835/36 resulted in local aggradation clearly indicating that the river would fill up

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<sup>120</sup> Kern, Impacts, HC-M, Annexes, vol 4 (part 1), annex 6.

<sup>121</sup> Kern, Impacts, HC-M, Annexes, vol 4 (part 1), annex 6, *Table 1*, p 5.

<sup>122</sup> Kern, Impacts, HC-M, Annexes, vol 4 (part 1), annex 6, *Figure 4*, (p 8)

<sup>123</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 2. For a more detailed demonstration see Kern, Impacts, vol 4 (part 1), annex 6, p 11.

<sup>124</sup> See *Plate 5*.



its bed in the Szigetköz reach without dredging – even with the operation of upstream dams.<sup>125</sup> Although no certain conclusion can be made for the Slovak reach of the Danube due to lack of data concerning dredged volumes, the sudden drop of water levels at Bratislava after the year 1967 coincided with the beginning of industrial dredging.

1.68. The Danube's riverbed degradation and the resulting poor navigation conditions were not "*tolerated* by the Czechoslovak and Hungarian authorities only in the expectation of the implementation of the G/N Project",<sup>126</sup> but may even have been *caused* by that expectation.<sup>127</sup> It is ironic that the Slovak Memorial should state that "one of the objectives of the G/N project... is to reverse the trend that was causing the Danube branches and side-arms to dry up". It may well be that if the Original Project had never been planned, the erosion and degradation of the riverbed that exists today – and the resulting environmental effects – would have been avoided. Indeed, attitudes have changed extensively in Upper Rhine barrage building,<sup>128</sup> as can be seen in *Plate 3*, where sediment addition has been shown to be a feasible solution to riverbed degradation.<sup>129</sup> Preliminary field tests are being carried out in the Austrian reach of the Danube to stabilise the river below the last barrage. General model tests proved the feasibility of this procedure.<sup>130</sup>

*(b) The impact on river morphology*

1.69. The Slovak Memorial claims that "[a]s a result of the G/N System, this [riverbed erosion] would be eliminated". On the contrary, the degradation of the Main Channel riverbed is likely to continue due to the almost total retention of the bedload at the Dunakiliti barrage. Without arriving bedload from upstream, degradation could be expected even with only a few flood discharges per year. Erosion up to 3 metres

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<sup>125</sup> Kern, *Impacts*, HC-M, Annexes, vol 4 (part 1), annex 6, pp 14-15.

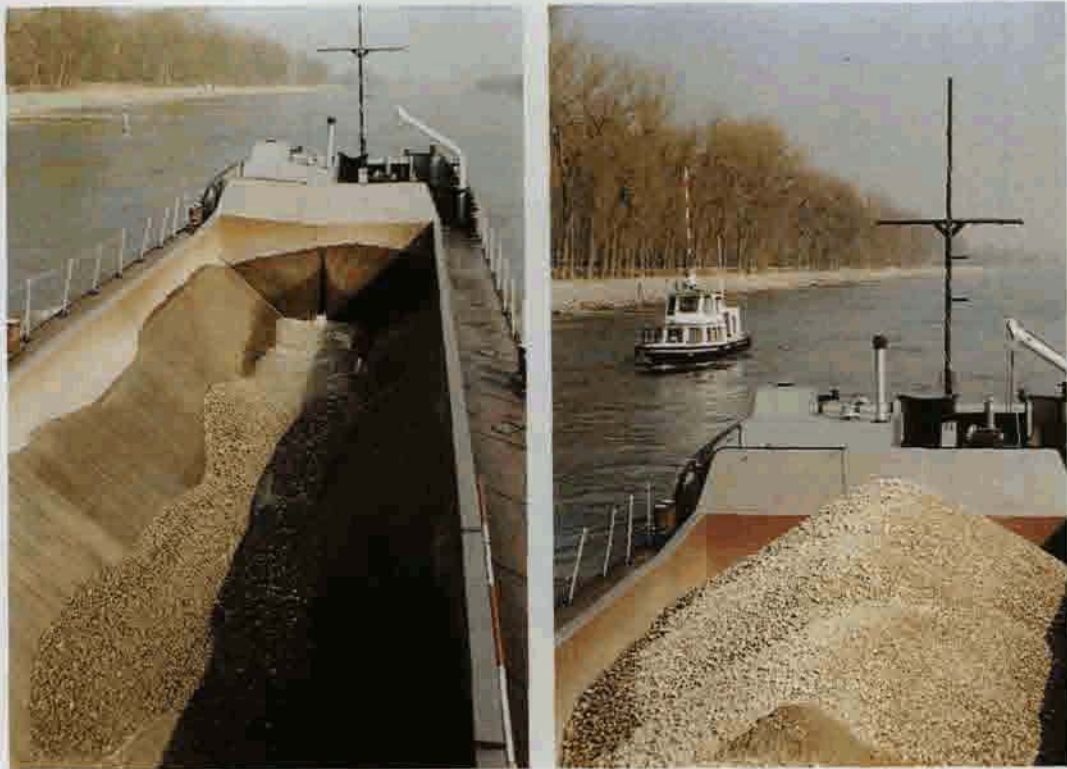
<sup>126</sup> SM, para 1.49 (emphasis added).

<sup>127</sup> Similarly, the "rock outcrops [that] started to appear in the riverbed near Nagymaros" (para 1.44) were not caused by erosion, as the Slovak Memorial asserts, but because of the industrial dredging.

<sup>128</sup> See *Plate 3*; see description of history below, para 1.152.

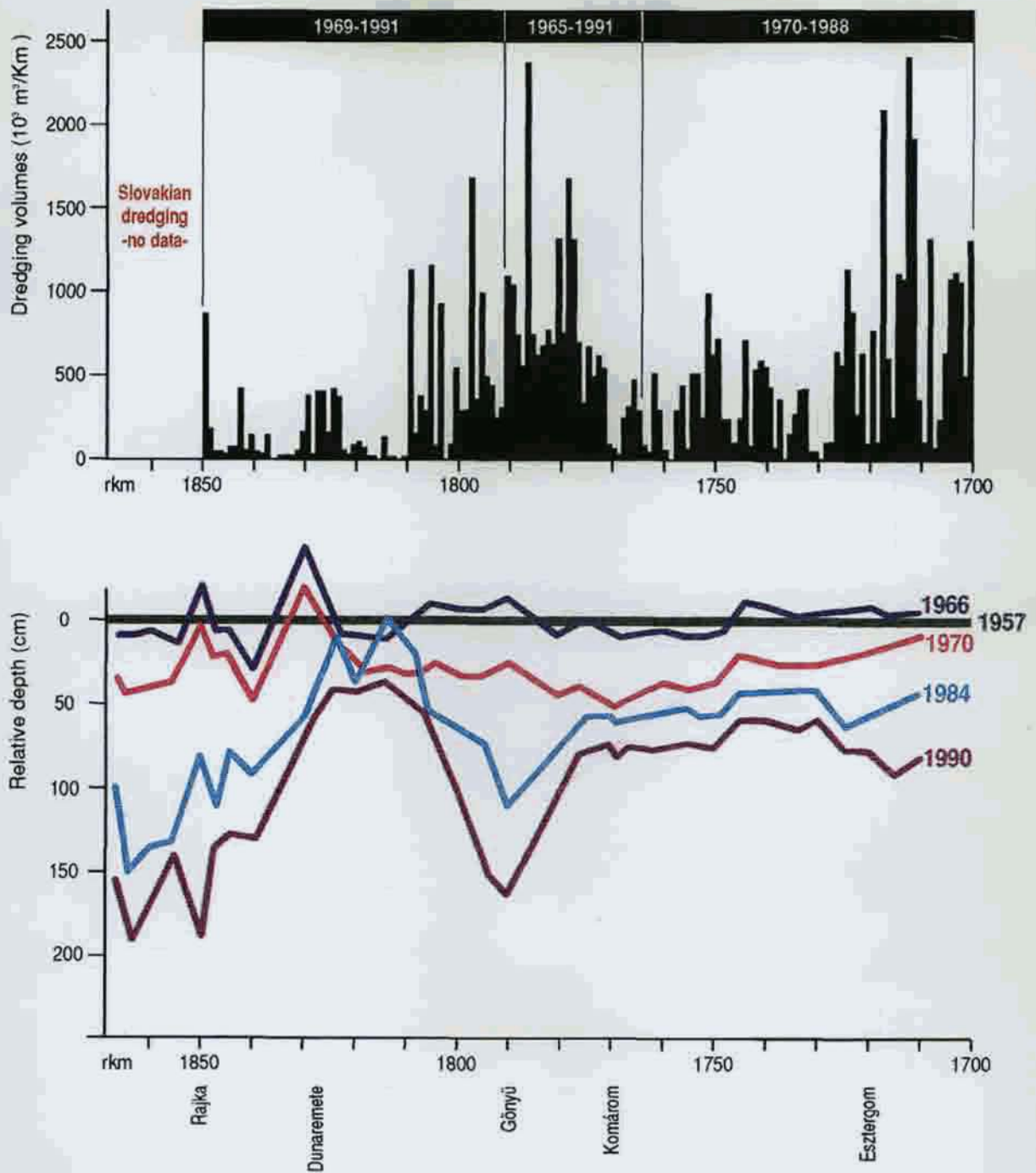
<sup>129</sup> See *Plate 4*, vol. 1. See also K Kern, *Non-structural Solutions to Riverbed Degradation – Experience from the Upper Rhine and the Austrian Danube, 1994*; HC-M, Annexes, vol 4 (part 1), annex 7; and M Bačík and J Kališ, *Silting Problems Arising with the Realisation of the Gabčíkovo Water Scheme*; HC-M, Annexes, vol 4 (part 1), annex 5.

<sup>130</sup> *Ibid.*



**Plate 4 Gravel Placement Instead of Barrage Building in the Upper Rhine**  
Sediment addition since 1978 as proven to be an effective tool to control erosion  
without disturbing navigation

*(After D. Kuhl, 1992. 14 year artificial grain feeding in the Rhine downstream of the Barrage Iffezheim.  
5th Int. Symposium on River Sedimentation, Karlsruhe, pp. 1121-1129)*



**Plate 5 Impact of Danube Dredging on Low-flow Water Levels**  
 Dredged volumes of gravel in thousand  $\text{m}^3$  per rkm (upper diagram) and drop of the low-flow water levels in selected years (lower diagram) along the Danube  
*(After K. Kern, Impacts of the Gabčíkovo-Nagymaros project on river morphology, fluvial hydraulics and habitats, 1994)*

could have been caused to some sections after 50 years of operation<sup>131</sup>. This would have entailed a further drop of the planned 50 m<sup>3</sup>/s water discharge.

1.70. *Table 1* shows the main hydrological and morphological impacts that could be anticipated in the main channel of the Danube in the Szigetköz region with the implementation of the Original Project. *Table 2* shows the anticipated effects for the Nagymaros area.<sup>132</sup> Some of the most important effects will be briefly summarised here; further details are provided in the *Scientific Evaluation*, Chapter 2 and related annexes.

1.71. For the Dunakiliti-Hrušov Reservoir, it was expected that 90% of the bedload would be deposited in the backwater reach, requiring continuous dredging. 77% of the suspended load was expected to deposit in the reservoir with a calculated lifetime of approximately 60 years.<sup>133</sup>

1.72. For the main channel of the Danube in the Szigetköz area, during 350 days of the year instead of an average of 2,000 m<sup>3</sup>/s, 50-200 m<sup>3</sup>/s would have been released from the reservoir – 200 m<sup>3</sup>/s only in the growing period.<sup>134</sup> The water-table – lowered since 1967-68 through excessive industrial dredging – would have dropped by 2.5-3 metres in certain areas. This water-table would have fluctuated only when the inflow into the reservoir exceeded 4,000 m<sup>3</sup>/s, about 12 days of the year on average.

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<sup>131</sup> M Bačik & J Kališ (1992); HC-M, Annexes, vol 4 (part 1), annex 5.

<sup>132</sup> *Table 4* (p 51) shows those anticipated for the Szigetköz floodplain.

<sup>133</sup> Kern, Impacts, HC-M, Annexes, vol 4 (part 1), annex 6, p 19.

<sup>134</sup> Although it was never specified in which period of time and in which case 200 m<sup>3</sup>/s should be released.

*Table 1: Hydro-morphological impacts of the Original Project on the Danube Channel<sup>135</sup>*

<b>DANUBE CHANNEL IN THE SZIGETKÖZ REGION</b>			
	<b>short term (5-10 yrs.)</b>	<b>medium term (10-20 yrs.)</b>	<b>long term (20-50 yrs.)</b>
<b>Discharges</b>	<ul style="list-style-type: none"> <li>• 50/200 m<sup>3</sup>/s should be released from the reservoir into the Danube channel - higher releases only at discharges exceeding 4,000 m<sup>3</sup>/s (ca. 12 d/yr.)</li> <li>• daily flow reversal for a few kilometres upstream of the conjunction with the power canal caused by peaking operation</li> </ul>		
<b>Water levels</b>	<ul style="list-style-type: none"> <li>• sudden drop of water levels by several metres</li> </ul>	<ul style="list-style-type: none"> <li>• gradual reduction of the water levels through bed erosion</li> </ul>	
<b>Flow velocities</b>	<ul style="list-style-type: none"> <li>• reduction of flow velocities from 1.2-2.0 m/s to less than 1.0 m/s at 50 m<sup>3</sup>/s;</li> <li>• reduced flow velocities in the backwater reach of the power canal conjunction</li> </ul>		<ul style="list-style-type: none"> <li>• minor variations of flow velocities with changes of bed morphology</li> </ul>
<b>Fluctuations of discharges &amp; water levels</b>	<ul style="list-style-type: none"> <li>• exclusion of all discharge and water level fluctuations for ca. 350 d/yr. except for the reach influenced by backwater where daily fluctuations of 4 metres would occur</li> <li>• sudden rise and fall of discharges and flow velocities in case of flood discharge release</li> </ul>		
<b>Riverbed stability</b>	<ul style="list-style-type: none"> <li>• during a flow of 50/200 m<sup>3</sup>/s, the Danube channel would eventually form an adequate low-flow bed</li> <li>• high floods in the first years would yield first riverbed deformations</li> </ul>	<ul style="list-style-type: none"> <li>• after 20 yrs. operation significant scouring was predicted with riverbed degradation up to 1.5 m caused by total retention of bedload in the Dunakiliti-Hrušov Reservoir</li> </ul>	<ul style="list-style-type: none"> <li>• after 50 yrs. operation scouring was predicted to reach 3 m in some sections leading to a severe drop of the prevailing water levels at 50/200 m<sup>3</sup>/s</li> </ul>
<b>Riverbed structures</b>	<ul style="list-style-type: none"> <li>• gradual formation of a low-flow bed; silting up of reaches with smaller velocities</li> <li>• spreading of vegetation in the channel outside the low-flow bed</li> </ul>	<ul style="list-style-type: none"> <li>• total destruction of the low-flow bed structures at higher flood discharges or by maintenance with partial erosion of silted reaches</li> <li>• growth of woody vegetation on higher elevations in the channel presumably causing a narrowing of the discharge cross-section (with the threat of further bed erosion), if not removed by regular maintenance</li> </ul>	
<b>Riparian structures (ecotones)</b>	<ul style="list-style-type: none"> <li>• following the drop of the water level of several metres the banks of the old channel would become unstable and collapse partially and locally</li> </ul>	<ul style="list-style-type: none"> <li>• the formation of the low-flow bed would create a new riparian zone which would periodically be destroyed at higher flood discharges; thus the riparian habitats would suffer from instability caused by an unnatural difference between average and flood discharges</li> </ul>	

<sup>135</sup> From *Scientific Evaluation*, HC-M, vol 2, chap 2.

**Table 2: Hydro-morphological impacts of the Original Project on the Nagymaros Reservoir<sup>136</sup>**

NAGYMAROS RESERVOIR			
	short term (5-10 yrs.)	medium term (10-20 yrs.)	long term (20-50 yrs.)
<b>Discharges</b>	<ul style="list-style-type: none"> <li>• daily fluctuations from 1,000 m<sup>3</sup>/s to more than 5,000 m<sup>3</sup>/s depending on the mode of peak operation</li> <li>• with mode 900/700 no release of water at Gabčíkovo for 18.5 hrs.</li> </ul>		
<b>Water levels</b>	<ul style="list-style-type: none"> <li>• at 2,300 m<sup>3</sup>/s compared to pre-dam conditions (without peaking): +6 m at Nagymaros, ±0 at Vének, -2 m at Palkovičovo (dredging)</li> </ul>		
<b>Flow velocities</b>	<ul style="list-style-type: none"> <li>• <math>v_{min}/v_{max}</math> flow velocities through peak operation (mode 2000/700): 0.00/0.95 m/s at tailwater Gabčíkovo (rkm 1819.45), 0.02/1.94 m/s at Palkovičovo (rkm 1811.05), 0.28/1.59 m/s at the mouth of Mosoni Danube (rkm 1793.3), 0.32/1.19 m/s at Komárno (rkm 1768.3) (Karadi and Nagy, 1993)</li> </ul>		
<b>Fluctuations of discharges &amp; water levels</b>	<ul style="list-style-type: none"> <li>• about 4,000 m<sup>3</sup>/s daily fluctuations of discharges</li> <li>• daily water level fluctuations through peak operation (mode 2000/700): 4.64 m at tailwater Gabčíkovo (rkm 1819.45), 4.38 m at Palkovičovo (rkm 1801.05), 2.65 m at the mouth of Mosoni Danube (rkm 1793.3), 1.06 m at Komárno (rkm 1768.3) (Karadi and Nagy, 1993)</li> </ul>		
<b>Riverbed stability</b>	<ul style="list-style-type: none"> <li>• rather high flow velocity fluctuations with peak operation would cause</li> <li>• general scouring in the entire reach except for the last 20 km upstream of Nagymaros (Bognár and Rákóczi, 1988)</li> </ul>	<ul style="list-style-type: none"> <li>• according to (Bognár and Rákóczi, 1988) eventual "armouring" of the riverbed would be expected by selective transport of smaller grain sizes leaving a protective layer of coarser gravel on the bottom of the riverbed; therefore scouring was expected to cease after 0.1-0.2 m depth</li> </ul>	
<b>Riverbed structures</b>	<ul style="list-style-type: none"> <li>• all islands between Gönyű (rkm 1791) and Nagymaros would be lost with the rise of the water level</li> <li>• all other aquatic habitats would experience thorough changes in current, deposition and scouring</li> <li>• many riverbed structures were already destroyed by channel dredging</li> </ul>	<ul style="list-style-type: none"> <li>• bank stability would be highly endangered by the sharp rise and fall of water levels requiring rip-rap protection with filter layers</li> <li>• eventually new riverbed structures would evolve according to the governing hydraulic regime caused by peak operation; nevertheless the hence prevailing conditions would be unfavourable to all aquatic habitats; the daily fluctuations between low-flow conditions and high flood flows – naturally occurring on less than 5 d/yr. – impose instability on all riverine habitats and must be regarded as a major detrimental impact of peak operation;</li> </ul>	
<b>Riparian structures (ecotones)</b>	<ul style="list-style-type: none"> <li>• with the permanent inundation of numerous large islands, valuable ecotones would be lost and all riparian structures between Gönyű and Nagymaros would be inundated as well</li> </ul>	<ul style="list-style-type: none"> <li>• daily water level fluctuations up to 4.38 m at Palkovičovo (rkm 1811) and 1.06 m at Komárno (rkm 1768) would produce a devastated strip of land of several metres width (about 3-12 m at slopes of 1:3); no vegetation growth would be possible in this zone;</li> <li>• the riparian habitats that are highly valuable in large rivers would not exist any more</li> </ul>	

<sup>136</sup> From *Scientific Evaluation*, HC-M, vol 2, chap 2.

1.73. It was expected that the degradation of the riverbed previously caused by excessive channel dredging would have continued due to the total retention of the bedload at the Dunakiliti barrage. The large daily water level fluctuations from peak power operation would have affected the part of the Danube channel above Palkovičovo, contrasting with the steady low water discharge downstream from Dunakiliti. This would have significantly impacted on fluvial and riparian habitats.<sup>137</sup>

1.74. For the Szigetköz floodplain, the consequences were likely to be disastrous, changing them to dry habitats similar to large floodplain areas of the Upper Rhine near Breisach.<sup>138</sup> They would not have prevented "a repetition of the disappearance of the Rhine branch system" as Slovakia asserts.<sup>139</sup>

1.75. For the Nagymaros reservoir, the daily fluctuations of water levels by several metres with operation at peak power would have yielded a devastated strip of riverbank, destroyed valuable habitats and generated unfavourable living conditions for the aquatic fauna in the reservoir.<sup>140</sup>

#### (6) SURFACE WATERS AND GROUNDWATER

1.76. Riverbed aggradation below Bratislava has led to the formation of the wetland systems of the Szigetköz and Žitný Ostrov, located on a deep alluvial cone which forms the largest high quality groundwater aquifer in Central Europe. The Danube flows have regularly flushed the complex system of side-arm branches, but the Danube main channel has primarily determined the groundwater recharge and groundwater levels throughout the Kisalföld [Little Hungarian Plain].<sup>141</sup>

1.77. Further downstream, the alluvial aquifers are much less extensive, but nevertheless are widely used for bank-filtered groundwater supply, including the supply to Budapest. In addition, there is some

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<sup>137</sup> Kern, Impacts, HC-M, Annexes, vol 4 (part 1), annex 6, at p 20.

<sup>138</sup> See *Plate 5*. See also Kern, Impacts, HC-M, Annexes, vol 4 (part 1), annex 6, at p 23.

<sup>139</sup> SM, para 1.67.

<sup>140</sup> Kern, Impacts, HC-M, Annexes, vol 4 (part 1), annex 6, p 22. The daily fluctuations of discharges, flow velocities and water levels due to peak operation at Gabčíkovo would be detrimental to the whole ecosystem in many respects, as seen in *Table 7*.

<sup>141</sup> See above, paragraphs 1.69-1.75.

limited connection with the karst groundwater of the Transdanubian mountains.

1.78. A full account of the impacts of the Original Project can be found in the *Scientific Evaluation*.<sup>142</sup> The impacts are complex, inter-related, and can only with difficulty be quantified; any quantification is subject to high levels of uncertainty. Changes in Danube flows affect groundwater directly, but also have impacts on surface water quality and the deposition/mobilisation of river sediment. In turn, the distribution and depth of sediment modify surface water-groundwater inter-relationships, and chemical changes in surface water and sediment can have important implications for groundwater quality.

1.79. It was clear in 1989 that an integrated programme of modelling was required to define these interactions, and that this was an essential pre-requisite for environmental impact assessment. Nevertheless, throughout its discussion of water issues, the Slovak Memorial continuously refers to matters having been thoroughly studied;<sup>143</sup> it relies on the Bechtel Report wherever possible in an attempt to demonstrate either that no harm was expected or that it could have been mitigated.<sup>144</sup> The Bechtel Report itself was much more cautious in its assessments than the Slovak Memorial portrays and queried many important aspects of the project and its operating modes, as the following extracts show:

"Potential problems that we believe require additional studies to quantify impacts... are the water quality and water level fluctuations downstream of the Gabčíkovo barrage."<sup>145</sup>

"Detailed studies of critical areas in Szigetköz should be conducted... The hydrogeologic characteristics of a specific area will most likely differ from the homogenous, isotopic conditions assigned in the analog modeling studies."<sup>146</sup>

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<sup>142</sup> See *Scientific Evaluation*. HC-M, vol 2, chap 3.

<sup>143</sup> It contends that 37 studies were devoted to problems arising from different water regimes, and that that 36 major studies were carried out examining the effect of the Original Project on surface and groundwaters; SM, para 2.15. It cites the Bechtel Report's conclusion that "GNB surface and ground water conditions have been thoroughly studied by VIZITERV and other experts". SM, para 2.90, citing Bechtel Report (see HC-M, Annexes, vol 4 (part 1), annex 1, p 1-9).

<sup>144</sup> See e.g., SM, paras 2.91, 2.95, 2.97.

<sup>145</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-9.

<sup>146</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-10.



"Exploration and installation of monitoring wells should be carried out in those areas where seepage is possible, and where previous studies have not been adequate."<sup>147</sup>

"Modeling is needed to assess the possibility of reduced DO in the two reservoirs..."<sup>148</sup>

"[With respect to groundwater] another 10-15 sites should be selected for long-term measurements..."<sup>149</sup>

"Groundwater quality sampling and quality analysis should be conducted monthly for 2 years to establish baseline conditions. Vertical sampling of a few deep wells should also be conducted."<sup>150</sup>

"Groundwater level data should be collected at all biological monitoring stations to monitor habitat changes. Stream gauging and water quality data should be collected at sensitive waterfowl locations..."<sup>151</sup>

1.80. The lack of a comprehensive study was recognised by Slovak and international experts<sup>152</sup> as well as by Hungary<sup>153</sup> and was the major motivation for the 1990 Czechoslovakian application to PHARE to engage in a "thorough and complex study of a proper impact assessment model".<sup>154</sup> Its stated objective was "to evaluate and verify the effects of previous activities and by [sic] the new hydraulic system of hydropower development".<sup>155</sup> Results of the study are expected in 1995. Discussing this project, a member of the EC Experts Group wrote that:

"To understand and analyze the complex relationships between physical, chemical and biological changes in the surface and subsurface water regimes requires multidisciplinary expertise in

<sup>147</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-11.

<sup>148</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-19.

<sup>149</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-21.

<sup>150</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-22.

<sup>151</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-22.

<sup>152</sup> See e.g., Mucha, 1990; HC-M, Annexes, vol 4 (part 2), annex 11; and Refsgaard *et al*, 1994; HC-M, Annexes, vol 4 (part 2), annex 12.

<sup>153</sup> Somlyódy *et al*, 1989, Water Quality issues concerning the GNBS: Models and applicability, Budapest, 1989; HC-M, Annexes, vol 4 (part 2), annex 13.

<sup>154</sup> PHARE Application, cover page; HC-M, Annexes, vol 3, annex 48.

<sup>155</sup> PHARE Application, preamble; HC-M, Annexes, vol 3, annex 48.

combination with advanced mathematical modelling techniques."<sup>156</sup>

He concluded that information from the integrated modelling system...

"constitutes a necessary basis for subsequent analysis of flora and fauna in the floodplain."<sup>157</sup>

1.81. Even today, although significant progress has been made by both sides, an integrated environmental assessment has not yet been completed.<sup>158</sup>

*(a) Surface water hydrology*

1.82. The discharge regime of the Danube is characterised by seasonal variability which is governed by the Alpine catchment of the river, yielding higher discharges in early summer (mean annual flood 5,300 m<sup>3</sup>/s) and a low-flow period in the winter (average 848 m<sup>3</sup>/s). *Figure 1* shows the long-term monthly hydrograph of the Bratislava gauge.

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<sup>156</sup> JC Refsgaard, K Havno, and JK Jensen. 1994, An integrated eco- and hydrodynamic model for prediction of wetland regime in the Danubian lowland under alternative operation strategies for the Gabčíkovo hydropower plant, *Report at the conference on wetland management*. 2-3 June, 1994. London; HC-M, Annexes, vol 4 (part 2), annex 12, at p 2.

<sup>157</sup> JC Refsgaard, K Havno, and JK Jensen, An Integrated Eco and Hydrodynamic Model for Prediction of Wetland Regime in the Danubian Lowland Under Alternative Operation Strategies for the Gabčíkovo Hydropower Plant (1994); HC-M, Annexes, vol 4 (part 2), annex 12, at p 13.

<sup>158</sup> See above, paragraphs 1.23-1.41.

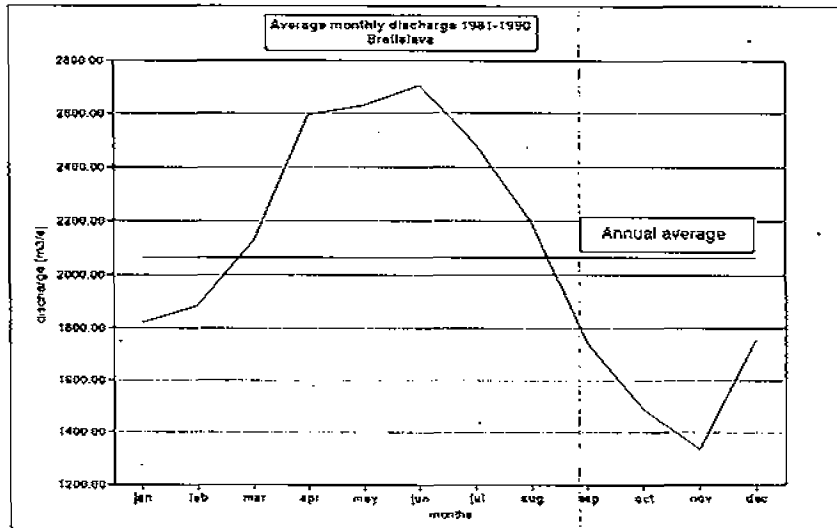


Figure 1: Average monthly discharge at Bratislava between 1981 and 1990

1.83. The design of the Original Project was based on the following characteristic discharges at Bratislava and Nagymaros:<sup>159</sup>

	Bratislava	Nagymaros
Period:	1901-1950	1901-1950
Average flow:	2,025 m <sup>3</sup> /s	2,421 m <sup>3</sup> /s
Lowest flow (year):	570 m <sup>3</sup> /s (1948)	590 m <sup>3</sup> /s (1947)
Highest flood (year):	10,400 m <sup>3</sup> /s (1954)	8,180 m <sup>3</sup> /s (1965)
20 year flood:	8,750 m <sup>3</sup> /s	7,650 m <sup>3</sup> /s
100 year flood:	10,600 m <sup>3</sup> /s	8,700 m <sup>3</sup> /s
1,000 year flood:	13,000 m <sup>3</sup> /s	10,000 m <sup>3</sup> /s
10,000 year flood:	15,000 m <sup>3</sup> /s	11,100 m <sup>3</sup> /s

Under the Original Project, the discharge to the Danube channel from the reservoir was to be 50 m<sup>3</sup>/s (instead of the traditional discharges shown in Figure 1), with unspecified increases of up to 200 m<sup>3</sup>/s in the growing season. Flood discharges exceeding 4,000 m<sup>3</sup>/s would be released at Dunakiliti into the bed of the Danube.

<sup>159</sup> Joint Contractual Plan, Summary Description, section 0-1 (1977); HM, Annexes, vol 3, annex 24.

1.84. The Slovak Memorial suggests that there would be an increased flow in the Danube side-arms.<sup>160</sup> This is not quite correct and ignores the important effects of flood flows and their associated frequency on the natural functioning of the Szigetköz wetlands.<sup>161</sup>

1.85. Before the degradation of the riverbed started in the 1960s, many of the side branches were still open.<sup>162</sup> The discharge in the side branches of the Szigetköz and Žitný Ostrov, e.g., in the reach of Gabčíkovo (rkm 1833-1816), amounted to about 20% for a total discharge of 1,005 m<sup>3</sup>/s. At a discharge of 1,958 m<sup>3</sup>/s, which was exceeded on 168 days per year, the side branches carried up to 500 m<sup>3</sup>/s.<sup>163</sup>

1.86. After degradation of the riverbed and the closure of entrances of side-arms to improve navigation, the threshold for the branch system inflow increased to 2,500 m<sup>3</sup>/s which typically occurs for 75-100 days per year. *Table 3* shows the 1980 flow regime for the Danube and its side-arms. From this, it is clear that all of the side-arms were inundated at least once a year and that many of the side-arms received a good supply of water for a large portion of the year.

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<sup>160</sup> SM, para 2.95, citing Bechtel Report, p 2-7 and 2-8 (see HC-M, Annexes, vol 4 (part 1), annex 1). It is also suggested that there would be an increased flow in the Mosoni Danube with the Original Project (SM, para 2.95) and that the flow in the seepage canals would help to maintain surface water levels (SM, para 2.96). Although it is true that the Original Project allowed for a constant but small supply of water to the Mosoni Danube, inundations would seldom have occurred, see below *Table 4*. The seepage canals would have only maintained surface water in the canals and side arms themselves, not in the surrounding regions.

<sup>161</sup> See below, *Table 4*.

<sup>162</sup> See the discussion above, paragraphs 1.65-1.68, on industrial dredging as being primarily responsible for the degradation of the riverbed and on possible solutions to the existing degradation.

<sup>163</sup> Mucha, Report on Temporary Water Management Regime – Independent Scenario. Bratislava, November 1993.

Table 3: Flow regime of the Danube in 1980-1964.

Characteristic flow situation	Discharge 1980- conditions (m <sup>3</sup> /s)	Water levels at Dunaremete (m)	Flow velocity in main channel at Dunaremete (m/s)	Average duration (days/year)	Frequency (events/ year)
Flow largely confined to groynes within main channel	< 1,000	2.3	→ 1.4	12 days	Several times per year
Flow in main channel and permanent branches	1,000-1,800	3.7	1.4-1.8	142 days	Several times per year
Flow in a few river arms	1,800-2,500	3.7-4.5	1.8-2.0	122 days	Several times per year
Flow in some river arms	2,500-3,500	4.5-5.2	2.0-2.2	68 days	Several times per year
Flow in almost all river arms	3,500-4,000	5.2-5.6	2.2-2.3	17 days	Several times per year
Complete inundation of floodplain	> 4,500	5.6	2.3	3 days	Once per year
Deep inundation of floodplain	6,000	5.2	2.4	1 day	Once per 3-4 years

1.87. If the Original Project were to have been implemented, average discharges to the Hungarian branch system under normal operating conditions would range from 15-25 m<sup>3</sup>/s. These flows would only have been exceeded if there was a discharge from the reservoir into the power canal and Danube channel totalling between 6,500-7,500 m<sup>3</sup>/s, and then only in some side branches. That normally occurs every 5-10 years. All side branches would only become inundated every 10-25 years, corresponding with 7,500-8,000 m<sup>3</sup>/s.<sup>165</sup>

<sup>164</sup> The data for this table came from CEC Working Group Report, 23 November 1992, pp 16-17 and its appendix G, p 2. The "duration" column in this table is different from Table 3.1 in the *Scientific Evaluation* (vol 2, chap 3, Table 3.1) and from annex 6 (Kern, vol 4 (part 2)). Those two documents reprinted the CEC Table exactly as it appeared in the Working Group Report. After HC-M, vols 2 and 4 were finalised, it was discovered that the CEC Table itself contained errors and that the correct data is in the Appendix to that Report.

<sup>165</sup> CEC, Fact-Finding Mission on Variant C, October 1992; HM, Annexes, vol 5 (part 2), annex 13. Also discussed in *Scientific Evaluation*, HC-M, vol 2, ch 2.3.2.

*Table 4: Hydrological impacts of the Original Project on the Szigetköz floodplain<sup>166</sup>*

SZIGETKÖZ FLOODPLAIN			
	short term (5-10 yrs.)	medium term (10-20 yrs.)	long term (20-50 yrs.)
<b>Discharges</b>	<ul style="list-style-type: none"> <li>• constant supply for side branch systems: 15/25 m<sup>3</sup>/s on the Hungarian side</li> <li>• flow in some side branches from Danube every 5-10 yrs</li> <li>• flow in almost all side branches every 10-25 yrs. with complete inundation of floodplain</li> </ul>		
<b>Groundwater-table</b>	<ul style="list-style-type: none"> <li>• in the vicinity of the Danube drop of the groundwater-table to the prevailing flow level of 50 m<sup>3</sup>/s</li> <li>• insufficient recharge of the groundwater by the side-arm system</li> <li>• gradual decline of groundwater-table towards the Danube</li> </ul>	<ul style="list-style-type: none"> <li>• clogging of most side branch reaches could be expected because regular supply discharges would not be able to prevent sedimentation of fines in large areas</li> <li>• effective flushing would occur only every 10-20 yrs. with higher flood discharges</li> </ul>	<ul style="list-style-type: none"> <li>• eventual scouring of the Danube riverbed would cause further drop of the groundwater-table</li> </ul>
<b>Fluctuations of the groundwater-table</b>	<ul style="list-style-type: none"> <li>• exclusion of all groundwater-table fluctuations for ca. 350 d/yr.</li> <li>• the duration of the flood discharges in the side branches will be too short to result in significant fluctuations of the groundwater-table</li> </ul>		
<b>Floodplain morphology</b>	<ul style="list-style-type: none"> <li>• until 1967/68 flushing of side arms with scouring, deposition and lateral movement occurred several times a year which would be hence limited to rare flood events</li> <li>• deposition of at least two thirds of the incoming suspended sediment load in the Dunakiliti-Hrušov Reservoir would considerably reduce the sediment input into the floodplain</li> </ul>		
<b>Floodplain habitats</b>	<ul style="list-style-type: none"> <li>• desiccation of almost all wetlands in the floodplain within a few years except for narrow riparian strips along those side arms that are supplied with constant discharge; stagnancy of the evolution of all habitats due to missing dynamics of waterflow and sediment input</li> </ul>		

1.88. Thus the Original Project would have substituted a small constant supply of water in the side-arms for a fluctuating supply. But the lack of

<sup>166</sup> From *Scientific Evaluation*, HC-M, vol 2, chap 2.

inundations in the floodplain and the lack of water fluctuations generally would have had serious ecological consequences, described elsewhere.<sup>167</sup>

1.89. Other effects include those due to the Nagymaros reservoir which would have encompassed a 6 metre increase in water levels at Nagymaros with a typical daily variation in water levels of 4.4 metres at Sap. The profound effect of this on the environment of this reach is discussed in the *Scientific Evaluation*. Implications for water quality are discussed below.

*(b) Surface water quality*

1.90. The Slovak Memorial argues that by April 1989 it was accepted that it was to be "a basic requirement of the implementation of the G/N System that there should be no deterioration of the water quality in the Danube".<sup>168</sup> As can be seen from the *Scientific Evaluation*,<sup>169</sup> this is not the case.

1.91. The Slovak Memorial contends that the creation of the reservoir upstream of Nagymaros could have a beneficial effect because the reservoir, by slowing down water flows, leads to increased deposition of sediment and therefore the clarification of water in the reservoir. The increase in surface water area within the reservoir increases oxygen absorption and thus dissolved oxygen content of the water. Finally, the longer retention time allows the breaking down of the organic load in the river.<sup>170</sup>

1.92. In reality there are both positive and negative effects.<sup>171</sup> The problems are complex and require detailed evaluation. But simulation results indicate predominantly negative effects.<sup>172</sup>

1.93. The Slovak Memorial also argues that the main threat to the water quality of the Danube is not the Original Project but human pollution.<sup>173</sup>

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<sup>167</sup> See below, paragraphs 1.149-1.153. See also *Scientific Evaluation*, HC-M, vol 2, chap 4; and HC-M, Annexes, vol 4 (part 2), annexes 15, 16, 17, 18, and 19.

<sup>168</sup> SM, para 2.90.

<sup>169</sup> *Scientific Evaluation*, HC-M, vol 2, chap 3.

<sup>170</sup> SM, para 2.92.

<sup>171</sup> See also *Scientific Evaluation*, HC-M, vol 2, chap 3.3.2.

<sup>172</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 3.

<sup>173</sup> SM, para 2.91.

1.94. It should be noted that historical trends of surface water quality show a dramatic increase since 1960 in the nutrients nitrogen and phosphorus, which are no longer limiting for eutrophication. Prior to implementation of Variant C, an order of magnitude increase in algal biomass had occurred, and a change in phytoplankton communities, with green algae, blue-green algae and flagellates predominating under summer conditions.<sup>174</sup> Increasing seasonal variability in water quality had been observed and a significant increase in the diurnal fluctuation of dissolved oxygen in the vegetation growing season, leading to over-saturation. Hence one primary concern is the impact of the Original Project on eutrophication.

1.95. Recent simulation results show a near-doubling of algal biomass due to the Dunakiliti reservoir.<sup>175</sup> Solutions proposed by Bechtel to mitigate these effects<sup>176</sup> remain to be evaluated in detail, and departed significantly from the Original Project. The fact remains, however, that only a few months before the deadline for closing the Danube at Dunakiliti to allow for the filling of the reservoir, those two proposals were not part of the Project. As to human pollution, the effect of increased algal biomass on biochemical oxygen demand (a primary indicator of water quality for aquatic life) can exceed the impacts of waste water discharges. Eutrophication problems are unlikely to be resolved without a regional restriction on nutrient inputs to the Danube.

1.96. A second set of issues relates to the effects of peak power generation on tributary rivers. For example, flow reversal in the Mosoni Danube is likely to lead to unacceptable water quality, given either waste water discharges or storm water overflows.<sup>177</sup>

1.97. The Slovak Memorial acknowledges as an area of concern the deposition of heavy metals in the reservoir. It merely states that the best method of eliminating this problem is by eliminating the industrial discharge of heavy metals into the Danube. Alternatively, sediment carrying heavy metals can be dredged at 3-5 year intervals.<sup>178</sup>

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<sup>174</sup> For explanation as to how Variant C has affected this, see below paragraphs 3.33-3.34

<sup>175</sup> *Scientific Evaluation*, HC-M, vol 2, *Figure 3.6*.

<sup>176</sup> The Bechtel Report proposed increased flows over the Dunakiliti weir during this time and operation of Gabčkovo at this time as a run-of-river plant, i.e., on a constant flow basis; SM, para 2.93, citing Bechtel Report (see HC-M, Annexes, vol 4, annex 1, pp 2-4, 2-5).

<sup>177</sup> *Scientific Evaluation*, HC-M, vol 2, chap 3.3.2.2.

<sup>178</sup> SM, para 2.94.



1.98. Dredging, however, results in a host of other problems, not least disposal. In 1990, one year after Hungary called for thorough investigation of this risk, Czechoslovakia itself came to the conclusion that these risks were serious indeed and urged that a more detailed modelling programme be implemented to determine methods for containing the risks, stating:

“Deposition of sediments containing heavy metals and organic materials in the reservoir should be avoided. Percolation of such contaminants into the aquifer could cause serious, irreversible ground water quality problems.”<sup>179</sup>

1.99. It is evident that impacts of the Original Project in terms of water quality were inadequately researched in the early studies of environmental impact, and even today have yet to be fully explored. It is clear, at least, that the Original Project would increase existing problems of eutrophication and exacerbate existing problems of effluent discharges and that risks from long-term accumulation of micropollutants in sediment could arise. Additionally, it can be noted that effluent treatment is not necessarily a solution to the anticipated water quality problems.

### *(c) Groundwater*

1.100. The Slovak Memorial states that due to the decrease in Danube water levels over the past 30 years, “the conditions for the recharge of the aquifer and its water supply wells were deteriorating”.<sup>180</sup> Citing the Bechtel Report, it contends that with seepage canals recharging the area, the groundwater table level could be maintained.<sup>181</sup> It also contends that the net change to aquifer groundwater supply throughout the affected area would have been minimal, again citing the Bechtel Report.<sup>182</sup>

1.101. It is true that in certain locations of the Szigetköz, the groundwater levels have fallen, as a result of bed degradation, by approximately 1 metre. But groundwater simulations show that the impact of the Original Project would be to decrease groundwater levels

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<sup>179</sup> PHARE Application; HC-M, Annexes, vol 3, annex 48, p 8.

<sup>180</sup> SM, para 1.62.

<sup>181</sup> SM, para 2.101, citing Bechtel Report (see HC-M, Annexes, vol 4, annex 1, p 2-15).

<sup>182</sup> SM, para 2.103, citing Bechtel Report, (see HC-M, Annexes, vol 4, annex 1, p 2-15).

by 3 times this amount in some areas (*Plate 6a*). The predicted effects are fully described in the *Scientific Evaluation*<sup>183</sup> and are summarised below.

1.102. The extent of the alluvial aquifer underlying the Little Danubian Plain is illustrated in *Plates 3.2 and 3.3* in Volume 5. Prior to the diversion of the Danube, groundwater levels throughout the Szigetköz and adjacent areas were determined by Danube water levels.<sup>184</sup> Capillary rise can provide a significant source of natural sub-irrigation, where groundwater levels reach the covering fine soil horizons (*Plate 6b*).<sup>185</sup> The average depth of groundwater below ground surface is illustrated in Volume 5, *Plate 3.6*, for 1990 conditions. The typical seasonal pattern of Danube flows generated maximum groundwater levels in the summer period of maximum water requirement for plants. Close to the Danube, fluctuations of two metres or more occurred. Towards the Mosoni Danube, these have reduced to one metre or less. *Figure 3.9* in the *Scientific Evaluation* shows the seasonal variability and historical trends in groundwater levels for a transect of three wells, at increasing distance from the Danube.<sup>186</sup> The amplitude of variation has remained largely unchanged since the 1950s, although in response to river bed degradation a decrease in levels of approximately one metre has occurred in the Upper Szigetköz.

1.103. Some groundwater from the Szigetköz is used for water supply, but the resource is as yet largely unexploited. Estimates of yield are similar to the needs of a capital city such as Budapest. The smaller alluvial aquifers downstream are more extensively used, in particular for the Budapest water supply.

1.104. Impacts of the Original Project have been investigated by groundwater simulation shown on *Plate 6a*. The regional flow patterns change radically.<sup>187</sup> The primary recharge sources become the reservoir itself and the side-arm system. Groundwater increases occur near the reservoir, but decreases in groundwater levels are predicted to exceed three metres and to affect an area of approximately 300 square kilometres on the Hungarian side.<sup>188</sup> Sub-irrigation would be reduced or lost over

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<sup>183</sup> *Scientific Evaluation*, HC-M, vol 2, chap 3.4.2.

<sup>184</sup> See *Plate 3.5*, HC-M, Annexes, vol 5.

<sup>185</sup> See *Plate 3.4*, HC-M, Annexes, vol 5.

<sup>186</sup> See *Plate 3.13*, HC-M, Annexes, vol 5 for their location.

<sup>187</sup> See *Plate 3.10*, HC-M, Annexes, vol 5.

<sup>188</sup> See *Plate 6a*; see also *Scientific Evaluation*, HC-M, vol 2, *Table 3.4*.

167 square kilometres as shown in *Plate 6b*.<sup>189</sup> However, results are sensitive to the uncertain effects of clogging associated with the deposition of fine sediment.

1.105. The Slovak Memorial argues that the penetration of human pollution from the surface has caused an increase in certain pollutants in the uppermost zone of the aquifer.<sup>190</sup> But such pollution is localised, and limited to the upper layer (10-20 metres) of the aquifer. Most of the aquifer is of good quality.<sup>191</sup> There are, however, very serious concerns as to the impact of the Original Project on groundwater quality of the Szigetköz, as detailed in the *Scientific Evaluation*, volume 2, chapter 3.52, and as outlined below.

1.106. It should also be noted that, further downstream, there is a likely degradation of karst waters due to backwater effects of the Nagymaros dam. But the main issues concern bank-filtered wells, which are considered separately, below.

*(d) Groundwater quality in the Szigetköz and adjacent areas*

1.107. Under natural conditions, recharge from the Danube is of high chemical quality and this determines the present groundwater quality. However, sediment deposition in the side-arms has led to important chemical changes. Organic decay consumes oxygen; under reducing conditions, iron, manganese and ammonium are readily released.

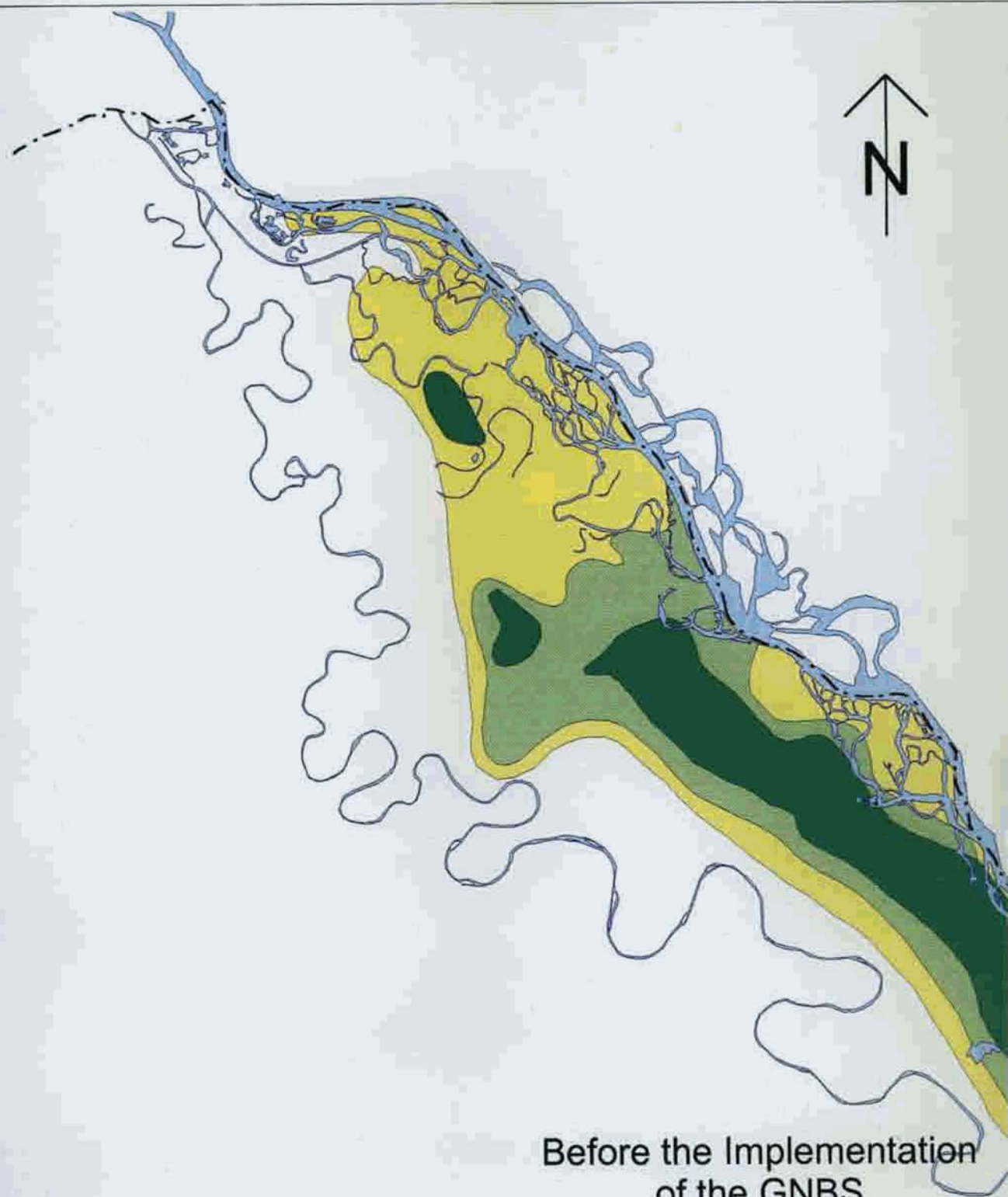
1.108. There are serious concerns for groundwater quality associated with the Original Project. Sediment deposition in the Dunakiliti Reservoir is expected to decay, and may lead to the water quality problems. This is confirmed by international experience, including, for

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<sup>189</sup> See *Plate 6b*; see also *Scientific Evaluation*, HC-M, vol 2, *Table 3.5*.

<sup>190</sup> SM, para 1.62; It states that the aquifer is made up of water bearing sediment which in their deepest sections reach "thicknesses of 300 m or more"; SM, para 1.61; This is only true for the gravel layer of highest grain size, but the joint Slovak-Hungarian geophysical measurements show that the total gravel layer can reach 600-700 m (see *Plate 3.3*, HC-M, Annexes, vol 5), and under those lie layers which were not penetrated even with a drilling of 2,000 metres. Thus, the water volume which can be contaminated is much greater than is indicated from this statement.

<sup>191</sup> Liebe, *Environmental-Ecological Effects of the Gabčíkovo-Nagymaros Project on Subsurface Waters in Budapest*, 1994; HM, vol 1, appendix 3.



Before the Implementation  
of the GNBS

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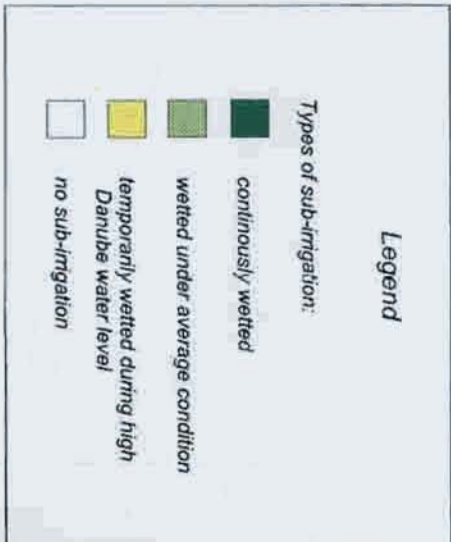
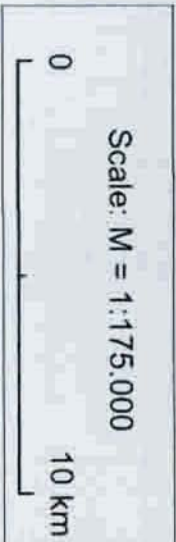
Upper Danube River Section  
 Gabčíkovo-Nagymaros Barrage System

Condition of  
 Sub-irrigation of the  
 Covering Layer

Simulation before and after  
 the Implementation of the Original Project

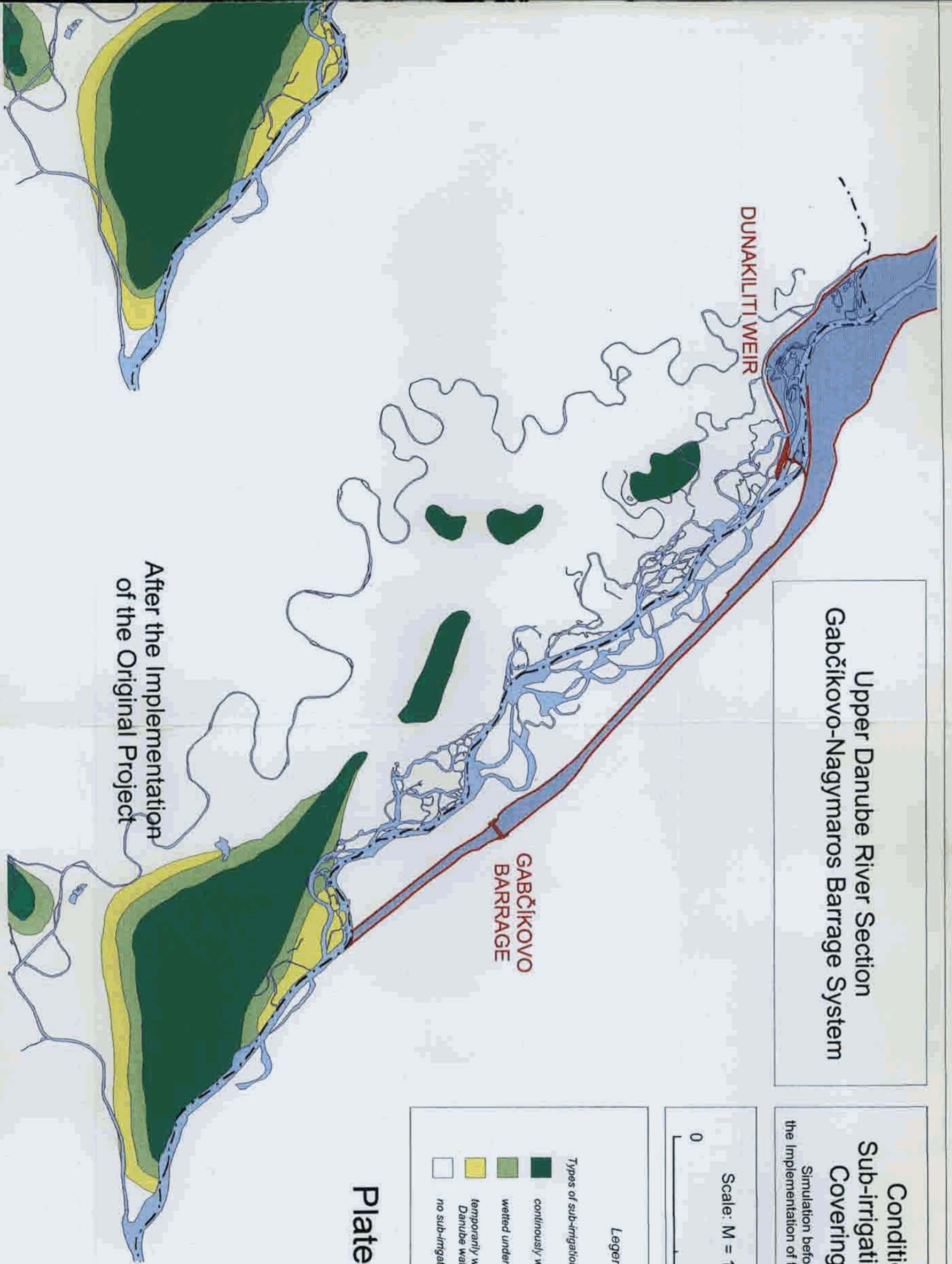
DUNAKILITI WEIR

GABČIKOVO  
 BARRAGE



After the Implementation  
 of the Original Project

Plate 6b





AUSTRIA

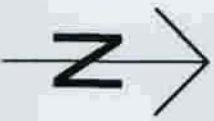
Upper Danube River Section  
Gabčíkovo-Nagymaros Barrage System

Predicted Changes in  
Groundwater Level  
due to the Implementation  
of the Original Project  
Uncertainty due to Increased Clogging

Scale: M = 1:175.000

0 10 km

SLOVAKIA



- Legend
- Changes of groundwater level:
- decrease between 1 and 2 m
  - decrease less than 1 m
  - no impact

Plate 6a

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HUNGARY



instance, the Altenwörth reservoir,<sup>192</sup> and the Abwinden-Asten power station,<sup>193</sup> both on the Austrian Danube. These concerns have been acknowledged both by Slovakia<sup>194</sup> and the CEC Fact-Finding Mission.<sup>195</sup> Predictions are highly uncertain, but a recent sensitivity analysis suggests that such occurrence is likely in the reservoir. These effects are already observed in the side-arm system,<sup>196</sup> which would become the other main source of groundwater recharge. There is a significant risk that the aquifer, over a period of years or decades, would become unfit for water supply.

(e) *Bank-filtered water supplies*

1.109. Citing, again, the Bechtel Report, the Slovak Memorial suggests there may be improvement, or at the very least no measured impact, on the wells "located downstream of Nagymaros".<sup>197</sup> It continues with a confused description of effects to the Budapest water works, most of which are upstream of Budapest.<sup>198</sup>

1.110. While there is some pollution of wells downstream of Budapest, this does not justify further damage to the water supplies. But the primary concern is for the well-fields to the north of Budapest, which provide approximately two-thirds of the Budapest supply. Concern for bank-filtered wells also applies to the river reach upstream of Nagymaros. These issues are fully described in the *Scientific Evaluation*,<sup>199</sup> and are summarised below.

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192 Hary and Nachtnebel, Eco-system study of Altenwörth. Changes by the Danubian power plant Altenwörth, in German with English summaries, Vienna, 1989, cited in *Scientific Evaluation*, HC-M, vol 2, chap 3.5.2.

193 Frischherz, von H, H Jung and W Urban, *Impact of Bank Filtration on the Groundwater*, 1986, Österreichische Wasserwirtschaft, pp 222-233, cited in *Scientific Evaluation*, HC-M, vol 2, chap 3.5.2.

194 Mucha, 1990, HC-M, Annexes, vol 4 (part 2), annex 11; Mucha & Paulikova, Groundwater Quality in the Danubian Lowland Downwards from Bratislava, European Water Pollution Control 1(5): 13-16 (1991); HM, Annexes, vol 5 (part 1), annex 11.

195 CEC, Fact Finding Mission on Variant C, 31 October 1992; HM, Annexes, vol 5 (part 2), annex 13; see above, also paragraphs 3.33-3.34.

196 *Plate 3.15*, HC-M, Annexes, vol 5.

197 SM, para 2.104.

198 SM, para 2.106.

199 *Scientific Evaluation*, HC-M, vol 2, chap 3.6.5.1.

1.111. In the river reach from Gönyű to Budapest, bank-filtered wells have been developed to a varying extent to exploit the alluvial aquifer. Between Gönyű and Nagymaros, the reach influenced by backwater effects from the proposed dam at Nagymaros, major well-fields have an existing capacity of approximately 30,000 m<sup>3</sup>/day,<sup>200</sup> and potential resources of 19,000 m<sup>3</sup>/day and 75,000 m<sup>3</sup>/day have been identified in the Ács-Komárom-Almásneszmély and Esztergom reaches.<sup>201</sup>

1.112. Below Nagymaros, 64% of the Budapest Waterworks supply comes from the major well-fields to the north of the city, principally Szentendre Island.<sup>202</sup> It is therefore an issue of national importance to evaluate the potential risk to these resources, considering effects both upstream and downstream of the Nagymaros dam.

1.113. Bank-filtration is used extensively on the major European rivers. It has been shown to be highly effective in removing contaminants, for example inorganic and organic pollutants, heavy metals, algae and bacteria,<sup>203</sup> although there is a dependence of removal efficiency on the length of the filter pathway. However, the water quality of bank-filtered wells is dependent on the chemical conditions in the filter layer. If chemically-reducing conditions develop, mobilisation of metals such as iron and manganese (and other heavy metal pollutants which may be present in river sediment) may occur, together with the generation of ammonium, and in addition serious clogging problems can arise due to bacterial activity.<sup>204</sup>

1.114. The yield in terms of water quantity from bank-filtered wells is dependent on river water levels and the hydraulic connection with the river. This in turn is affected by the geometry and material properties of the riverbed. The primary concerns for bank-filtered water supplies are associated with a combination of these two factors. Changes to river water levels and riverbed levels will affect yield; changing patterns of sedimentation will cause deposition of organic-rich sediment. Their long-term degradation can change the chemical state of the filter system, with serious adverse consequences.

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<sup>200</sup> See Plate 3.8, HC-M, Annexes, vol 5.

<sup>201</sup> *Scientific Evaluation*, HC-M, vol 2, chap 3.6.1.

<sup>202</sup> See Plate 3.9, HC-M, Annexes, vol 5.

<sup>203</sup> See e.g., Sontheimer, 1980; Hermann *et al*, 1986; Chorus *et al*, 1992, cited in *Scientific Evaluation*, HC-M, vol 2, chap 3.6.2.

<sup>204</sup> van der Kooij *et al*, 1985, cited in *Scientific Evaluation*, HC-M, vol 2, chap 3.6.2.



1.115. In addition, it is not uncommon in international experience for adjacent groundwater to have inferior water quality to bank-filtered river water. Reduction in river bed hydraulic connection can lead to increased well capture of poorer quality water.

1.116. Two examples, discussed in detail in the *Scientific Evaluation*,<sup>205</sup> demonstrate the occurrence of these processes in the Gönyü-Budapest reach.

1.117. River training and dredging of the Danube channel adjacent to the Budapest Waterworks well field on Szentendre island<sup>206</sup> led to the localised deposition of fine sediment adjacent to certain bank-filtered wells.<sup>207</sup> Water quality problems developed over a period of years and were first investigated in the mid 1980s.<sup>208</sup> Ammonium and manganese concentrations were observed which were 90 and 200 times EC guide levels, respectively. Following changes in river training, sediment removal adjacent to one of the affected wells led to an increase in quality. Recent data (1993) show that at other affected wells, where the sediment remained, the problem has continued.<sup>209</sup>

1.118. The second example concerns the Nagymaros Waterworks. Two bank-filtration wells of the Nagymaros Waterworks of the Danube Regional Water Company were operated on the left bank of the Danube at rkm 1693 between 1963 and 1988. Rapid water quality deterioration began in both wells in the early 1980s.<sup>210</sup> The manganese and ammonium concentrations exceeded drinking water limits and the operating licences for the wells were withdrawn. A Raney-type well was installed two kilometres downstream in 1986. Within six years the water quality became unacceptable. The results show a change of redox conditions leading to increased manganese and ammonium and reduced nitrate concentrations.<sup>211</sup>

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205 *Scientific Evaluation*, HC-M, vol 2, chap 3.6.3

206 *Plate 3.9*, HC-M, Annexes, vol 5.

207 *Scientific Evaluation*, HC-M, vol 2, *Figure 3.23*.

208 László *et al*, *Impacts of river training on the quality of bank-filtered waters*, (1986) 22 (5) *Wat Sci Tech* at 167-172, cited in *Scientific Evaluation*, HC-M, vol 2, chap 3.6.3.1.

209 *Scientific Evaluation*, HC-M, vol 2, chap 3.6.3.1.

210 *Scientific Evaluation*, HC-M, vol 2, chap 3.6.3.2; and *Figures 3.30 and 3.31*.

211 *Scientific Evaluation*, HC-M, vol 2, chap 3.6.3.2; and *Figure 3.32*.

1.119. The adverse changes in water quality in these three wells occurred due to bed sediment deposition. It is believed to be a direct result of the Nagymaros coffer dam construction.

1.120. In the back-water reach of the Nagymaros dam, sediment deposition is calculated to affect the quality of existing waterworks.

1.121. Downstream of Nagymaros, dredging was to have taken place and simulations show that further bed degradation is expected due to erosion. These effects are compounded by changing patterns of sediment deposition. It is concluded that there is a serious risk of yield reduction and water quality deterioration in the major well fields providing water supply to Budapest.

### (7) SOILS, AGRICULTURE AND FORESTRY

1.122. The Slovak Memorial presents the Original Project as enhancing the productivity of the affected region:

“The Project would undeniably have had an effect on the productivity of these important regions if no plans had been made to maintain water levels: without the dedication of new flows, further productivity would have been reduced by one third.”<sup>212</sup>

1.123. According to this view, the Original Project was necessary for agriculture and forestry because of “sinking ground water levels and insufficient water resources for irrigation needs”.<sup>213</sup> The argument is premised on two main assumptions:

- \* increased water flowing into the floodplain and side-arms improves the recharge system and thus groundwater conditions;
- \* the building of weirs improves conditions in the long term.

Neither of these assumptions can be sustained.

1.124. An initial and crucial reason is that the recharge system would not have been adequate. The Original Project would have discharged on the average 15-25 m<sup>3</sup>/s into the side branches and only 50 m<sup>3</sup>/s into the

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<sup>212</sup> SM, para 2.116.

<sup>213</sup> SM, para 1.65. See also SM, paras 1.57, 1.58, 2.16, 2.85. For the cause of the sinking groundwater levels, see above paragraphs 1.61-1.68.

Danube bed, with up to 200 m<sup>3</sup>/s allowed during times of need.<sup>214</sup> This would not have been adequate to maintain groundwater recharge, average groundwater levels or their natural variability.<sup>215</sup> Rather, as demonstrated in *Plate 6a*, even in the best-case scenario of 200 m<sup>3</sup>/s discharge, there would have been a significant drop in groundwater. What would happen in reality is that the enormous reduction in Danube flows, from 2000 m<sup>3</sup>/s to 50-200 m<sup>3</sup>/s,<sup>216</sup> and the corresponding drop in river water levels, would result in a situation where the river bed is no longer the main source of groundwater recharge; on the contrary it would tend to act as a drain.

1.125. As a consequence the groundwaters in the key areas of the Szigetköz would tend not to reach the covering layer of fine soil to provide sub-irrigation.<sup>217</sup> The differential before and after the implementation of the Original Project is even greater during periods of high flows into the Danube bed.<sup>218</sup>

1.126. Secondly, the building of weirs entails a loss of natural ecological functioning.<sup>219</sup> In the short term, groundwater levels can be raised but without reproducing their natural variability, which is essential both for the adjacent habitats and the more extensive groundwater system. In the long term, serious questions remain as to their sustainability with respect to sediment deposition and groundwater quality changes. Moreover, underwater weirs create an artificial and unrepresentative environment, with long-term ecological effects. The EC Experts Group, which recommended the building of weirs as an interim measure, acknowledged the danger and futility of building weirs if the Danube were only to receive a small flow.<sup>220</sup> In fact, weirs were never provided for in the Original Project. As the Slovak Memorial acknowledges, these were only "foreseen" existing in 1989.<sup>221</sup>

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214 See *Table 4*.

215 For issues of water quality see above, paragraphs 1.76-1.121.

216 See *Tables 3 and 4*.

217 See *Plate 6b*. For a further description, see HM, paras 5.60-5.67.

218 See *Scientific Evaluation*, HC-M, vol 2, *Table 3.5*.

219 See *Science Evaluation*, HC-M, vol 2, chap 4; see below, paragraphs 3.104 - 3.105.

220 Working Group of Monitoring and Water Management Experts for the Gabčíkovo System of Locks, Report on Temporary Water Management Regime, 1 December 1993; HM, Annexes, vol 5 (part 2), annex 19, point 7.9.

221 SM, para 2.70.

(a) *The impact on soils*

1.127. The area affected by the Original Project is a large alluvial plain, rich in various valuable natural ecosystems. At the same time, the area is a traditionally important agricultural and forestry region in Hungary. The distribution of soils has developed in response to the groundwater regime.<sup>222</sup> The area has a continental climate with extremes of temperature and low precipitation. The moisture regime (the depth and fluctuation of the groundwater-table) and hydrophysical characteristics of the soils of the Danube alluvial terrace generally mitigate the impacts of weather extremes over much of the region.<sup>223</sup> The Slovak Memorial ignores the importance of this natural sub-irrigation system.

1.128. High quality groundwater is drawn up by capillary action to provide an important contribution to the water-use of natural vegetation and cultivated crops. This can only occur, however, where the groundwater-table reaches the fine-textured sediment which overlie the gravel aquifers of the alluvial terrace. Any change to the groundwater table changes the soil moisture regime. This in turn determines the water available for plant-transpiration and aeration and temperature of the soil. Thus the nutrient status of the soil is affected, and in the long term, soil structure. This modification affects agriculture, forestry and the ecosystem.

1.129. As concluded in the Scientific Evaluation, the Original Project would have had different effects in different areas depending on the type of soil: this is clearly shown in *Figure 2*.<sup>224</sup> *Plate 6b* demonstrates the likely impact of the Original Project on capillary moisture supply. It is estimated that 80 square kilometres would have suffered a total loss of moisture supply, and 167 square kilometres at least some reduction of capillary water.<sup>225</sup>

1.130. This loss could have been expected to result in important changes to local soil moisture and chemical regimes, to species and to biological productivity, to soil productivity and to crop yields and the security of yield (i.e., rendering them more drought sensitive).<sup>226</sup>

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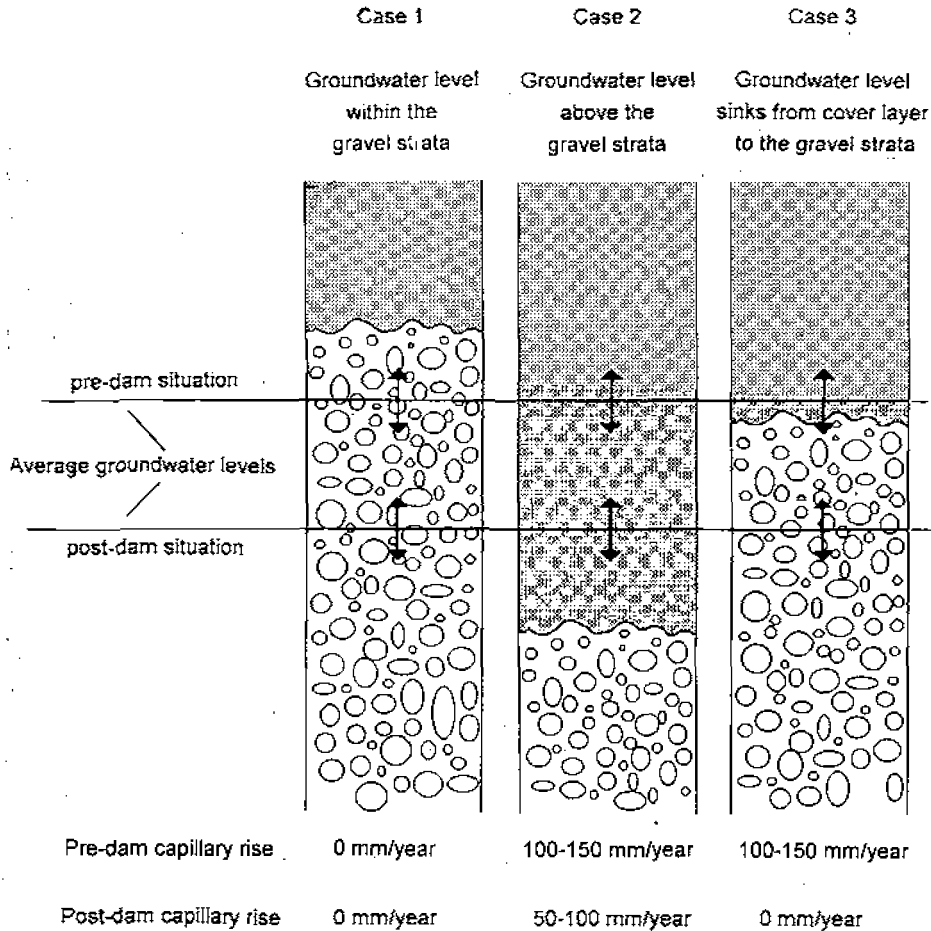
<sup>222</sup> *Scientific Evaluation*, HC-M, vol 2, chap 5.1.6.

<sup>223</sup> HM, paras 5.60-5.67.

<sup>224</sup> See also HM, paras 5.60-5.67.

<sup>225</sup> *Scientific Evaluation*, HC-M, vol 2, *Table 3.5* and *Plate 6b*.

<sup>226</sup> HC-M, Annexes, vol 4 (part 2), annex 20.



*Figure 2: The effect of the lowering of the groundwater table on capillary rise*

1.131. The changes in the moisture regime of soils were also likely to result in important long-term changes to the biogeochemical cycles of various elements, and the chemical regime of the soil. Of particular concern is the potential development of carbonate accumulation layers, lime concretions and lime coated gravels. Changes to the soil water regime can lead to carbonate hardpan development, and hence a reduction in effective soil depth, isolation from underlying groundwater and drought sensitivity.<sup>227</sup>

<sup>227</sup> HC-M, Annexes, vol 4 (part 2), annex 28.

1.132. Lowering of groundwater-tables would have led to a loss of soil fertility. While water-table increases might have had favourable effects from the perspective of increased sub-irrigation, a number of adverse consequences could also have been anticipated. These would have included loss of aeration, leading to unfavourable changes in soil biota, microbiological processes and nutrient regime; problems of tillage and general access by agricultural machines; carbonate accumulation, with implications as described above; secondary salinisation/alkalination processes under the influences of a stagnant shallow water-table and high groundwater salinity.<sup>228</sup>

1.133. For the light soils of the region, with poor soil water retention characteristics, frequent irrigation would have been necessary to replace the natural capillary supply to agricultural crops. Yet, irrigation would not have improved the situation in all areas, nor would it have been beneficial to the natural ecosystems. Not only is irrigation expensive, but there are potential adverse environmental consequences.<sup>229</sup> It can lead to chemical leaching and soil structure degradation. Soils also become vulnerable to surface degradation from frequent irrigation. Sub-irrigation from a supply of groundwater has none of these negative effects.

*(b) Impact on agriculture*

1.134. Studies have shown that during the period 1980-1992, 53% of the farmland had sufficient groundwater available for natural sub-irrigation due to capillary rise. For all crop species and soil types, yields are linked to water-table levels. For example, for average rainfall years before 1992 areas with water-tables within 2 metres of the surface showed a yield increase of 10.8%; for water-tables between 2 metres and 3 metres below the surface the yield increase was 7.4% as compared to those without sub-irrigation. In dry years, the effect of a high groundwater-table level was much greater (15-19% yield increase for high water-table conditions; 10-11% increase for 2-3 metre water-table depths).<sup>230</sup>

1.135. The groundwater-table would have been reduced in much of the Szigetköz if the Original Project had been implemented.<sup>231</sup> Already prior to Hungary's termination, 130 hectares of fields and 260 hectares of

<sup>228</sup> *Scientific Evaluation*, HC-M, vol 2, chap 5.1.6.

<sup>229</sup> *Scientific Evaluation*, HC-M, vol 2, chap 5.1.6.

<sup>230</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 5.21; See also HC-M, Annexes, vol 4 (part 2), Summary Report, annex 20.

<sup>231</sup> See supra paragraphs 1.69-1.75

grass lands were lost for agricultural production due to construction activities. The decrease in productivity of the land would have resulted in significant agricultural losses.

1.136. Further downstream in the Danube Valley region decreases in the water-table could have dried out areas which are currently overly wet, as the Slovak Memorial noted.<sup>232</sup> But it did not mention that those areas would have become more sensitive to drought because of the change in the soil regime.<sup>233</sup>

*(c) Impact on forestry*

1.137. The active floodplain in this area was historically the most productive region in Hungary for timber production.<sup>234</sup> The yearly growth of timber was much higher than the national average. Estimates vary as to the average growth rate. Some indicate that the rate was 5-6 times greater than the national average,<sup>235</sup> and others indicate the rate to have been twice the national average.<sup>236</sup> In this area were found some of the most productive wood species of the country; the "noble" poplar and the willow. The average annual growth rate of these was 30-40 m<sup>3</sup>/ha.<sup>237</sup>

1.138. Many of the areas currently used for forestry would have been affected by the changes to soil and water quality from the implementation of the Original Project.<sup>238</sup> Estimates vary as to how the

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<sup>232</sup> SM, para 2.117.

<sup>233</sup> Moreover, the Slovak Memorial's citations to the Hydro-Québec report in para 2.117 have been taken out of context. Hydro-Québec's previous paragraph states:

"La plaine de débordement située entre le barrage de Dunakiliti et la restitution à Palkovičovo sera drainée et il en résultera une modification majeure de l'équilibre biologique de cette région."

"The alluvial plain situated between the Dunakiliti Barrage and the reconnection at Palkovičovo will be drained and will result in a major modification of the biological equilibrium of this region"

HM, Annexes, vol 5 (part 1), annex 9, p 226.

<sup>234</sup> See also HM, paras 5.72-5.74.

<sup>235</sup> Standpoint of ERTI [Scientific Institute of Forestry, Budapest], 8 November 1994.

<sup>236</sup> *Scientific Evaluation*, HC-M, vol 2, chap 5.3.

<sup>237</sup> L. Halupa, and I. Csókáné-Szabados, *The Forests in Kisalföld Region*, (1994) 74 (5) *Hydrológiai Közlöny*, p 271..

<sup>238</sup> HM, paras 2.60-2.74. For example, because of the seriously reduced discharge into the part of the Danube flowing though the Szigetköz, the Original Project had

growth rate of trees in the floodplain would have been affected. It is suggested however that with the change in the water regime and soil regimes, more than one-half of the trees of the Szigetköz would have decayed or died out within 15 years of the Original Project.<sup>239</sup> It was proposed to replace the riparian forests with drought tolerant tree species and to suffer the drop in productivity; in this proposal ecological aspects were not considered.<sup>240</sup>

## (8) FLORA AND FAUNA

1.139. The impact of the Original Project on the natural environment (flora and fauna) receives just three pages in the Slovak Memorial.<sup>241</sup> Even the chosen passages from the Bechtel and Hydro-Québec Reports, which are presented to refute Hungary's "ecological state of necessity" argument,<sup>242</sup> do not incorporate a single sentence on the core theme of ecology, that is on habitats, flora and fauna.

1.140. This is not because the Bechtel Report was silent on flora, fauna and habitats. Of the 92 pages devoted to impact description, 31 are devoted to "biology". The failure of Slovakia to address those parts reflects unease with conclusions such as the following:

"Due to the uniqueness of this system [of habitats in the Szigetköz depending on the groundwater regime] and the lack of baseline data, impacts on wildlife, particularly waterbirds using the side arm system cannot be assessed accurately. In the event that surface water levels dropped significantly in the side arms, important breeding and feeding habitat could be lost and adverse impacts on waterbirds could result, which should be avoided by all means."<sup>243</sup>

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envisioned replacing the riparian forests with a drought tolerant species to let the area continue to stay green. The drought-tolerant species would not have been nearly as productive.

<sup>239</sup> I Láng, *Environmental Problems* (1994). Tree productivity has been substantially affected by the reduction in water discharge from Variant C. See below, paragraphs 3.72-3.76.

<sup>240</sup> See SM, para 2.112.

<sup>241</sup> SM, pp 97-100.

<sup>242</sup> SM, para 8.28

<sup>243</sup> Bechtel Report; HC-M; Annexes, vol 4 (part 1), annex 1, p 2-29. For other such quotations reflecting Bechtel's unease with biological matters, see above, paragraphs 1.30-1.31.



"Changes in ground water and surface water levels could also potentially impact the sensitive wildlife area near Ásványráró, the habitat of the four protected birds discussed above, as well as other wildlife resources."<sup>244</sup>

"It is considered likely that the 95 percent reduction of flow to the old channel and resultant loss of aquatic and riparian vegetation (within the zone between the main channel and the side arm system) will affect a wide diversity of species and substantial numbers along the 25 km reach. This is expected to be a regionally significant long-term impact."<sup>245</sup>

"Overall, loss of and changes to the natural vegetation along the Nyergesújfalu to Nagymaros reach are expected to affect a substantial portion of the remaining fringe forest and other riparian vegetation. Such changes are expected to be permanent. This is considered to be a long-term significant impact."<sup>246</sup>

"The Szigetköz side arms will be diked, eliminating access from the Danube. Fish populations which currently migrate to the area to spawn will no longer be able to do so. A decrease in these populations is anticipated."<sup>247</sup>

"Loss of migratory fish access to spawning grounds in the side channel system will result from blocking the outlets to the Danube and installing [*sic*] the weir at Ásványráró to maintain the water levels in the side arms. This is expected to result in a regionally significant, long-term impact on some fish species inhabiting the Danube."<sup>248</sup>

"This loss of vegetation will be a long-term impact of the project. Vegetation cleared for the Dunakiliti reservoir is permanently lost, and alternation [*sic*] of willow thicket and willow-poplar forest vegetation to associations requiring less water is also expected to be permanent...Additionally, these natural vegetation types are ecologically important because they support a greater diversity and abundance of bird species than

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<sup>244</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-12. Incidentally, Bechtel was mistaken in believing that there were only 4 birds deserving protected status. As described in the Hungarian Memorial, Appendices 1 and 2, there are far more than 4 birds currently protected, not only within Hungary, but internationally.

<sup>245</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 2-26.

<sup>246</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 2-46.

<sup>247</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 2-85.

<sup>248</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 1-13.

do the planted poplar stands in the floodplain of the Danube. Because of the importance of this natural vegetation, the extent of the area to be affected, and the long-term nature of the effect, this is considered to be a long-term regionally significant impact."<sup>249</sup>

1.141. The Hydro-Québec Report was also clear:

"De façon générale, outre les pertes économiques liées à l'occupation du territoire par le projet et les aspects de qualité des eaux souterraines, l'information fournie n'a pas permis de juger des impacts directs ou indirects associées à la gestion courante de débits et des niveaux sur les différents aspects de l'environnement."<sup>250</sup>

1.142. Instead, the Slovak Memorial stresses:

- (1) that numerous studies were done;<sup>251</sup>
- (2) that the losses arising from a "change in land use" must be examined in light of the type of area affected;<sup>252</sup>
- (3) that the major environmental effect to the area has already been felt;<sup>253</sup>
- (4) that mitigation measures were envisaged as of 1989,<sup>254</sup> and
- (5) that the harmful effects of the Original Project have for the most part occurred during construction.<sup>255</sup>

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<sup>249</sup> Bechtel Report; HC-M, Annexes, vol 4 (part 1), annex 1, p 2-23.

<sup>250</sup> Hydro-Québec; HM, Annexes, vol 5 (part 1), annex 9, pp 290-291. In translation this reads:

"In general, other than the economic losses associated with the use of the land by the project and the aspects of groundwater quality, the information given does not allow a judgement to be made on the direct or indirect impacts associated with the present management of discharge and levels on different environmental aspects".

<sup>251</sup> SM, paras 2.14, 2.20-2.22.

<sup>252</sup> SM, para 2.109.

<sup>253</sup> SM, para 2.111

<sup>254</sup> SM, para 2.113.

<sup>255</sup> SM, para 2.109: "loss of over 3,000 hectares of forest"; SM, para 2.112: "250 - 300 m wide zone of floodplain vegetation would be subject to aridification"; SM, para 2.114: "resultant reduction in natural vegetation"; SM, para 2.115: "The effect of

The Memorial also argues that the Szigetköz "will actually benefit from the Project, which will not only guarantee the required water flows in some areas but will also halt the damaging sinking of the Danube riverbed that was drying out the region's natural meadow and forest land".<sup>256</sup>

1.143. It has already been shown that implementation of the Original Project would have caused a reduction in the water-table<sup>257</sup> and that there were other possibilities for halting the sinking of the riverbed.<sup>258</sup> The remainder of this section will focus on refuting the five Slovak contentions, and in that context will briefly describe the risks and damage that would, in all likelihood, have been encountered with the Project.<sup>259</sup>

1.144. The Slovak Memorial claims that "more than 200 proposals for ensuring such protection [of the environment] were formulated" and then lists a number of areas relating to flora and fauna as among the areas addressed by proposals.<sup>260</sup> No citation is provided indicating where these proposals originated from or what consequences they produced. Most of the proposals appear geared to forestry planning and fish stocking rather than protection of flora and fauna. To the extent they do address flora and fauna, they faced the difficulty that insufficient biological information existed both in 1977 and in 1989.<sup>261</sup> If the proposals are proof of any contention, they demonstrate the out-dated approach that small components of the "natural environment" can be micro-managed to provide improvements to nature.<sup>262</sup>

1.145. The Slovak Memorial makes the following comments about the affected area in Hungary, leading to the conclusion that, looked at in historical perspective, "it is quite clear that the major 'environmental impact' had already been felt".<sup>263</sup> It states:

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the Project on this vegetation would again be some reduction due to construction works".

<sup>256</sup> SM, para 2.111.

<sup>257</sup> See paragraphs 1.69-1.75.

<sup>258</sup> See paragraphs 1.67-1.69.

<sup>259</sup> These have already been described in detail in the HM, chap 5, and Appendices 1 and 2.

<sup>260</sup> The proposals pertaining to flora and fauna supposedly suggested within the framework of the BIOPROJECT are described in SM, para 2.20.

<sup>261</sup> See quotations from the Bechtel and Hydro-Québec Reports set out in paragraphs 1.31-1.32 above.

<sup>262</sup> See critique of the philosophy of the SM above at paras 1.04-1.11.

<sup>263</sup> SM, para 2.111.

"Žitný Ostrov and Szigetköz are not nature reserves."<sup>264</sup>

"16% (approximately 6,500 hectares) is made up of industrial land, residential land and by natural habitat."<sup>265</sup>

These areas are "heavily cultivated" and "significantly populated."<sup>266</sup>

The vegetation consists of approximately "80% artificial (i.e., managed) poplar trees."<sup>267</sup>

It adds that one of the main polluting sources of the Danube is agricultural fertilisation of Szigetköz origin.<sup>268</sup>

I.146. This characterisation of the area is inaccurate:

- \* In Hungary, the Government established the Szigetköz nature protection area<sup>269</sup> on 9,158 hectares of which 5,948 ha (65%) are forests; many of the species there are protected according to the Berne Convention and IUCN.<sup>270</sup>
- \* "Natural" landscape, i.e., forests including indigenous species and free water surfaces (sides arms, lakes, dead side-arms), encompasses at least one-fourth of the Szigetköz; at least 64% of the Szigetköz vegetation indicates a quasi-natural status, harbouring a large amount of protected Hungarian fauna.<sup>271</sup>
- \* These "artificial forests" have botanical and zoological value, in part because most of the original vegetation remains allowing for high habit diversity. There are protected animals, protected flora, including many species of orchid.<sup>272</sup>

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264 SM, para 2.110.

265 SM, para 2.110.

266 SM, para 2.111.

267 SM, para 2.112.

268 SM, para 2.111.

269 Government Decree 1/1987 (III.15), 15 March 1987; HC-M, Annexes, vol 3, annex 42.

270 See HM, vol 1, appendix 2, Table 1.

271 Mészáros, *et al*, The Description of the Ecological Values of the Szigetköz Inland Delta; HC-M, Annexes, vol 4 (part 2), annex 18.

272 For example, *Hipploais icterina* (Icterine Warbler) can be found there.

- \* Fertilisers are not used at all in the floodplain, are not used in large quantities elsewhere, and do not pollute the Danube, as distinct from the shallow groundwater and the Mosoni Danube.

1.147. It is true that the area in question serves multiple purposes, but the economic values of forestry, agriculture, and fishing do not detract from the value of the Szigetköz as such.<sup>273</sup> The alluvial cone of the Danube is principally a fossil inland delta. This means that the width and thus the size of the riparian habitat is large. Its geographical, geomorphological and hydrological features and the special climate lead to the development of species combinations that differ from the usual species of European river valleys.

1.148. The Slovak Memorial argues that the losses could have been mitigated if the Original Project itself had been modified to include:

- \* an increased flow to the Danube of 350 m<sup>3</sup>/s;
- \* the building of underwater weirs;
- \* a revegetation plan, and
- \* an "unfunded plan to expand the remnants of the native forest along the Mosoni Danube."<sup>274</sup>

1.149. But these mitigation measures were not incorporated into the plans of the parties as of 1989.<sup>275</sup> Moreover, they would not have solved the problems:

- \* A discharge of 350 m<sup>3</sup>/s is still only a small fraction of the traditional discharge of 2000 m<sup>3</sup>/s. Many of the problems currently existing with Variant C (which has had a discharge of between 200 m<sup>3</sup>/s-350 m<sup>3</sup>/s) would still occur.<sup>276</sup>

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<sup>273</sup> See Mészáros, *et al.*, The Description of the Ecological Values of the Szigetköz Inland Delta; HC-M, Annexes, vol 4, annex 18; see also HM, vol 1, paras 5.15-5.24.

<sup>274</sup> SM, para 2.113

<sup>275</sup> The uncertain status of these proposals and the fact that Hungary has never officially been presented with a proposal of an increase in discharge to 350 m<sup>3</sup>/s, as was discussed above in paragraph 1.53.

<sup>276</sup> See *Scientific Evaluation*, chap 3.

- \* Weirs are problematic, particularly if they are coupled with low discharge.<sup>277</sup>
- \* The Slovak Memorial treats the revegetation proposal in the Bechtel Report<sup>278</sup> as a simple operation similar to the replacement of a shiplock gate.<sup>279</sup> Revegetation and expansion of the "native forest" along the Mosoni Danube would not have been harmful, but would not have compensated for the destruction of substantial forests, fauna and flora in the Szigetköz within the contemplated life of the Project.<sup>280</sup>

The proposed mitigation measures should be measured against the serious impacts to flora and fauna from the operation of the Original Project, which may be summarised as follows.<sup>281</sup>

*(a) Impact on flora and fauna*

1.150. The hydrological regime envisaged by the Original Project would have been likely to have drastic effects on flora and fauna.<sup>282</sup> The

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<sup>277</sup> See 3.101-3.114 for discussion of weirs.

<sup>278</sup> SM, para 2.113, citing Bechtel Report (see HC-M, Annexes, vol 4, annex 1, p 2-23).

<sup>279</sup> "The most effective mitigation [against reduction in vegetation in the region of Nagymaros] would be re-vegetation programs. This has been considered by the parties"; SM, para 2.115. This statement suggests that consideration is action and action is always successful.

<sup>280</sup> The Slovak Memorial treats the replacement of floodplain vegetation by vegetation adapted to drier soils (such as oak steppe) as an acceptable consequence of significantly lower water discharges in the Danube; SM para 2.112.

<sup>281</sup> These impacts were already extensively described in the Hungarian Memorial in chap 5, and currently are described in the *Scientific Evaluation*, HC-M, vol 2, chap 4, and HC-M, Annexes, vol 4, annex 17. This section will highlight the key impacts.

<sup>282</sup> The anticipated hydrological impacts of the Original Project influencing the ecosystem of the Szigetköz can be summarised as follows:

- a drastic reduction of the discharge in the main channel of the Danube in the Szigetköz region;
- floods fail to enter the floodplain except at a flood of 6,500-7,500 m<sup>3</sup>/s;
- those few floods which meet the necessary criteria to be discharged into the Danube enter the floodplain and the almost desiccated main channel in an extremely short time and with high velocity;

importance of wetlands and the potential effects of hydrological changes are described in detail in Chapter 4 of the Science Appendix and in its annexes. These changes would likely have included the following: changes of the species composition, disappearance of more sensitive species, and replacement by species of lower sensitivity. In the Danube Valley between Sap and Nagymaros, the peak power daily fluctuations of between one and four metres would have had a devastating impact on aquatic species.<sup>283</sup> The initial surge of water released into the tailwater canal when the turbines commence daily operations is extremely turbulent with rapid changes in depth and velocity of the water.<sup>284</sup> The highly fluctuating water levels would have been unsuitable for most terrestrial and aquatic organisms.<sup>285</sup> In the Nagymaros Reservoir, approximately 20 islands, peninsulas and large parts of the shoreline would have been submerged, destroying the narrow but active floodplain. In the section downstream of Nagymaros habitats would have been lost because of the lowering of the riverbed.<sup>286</sup>

1.151. Peak power operation would not only have affected aquatic habitats and other organisms in the impoundment between Gabčíkovo

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- daily fluctuations of several metres in the water level with inverse flow directions, primarily in the middle and lower reaches, as a result of peak operation at Gabčíkovo;
  - significant changes in the groundwater levels near the reservoir (primarily an increase), in the Szigetköz region (primarily a decline), and along the whole section from Palkovičovo to Nagymaros (both increase and decline, depending upon the area).

*Scientific Evaluation*, HC-M, vol 2, chap 4.4.2.3.

- 283 Indeed, downstream of Palkovičovo (Sap), the Slovak Memorial admits that "further vegetation would be lost", there would have been "some changes in species type", and in some areas there could have been "colonisation of more hydrophilic species". See SM, para 2.114.
- 284 In many cases, the sudden shift in flow can exceed the reaction rate of fauna, leaving aquatic species stranded at low flows or entrained by high flows.
- 285 Spawning sites and nursery zones for fish would have been unable to exist. Embryos and juveniles of fishes could not have survived. The rapid changes in temperature resulting from the fluctuations would also have resulted in species loss.
- 286 The lowering of the riverbed downstream of Nagymaros would have degraded the riverbed by 0.60-1.20 m on average; Kern, *Impacts*, HC-M, Annexes, vol 4 (part 1), annex 6. The drop in water levels which would have accompanied the degradation has been shown in another stretch of the Danube, at Altenwörth in Austria, to cause negative effects to the vegetation of that particular stretch at the Austrian Danube. Similar impacts are to be expected in the Nagymaros area.

and Nagymaros, but would have resulted in changes to the habitat<sup>287</sup> because of increased sedimentation further downstream.<sup>288</sup> To the extent dredging would then have been necessary, it would have had further impacts on habitats.

1.152. Many floodplain ecosystems of other rivers have experienced damage and destruction caused by river regulation and waterpower development. The Upper Rhine between Basel, Switzerland, and Rastatt, Germany, is a useful example.<sup>289</sup> There three steps of river training have been carried out since the beginning of last century (see *Plate 3*). Every stage of the regulation works was accompanied by unexpected, serious, adverse effects which were meant to be corrected with the next measure. Nevertheless, other economic and ecological damage occurred.<sup>290</sup> The overall impacts were disastrous for flora and fauna. At the lower portion of the 70 kilometre section of the by pass canal, 81% of the alluvial forests decayed or died (phase 1). In the partially diverted section, only some typical vegetation and their fauna survived within the inundation dykes, though with considerable change in the composition of species (phase 2). In the section of river barrages (phase 3), the entire floodplain ecosystem no longer became inundated. Most of the vegetation (85%) changed from being typical and adapted to the ecological conditions of a floodplain to being unadapted and uninfluenced by groundwater. In none of the regulated sections of the Rhine could the natural vegetation and wildlife be preserved. The new communities have been judged significantly less valuable from the ecological and conservation point of view.<sup>291</sup>

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287 In the Nagymaros section, the Slovak Memorial admits that in some areas where water level would have increased, there would have been "reduction... and change to more hydrophilic species", and once again proposes mitigation by revegetation. See SM, para 2.115.

288 *Scientific Evaluation*, HC-M, vol 2, chap 2.3.2

289 For more details, see *Scientific Evaluation*, HC-M, vol 2, chap 4.4.2.3; and HC-M, Annexes, vol 4, annex 16.

290 Similar effects have been observed for example at the Rhône River (Fruget 1992).

291 See Hügin, *The riparian woods of the southern Upper Rhine valley – Changing and endangering by Rhine development* (1981); Dister, *et al*, *Water Management and ecological perspectives of the Upper Rhine's floodplains* (1990); Hügin & Henrichfreise, *Vegetation and water balance of the forest adjacent to the Rhine. Assessment for nature protection in the Baden floodplain of the Rhine* (1992); Lösing *Ecological effects of the management system of connected side branches demonstrated by the example of the regulation of side branches of the River Rhine* (1994), HC-M, Annexes, vol 4 (part 2), annex 15. The predominant plant communities of the lower and upper hardwood riparian forests have been replaced by those of the oldest and uppermost levels of the floodplain and are no longer influenced by groundwater. The influence of floods has become negligible as well.



1.153. As described above,<sup>292</sup> France and Germany finally decided to break the vicious circle of correcting the negative impacts of a barrage by building another further downstream and opted for a small-scale solution with the controlled addition of riverbed material.<sup>293</sup> About 10 years ago a large programme was started on the Upper Rhine to restore floodplain habitats damaged or lost by the implementation of the Upper Rhine barrage system.<sup>294</sup>

1.154. Thus there is sufficient evidence from both Hungary and abroad that the Original Project would be likely to have destroyed one of the few remaining wetlands in Europe,<sup>295</sup> a valuable riparian zone<sup>296</sup> and a historic inland delta. Although it is difficult to quantify the impacts with precision, examples of projects in other countries are useful in identifying likely results in Hungary.<sup>297</sup>

### (b) Fisheries

1.155. No argument in the Slovak Memorial specifically addresses fisheries. The assumption appears to be, however, that mitigation measures will solve any possible problems.

1.156. The Original Project was highly likely to have an extensive impact on fauna, in particular fish: there would have been changes in the species composition, disappearance of more sensitive species, and

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Due to the long life-cycle of woody species, the conversion of the forests is still in process, but the characteristic species of the herb layer have manifested the change.

<sup>292</sup> See above, paragraph 1.68.

<sup>293</sup> See *Plate 4*, and *Science Evaluation*, HC-M, vol 2, chap 2.6.1, and HC-M, Annexes, vol 4 (part 1), annex 7; and Bačik & Kališ, *Silting Problems*; HC-M, Annexes, vol 4 (part 1), annex 5.

<sup>294</sup> The programme combines flood protection measures with ecological restoration and is called the "Integrated Rhine Program"; see *Plate 5*; see also *Scientific Evaluation*, HC-M, vol 2, chap 4.4.2.3.

<sup>295</sup> For an indication of its values, see Mészáros, *et al*, *The Description of the Ecological Values of the Szigetköz Inland Delta*; HC-M, Annexes, vol 4 (part 2), annex 18, p 4.

<sup>296</sup> In the last 200 years, 80% of riparian zones in Europe and North America have disappeared. See Mészáros, *Ecological Values*; HC-M, Annexes, vol 4 (part 2), annex 18, p 4.

<sup>297</sup> HC-M, Annexes, vol 5; and *Scientific Evaluation*, HC-M, vol 2, chap 4.4.2.3.

replacement by species of lower sensitivity.<sup>298</sup> This prediction is borne out by the experience of Variant C.<sup>299</sup>

### (9) SEISMIC AND ENGINEERING RISKS

1.157. Slovakia contends that "seismic activity is not of a degree sufficient to pose a threat...to the G/N System structures, which had of course been designed to withstand seismic movements".<sup>300</sup> On the other hand Hungary had and still has concerns over seismic risks in the region of the location of the Original Project. These will be assessed in this section, which summarises the analysis in Chapter 6 of the *Scientific Evaluation*.<sup>301</sup>

1.158. When Hungary suspended construction at Nagymaros, methods applied to seismic zoning and design for the project did not conform with current practice. The seismic zoning for the project was established in 1965, before the methods of risk analysis that underlie current practice were developed. The 1965 zoning was not intended to set the basis for final design; it was a preliminary assessment, subject to further study and review.<sup>302</sup>

1.159. The Slovak Memorial states that "[s]ome 39 studies were devoted to researching the geology and seismology of the [Original Project] area".<sup>303</sup> The references to these studies does not extend to the substantive conclusions contained in these reports, but merely "to the fact of their existence".<sup>304</sup> That fact was not, however, sufficiently reassuring to the engineers of Hydro-Québec, who were unable in 1989

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<sup>298</sup> See HM, paras 5.70-5.90; A Vida, HM, vol 1, appendix 2; Holčík, *et al*, Hydrobiology and Ichthyology of the Czechoslovak Danube in relation to the predicted changes after the construction of the Gabčíkovo-Nagymaros River Barrage System (1981), 3 Prace Lab. Rybár. Hydrobiologie 19-158.

<sup>299</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 5.4, and see further below, paragraphs 3.78-3.80.

<sup>300</sup> SM, para 2.60.

<sup>301</sup> See also HM, paras 5.99-5.105.

<sup>302</sup> Minutes of the meeting of the Hungarian and Czechoslovakian experts, held in Bratislava, 23-25 November, 1965, on the seismic zoning and its mapping of the Hungarian-Czechoslovakian joint Danube Barrage System.

<sup>303</sup> SM para 2.12.

<sup>304</sup> For correspondence on this point see above, paragraph 1.26.

to discern a satisfactory relationship between existing data and the risks of future seismic activity in the region.<sup>305</sup>

1.160. The Slovak Memorial incorrectly describes the relation between the MSK and older MCS intensity scales, and as a result presents a confused response to Hungarian statements on seismology.<sup>306</sup> The 1965 seismic zoning, subsequently embodied in the Joint Contractual Plan, required the Original Project to withstand the seismic intensities that it prescribed. These intensities varied between 6 and 9 MCS, depending on location. A level of intensity corresponding to 6 MCS was prescribed for Dunakiliti.<sup>307</sup> However, based on a probabilistic analysis of historical data, the Hungarian Declaration suggested that values of intensity in the region of 8.7-9.0 MSK might be expected at Dunakiliti. The Slovak Memorial declares this figure to be "simply wrong".<sup>308</sup>

1.161. This is based on a misinterpretation. The Slovak Memorial assumes that the MSK scale runs from 1 to 10, while the MCS scale runs from 1 to 12.<sup>309</sup> In fact both are 12-point scales and are directly comparable.<sup>310</sup> The Slovak Memorial thus gives the impression that the 1992 Hungarian Declaration of Termination,<sup>311</sup> which used the MSK intensity scale, was exaggerated. It may also be a measure of this confusion that the Slovak Memorial contends – without any documentation – that the structures were originally designed to withstand an earthquake of 9 MCS, whereas, as already noted, the Joint Contractual Plan specified a level of 6 MCS.<sup>312</sup>

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<sup>305</sup> Hydro-Québec Report (1990); HM, Annexes, vol 5 (part 1), annex 9, p 252 ("Pour le moment il n'a pas été établi de relation entre ces données et celles de néotectonique").

<sup>306</sup> SM, para 2.60 note 43.

<sup>307</sup> See *Scientific Evaluation*, HC-M, vol 2, *Table 6.1*, which sets forth design intensity levels for various sections of the Original Project. Dunakiliti is set at 6 MCS, Gabčíkovo at 7 MCS, Komárom at 9 MCS.

<sup>308</sup> SM, para 2.62.

<sup>309</sup> SM, para 2.60, note 43.

<sup>310</sup> World Data Center A for Solid Earth Geophysics, *Manual of Seismological Observatory Practice* (Report SE-20, US Dept. of Commerce, 1979, ed PL Willmore, IGS, Edinburgh), Section I.1.4.

<sup>311</sup> Hungarian Declaration on the Termination of the 1977 Treaty, 16 May 1992; HM, Annexes, vol 4, annex 82.

<sup>312</sup> SM, para 2.63.

1.162. The Slovak Memorial frequently refers to the historical record of earthquakes<sup>313</sup> in justifying the Project's seismic zoning. It is now widely recognised that hazard evaluation based solely on historical data is insufficient when applied to large projects having a wide social and economic impact in an area in which earthquakes are not very frequent.<sup>314</sup> This is apparently accepted in the Slovak Memorial which acknowledges that the structures should have "the ability to handle possible worst case scenarios".<sup>315</sup> In areas of low seismicity, this implies return periods of tens of thousands of years, whereas the historical record is probably complete in respect of large events for a period of only a few hundred years. Any assessment of the "worst possible" event should consider the seismicity of the region as a whole, as well as geological, geophysical, macroseismic and tectonic evidence.

1.163. Various attempts have been made to assess the maximum credible earthquake. The eminent Czech seismologist, Kárník, suggested a range of maximum credible earthquake of Richter magnitude,  $M_{\max}$ , between 6.0 and 6.5.<sup>316</sup> For shallow earthquakes, which predominate in the region, a Richter magnitude 6.0 to 6.5 earthquake can be expected to

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<sup>313</sup> E.g., SM, paras 2.64, 4.17, 4.33.

<sup>314</sup> The historical approach to setting seismic zones is adequate for "standard building", but not satisfactory for "critical" structures where a "more complex hazard must be made"; Kárník, *et al.*, "Seismic Zoning Map of Czechoslovakia - Version 1987" (1988) 32 *Studia Geoph et Geod* 44-150. The project, as originally envisaged, extended over a 160 kilometres stretch of the Danube. The largest impounded volumes of water were the Dunakiliti-Hrušov reservoir (200 million m<sup>3</sup>), and the headrace canal (80 million m<sup>3</sup>). Impoundment is provided by an extensive system of dykes that expose the overall project to a greater seismic hazard than that of a single element of the scheme. The depth of retained water is greatest at Gabčíkovo, where the height of retained water is 15 metres above the level of the surrounding land. The consequences of a breach of the dyke system at critical locations would be serious in social, economic and environmental terms.

<sup>315</sup> SM, para 2.61. A similar conclusion is reached by a simple analysis based on the recommendations of the International Commission on Large Dams which state:

"For dams whose failure would present a great social hazard, the maximum design earthquake will normally be characterised by a level of motion equal to that expected at the dam site from the occurrence of a deterministically evaluated maximum credible earthquake... It will be required at least that the impounding capacity of the dam be maintained when subject to that load."

ICOLD (International Commission on Large Dams), Bulletin 72, "Selecting Seismic Parameters for Large Dams" (1989).

<sup>316</sup> Kárník, V, "Seismicity of the European Area (Part 2)", Czechoslovakian Academy of Sciences, Prague, 1971. A value of  $M_{\max} = 6.0$  was given for the region in Kárník's "Scheme of Earthquake Provinces", published in 1978.

have an epicentral intensity of about 9.0 MSK. Comparable values of ground motion have been used in the design of nuclear facilities in the region (Bohunice and Mochovce in Slovakia, Paks in Hungary).

1.164. The assessment of maximum credible earthquakes in the range 6.0 to 6.5 (Richter magnitude) does not seem unreasonable when compared to historical data for the region. The following examples are noteworthy:

- \* *Komárom Region, 1599*: Reports of devastation, although insufficient information to assign intensity.
- \* *Komárom, 1763*: 30% of houses in Komárom were destroyed. Estimates of epicentral intensity range between 8.5 and 9.5 MSK, magnitude estimated as Richter 6.2. Foreshocks observed in Győr.
- \* *Komárom, 1783*: Extensive damage, intensity estimated as 8.0 MSK; magnitude Richter 5.3. Foreshocks observed in Győr.
- \* *Komárom Region, 1806, 1822, 1841, 1851*: Estimated intensities of 7 MSK, 6.5 MSK, 6.5 MSK, 7 MSK, respectively; magnitudes 5.0, 4.7, 4.7, 5.0 respectively.

This frequency of damaging earthquakes contrasts with the quiescence of the region as portrayed in the Slovak Memorial.<sup>317</sup>

1.165. Geophysical, geological and macroseismic studies carried out by Hungarian scientists have allowed earthquake source zones to be identified. The principal sources close to the project are the Mur-Mürz line, which runs through Bratislava, and the Győr-Becske line, which passes through Győr, Komárom and Nagymaros.<sup>318</sup> The most active of all sources is the fault passing between Győr and Komárom; at its closest point, the fault zone is within about 20 kilometres of Gabčíkovo. Dunakiliti is within about 30 kilometres of the Mur-Mürz line. It is accepted as current practice that, in establishing the worst case scenario, the maximum credible earthquake is assumed to act anywhere within the source zones identified.

1.166. The Slovak Memorial attempts to reassure Hungary by stating that "as a result of such studies, the hydroelectric plant and navigation locks at Gabčíkovo were moved 700 metres upstream and away from the

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<sup>317</sup> SM, para 2.60.

<sup>318</sup> See Balla, "Deep Structure and Seismic Hazard of the Gabčíkovo-Nagymaros Region" (September 1994); HC-M, Annexes, vol 4 (part 2), annex 21.

area of a geological fault line".<sup>319</sup> But the effects of an earthquake are not localised. The application of a maximum credible earthquake acting anywhere within the source zones identified would probably give a "worst case scenario" peak ground acceleration<sup>320</sup> of about 0.3 g over much of the project. This level of ground motion is broadly consistent with an earthquake intensity of 9 MSK, which the 1992 Hungarian Declaration of Termination suggested might be appropriate to Dunakiliti. A systematic analysis of hazard evaluation risk would be required in order to evaluate the safety of the Project. This has not been carried out.

1.167. The Hydro-Québec Report referred to in the Slovak Memorial concluded that the liquefaction of silt and sands "were not to fear".<sup>321</sup> No data is provided in the Report to support this statement. An evolution in seismic design methodology took place in the 1970s and 1980s when it became apparent, after the collapse of the Lower San Fernando Dam in California, that simple pseudo-static methods could not predict the response of water-saturated granular materials during strong shaking. The Danube floodplain is covered by recently deposited (Holocene) materials, which reach thicknesses of up to 30 metres near Gabčíkovo. Such materials have been observed in the area in a loose condition, and would have the potential to liquefy<sup>322</sup> and settle under ground motion in a "worst case scenario". There are four documented occurrences of liquefaction having occurred in the Carpathian Basin since 1763. Given the Holocene deposits' thickness, it is unlikely that all liquefiable materials have been removed from beneath the dykes of the headrace canal and upstream reservoir, as is suggested by the Slovak Memorial.<sup>323</sup>

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<sup>319</sup> SM, para 2.12. If anything this move is disturbing. It may indicate that Slovakia is aware of data showing the fault line capable of producing shaking. If such a source zone exists, higher accelerations at Gabčíkovo may be applicable. Earthquakes in this region are generally shallow events, and it can be expected that, typically, intensity would decrease by one degree with 20-30 km from the epicentre. It should be noted, however, that intensity will vary according to other factors, such as local geology, greater intensity can be expected with the increasing thickness of soft alluvial materials. 700 metres is insignificant.

<sup>320</sup> Peak ground acceleration refers to the highest instantaneous level of ground acceleration measured. In this case it corresponds to 30% of gravitational force. Peak ground accelerations in excess of 1.0g have been recorded during strong earthquakes.

<sup>321</sup> SM, para 2.60.

<sup>322</sup> This occurs when soils lose their strength and allow large displacements to take place.

<sup>323</sup> SM, paras 2.61, 2.66. No data were presented by Hydro-Québec to support their statements concerning liquefaction.

1.168. The Slovak Memorial makes reference to the work being carried out in accordance with the Soviet codes SNIP II A.12-69 and SNIP II 7-81.<sup>324</sup> The freeboard between the crest of the dykes and operating water level is typically 2.0 metres over much of the project. Yet this freeboard is less than the wave height prediction given in the SNIP codes for intensity 9 MSK ground motion. Moreover, these Soviet codes make no reference to liquefaction or settlement as a result of strong ground motion. Settlement may take place, with the effect of reducing freeboard, even where liquefaction does not occur. Settlements arise from tectonic movements, compaction of loose foundation materials and from the compaction of fills. There is evidence of crustal sinking in the vicinity of Gabčíkovo. Settlements in excess of one metre were observed during the 1987 Edgecumbe earthquake in New Zealand – an area with comparable rates of crustal sinking. If liquefaction of the foundation materials of the dykes were to take place, extensive damage to the water-proofing membranes and over-topping might well occur. Over-topping may even occur where liquefaction has not taken place simply as a result of tectonic movement and compaction of the soils forming the dykes and their foundations.<sup>325</sup>

1.169. The Slovak Memorial assumes that the historical record is sufficient to determine the seismic hazard at Nagymaros.<sup>326</sup> However, the historical record is short in relation to the return periods that should be applied to critical structures. Careful logging of the foundations at Nagymaros showed the rocks to be heavily tectonised. Although no direct evidence was found for recent movement along these faults within the excavation at Nagymaros, geological and macroseismic data indicate faults in this area to be capable. Some significant seismic events in this zone are known (e.g., Vác, Esztergom). An historic record of several hundred years, even if complete, is not in itself sufficient to exclude the

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<sup>324</sup> SM, para 2.65.

<sup>325</sup> The bulk fill of the dykes of the headrace canal comprises a well-graded gravel. Such materials are potentially internally unstable when subject to a through-flow of water, and are easily eroded by water passing over them. These features of the gravel fill make the dykes particularly vulnerable to the development of a full breach if over-topping or rupture of the water-proofing membranes were to occur. The consequences of such a failure are potentially catastrophic, and should be avoided. Catastrophic failure is a *possibility* given a possible worst case scenario. Such scenarios have not been assessed using accepted current practice as applied to large critical structures.

<sup>326</sup> SM, para 2.64; paras 4.17 and 4.33 refer to the work of "Réty" in asserting a low level of seismicity for the facility at Nagymaros. It is assumed that the passage refers to Réthly (1952), a seismologist who carried out research on historical evidence for large earthquakes in the period 455-1918.

possibility of larger infrequent events by which to determine the "worst case scenario".<sup>327</sup>

1.170. Thus there were reasonable grounds for concern, review and re-assessment of risks at the time that Hungary suspended construction works at Nagymaros<sup>328</sup> and Dunakiliti and later terminated the Treaty. Those concerns have still not been alleviated.

#### (10) OTHER RISKS AND DEFICIENCIES RELATED TO THE ORIGINAL PROJECT

1.171. As addressed in the Hungarian Memorial, the Barrage System would have ruined the landscape of both the Szigetköz and the Nagymaros region and consequently had a negative impact on tourism, particularly in the latter region, the location of the historic site of Visegrád.<sup>329</sup> Moreover, the groundwater table would have risen to endanger excavation of sites dating back to the Neolithic Period (3,500-2,500 BC)<sup>330</sup> and some of the most important sites for early settlement.

#### SECTION E: THE QUESTION OF FLOOD CONTROL

1.172. The Slovak Memorial lays particular emphasis on the importance of the Original Project from the perspective of flood protection.<sup>331</sup> It is true that the Original Project would have provided additional security to the region, surpassing the generally agreed level of flood protection (the so-called "100-year flood"). But flood control was certainly not a "prin-

<sup>327</sup> See above, paragraph 1.162.

<sup>328</sup> The SM correctly states "[i]t is vital that large dam structures that retain huge amounts of water are safe and can withstand not only extreme flood or constant underwater erosion conditions, but the possibility of earthquake conditions also". SM, para 2.57. Citing the Schwartz Study in the Ecologia/INFORT Report (HM, Annexes, vol 5 (part 1), annex 6) the SM argues that the project was "sound from an engineering viewpoint". SM, para 2.59. Clearly if the seismic risks were underestimated, the construction could not be sound from an engineering viewpoint. Schwarz was on the site less than one week, rendering it difficult to determine whether standards written on paper were carried out in practice.

<sup>329</sup> See HM, photo Nos 29 and 31; Annexes, vol 2. See description of these impacts in HM, paras 5.92-5.96.

<sup>330</sup> See HM, Map No 8; Annexes, vol 2.

<sup>331</sup> SM, paras 1.21-1.34.



cial” concern of the Treaty.<sup>332</sup> On the contrary it was a benefit that could have been achieved in other and cheaper ways.<sup>333</sup>

1.173. Since the 19th century, great plains such as the Szigetköz have been protected from flooding by the construction of levees along the rivers. The early engineering measures were more or less based on a “trial and error” method. Dykes were usually built to resist the greatest flood observed. When a flood overtopped or damaged the levees, reconstruction work adapted them to resist the latest conditions. As the surrounding land became more developed and economically valuable over time, it gradually became apparent that this approach to the problem was insensible. The extent of economic damage resulting from a flood was simply too great in comparison to the cost of added prevention. A new method of determining design standards thus became not only justified but necessary. The floods of 1954 and 1965 were the impetus for creating this new design standard; they were not “the impetus for the [GNBS]” as the Slovak Memorial contends.<sup>334</sup>

1.174 After the flood of 1954, it was realised that the traditional “trial and error” method was no longer appropriate. In 1957, reconstruction and improvement of the levee system were based on a more comprehensive statistical basis, which calculated the 100 year flood levels and set the design standards accordingly.<sup>335</sup> Hungary’s diligence in working toward this standard was rewarded in 1965; the historical Danube flood of 1965 caused no major failures or breakthroughs along the Szigetköz reach of the Danube where levees had been reinforced. At this time, however, 94% of the length of the levees had not yet been modified to meet the

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<sup>332</sup> SM, para 2.79, see above paragraphs 1.12-1.19.

<sup>333</sup> See Laczay, Flood Protection and the Gabčíkovo-Nagymaros Project (hereafter referred to as “Flood Protection”), October 1994; HC-M, Annexes, vol 4 (part 1), annex 9; see also summary of flood protection issues in *Scientific Evaluation*, HC-M, vol 2, chap 2.

<sup>334</sup> SM, para 1.30. Contrary to the statement in the Slovak Memorial, the devastating flood of 1954 caused four levee breaks along the Hungarian side of the Danube, not three. See *Plate 2.2*, HC-M, Annexes, vol 5; SM, para 1.31. Two-thirds of the Szigetköz area were inundated, resulting in substantial damage to both Czechoslovakia and Hungary. The damage suffered by Hungary was 383 million Ft, not 15 billion Ft (SM, para 1.31) See Laczay, Flood Protection; HC-M, Annexes, vol 4 (part 1), annex 9, p 5 and *Table 1*.

<sup>335</sup> These standards were revised in 1964 and 1976, being amended in the Danube Subcommittee of the Hungarian/Czech/Slovak Boundary Water Commission and approved by the Government Plenipotentiaries. The 1976 standard is still used today.

design standards for the 100 year flood. Thus, Hungary did suffer damage from this flood.<sup>336</sup>

1.175. Despite the success of the reinforced dykes against catastrophic floods, the Slovak Memorial contends that the 1954 and 1965 floods "showed that traditional methods of flood control were insufficient" and that the "improvement of dykes could not respond to urgent needs to protect the territory".<sup>337</sup> This is untrue. By 1965 not all met the required standard; nevertheless those that did resisted the flood. It was acknowledged by both sides that the appropriate design standard was the 100-year flood.

1.176. The Slovak Memorial compares the Original Project design standards against "the existing structures, which, at the time of the 1965 flood, were only capable of handling the 100 year flood".<sup>338</sup> The implication is that no works were undertaken during the period from 1965 to 1977 and that setting the standard at the 100 year flood level was inadequate. In fact, substantial works were carried out along the Danube between 1967-1977. By 1977, reinforcement of the dyke system in the Szigetköz reach incorporated a safety level of 1.2 metres above the 100 year flood design standard as adopted in 1976.<sup>339</sup> Contrary to the Slovak Memorial – which implies that the prevention of seepage through the gravel layers of the Danube could only be attained by construction of the Original Project<sup>340</sup> – the necessary structures to prevent seepage had been incorporated into the improved dykes by 1977. As to the 100-year flood level itself, both sides had accepted this design level, which complies with international standards.<sup>341</sup>

1.177. This is not to deny that the Original Project would have improved existing flood protection in the region.<sup>342</sup> But the Original Project would

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<sup>336</sup> See Laczay, Flood Protection; HC-M, Annexes, vol 4 (part 1), annex 9.

<sup>337</sup> SM, para 1.34.

<sup>338</sup> SM, para 2.81.

<sup>339</sup> The only exception was along the Rajka-Dunakiliti, where the Dunakiliti-Hrušov Reservoir dyke was planned. The Mosoni Danube's left bank flood system also did not meet the requirements.

<sup>340</sup> SM, para 1.34.

<sup>341</sup> See HC-M, *Science Evaluation*, vol 2, chap 2.2.4. The Slovak Memorial lists 19 floods occurring after 1965 (SM, para 1.21). Of these, 4 were classified as "second degree floods", 2 as "third degree" floods. Yet there is no record of significant flood damage after 1965, and no evidence at all that the dyke system in 1977 was inadequate.

<sup>342</sup> Construction still remained to be done – incorporating the 1976 standards.

merely have added additional security to what was otherwise a secure flood protection system.<sup>343</sup>

## SECTION F: THE PROBLEMS OF NAVIGATION

1.178. The Slovak Memorial emphasises and re-emphasises the supposed benefits of the Barrage system for navigation on the Danube. It recalls the history of the works undertaken for improving navigation,<sup>344</sup> stresses the consequential decline of the water level<sup>345</sup> and the need to remove the obstacles to navigation,<sup>346</sup> and suggests that the Barrage System would have allowed for a 100% increase of ship traffic on the river.<sup>347</sup>

1.179 The navigation provision in the 1977 Treaty was intricately related with the furtherance of social integration and fraternal relations.<sup>348</sup> The Treaty gave no elevated status to navigation among its purposes, as the Slovak Memorial implies.<sup>349</sup> Nevertheless, navigation on international watercourses such as the Danube is important, and it is necessary to say something about the Slovak Memorial's discussion of the issue.

1.180. The Slovak Memorial states that the Bratislava-Budapest region is "the only remaining difficult stretch of the Danube".<sup>350</sup> In fact both below Budapest and above Bratislava shallows exist which pose similar constraints.<sup>351</sup> This is one of a number of troubled links in the as yet incomplete Danube-Main-Rhine river route. Moreover the Bratislava-

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343 See *Scientific Evaluation*, HC-M, vol 2, chap 2.2.4.

344 SM, paras 1.38-1.49.

345 SM, paras 1.42-1.44, 2.82.

346 SM, paras 2.82-2.83, 5.08.

347 SM, paras 2.82-2.83.

348 See above paragraphs 1.18 and 1.19.

349 See SM, para 1.46: "The 1977 Treaty had as one of its central aims the adoption of the remedial measures to eliminate the navigational hazards along the Slovak-Hungarian stretch of the Danube."

350 SM, para 2.82.

351 In Austria between 1 April 1991 and 31 March 1992 there were 116 days when the navigational depth remained below 2 metres; for 43 days it was below 1.7 metres. In the same year on the Yugoslav section there were 122 days when navigational depth did not reach 2.5 metres. See Danube Commission, "Information sur l'entretien du chenal navigable et sur les seuils du Danube d'Ulm à Sulina (du 1<sup>er</sup> avril 1991 au 31 mars 1992)" (Budapest, 1993) pp 140, 152.

Budapest sector is – at present, at least – relatively unimportant in the realm of international commerce. So far as navigation is concerned, the Original Project, although potentially useful in the Bratislava-Budapest stretch, was neither necessary from an economic point of view nor critical for river navigation.

1.181. According to the Danube Commission,<sup>352</sup> the development of the bottleneck between Vienna and Budapest would need to include a set of four dams equipped with double locks: Hainburg (Austria), Wolfsthal (Austria), Gabčíkovo (Czechoslovakia), and Nagymaros (Hungary).<sup>353</sup> The investment required was estimated in 1992 at U.S.\$1 billion (not including Gabčíkovo).<sup>354</sup> This would produce no direct economic return, since the resulting increase in traffic would probably be very limited (around 1.8 million tons per annum on the Vienna-Budapest stretch<sup>355</sup>). In 1990 the cargo traffic on the Danube amounted to 66.6 million tons, which declined to 43 million tons in 1992.

1.182. The Slovak Memorial suggests that the required works to ensure safe navigation simply could not be undertaken on the Danube without interfering with the environment.<sup>356</sup> But navigational works were not responsible for riverbed degradation and the resulting lowered ground-water-tables.<sup>357</sup> Sediments removed by navigational dredging and other necessary river works were – and still would be – less than the amount of sediment arriving from upstream. This would result in stable, or even mildly aggrading, riverbed and groundwater levels – the situation that existed before excessive industrial dredging was undertaken.<sup>358</sup>

1.183. The Slovak Memorial compares the width and depth of the Danube navigation channel to the standards of the Danube Commission.<sup>359</sup>

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352 Established under Soviet auspices by the Convention Regarding the Regime of Navigation on the Danube, Belgrade, 18 August 1948; HM, Annexes, vol 3, annex 4. The mandate of the Commission is limited to navigation.

353 Equipe Cousteau, *Final Report* (1992); HM, Annexes, vol 5, (part I), annex 12, p 364.

354 Equipe Cousteau, *Final Report* (1992); HM, Annexes, vol 5 (part I), annex 12, p 364.

355 As reported by Equipe Cousteau, *The Danube... For Whom and For What?* (1993); HM, Annexes, vol 5 (part II), annex 16, p 603.

356 SM, paras 1.40-1.45.

357 See above, paragraphs 1.60-1.67.

358 See further River Morphology and River Hydraulics, *Scientific Evaluation*, HC-M, vol 2, chap 2.

359 SM, paras 1.37-1.38, 1.41, 1.45.

Although it notes on one occasion that the Commission's standards take the form of recommendations and are non-binding (and despite its aversion in other contexts to so-called "soft law"<sup>360</sup>), the Slovak Memorial nonetheless repeatedly criticises Hungary for its failure to comply with these criteria.<sup>361</sup> It also relies on Article 13(1) of the Boundary Waters Convention of 1976,<sup>362</sup> which, under the title "The Maintenance and Marking of Waterways", provides that:

"The maintenance and marking of the waterways, as well as the location of the navigational routes, shall be undertaken by the authorised bodies of the Contracting Parties on the Danube, in accordance with the recommendation made by the Danube Commission."

But this provision cannot be read as creating an *obligation* to undertake operations aimed not at maintenance and marking of existing navigation routes, but at the construction of wider and deeper fairways.

1.184. In fact the fulfilment of the Danube Commission's recommendations was never necessary to ensure a safe navigational route. The large width of the navigation channel recommended by the Danube Commission (100-180 metres) is simply not economically justified having regard to the volume of ship traffic in the area – in 1977 or at the present time. It reflects an era that focused on military transport and logistics rather than commercial transportation.<sup>363</sup> An 80 metre navigation width associated with a 2.5 metre depth requirement would have been – and would now be – adequate and appropriate. In fact the regulation works undertaken by Hungary on the Danube sector between 1962 and 1976 conformed almost entirely to such a standard.<sup>364</sup>

360 SM, paras 7.74, 8.112.

361 SM, paras 1.46, 1.48, 2.82.

362 For the 1976 Convention see HM, Annexes, vol 3, annex 19.

363 "[T]he consequences of opening the Rhine-Main-Danube canal and the possibility of switching traffic from one mode to another have been overestimated... In spite of financial advantages, the experience in Western countries has shown that there is practically no transfer from road transportation to waterways, while on the contrary road and train transportation gradually overtake the market share of waterway transportation". Equipe Cousteau, *Report* (March 1993); HM, Annexes, vol 5 (part II), annex 16, p 554 at p 569. The waterway which connects the Danube with the Rhine currently does not allow access to all ships which could pass the Gabčíkovo locks.

364 J Csoma and D Kovács, *Impacts of river training works carried out over the Rajka-Gönyű section of the Danube (1981)*, *Vízügyi Közlemények*, pp 267, 281.

1.185. The Slovak Memorial asserts that a 100% increase in ship traffic on the river could be handled without problem and that such an increase has been predicted within ten years.<sup>365</sup> However following the collapse of CMEA, navigation has decreased in importance. Between 1950 and 1980 freight transport on the Danube increased, from 9.7 million to 95 million tons, whereas during the last 15 years it has dramatically decreased – to 43 million tons in 1992.<sup>366</sup> The total volume of Czecho/Slovak traffic on the Danube showed a 70-75% decrease from 1985-86 to 1992-93. River traffic in Slovakia represents about 8 million tons, of which 2.5 million involves international traffic. The remainder is local (e.g., sand and gravel), over an average distance of 19 kilometres.

1.186. According to optimistic estimations, the traffic on the Danube will increase from 34.7 billion tons/km in 1989 to 55.5 billion tons/km in 2020.<sup>367</sup> Most of this increase, however, will occur downstream from Budapest: predictions are that approximately 21 million metric tons above the current traffic will transit between the Black Sea and harbours downstream from Budapest, whereas the traffic increase through the Bratislava-Budapest sector will only amount to 1.8 million metric tons. This is why, according to informed views, “developing the Vienna-Budapest sector will not be directly profitable for navigation (negative internal rate of return).”<sup>368</sup>

1.187. In 1977, the Bratislava-Budapest sector had its problem sections as did most other sectors of the Danube, but these problems could have been addressed in a much simpler way. By that time, due to river regulation carried out in the 1960s and 1970s, the section between Rajka and Sap was developed and only one difficult section remained, at a narrow and sharp bend at Bagamér.<sup>369</sup> Even this problem, however, can be handled without difficulty if appropriate equipment is installed on the ships.

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<sup>365</sup> SM, para 2.82.

<sup>366</sup> *Annuaire Statistique de la Commission du Danube* (1993).

<sup>367</sup> Equipe Cousteau (September 1992), HM, Annexes, vol 5 (part I), annex 12, p 366. A ton/km is a ton carried 1 km; thus a barge which carries 100 tons for 100 kms carried 10,000 ton/kms.

<sup>368</sup> Equipe Cousteau, *Report* (March 1993); HM, Annexes, vol 5 (part II), annex 16, p 554 at p 569.

<sup>369</sup> See Laczay, “Traditional Solutions to the Navigational Problems of the Szigetköz Stretch of the Danube” (hereafter referred to as “Traditional Solutions”), HC-M, Annexes, vol 4 (part 1), annex 8. Another difficult stretch in this section has developed since 1977 which is related to the construction site at Dunakiliti. *Ibid.*

1.188. The more difficult section of the river affected by the Original Project was the Nagymaros reach, and this is reflected in the recommendation of the Danube Commission as to the Vienna-Budapest sector, which identified Nagymaros (but not Gabčíkovo) as one of 4 sectors requiring attention.<sup>370</sup> However, studies have shown that the problems affecting the Nagymaros reach can nonetheless be resolved by traditional means.<sup>371</sup>

1.189. Indeed, it seems that the focus on the Project may have *aggravated* the difficulties, leading to neglect of standard river works in the affected sectors after 1977.<sup>372</sup> If these had been continued, and if the necessary renewal of the commercial fleet had taken place, traditional methods of river regulation could have provided the required navigation standards to a larger extent than on other sections of the Danube not affected by the Project.

#### SECTION G: SLOVAKIA'S INVOCATION OF "ENERGY POLICY"

1.190. The Slovak Memorial says relatively little of the hydroelectric capacity of the Original Project as such, despite its importance to the present dispute. Instead, it speaks in general terms of the necessity to maximise the utilisation of the "hydroelectric potential" of the region. It calculates that, by the addition of the Gabčíkovo power plant, it has brought its utilisation of hydroelectric potential to 52% (previously 30%), and anticipates that the construction of an extensive network of small hydroelectric plants on rivers in Slovakia's mountainous northern regions will allow it to utilise some 78% of its potential.<sup>373</sup>

1.191. Two further phases of the "provisional solution" are planned in order to "optimise" the use of the Danube for this purpose. First, a

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<sup>370</sup> See above, paragraph 1.179.

<sup>371</sup> See Laczay, *Traditional Solutions*; HC-M, Annexes, vol 4 (part 1), annex 8. Similar conclusions were reached in a Report on this sector commissioned by the Hungarian Government: Delft Hydraulics, Frederic R Harris, VITUKI, *Danube Environmental and Navigation Project. Feasibility Study Rajka-Budapest. Final Report, Stretch B1: Szap-Ipoly Mouth* (August 1994). Due to its length, this Report is not annexed: copies have however been placed in the Library of the Court.

<sup>372</sup> See Laczay, *Traditional Solutions*; HC-M, Annexes, vol 4 (part 1), annex 8.

<sup>373</sup> SM, para 1.54. According to the same calculation, France uses no less than 96.7% of its hydroelectric potential, and Denmark uses 3.2% only. It is not clear how this figure is calculated.

hydroelectric power plant has been designed to produce 4 GWh annually from the constant flow directed into the Mosoni Danube at Čunovo. Second, the middle section of the Čunovo complex has been prepared for the installation of four more turbines. This will enable Slovakia to harness the flow into the old Danube, producing a further 174 GWh annually.<sup>374</sup>

1.192. On the other hand Variant C will contribute at best 10% of Slovakia's total electricity production. This rather low figure is attributed variously to the non-completion of Nagymaros and to voluntarily increased flows into the main bed of the Danube in 1993.<sup>375</sup> But Slovakia admits that the Original Project, as originally designed, could provide no more than a small portion of each country's total power production. It then resorts to a portrayal of hydroelectricity as a "clean alternative" to thermal or nuclear energy,<sup>376</sup> without mentioning its own ambitious nuclear energy programme.<sup>377</sup>

1.193. Broader issues of energy policy are not before the Court in this case. However given the Slovak Memorial's pejorative references to Hungarian energy policy and its criticisms in particular of its use of nuclear energy,<sup>378</sup> some brief account is called for. More importantly, it is necessary to put in perspective the value of power generation through the Original Project and through Variant C.

1.194. Before the radical political changes in 1989, economic development in Central and Eastern Europe was based mainly on energy-intensive industries.<sup>379</sup> Thus the priority of energy policy was the

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<sup>374</sup> SM, para 5.35.

<sup>375</sup> SM, paras 5.51, 9.39.

<sup>376</sup> SM, para 2.84.

<sup>377</sup> See above, Introduction, para 20.

<sup>378</sup> See the photograph of the Hungarian nuclear plant at Paks, in SM, Illustration 13. That plant is a later generation than the current Slovak plants and has been given a clean bill of health by the IAEA: see IAEA, Operational Safety Review Team, *Operational Safety of Nuclear Installations: Hungary* (IAEA-NENS/OSART/89/19, February 1989). Copies of this Report have been placed in the Court's Library.

<sup>379</sup> In Czechoslovakia the ratio of primary energy intensity (energy consumption/GNP) was 0.80, twice as much as that of Eastern Germany (0.40) and three times that of Italy (0.26): Equipe Cousteau, *The Danube...For Whom and for What? The Gabčíkovo Dam: a Textbook Case* (September 1992), reproduced in HM, Annexes, vol 5 (part I), annex 12, p 324 at p 355. Electric intensity was also very high (0.92), two to three times greater than the value of EC countries (Western Germany in 1990, 0.56; Italy in 1990, 0.36). Ibid at p 356. Total consumption of primary energy



maintenance of sufficient energy supplies to fuel increasing production goals, without consideration of economic, environmental or social effects. Two factors facilitated this policy. First, the Hungarian and Czechoslovak economies were oriented towards the low-demand markets of other COMECON countries. This effectively postponed modernisation of economic structures or industrial technology, and provided no incentive for energy efficiency. Secondly, this policy was encouraged by ever-expanding energy imports from the Soviet Union. These were projected to continue to be inexpensive and inexhaustible. Consequently, energy-intensive and inefficient economic structures developed.

1.195. During an initial period of strong economic growth (1950-1955), the total increase in energy demand (9.2%) was roughly double the increase in GNP (5.7%) in the two countries. In subsequent periods, however, the two indicators fell to roughly the same level and then declined. Political changes in the region after 1989 led to the dissolution of old industrial structures and the collapse of trading relations. As GNP was dramatically reduced, there was a considerable decline in energy demand in the region, with excess production capacity. This period of general decline coincided with the planned final phase of construction of the Original Project.

1.196. Slovakia maintains an expansive energy policy, in spite of a steady decline in electricity consumption. In addition to the Bohunice nuclear power plant, constructed in 1974-1976 near the border with Austria and Hungary (and thus the target of criticism<sup>380</sup>), Slovakia is building another nuclear plant at Mochovce, less than 60 kilometres from the Hungarian border. Mochovce is designed to operate four units (one of which is already operational) and will reach full capacity in 1995. Its total generation capacity will be 1760 MW, the same as that of the old Bohunice nuclear plant.<sup>381</sup>

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in 1989 was greater than that of Western Germany, the largest consumer in the EC. Ibid at 355.

<sup>380</sup> This criticism is at least partly founded on the two serious accidents in Bohunice A1 unit, one of which caused fuel melting in the active reactor zone and contaminated part of the plant, the Dudväh river and some groundwater wells. As a consequence, this block was shut down in 1979, after 7 years of operation. On the other hand, the two units (out of the original four) still operating at Bohunice, which are Soviet-designed veteran first generation power plants (WVER 440/230) lack safety features basic to other pressured water reactors: International Atomic Energy Agency, *The Safety of WVER 440 Model 230 Nuclear Power Plants* (Vienna, 1992). It is understood that contracts to upgrade these reactors have been agreed.

<sup>381</sup> *Slovensky energeticky podnik*, 1993.

1.197. Given this increasing nuclear capacity, the electricity generated by Variant C represents a rather small part of overall power production in both countries – the same would have been true of the planned capacity of the Original Project. The planned built-in capacity was 720 MW at Gabčíkovo and 168 MW at Nagymaros, totalling 888 MW. The two states were to share this in roughly equal parts. The Czechoslovak share of 444 MW would now represent 7.5% of global Slovak built-in capacity. Projected electricity generation was to be about 1887.5 GWh/year for each country, although production might vary between 1365 and 2335 GWh depending on weather conditions.

1.198. The Original Project was to have generated peak-mode electricity. Under Central European climatic conditions, peak-mode production is generally higher in summer (when the demand is less) and falls in the winter months, when its reliability is problematic due to ice flows.

1.199. According to calculations in the 1950s, when it was conceived, the Original Project would have supplied more than 30% of Hungarian electricity needs. In the 1960s, when it was planned, its output would have accounted for some 20% of demand. By the 1970s, when it was concluded, the Project's projected potential contribution had declined to just 8.5% of Hungarian energy needs. At current (reduced) levels of electricity demand, the Project would have accounted for approximately 5% of Hungarian consumption.<sup>382</sup>

1.200. For Slovakia, the significance of the Project in energy terms is not much greater even considering that, with the operation of Variant C, it retains all hydroelectric production. This amounted to 223 GWh in 1992 and to 1,962.82 GWh in 1993. Thus when all four units of the Mochovce nuclear plant become operational in 1995, Gabčíkovo will contribute only 9.53% to the total electricity production (20,577 GWh) in Slovakia.<sup>383</sup>

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<sup>382</sup> This is based on the following calculations: operating in peak-mode, the Original Project would have used the totality of its 888 MW built-in capacity, and would have given to Hungary half its production. The Gabčíkovo power plant (360 MW) constitutes 6.41% of the yearly peak load (5,612 MW) and 4.89% of the total installed capacity (7,350 MW). The Nagymaros power plant (84 MW) would have contributed 1.49% to the yearly peak load and only 1.14% to the built-in capacity of Hungary.

<sup>383</sup> Electricity produced by hydropower plants in Slovakia in 1993 was 3,857 GWh of a total of 23,397 GWh (i.e., around 16% of the total electricity production), about the same level as the power plant operational self-consumption (1,683 GWh) added to the losses in the grid (1,858 GWh). The contribution of the Gabčíkovo power plant was 1,962 GWh, less than the 10% claimed by Slovakia. Slovakia imported 4,009 GWh and exported 2,906 GWh: *Slovenský energetický podnik*, 1993.

1.201. An independent report published in September 1992 analysed the production of electricity by the Original Project.<sup>384</sup> The study predicted that, while electric intensity in Slovakia would decrease slightly over the next 15 years, it will nonetheless remain far greater than current Western European levels, owing to continued inefficiency.<sup>385</sup> Given improved energy efficiency, a reduction of some 30% could be achieved, assuming an average growth in GNP of 2% per annum from 1992 to 2000, and of 3% from 2000 to 2010. According to this body, "the Czech and Slovak Republics do not need any more electricity up to 2010 or even beyond. From this point of view, Gabčíkovo serves no purpose".<sup>386</sup>

1.202. Another independent study published in 1992 stated that:

"Technically viewed, the requirements for an alternative energy policy are given. Through utilisation of demand-side and supply-side efficiency potentials, as well as structural potential, an energy-saving policy is feasible."<sup>387</sup>

The study notes, however, that there is opposition to such a policy in Slovakia.<sup>388</sup>

1.203. The Hungarian Government and Parliament have adopted a new energy policy, with an emphasis on increased energy efficiency.<sup>389</sup> Steps are being taken to connect the Hungarian energy system to the European networks (UCPTE Power System). Hungary has created the CENTREL subsystem with the participation of the Czech Republic, Poland and Slovakia. Hungary's aim is to solve energy problems which arise by co-operation with other countries in a way which corresponds to present economic realities and which is respectful of the environment.

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<sup>384</sup> See Equipe Cousteau, *Report* (September 1992); HM, Annexes, vol 5 (part 1), annex 12, p 324 at p 354.

<sup>385</sup> See *ibid* at p 357.

<sup>386</sup> *Ibid* at p 358.

<sup>387</sup> H Haberl & Andrea Höllt in conjunction with J Marousek, B Schwartzkopf & F Christian Matthes, *Energy for Slovakia, Options for an Environment-oriented Policy* (Austrian Ecology Institute, Vienna, May 1992), p 6.

<sup>388</sup> *Ibid*.

<sup>389</sup> See M Poós, *The Hungarian Energy Situation and Energy Policy* (Department of Energy Strategy, Ministry of Industry and Trade, Budapest, October 1994), p 5.

## SECTION H: A COMPARISON WITH OTHER INTERNATIONAL DAM PROJECTS

1.204. It is suggested in the Slovak Memorial that the Gabčíkovo-Nagymaros Barrage System would be just another hydropower development along the Danube, constructed and operated as many other European barrage systems.<sup>390</sup> Illustration No 11 in the Slovak Memorial presents the location of all hydropower stations along the rivers Rhine, Main, Neckar, Moselle and Danube without reference to details of their construction or operation. In fact there are large differences between existing hydropower systems and the Original Project.

1.205. Any hydropower development impacts on natural river ecosystems to a certain extent, depending on the type of construction and on the way the system is operated. Until the 1970s the environmental changes associated with the development of large hydropower schemes were widely accepted by Western societies. But growing public concern in environmental issues in the 1980s initiated intensive debates on major water resource projects, leading to the abandonment of a number of large hydropower barrage systems, e.g., Neuburgweier on the Upper Rhine (1979-82), Hainburg on the Austrian Danube (1986).<sup>391</sup> At present the most debated waterpower development project in Germany includes a 70 kilometre stretch of the Danube with a sequence of barrages endangering the last major free-flowing reach of the river in Germany, although the expected environmental impacts in this Danube reach can by no means be compared to those which were likely to have been induced by the Original Project.

1.206. Along the Upper and Middle Danube, the Original Project was the only water power development planned to operate on large scale peaking modes. None of the Austrian or German barrages in the Danube exploit the potential energy of the river to a similar extent as the Original Project would have done.<sup>392</sup>

1.207. The difference in water level at Gabčíkovo, used for energy production, would vary between 16.0 metres and 21.5 metres depending on the water level fluctuations. No other barrage system in the German and Austrian Danube reach has created a similar step in the river.

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<sup>390</sup> SM, para 1.16.

<sup>391</sup> See *Plate 3*.

<sup>392</sup> Some of the adverse effects of peaking are described in *Tables 1, 2, and 4*, and in paragraphs 1.150-154.

1.208. The envisaged peaking operation carried with it two technical necessities. One was an operational reservoir volume in the upstream impoundment; the other was a second barrage downstream to avoid riverbed instabilities caused by peak operation. None of the German and Austrian barrage systems along the Danube has an operational reservoir volume which could be remotely compared to the planned Dunakiliti-Hrušov Reservoir. Thus the residence time, which is a crucial factor with respect to water quality, e.g., for algae blooming,<sup>393</sup> is much shorter in upstream reservoirs.

1.209. The first steps in planning for the Nagymaros Barrage were taken in 1942, long before the Gabčíkovo project was considered.<sup>394</sup> But it was never realised. Compared with any other river barrage systems on the Danube, the Rhine, or the Rhône, it is obvious that the gradient of the river is very low and unfavourable for hydropower development.<sup>395</sup> Given the same head and discharge a river reach with a gradient of only 7 cm/km requires 5 times the reservoir length of a 35 cm/km reach to produce the same energy output. This not only has economic implications (requiring longer reservoir dykes and systems for artificial drainage for the adjacent area), but also ecological ones. To produce the same amount of energy 5 times the length of the free flowing river has to be impounded, with all the ecological consequences and risks of degrading the riverine ecosystem.<sup>396</sup> This is why there is no other barrage like the envisaged Nagymaros along the lower sections of the Danube or the Rhine.<sup>397</sup> It also makes it clear that the decision to built Nagymaros was inextricably related to peak power operation of Gabčíkovo.

1.210. Several peaking modes were considered for both power stations, Gabčíkovo and Nagymaros,<sup>398</sup> including the option of a complete

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<sup>393</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 3.3.

<sup>394</sup> SM, annex 22.

<sup>395</sup> The mean gradients of these rivers are: 44 cm/km for the Austrian Danube, 80 cm/km for the Rhine between Lake Constance and Gerstheim and 60-45 cm/km for the reach to Iffezheim, about 50 cm/km overall gradient for the Rhône between Lyon and the Mediterranean with a minimum slope of 35 cm/km in the lowest 100 km reach. The Szigetköz reach of the Danube has a gradient of about 35 cm/km, which drops to 17 cm/km at Sap (rkm 1810), to 10 cm/km at rkm 1793 and to only 7 cm/km at rkm 1768, which is about 70 km upstream of Nagymaros.

<sup>396</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 4.4.

<sup>397</sup> The Dutch barrage systems near the mouth of the Lower Rhine mentioned in SM, Illustration No 11, have been installed for flood water management and not for waterpower development.

<sup>398</sup> See Kern, *Impacts*; HC-M, Annexes, vol 4, annex 6, internal annexes A-6, A-7.

closure of the turbines at Gabčíkovo for 18 hours and a sudden release of 4,200 m<sup>3</sup>/s increasing up to 5,200 m<sup>3</sup>/s during 6 hours per day. The rise of the discharge from zero to the first peak would have occurred within 30 minutes and the descent from the second peak to zero in only 20, causing a considerable artificial flood wave in the Nagymaros reservoir, and severely damaging the aquatic biocoenosis.<sup>399</sup> A smaller, but still considerable peak operation was planned at Nagymaros towards the free flowing downstream river section.<sup>400</sup> For instance, at low discharges of the Danube a sudden rise from 1,000 m<sup>3</sup>/s to more than 2,000 m<sup>3</sup>/s was planned, followed by a sudden descent to the former flow level.

1.211. Peak operation of barrage systems is a frequent practice, even on lowland rivers used for navigation such as the Danube and the Upper Rhine. If peak operation is done in a moderate way it may not cause additional harm to the riverine ecosystem. At the Upper Rhine, for instance, a maximum increase of 300 m<sup>3</sup>/s above the natural flow is allowed within the chain of 10 barrages. On the other hand below the last barrage of Iffezheim a maximum increase of only 40 m<sup>3</sup>/s above the natural flow is allowed towards the free flowing river section. The latter limiting value has to be compared with the peaking mode at Nagymaros and the former with the one at Gabčíkovo. The difference is more than an order of magnitude, although the average flow at the Project reach is only twice as much as on the Upper Rhine river.

1.212. Thus the conception of the Original Project differs significantly from other European barrage systems. This reinforces concerns that the Original Project would have caused considerably more damage to nature and natural resources than other European barrage systems, especially given the outstanding natural value of the impacted area.

1.213. Changing attitudes to environmental issues have not only led the abandonment of various barrage projects but also to new programmes for the restoration of riverine wetland habitats affected by existing barrage systems.<sup>401</sup> For example an "Integrated Rhine Programme" combines objectives of flood protection and the restoration of wetlands along the Upper Rhine river which were damaged by the implementation of the

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<sup>399</sup> See *Scientific Evaluation*, HC-M, vol 2, chaps 2.3.2 & 4.4.2.

<sup>400</sup> This was denied by the Slovak Memorial stating that "...the Nagymaros step would generate power on a constant basis only, i.e. its discharge into the riverbed below would never vary so that downstream of this point no impact of the water level fluctuations could be felt"; SM, para 2.36.

<sup>401</sup> *Scientific Evaluation*, chaps 2.6 & 4.4.2

barrage system there.<sup>402</sup> The Upper Rhine experience suggests, however, that efforts to restore natural riverine systems will be in vain as long as the dynamics of discharges and water levels remain considerably disturbed.<sup>403</sup>

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402 See *Scientific Evaluation*, chap 4.4.2.3.

403 See *Scientific Evaluation*, chap 4.6.

## CHAPTER 2

### THE CONDUCT OF THE PARTIES

2.01. This Chapter reviews the conduct of the Parties in relation to the dispute, in particular in the light of the primary and fundamental claim presented in the Slovak Memorial that Hungary acted in bad faith in invoking environmental concerns as a basis for the suspension of works and the subsequent termination of the Treaty. First it is helpful to summarise the Slovak argument in this respect (below, **Section A**, paragraphs 2.02-2.08). Against that background, this Chapter deals with the Slovak arguments relating to the performance of the 1977 Treaty in the period prior to 1989 (**Section B**, paragraphs 2.09-2.25); then to the negotiations in the period 1989-1992 (**Section C**, paragraphs 2.26-2.88); the history of Variant C (**Section D**, paragraphs 2.89-2.106); and the negotiations for a temporary water management regime (**Section E**, paragraphs 2.107-2.117). The Chapter concludes by placing the Slovak arguments based on bad faith in their legal context and drawing the appropriate conclusions (**Section F**, paragraphs 2.118-2.128).

#### SECTION A: INTRODUCTION

2.02. Slovakia paints its claim of bad faith in broad, impressionistic strokes. It is an ever-present subtext woven through its Memorial. In substance the Slovak argument is as follows.

2.03. Whereas Hungary first initiated discussions over the common utilisation of water energy on the Danube,<sup>1</sup> and then forcefully advocated the adoption of the Gabčíkovo-Nagymaros Project over other alternatives,<sup>2</sup> it subsequently demonstrated a shocking lack of respect for its obligations under the 1977 Treaty. Over the "prolonged history of prevarication and violation",<sup>3</sup> Hungary proved itself both unwilling and unable to fulfil its treaty obligations.<sup>4</sup> From the outset, Hungary sought delays in the agreed schedule as well as in the distribution of work,<sup>5</sup>

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1 SM, paras 2.03, 6.08.

2 SM, para 2.03.

3 SM, para 7.10.

4 SM, paras 6.61, 6.63.

5 SM, paras 3.01, 3.44.



causing serious harm to Czechoslovakia.<sup>6</sup> In this way, it sought constantly to obstruct and frustrate the purpose of the Treaty.

2.04. Slovakia reminds the Court of the general duty of good faith imposed on any State in the performance of its international obligations.<sup>7</sup> Characterising Hungary as a "difficult Project partner"<sup>8</sup> from the beginning, Slovakia claims that Hungary demonstrated an unwillingness to co-operate in good faith,<sup>9</sup> adopted unconstructive and inflexible positions<sup>10</sup> and sought to impose preconditions calculated to render negotiation impossible.<sup>11</sup> This was amply demonstrated when Czechoslovakia suggested the involvement of neutral third parties to provide an objective determination of disputed issues.<sup>12</sup> In sharp contrast, Czechoslovakia and subsequently Slovakia conducted itself throughout in a co-operative and accommodating manner,<sup>13</sup> and only reluctantly resorted to Variant C at the last minute in order "to secure the achievement of the mutually agreed objectives of the 1977 Treaty".<sup>14</sup>

2.05. Slovakia claims that "Hungary has in all cases acted unilaterally",<sup>15</sup> citing in particular "successive decisions for the suspension of works".<sup>16</sup> It characterises Hungary's behaviour throughout as unpredictable and inconsistent with previous commitments.<sup>17</sup> Hungary is said repeatedly to have failed to comply with the procedures for consultation and notification set forth in the Treaty and this is cited as further evidence of bad faith.<sup>18</sup> Slovakia accuses Hungary of abusive conduct, deliberately taking advantage of its partner's efforts to resolve disputed issues.<sup>19</sup>

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<sup>6</sup> SM, para 6.119.

<sup>7</sup> SM, para 6.158.

<sup>8</sup> SM, para 3.01.

<sup>9</sup> SM, para 6.158.

<sup>10</sup> See generally SM, paras 6.70-6.71, 6.155-6.156.

<sup>11</sup> SM, paras 4.64, 4.94, 8.57.

<sup>12</sup> SM, paras 4.92, 8.50-8.57.

<sup>13</sup> SM, paras 6.106, 6.137.

<sup>14</sup> SM, para 7.10.

<sup>15</sup> SM, para 6.156.

<sup>16</sup> SM, para 6.157.

<sup>17</sup> See SM, paras 3.31 4.07-4.08, 4.35, 6.16, 6.63-6.64, 6.76, 8.49.

<sup>18</sup> See e.g., SM, paras 4.07, 4.59, 6.63-6.64, 6.74, 6.155, 6.158.

<sup>19</sup> SM, paras 4.36, 6.16.

2.06. By refusing to countenance any solution other than the outright cancellation of the Project, the Hungarian Government allowed political pressures to override its international obligations, as the Gabčíkovo-Nagymaros Project became a pawn in domestic politics.<sup>20</sup> Environmental protests against the Project are dismissed as related to the "grievous economic, political and cultural injustices" suffered under the communist regime, rather than any deep-seated ecological concerns.<sup>21</sup> The issue was then seized upon by an unpopular regime to divert attention from its own failings,<sup>22</sup> and adopted by the opposition as an "*idée fixe*",<sup>23</sup> a useful tool in the struggle for power.<sup>24</sup>

2.07. Hungary's purported concern for the environment was in fact a disingenuous "pretext" for the serious economic difficulties which prevented it from fulfilling its treaty obligations.<sup>25</sup> Such arguments were advanced merely as a tool in the negotiations and were never seriously entertained.<sup>26</sup> In spite of repeated requests, Hungary failed to provide any compelling scientific basis for its position,<sup>27</sup> and even refused to allow any objective assessment of its claims.<sup>28</sup>

2.08. The picture is a dramatic one. But it has the disadvantage of being untrue in every material respect – as the following sections will demonstrate.

## SECTION B: THE PERFORMANCE OF THE TREATY BEFORE 1989

2.09. In order to create the image of Hungary as a "difficult partner" even before 1989, the Slovak Memorial is forced to overlook important facts and to contradict its own statements.

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<sup>20</sup> SM, paras 2.23, 3.51-3.52, 3.56.

<sup>21</sup> SM, para 3.51.

<sup>22</sup> SM, paras 3.52, 3.56.

<sup>23</sup> SM, para 3.56.

<sup>24</sup> SM, para 3.56.

<sup>25</sup> SM, paras 3.36, 3.40-3.41, 3.53, 3.56. This implicitly acknowledges the reality of the economic concerns.

<sup>26</sup> SM, paras 3.35, 3.56.

<sup>27</sup> SM, paras 3.56, 4.03, 4.05.

<sup>28</sup> SM, paras 4.02, 8.50-8.53, 8.55-8.57.

2.10. Hungary in no way denies that the realisation of the Project, adopted to a great extent for political reasons under very different circumstances and expectations, posed an enormous financial burden which the deteriorating state budget could hardly finance. This was the reason for requesting – together with Czechoslovakia – a Soviet loan,<sup>29</sup> for concluding the Mutual Assistance Agreement,<sup>30</sup> and for suggesting the suspension of construction works for nine years.<sup>31</sup> With hindsight politicians on both sides have admitted that the Project should never have been started.<sup>32</sup>

2.11. In relation to the pre-1989 period, the Slovak Memorial focuses on a single Hungarian internal document, one of many thousands concerning the Project, namely the letter that Deputy Prime Minister József Marjai sent on 19 March 1984 to János Szentágothai, President of the Hungarian Academy of Sciences.<sup>33</sup> Slovakia claims that environmental arguments “were developed as a pretext to support economic motives for delaying the Project”, and produces this letter as the cardinal evidence in support of that contention.<sup>34</sup>

2.12. The Marjai letter is implausible as evidence of Hungarian bad faith, for a number of reasons. First of all, it was written *in 1984* by a minister of the former regime, whereas the Slovak argument relates to the bad faith of the new government in relation to action taken by it *in and after 1989*.

2.13. Secondly, it was hardly surprising that a Hungarian minister with responsibility for financial matters would complain about the financial

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<sup>29</sup> HM, para 3.33.

<sup>30</sup> HM, Annexes, vol 3, annex 22.

<sup>31</sup> HM, para 3.43.

<sup>32</sup> See e.g., Václav Havel in Hungarian TV programme “Panoráma”, 15 February 1991, as reported in BBC, Summary of World Broadcasts, EE/0999 A2/5, 18 February 1991; HC-M, Annexes, vol 3, annex 88.

<sup>33</sup> SM, paras 3.37-3.49.

<sup>34</sup> SM, para 3.36. In 1984 *The Economist* ran an article in which quite the contrary assumption was suggested – that behind the plea of the lack of resources–

“the real reason is probably fierce opposition in Hungary to the scheme. This summer, thousands of people signed a petition demanding that the government abandon it altogether. The petitioners claim the scheme will cost twice as much as a normal power station, and damage water supplies and local wildlife.”

*The Economist*, (European Edition), 8 December 1984; HC-M, Annexes, vol 3, annex 76.

viability of the Project. It is true that Mr Marjai did not actually say that the Project was not viable. In a passage which remained unquoted despite no fewer than 26 references to his letter in the Slovak Memorial, he wrote:

*"I don't want to assert that the construction of the System of water works is in our opinion uneconomical, but it is sure that if we had to take decision concerning the construction today, with our modest investment possibilities we would probably decide to postpone the investment."*<sup>35</sup>

This is cautious language, and a thin reed on which to rest a claim of bad faith. On the other hand the letter has to be read in the context of its time. In the convoluted language of the Brezhnev era, to say that one was not asserting that a project was uneconomical was virtually a confession that it was so!

2.14. Hungary has never denied that economic issues were relevant in 1981, or continued to be relevant in 1989 and subsequently. It is Slovakia which seeks to erect a rigid barrier between economic and environmental arguments, whereas the truth is that the two are closely linked. The real cost of development, including its cost on the environment, has to be taken into account in deciding whether to proceed with a development project.<sup>36</sup> And this linkage was realised even *at the time*: as the Hungarian Memorial explains, suspension was suggested in 1983 "not only because of Hungary's economic situation, but also for further examination of [the Project's] environmental impacts".<sup>37</sup> Very little was then known about the Barrage System's environmental effects. Environmental arguments were relied on neither to hide the economic concerns nor to replace them – which is the function of a pretext – but to shed light on aspects of the Project which had been inadequately investigated. Mr Marjai himself admitted that investigations were still outstanding in 1984 which ought to have been completed *before* the investment was initiated. He also confirmed the relevant findings of point 2 of the Academy's 1983 Statement,<sup>38</sup> which *inter alia* called for further research, planning and investment so as to ensure that:

*"a/ The pollution of the water of the Danube and changes in the biological conditions must not endanger, not even in the long term, the drinking water supply...of the region and Budapest.*

<sup>35</sup> SM, Annex 56, p 477 (emphasis added).

<sup>36</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 7.3 on the close relationship in principle between environmental and economic considerations.

<sup>37</sup> HM, para 3.43.

<sup>38</sup> HC-M, Annexes, vol 3, annex 36.

For this reason the waste water of the catchment area has to be also biologically purified, prior to the putting into operation of the Dunakiliti-Hrušov reservoir.

...

d/ The biological degradation of the *Main Channel* water – and its tributaries – has to be avoided and the characteristics worthy of a boundary river have to be ensured providing, at the same time, continuous operational conditions for a well designed navigational route.”<sup>39</sup>

2.15. The underlying issue was what to do in case of scientific uncertainty. Whereas the Academy suggested that investigations and certain measures protecting water quality and quantity in the Danube should precede the operation of the Project, Mr Marjai – while conceding the need for research and accepting that the purification of waste water should be a prerequisite of the operation of the reservoir – thought the available scientific evidence was not sufficient to justify suspending the construction, and that the available financial resources of Hungary did not permit environmental requirements to be met.

2.16. It is true – and Mr Marjai was aware of this – that some sewage treatment plants were under construction in 1984.<sup>40</sup> The Slovak Memorial<sup>41</sup> reveals that Czechoslovakia planned to build 25 plants between 1985 and 1990, and almost four times as many after the start of the operation of the Barrage System. But it does not answer three relevant questions:

- (a) How many of the planned sewage treatment plants were actually ready and operational even in 1994?
- (b) What was the capacity of these installations, were they capable also of biological treatment, and what percentage of the sewage waters had their own treatment capacities in 1994?
- (c) Did the sewage treatment programme have any beneficial influence on the water quality of the Danube?

And if these questions are not answered in 1994, *a fortiori* the answers to them could not have been available a decade earlier. There were obvious reasons for concern.

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<sup>39</sup> HC-M, Annexes, vol 3, annex 36.

<sup>40</sup> See SM, para 3.48.

<sup>41</sup> SM, paras 3.18-3.21.

2.17. Independent studies relying on data published by Mr Vavroušek, the Federal Minister for Environment, and his colleagues indicate that 60% of the waste water of Czechoslovakia was not adequately treated. In 1989 more than 50% of Bratislava's industrial waste and household sewage was released directly into the Danube without purification, and half of Slovakia's rivers could "no longer support aquatic life".<sup>42</sup>

2.18. The Slovak Memorial fails to note the intensive discussion of environmental issues in Hungary at the time. Not less than three committees of the Hungarian Academy of Sciences were active between 1981 and 1983.<sup>43</sup> As a consequence of their repeated findings that further investigations were necessary, two studies were produced, one on the complex utilisation of the Danube, the other on the environmental impacts of the Project.<sup>44</sup>

2.19. The Slovak Memorial states that "Czechoslovakia was never given any...proposals for revision".<sup>45</sup> In fact it was Deputy Prime Minister Marjai himself who handed over the summary of the 1985 Environmental Impact Statement<sup>46</sup> to his counterpart, as was noted during his negotiations with Czechoslovak Prime Minister, Mr Strougal, on 19 August 1985.<sup>47</sup> This visit to Prague was specifically arranged to inform the Czechoslovak Government about the modifications of the Project required by the just finished "environmental impact statement".<sup>48</sup> According to the Hungarian internal memo of the meeting, Premier Strougal promised to study the statement carefully and agreed with the need for thorough scientific investigations in order to conserve (in the language of the time, to "preserve") nature. He recalled the fate of the water reservoir at Orlik where the environment had suffered increasing

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42 Hilary F French, *Green Revolutions: Environmental Reconstruction in Eastern Europe and the Soviet Union* (Worldwatch Paper No 99, November 1990) p 17.

43 HM, paras 3.45-3.48.

44 HM, paras 3.48, 3.52.

45 SM, para 3.05.

46 HM, Annexes, vol 5 (part I), annex 4.

47 Strictly confidential internal note of the secretariat of the Hungarian Government, Memorandum On the Negotiations of Comrades Strougal and József Marjai Held On 19 August 1985, 19 August 1985; HC-M, Annexes, vol 3, annex 40. The hand-written corrections on this document appear to be by Mr Marjai.

48 See HM, para 3.55. By international standards, the environment impact assessment of the mid-1980s was inadequate: see above, paragraphs, 1.30-1.41. But the fact that such studies were undertaken shows that the issue was a complex economic and environmental one, and that the parties were aware of this.

damage, although scientists had assured before the construction that there would be no problem.<sup>49</sup>

2.20. The Czechoslovak Prime Minister's view that more attention should be devoted to the environment was not unprecedented. Hungary and Czechoslovakia had already agreed in July 1983 that they "consider it necessary, to seek rational solutions through necessary and possible modification of the technical plans for the avoidance of unfavourable consequences which may be identified..."<sup>50</sup>

2.21. As already noted, the Slovak Memorial complains about Hungarian inconsistency, citing Hungary's request in the mid 1980s for an acceleration of the construction.<sup>51</sup> But that request was consistent with earlier expressed concerns, and even flowed from them. Precisely *because* of the financial burden and the weakening Hungarian economy, as well as Czechoslovak insistence on the continuation of the Project without stopping to investigate environmental concerns, the Government began to search for ways of temporarily relieving the current Five-Year Plan from the burdens of the investment. Thus Hungary concluded private law contracts with two Austrian companies, whose capacity had been freed by the abandonment of a hydropower station on the Danube at Hainburg in Austria. Having helped Hungary to secure relatively favourable conditions for a loan given by Austrian banks, the main Austrian contractor, Donaukraftwerke, could require that such relatively minor issues as the construction schedule be tailored to its unused capacity.

2.22. The performance of the Parties during the years of construction has to be understood in the light of the real character of the Project. This was an enormous engineering project, which by its scale and complexity required repeated modifications. Keeping to the schedule and to decade-old plans was never anticipated, which was why the schedule was not laid down in the Treaty itself. A survey of the protocols of the Government Plenipotentiaries reveals that almost every year major or minor adjustments to the Plan were adopted.<sup>52</sup> A consolidated list of

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<sup>49</sup> Strictly confidential internal note of the secretariat of the [Hungarian] Government, Memorandum On the Negotiations of Comrades Strougal and József Marjai Held On 19 August 1985, 19 August 1985; HC-M, Annexes, vol 3, annex 40.

<sup>50</sup> *Aide Memoire* on consultation of the co-chairmen of the Hungarian-Czechoslovak Commission on Economic, Scientific and Technical Cooperation, 9 July 1983; HM, Annexes, vol 4, annex 12; also published in a different translation as SM, annex 46.

<sup>51</sup> SM, paras 3.11-3.12.

<sup>52</sup> For example, issues discussed at a single meeting included the possibility to establish a connecting canal between the Danube and the tail-race canal, to build

agreed modifications to the Joint Contractual Plan adopted before 31 December 1984 lists 74 amendments to the original, including such significant changes as moving the site of the tail-race canal and altering the isolation method in the head-race canal.<sup>53</sup>

2.23. The Hungarian suggestion in May 1989 to suspend the construction temporarily pending joint environmental investigations was not extraordinary, given this background of repeated adjustments, and this was understood at the negotiations of Prime Ministers Némethi and Adamec.<sup>54</sup> But within a few months the Czechoslovak position lost all its flexibility, and active planning for what was later to be called Variant C commenced – or rather recommenced – as will be seen.<sup>55</sup>

2.24. The Slovak Memorial is particularly dismissive of the motives of the environmental groups arguing against the Project. They are accused of picking an “easy target”, the Gabčíkovo-Nagymaros project, instead of more pressing domestic issues.<sup>56</sup> That the target was vulnerable to criticism may have been true – it was vigorously criticised from both sides at the time. But it was far from an “easy target”, given continuing governmental practices against dissent, such as dismissal from employment, police surveillance, home search, arrest, etc., both in Hungary and Czechoslovakia.<sup>57</sup> As a participant noted later:

“It is true that the aim was to stop completion of the dam, but never, for a moment on nationalistic grounds. Highly respected Slovak authors and academics as well as environmentalists were our partners in providing correct information and demonstrating against this mastodon of communist ideology. Hungarian environmentalists had a great deal of respect for those who took

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generators into the Dunakiliti weir, to change the construction schedule of that weir, etc. See the Protocol on the Negotiations of the Government Plenipotentiaries of the Hungarian People's Republic and the Czechoslovak Socialist Republic Concerning the Co-operation on the Construction of the GNBS Held in Bratislava on 13-14 June 1985, 14 June 1985; HC-M, Annexes, vol 3, annex 38.

<sup>53</sup> Agreed list of the modifications of the technical solutions of the joint contractual plan, adopted before 31 December 1984, Annex 3 to the Protocol of the meeting of the Government Plenipotentiaries, held on 7 March 1985.

<sup>54</sup> HM, para 3.78.

<sup>55</sup> See below, paragraphs 2.93-2.97.

<sup>56</sup> SM, paras 3.52-3.54.

<sup>57</sup> Hilary F French, *Green Revolutions: Environmental Reconstruction in Eastern Europe and the Soviet Union* (Worldwatch Paper No. 99, November 1990), p 32.



a larger risk in the less tolerant and more oppressive communist regime in neighbouring Czechoslovakia.”<sup>58</sup>

2.25. The general point has already been made that the Slovak Memorial deals with the Project in a historical as well as an ecological vacuum, as if the historical changes which culminated in the revolutions of 1989-90 had never occurred, any more than the major developments in environmental science and in the understanding of environmental impact – developments intimately linked to environmental catastrophes and concerns in Eastern Europe.<sup>59</sup> Within this context it is not surprising that Hungary sought to modify the Project so as to reduce the disadvantages which critics of the Project increasingly perceived.

### SECTION C: HUNGARY'S WILLINGNESS TO NEGOTIATE WITHIN THE FRAMEWORK OF THE 1977 TREATY (1989-1992)

2.26. Slovakia repeatedly claims that Hungary was unwilling to negotiate.<sup>60</sup> However the chronicle of the three years between the suspension of the construction works at Nagymaros on 13 May 1989 and the termination of the 1977 Treaty in May 1992 witnessed repeated good faith efforts of Hungary to achieve a mutually acceptable response. What might have been a cautious measure of a state acting reasonably in 1989 has matured into environmentally sound and required action by 1992, reflecting growing awareness with respect to the vulnerability of ecosystems in general, and specifically of the affected region. The growing concern for the protection of natural resources was simultaneously reflected in the increasing number of major international treaties protecting elements and processes of the environment, including in particular the instruments adopted at the Rio Conference on Environment and Development.<sup>61</sup> What Hungary tried in vain to achieve with its treaty partner was precisely what the world community was striving for: “States shall co-operate in a spirit of global partnership to conserve, protect and restore the health of the earth’s ecosystem”.<sup>62</sup>

<sup>58</sup> Judit Vásárhelyi, “Gabčíkovo: the Case Against”, *East European Observer*, September-October 1992, p 79; HC-M, Annexes, vol 3, annex 92.

<sup>59</sup> See above, paragraphs 1.21-1.22, 2.91.

<sup>60</sup> See e.g., SM, paras 6.157, 8.50.

<sup>61</sup> See above, Introduction, paragraphs 5-7. See also HM, paras 6.57, 6.64, 7.58.

<sup>62</sup> Rio de Janeiro Declaration on Environment and Development, UN Doc A/CONF.151/5, principle 7.

## (1) THE PERIOD FROM 1989 TO EARLY 1991

2.27. From the suspension of the works at Nagymaros onwards, Hungary was willing to negotiate with Czechoslovakia in order to reach a mutually agreed solution to the environmental problems. The relevant Resolution of the Hungarian Government, dated 13 May 1989, provided that:

“The Council of Ministers requests Parliament to authorize it to enter into preliminary negotiations with the Czechoslovak Party regarding the amendment of the treaty.”<sup>63</sup>

2.28. The Hungarian Memorial has referred to the most important interactions between the parties over the following months and years, and its account will not be repeated here.<sup>64</sup> Between the decision to suspend the construction of Nagymaros in May 1989 and the decision to initiate negotiations with a view to abandoning Nagymaros in October 1989, no less than five meetings took place at prime ministerial or deputy prime ministerial level.<sup>65</sup> These meetings were accompanied by three rounds of meetings between different expert groups, and frequent meetings of the Government Plenipotentiaries.<sup>66</sup>

2.29. Slovakia suggests that the decision to suspend the construction of Nagymaros only three months after the signing of the Protocol on speeding up the works came as an unexpected move.<sup>67</sup> Attention to the events themselves suggests a different interpretation.

2.30. The negotiations to shorten the deadline by one year were carried out in 1986-87 and agreement on the new schedule was reached in January 1988.<sup>68</sup> The issue of substantive environmental concerns was raised by a few members of the Hungarian Parliament who were independent from the Socialist Worker's Party's instructions in June 1988.<sup>69</sup> From that moment onwards the Hungarian Government was anxious not to neglect the concern of the population expressed by the

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<sup>63</sup> Government Resolution No 3125/1989, 13 May 1989; HM, Annexes, vol 4, annex 147. See HM, paras 3.75-3.76.

<sup>64</sup> See HM, paras 3.109-3.223.

<sup>65</sup> The Prime Ministers met on 24 May, 20 July, 11 October and 26 October 1989, the Deputy Prime Ministers on 9 September 1989.

<sup>66</sup> HM, paras 3.78-3.99.

<sup>67</sup> SM, paras 4.07-4.08.

<sup>68</sup> HM, para 3.71.

<sup>69</sup> HM, para 3.60.

huge wave of public protest against the Project, and committed itself to act in a way consistent with the sustainable use of Hungary's natural resources. The real message of the 1988 October decision of Parliament was not the adoption of the idea of continuation with the construction, but the identification of the environmental criteria without which the Project was *not* to be operated. This was succinctly stated in the Declaration: ecological interests should take priority over short-term economic concerns.<sup>70</sup>

2.31. Precisely as a consequence of the 1988 October decision Hungary and Czechoslovakia agreed that a proposal guaranteeing that the environment in the region of the Gabčíkovo-Nagymaros Project would not deteriorate be worked out by the two ministers responsible for environmental matters.<sup>71</sup> The legitimacy and extent of the concern was recognised at the time; it was not seen as a "pretext".

2.32. As noted in both Memorials,<sup>72</sup> a proposal for principles of a new treaty on water quality to enable risk-free peak operation was presented to the co-chairmen of the Hungarian-Czechoslovak Committee of Economic, Scientific and Technical Co-operation.<sup>73</sup> What the Slovak Memorial fails to add is that this was not yet a treaty but a *pactum de contrahendo*, and that it was actually signed by the two ministers, Mr Maróthy and Mr Margetin, thereby establishing the same level of obligation as the signing of a protocol by the two deputy prime ministers could have produced on 3 May 1989.

2.33. It may be true (albeit undocumented<sup>74</sup>) that the protocol of the working meeting of the two co-chairmen remained unsigned. However the report Deputy Prime Minister Medgyessy submitted to the Hungarian Government concerning this working meeting does not mention any dispute over the signing of the protocol. As to the fate of the planned environmental treaty, the report states:

"During the meeting the Czechoslovak party brought to my knowledge unequivocally that they were ready to conclude the treaty, but they would be willing to negotiate on environmental issues or conclude the treaty only if the Barrage System would

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<sup>70</sup> HM, para 3.63, quoting the Resolution of the Parliament, HM, Annexes, vol 4, annex 145.

<sup>71</sup> HM, paras 3.68-3.69.

<sup>72</sup> HM, para 3.69; SM, para 3.23.

<sup>73</sup> HM, Annexes, vol 4, annex 15.

<sup>74</sup> SM, para 3.24 offers no any evidence for the claim that the Hungarian [Co-] Chairman "refused to sign the protocol".

be built in its entirety, according to the original concept. In connection with that I have explained: our Government has not stopped any works so far, the construction including Nagymaros continues according to the agreed schedule. Our Prime Minister undertook the obligation at the March session of the Parliament not to carry out any irreversible work. At the same time we have to wait until the Parliament decides on the eventual referendum concerning the construction of the Nagymaros Barrage. My partner has noted my statement with understanding, but indicated that it would seriously prejudice Czechoslovak interests if eventually the Nagymaros Barrage was not built. He requested unequivocal information at the meeting of the heads of governments.

We agreed that the draft of the environmental agreement would be made by the experts until the end of June.<sup>75</sup>

2.34. Clearly Czechoslovakia was well informed about the contingencies involved in the Hungarian domestic deliberations; nonetheless its position on the Original Project was inflexible. It insisted that the Project be completed irrespective of the results of further investigations or of the success or otherwise of the proposed agreement on environment protection. The conclusions sought to be drawn in the Slovak Memorial<sup>76</sup> from Hungary's "refusal" to sign a protocol on environmental protection at this stage are without foundation.

2.35. This inflexibility was seen following the agreement by Prime Minister Adamec on 24 May 1989 to set up joint committees to investigate the two parties' concerns.<sup>77</sup> The Czechoslovak experts left their Hungarian colleagues only four days to examine their reply (produced only in Slovak).<sup>78</sup>

2.36. Thus in the light of fundamental disagreement at the meeting held on 17-19 July 1989, Hungarian Prime Minister Németh informed his counterpart Adamec that Hungary thought it prudent not to proceed with those elements of the Project which might pre-empt the investigations

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<sup>75</sup> Report for the Council of Ministers, 4 May 1989; HC-M, Annexes, vol 3, annex 44.

<sup>76</sup> SM, para 3.24.

<sup>77</sup> That Czechoslovakia itself was also entertaining serious doubts about the Project is reflected by the fact that it felt the necessity to commission an "independent report" 16 months later (in September 1990) to "review the potential contamination of or reduction in the water table, the existing environmental studies and, in addition, the security of the various construction works", SM, para 2.27.

<sup>78</sup> SM, para 4.13.

necessary to resolve the disagreements surrounding the Project. Hungary would continue work at Gabčíkovo except for the preparation for the closure of the Danube in October 1989, an act that would be effectively irreversible. Other construction works on the sites continued and orders for the machinery to be installed both at Nagymaros and at Dunakiliti were not revoked. In general, nothing was done which would have prejudiced the completion of the Project.

2.37. It must be re-emphasised that the question raised between May and October 1989 was whether to continue or abandon the construction of the Nagymaros sector, and what kind of guarantees were required for the environmentally sound operation of the Gabčíkovo sector, with or without peak mode operation. The Slovak Memorial asserts that "Hungary had succeeded in postponing the damming of the Danube for three successive years, during which time no new scientific studies of Hungary to justify its suspension of the G/N Project had been undertaken".<sup>79</sup> In fact, during the summer of 1989 a number of new studies had been produced. The annotated bibliography listing the most important environmental studies related to the impact area of the Gabčíkovo-Nagymaros Project lists 31 Hungarian studies for 1989 and 43 for the year 1990 as a clear sign of the scientific activity aimed at identifying the parameters of expected damage and risks.<sup>80</sup>

2.38. International experts' reports produced in this period confirmed the well-founded character of the Hungarian reservations. The 1989 Report of INFORT/Ecologia,<sup>81</sup> after comparing the Nagymaros section with other suggested and abandoned projects elsewhere in the world, came to the following conclusion:

"In summary, a project of the nature of the Nagymaros Barrage would *never* be permitted today in many countries. In the US, the project *would be impossible for any one* of the following reasons: environmental impacts (destruction of wetlands, wildlife habitat, groundwater impacts, etc); cultural impacts (history, archaeology); scenic impacts; or public outrage at the degradation of a national symbol. If these problems were combined, as they are at Nagymaros, opposition to the project would likely be insurmountable."<sup>82</sup>

<sup>79</sup> SM, para 4.82.

<sup>80</sup> Magyar Tudományos Akadémia, *A Bős Nagymarosi Vízlepcsőrendszer hatásterületét érintő fontosabb környezeti kutatásokról* (Budapest, 1994).

<sup>81</sup> HM, Annexes, vol 5 (part I), annex 6.

<sup>82</sup> HM, Annexes, vol 5 (part I), annex 6, p 118 (p 68 of the original) (emphasis added). The Slovak Memorial criticises this Report, contending that it was not based on new

2.39. The conclusions of the August 1989 report of the World Wildlife Fund were to similar effect.<sup>83</sup> The Project would undoubtedly have a negative impact on the environment, and because of the lack of appropriate investigation and data, a moratorium of at least three years on construction of all the component parts of the Project was necessary.

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scientific data and that it was poorly received by Hungarian scientists (SM, para 2.24). It relies particularly upon the criticism of OVIBER, the Hungarian National Hydraulic, Investing, Consulting and Engineering Company which had been commissioned by the Hungarian Government to build the Barrage System (SM, para 2.25).

OVIBER specifically criticised the Preliminary INFORT (Ecologia) study for making four recommendations as to GNBS operational pre-conditions, namely (1) that a monitoring system to track water quality be in operation for at least 5 years prior to diversion; (2) development of a 3-dimensional computer modelling system; (3) establishment of a Geographic Information System (GIS); and (4) the formation of an independent water authority. OVIBER's response asserted that all pre-conditions were met with the exception of a 3-D system, which could be a final goal, since 2-D models would suffice. See SM, annex 25, which reproduces pp 1, 2 and 11 of the OVIBER comments.

The OVIBER analysis is inaccurate and over-simplified. First, although it was true that a monitoring system had been in place for years, it needed a number of modifications to monitor adequately the Barrage System's impacts on water. Secondly, the models in place in late 1988 were not nearly sufficient to describe the phenomena. Even Czechoslovakia recognised that fact in 1990 when applying for PHARE support to engage in a large water modelling project; it then argued for an integrated modelling system "to provide better understanding of the interrelated processes involved, their interactions and basis for decision making... A detailed three-dimensional computer ground water model interconnected with model of reservoir and river water quality, could reflect the various possible problems." (Surface Water and Ground Water Model of Danubian Lowland Between Bratislava and Komárno: Ecological Model of Water Resources and Management, pp 1, 3; HC-M, Annexes, vol 3, annex 48.) Third, with respect to the GIS, INFORT (Ecologia) acknowledged later in its Report that the system existed in Hungary; their recommendation was that it should be used; HM, Annexes, vol 5 (part I), annex 5, pp 42-43 [of the annex volume].

No doubt studies done by scientists not intimately involved in the details of the GNBS may be hindered by lack of access to data. The three reports in the period before and around Hungary's suspension of construction (WWF 1986, WWF 1989, and INFORT (Ecologia)) were nonetheless important in supporting the view that it was imperative that construction be stopped until a comprehensive impact evaluation could be performed. And this conclusion was valid even if the reports contain minor inaccuracies. The same is true of the Bechtel and Hydro-Québec Reports, which were commissioned by entities charged with constructing the Barrage System but which nonetheless expressed concerns and admitted lack of knowledge of critical issues: see the passages from those Reports cited in paragraphs 1.30, 1.37 above.

<sup>83</sup> See HM, para 3.94.

2.40. In these circumstances the Hungarian Government was justified in assessing the situation as one of true scientific uncertainty, in which continuation of the construction would have defied the principle of responsible governance. Since the investment in the Nagymaros section, although significant, was considerably smaller than the expected risks and damage linked to its operation, and since the works already carried out on the site though large-scale were not irreversible, the Government suggested to Parliament that it be empowered to negotiate with Czechoslovakia about the abandonment of the Nagymaros section and a corresponding modification to the 1977 Treaty.

2.41. It may be useful to recall at this point the exchange of views in late October 1989, when there was the potential for a compromise.

2.42. At a meeting of the two Prime Ministers on 11 October 1989, Czechoslovak Prime Minister Adamec showed no willingness to agree on a suspension of works at Dunakiliti until a treaty on the environmental guarantees could be concluded, and again threatened the unilateral diversion of the Danube. On 26 October 1989, before the Hungarian Government's final decision on what recommendation to make to the Parliament,<sup>84</sup> and before the Hungarian Parliament's decision to suggest negotiations on the modification of the 1977 Treaty with a view to the abandonment of Nagymaros,<sup>85</sup> the two heads of government met again in a last effort to reconcile their views. No compromise solution emerged, and consequently the Government decided the next day to propose that the Hungarian Parliament adopt a resolution on an amendment of the 1977 Treaty to eliminate Nagymaros.

2.43. The Slovak Memorial fails to make it clear that the willingness reflected in the Czechoslovak *Note Verbale* to initial a treaty on environmental guarantees before continuing preparation for the diversion of the Danube was not shown at the 26 October 1989 meeting, but appeared as a new element *after* the Hungarian Government's decision of 27 October 1989. That *Note Verbale* was transmitted at 6 p.m. on 30 October 1989, when the Hungarian Parliament was already seized of the question.

2.44. The Slovak Memorial refers to what it describes as a Hungarian *Note Verbale* of the same date.<sup>86</sup> This document was not a *Note Verbale* but an *Aide Mémoire* of a meeting held on the afternoon on 30 October 1989 between a senior official of the Hungarian Foreign Ministry (Mr

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<sup>84</sup> HM, Annexes, vol 4, annex 150.

<sup>85</sup> HM, Annexes, vol 4, annex 151.

<sup>86</sup> SM, para 4.46 & annex 75.

Ószi) and the Czechoslovak ambassador (Mr Ehrenberger).<sup>87</sup> The meeting was intended to inform the Czechoslovak Government about the as-yet-unpublished decision of the Hungarian Government, adopted on 27 October 1989. Unlike the Czechoslovak *Note Verbale* of the same day, it did not incorporate any new element with respect to the substance of the negotiations held between the two Prime Ministers on 26 October.

2.45. To summarise, the "compromise offer" was delivered at a moment when the offering party could be certain that it could not be incorporated into the decision to be adopted by the Parliament 20 hours later. In addition, the "compromise offer" contained the following elements: (1) it did not specify what the "ecological guarantees" would be – these were left to future negotiations; (2) it required immediate preparations for the closure of the Danube; (3) it contained a blank refusal to contemplate any amendment to the 1977 Treaty itself; (4) it threatened unilateral implementation of a "provisional substitute technical solution".<sup>88</sup> Curiously, the Czechoslovak *Note Verbale* implies that limiting or excluding peak hour operation would be compatible with the 1977 Treaty – presumably because Czechoslovakia was never willing to amend the 1977 Treaty itself, and yet to insist on peak-hour production would have involved no element of compromise whatever.<sup>89</sup>

## (2) THE 1991 INTERGOVERNMENTAL NEGOTIATIONS

2.46. After the fundamental political changes of 1989 and 1990 the new Hungarian Government decided on high level negotiations with Czechoslovakia on the future of the Project. This resulted in three intergovernmental negotiations being held in Budapest and Bratislava in 1991.

2.47. The Slovak Memorial seeks to play down the importance of these negotiations. They are presented in a 17-line paragraph,<sup>90</sup> under the inaccurate title "*The First Involvement of the European Communities*".

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<sup>87</sup> The Slovak Memorial's annex 75 produces a text headed:  
"(Courtesies)

Note Verbale"

In fact those words are not in the copy of the original Hungarian document filed with the Court, nor are any courtesies. In a genuine *Note Verbale*, the courtesies would follow rather than precede the title of the document.

<sup>88</sup> See HM, para 3.99.

<sup>89</sup> SM, annex 76, p 162.

<sup>90</sup> SM, para 4.68.



Thus as to the first round of negotiations, the Slovak Memorial simply says that: "There was a meeting of the recently appointed delegations, at which position papers were exchanged".<sup>91</sup>

2.48. The Hungarian Memorial fully describes these important talks, explaining the background to the Hungarian position.<sup>92</sup> It is not necessary to repeat this explanation, but it is important to recall a number of facts:

- \* During the 1991 negotiations both parties were represented by large delegations which included both high level governmental officials and well-known experts;
- \* The Czechoslovak delegation was led on all three occasions by the Slovak Prime Minister (Mr Mečiar and subsequently Mr Čarnogurský), duly accredited by the *federal* authorities;
- \* At the first meeting the Hungarian delegation presented four essential documents, including a draft bilateral treaty on the termination of the 1977 Treaty and on compensation for the losses of Czechoslovakia, and another draft treaty on the suspension of construction until the end of September 1993;<sup>93</sup>
- \* The Hungarian delegation had received information on the Czechoslovak aim of constructing Variant C *before* the first meeting.

2.49. The Slovak Memorial does no more than state that at the first meeting "both sides confirmed the validity of the 1977 Treaty".<sup>94</sup> This is self-evident. Hungary held the 1977 Treaty valid until its termination. In 1991, Hungary still saw some chance that the 1977 Treaty could be amended or terminated by mutual agreement and that the parties could agree on important related issues (e.g., assessment and compensation of losses, the fate of the installations already completed, the resolution of the problems of navigation and flood protection, and the rehabilitation of the area).

2.50. The Slovak Memorial recalls that Hungary proposed at the intergovernmental negotiations in 1991 the suspension of work by Czechoslovakia, in order to provide some time for experts to undertake

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<sup>91</sup> SM, para 4.68.

<sup>92</sup> HM, paras 3.121-3.145.

<sup>93</sup> HM, paras 3.126-3.127.

<sup>94</sup> SM, para 4.68.

joint research to assess the ecological impacts of the Project. Hungary believed that the outcome of this research would lead Czechoslovakia to the conclusion that the Project would have to be abandoned. But according to the Slovak Memorial—

“The Czechoslovak delegation rejected this position on the basis that Hungary had produced no scientific evidence to establish the need for such a suspension, characterising what had been received so far from Hungary in the way of materials as ‘*science fiction*’.”<sup>95</sup>

It is characteristic of the climate of the negotiations that the Czechoslovak delegation used such language.

2.51. The Slovak Memorial devotes special attention to the 1991 Resolution of the Hungarian Parliament which empowered the Government to conduct negotiations with Czechoslovakia “on the termination [of the 1977 Treaty] by mutual consent”.<sup>96</sup> It asserts that the Resolution was passed “on 23 April 1991, i.e., the very next day after [the first] intergovernmental meeting”. Actually, the Resolution had been passed a week earlier – on 16 April 1991, before the first meeting was held – and had taken effect on the same day.<sup>97</sup>

2.52. According to the Slovak Memorial the Resolution of the Hungarian Parliament “...tied the hands of the Hungarian Government in any future negotiations”.<sup>98</sup> However, in just the previous paragraph the Slovak Memorial described what had happened in April 1991: that Hungary had proposed to undertake joint research with Czechoslovakia, and the latter had rejected the proposal. The same applied to the second and the third round of the 1991 negotiations. In addition, Hungary had learned about the Czechoslovak aim to construct Variant C *before* the Resolution of Parliament was passed<sup>99</sup> and *before* the first meeting of the two delegations was held. Furthermore, the Czechoslovak delegation announced *during* the second meeting and the Slovak Prime Minister

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<sup>95</sup> SM, para 4.68 (emphasis added).

<sup>96</sup> Resolution of the Hungarian Parliament No 26/1991 (IV.23), regarding the Government's Responsibility In Connection With the Gabčíkovo-Nagymaros Barrage System, 16 April 1991; HM, para 3.121; HM, Annexes, vol 4, annex 154.

<sup>97</sup> The date in brackets indicates the date of official promulgation of the Resolution, not the date of its passage.

<sup>98</sup> SM, para 4.71.

<sup>99</sup> See HM, para 3.123.

confirmed in a "frank and notably courteous letter"<sup>100</sup> before the third meeting that Czechoslovakia had commenced the construction of Variant C.<sup>101</sup> (This sequence of events is not mentioned in the Slovak Memorial).

2.53. Legally the hands of the Hungarian Government were not tied by the Resolution. Parliamentary resolutions do not have the force of law, although, like parliamentary resolutions on issues of governmental policy in many constitutional systems, represent guidelines of the legislators. Any such resolution could be rescinded by Parliament in the same manner in which it had been passed.

2.54. At the same time the Czechoslovak Government had a free hand to refuse any proposal on joint research and to refuse anything else which might lead to the abandonment of the Project. Whatever Hungary did during the coming months, Czechoslovakia was determined to put the Gabčíkovo sector into operation unilaterally and at the latest by 1992.

2.55. Chapter VII of the Slovak Memorial briefly returns to the 1991 intergovernmental negotiations. It asserts that:

"Throughout the meetings of governmental delegations of 1991 Hungary insisted only upon a right of people to their 'original environment' and hence the cancellation of the 1977 Treaty."<sup>102</sup>

2.56. During the meetings the Hungarian delegation did not refer to any right to an "original environment" but stressed that during the time of the suspension of the construction, Hungary had become increasingly certain that the Project would pose a serious risk of irreversible and damaging environmental processes, with adverse consequences to both countries.<sup>103</sup> At no stage had Hungary "refused bilateral discussions" at the expert level.<sup>104</sup>

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<sup>100</sup> As described in SM, para 4.73.

<sup>101</sup> See letter from Slovak Prime Minister J Čarnogurský, to Hungarian Prime Minister J Antall, 30 July 1991; HM, Annexes, vol 4, annex 56.

<sup>102</sup> SM, para 7.08.

<sup>103</sup> HM, para 3.125.

<sup>104</sup> SM, para 7.08.

(3) INVOLVEMENT OF THIRD PARTIES IN THE SOLUTION OF THE  
DISPUTE: THE ROLE OF THE EUROPEAN COMMISSION

2.57. Hungary was always willing to involve third parties in the solution of the dispute. The Slovak Memorial under the title "The First Involvement of the European Communities" tries to establish that Hungary was always hostile to the involvement of the EC. At the same time the Memorial portrays Czechoslovakia as having made—

"repeated attempts...to broaden the bipartite negotiations and studies into a tripartite format with EC participation, particularly with respect to scientific aspects...starting with the participation of Czechoslovakia (but not Hungary) in the EC's PHARE project."<sup>105</sup>

2.58. Again it is necessary to go back to the historical record. It is convenient to start with the issue of the "participation of Czechoslovakia (but not Hungary) in the EC' PHARE project".

*(a) The issue of participation in the PHARE Project*

2.59. Slovakia misrepresents the Hungarian response to the 1990 Czechoslovak proposal on participation in the PHARE project. The Slovak Memorial asserts that:

"The response of the Hungarian Government...misdrew the proposed agreement as being a bilateral project between Czechoslovakia and the PHARE Program, with Hungary in the position of a mere consultant. The draft agreement forwarded to Hungary by the Czechoslovak Government was nothing of the kind; the two parties were to participate jointly in the study."<sup>106</sup>

And it concludes the story by stating that:

"After Hungary refused to make a joint request to the EC, Czechoslovakia, in October 1990, decided to participate in a PHARE project..."<sup>107</sup>

<sup>105</sup> SM, para 4.92.

<sup>106</sup> SM, para 4.64. For the Hungarian response referred to in this passage see Letter from György Sámsondi Kiss, Hungarian Government Plenipotentiary to Dominik Kocinger, Czechoslovak Government Plenipotentiary, HM, Annexes, vol 4, annex 38.

<sup>107</sup> SM, para 8.51 (emphasis added).

Thus according to Slovakia it was not Czechoslovakia which applied for PHARE funds and invited Hungary to participate in the project: there was a Czechoslovak proposal to submit a joint-application.

2.60. This is not the case. Czechoslovakia *first* applied for the funds and then submitted a proposal to Hungary. The copy of the "Agreement on Joint Czecho-Slovakian and Hungarian Cooperation on the PHARE-Environment Protection", annexed to the Slovak Memorial, reveals a significant discrepancy. That Agreement was a draft, which was not signed by the Plenipotentiaries.<sup>108</sup> On 26 October 1990 it had been sent by the Slovak Plenipotentiary to his counterpart for signing, but the latter, on 15 November 1990, refused to sign it.<sup>109</sup> But according to the Slovak Memorial, Czechoslovakia applied for PHARE funds in *October* 1990.

2.61. Moreover the Czechoslovak proposal stated that:

"Slovak, Hungarian and foreign experts will act and work together as an independent working team and will take main methodological responsibilities in the organization and execution of the project. This group will be included in coordinative and investigative group 'Groundwater' which *has been* established at the Faculty of Natural Sciences, Comenius University in Bratislava."<sup>110</sup>

2.62. According to the application to PHARE, this coordinative group "Groundwater" would lead the programme. Under its auspices would be a team made up of half Slovak and half EC experts. That team would cooperate not only with a team of experts from Hungary, but also with other organisations dealing with related problems, as well as with specialists "from all over the world". The mandate of the group was to establish models tailored for Žitný Ostrov conditions, and thereby to seek

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<sup>108</sup> Contrary to the impression given by SM, annex 82. The original, lodged with the Court, is unsigned.

<sup>109</sup> HM, Annexes, vol 4, annex 38.

<sup>110</sup> Draft Agreement on Joint Czecho-Slovak and Hungarian Co-operation on PHARE — Environment Protection: "Surface Water and Ground Water Model of Danubian Lowland Between Bratislava and Komárno: Ecological Model of Water Resources and Management", Proposal handed over by Czechoslovakia to Hungary on 26 October 1990; SM, annex 82, p 189; HC-M, Annexes, vol 3, annex 49 (emphasis added).

to solve a number of problems in the Bratislava-Komárno section of the Danube.<sup>111</sup>

2.63. Thus the project was not meant to be an analysis of the impacts of the Barrage System on both Hungary and Czechoslovakia rather, by studying only the situation on Czechoslovak territory, the plan was to—

“evaluate and verify the effects of previous activities and by the new hydraulical system of hydropower development. The goal is to define the remedial actions and optimization of all mutual interferences. A permanent optimization and management model is to be developed by this project.”<sup>112</sup>

At the end of the first phase, the designs for technical solutions were to be submitted to a representative of the Czechoslovak Government. There was no provision for “EC involvement” in the resolution of the dispute, as suggested in the Slovak Memorial. There was no provision for studies on Hungarian territory, either in the upstream or downstream sectors of the GNBS. But above all, the project assumed (rightly, as it turned out) that “the new hydraulical system of hydropower development”, i.e., Variant C, would be in operation before any conclusions had been reached. It aimed at “remedial actions” after the event. In that context it is also worth noting that the envisaged model is not fully developed even four years after the application and more than two years after the diversion of the Danube. The problems foreseen in the funding application are occurring, yet none of the “remedial actions” is in place.

*(b) The issue of EC mediation and the suspension of Variant C*

2.64. Elsewhere the Slovak Memorial attempts to show that Hungary was unwilling to involve third parties in the dispute. Thus it asserts that Hungary was against the participation of EC experts and against broadening the negotiations by establishing a tripartite committee.<sup>113</sup>

2.65. In fact the idea of EC involvement had been raised at an early stage by Hungary. On 14 December 1990 the new Hungarian Prime Minister, Mr Antall, informed his Czechoslovak counterpart about an agreement with an EC Commissioner that experts of the Community

<sup>111</sup> Surface Water and Ground Water Model of Danubian Lowland Between Bratislava and Komárno: Ecological Model of Water Resources and Management, 25 October 1990, p 12; HC-M, Annexes, vol 3, annex 48. See *ibid* at pp 6-11 for further details.

<sup>112</sup> *Ibid* at p 3.

<sup>113</sup> SM, para 4.72.

would assist the two countries in the resolution of their dispute.<sup>114</sup> In his response dated 15 January 1991, the Czechoslovak Prime Minister did not refer to any EC participation but merely stated that the Czechoslovak Government—

“authorises Josef Vavroušek, Minister of the Government of the Czech and Slovak Federal Republic [to] organize international assistance in judging the ecological problems”.<sup>115</sup>

This did not specify what kind of third party assistance the Czechoslovak Government had in mind.

2.66. Hungary was however concerned that any EC involvement not be used as a cover for continued work on Variant C, which threatened to pre-empt the very purpose of that involvement. Thus – as pointed out at the third 1991 intergovernmental meeting – Hungary found the establishment of the Committee meaningless if Czechoslovakia did not meanwhile suspend work aimed at the implementation of Variant C.<sup>116</sup> The activity of the Committee would have legitimised the unilateral conduct of Czechoslovakia, while at the same time the Committee would have been acting under the pressure of bulldozers.

2.67. The Czechoslovak position can be seen from a *Note Verbale*, dated 27 August 1991, which contained what the Slovak Memorial characterises as a “positive suggestion”:

“Provided the Hungarian side submits a concrete technical solution aimed at putting into operation the Gabčíkovo system of locks...based on the 1977 Treaty in force...the Czechoslovak side is prepared to implement the mutually agreed solution.”<sup>117</sup>

It is difficult to see what the positive contents of the suggestion were, or for that matter, what exactly the authors of the *Note* had in mind other than the Original Project. What kind of “technical solution” aimed at putting the Gabčíkovo sector into operation “based on the 1977 Treaty in force” other than the Original Project, which also required the construction of Nagymaros and operation in peak power mode? This was only another way of insisting that the whole Barrage System be implemented without significant alteration.

<sup>114</sup> HM, Annexes, vol 4, annex 40; referred to in HM, para 3.114; SM, para 4.66.

<sup>115</sup> Letter from Czechoslovak Prime Minister M Čalfa to Hungarian Prime Minister J Antall, 15 January 1991; HM, Annexes, vol 4, annex 42.

<sup>116</sup> See HM, paras 3.144, 3.149.

<sup>117</sup> Czechoslovak *Note Verbale* of 27 August 1991; SM, Annex 96, cited in SM, para 4.74.

2.68. Hungary was not alone in seeking a commitment from the Czechoslovak party to discontinue work on Variant C pending negotiations. In a letter of 23 April 1992, Czechoslovakia reiterated its complaints about Hungary's unwillingness to take part in the joint Committee with the participation of EC experts.<sup>118</sup> But it failed to refer to the contents of a letter of EC Vice-President Andriessen sent to both Ministers of Foreign Affairs 10 days earlier, on 13 April 1992. This letter included a rather important point with regard to the EC's participation.<sup>119</sup> It stressed that any involvement of the Commission would depend upon three conditions, the third being that:

“each Government would not take any steps, while the Committee is at work, which would prejudice possible actions to be undertaken on the basis of the [Committee] report's findings.”<sup>120</sup>

The Slovak Memorial<sup>121</sup> refers to Mr Andriessen's letter but fails to mention that it included such a condition.

2.69. Another letter of Mr Andriessen sent on 30 July 1992 again drew the attention of the Czechoslovak Minister of Foreign Affairs to the three conditions outlined in his previous letter.<sup>122</sup> The Slovak Memorial nonetheless states that—

“Hungary *resurrected* [at a 13 October 1992 meeting] the precondition that Czechoslovakia suspend at once all work to dam the Danube, a condition that the Czechoslovak Government rejected.”<sup>123</sup>

Reference is made in the same paragraph to the first Andriessen letter, which set the condition that no unilateral step be taken by the parties, *and* to the Czechoslovak intention to continue the unilateral construction of Variant C. The two intentions were in opposition to each other. This was

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<sup>118</sup> SM, annex 108.

<sup>119</sup> See HM, para 3.158.

<sup>120</sup> Letter from the Vice-President of the European Communities to the Czechoslovak Minister of Foreign Affairs, SM, annex 107.

<sup>121</sup> SM, para 4.80.

<sup>122</sup> Letter of 30 September from Vice-President of the EC Commission to the Czechoslovak Foreign Minister; SM, annex 124. SM, para 4.87, says only that such a letter had been sent, demonstrating that “the EC Commission remained ready to help”.

<sup>123</sup> SM, para 4.94 (emphasis added).



not “resurrecting” a precondition: the precondition had always been there, both so far as Hungary *and* the EC were concerned.

2.70. As to the fate of the third condition, at a bilateral meeting on 13 October 1992 Czechoslovak Foreign Minister Pirek stated that the conditions contained in Mr Andriessen’s letter of 13 April 1992 were no longer appropriate, because the work on Variant C had been completed.<sup>124</sup>

*(c) The “scheduled” Vienna meeting*

2.71. The Slovak Memorial stresses that Czechoslovakia – while working intensively on the completion of Variant C – was willing to enter into substantive negotiations with Hungary and to accept the involvement of the Community, in spite of the fact that it was unwilling to respect the third condition of Mr Andriessen. It cites a letter of the Czechoslovak Prime Minister to his Hungarian counterpart dated 23 September 1992, according to which:

“in May 1992 the two sides ‘were very close to reaching an agreement on involvement of the EC Commission in settling the dispute’, but then Hungary refused to take part in the first trilateral talks that were convened, but not held, in Vienna on 18 May [1992].”<sup>125</sup>

It asserts that–

“A meeting in Vienna was scheduled by the EC for 18 May 1992 and Czechoslovakia and Hungary were invited to attend...At the last minute (on 17 May), Hungary announced that it would not attend this meeting.”<sup>126</sup>

2.72. These allegations do not correspond with the facts. What in fact happened was that the ambassadors to Budapest and Prague of the European Commission, attempting to mediate between the parties, orally suggested a meeting in Vienna.<sup>127</sup> In response to this suggestion, the responsible Hungarian Minister, Mr Mádl, agreed to attend on the understanding that the meeting would, in his words:

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<sup>124</sup> See HM, para 3.181.

<sup>125</sup> SM, para 4.86.

<sup>126</sup> SM, para 4.93. No further reference is provided with regard to either EC or Czechoslovak documents.

<sup>127</sup> HM, para 3.171.

“enable the parties to abandon any actions which would prejudice the launching and the [completion] of the work of the Expert Committee. Accordingly it is expected that the meeting will result in the discontinuation of the unilateral works on the one hand and in the non-effectuation of the abrogation of the treaty of 1977 on the other hand.”<sup>128</sup>

However, the Slovak Government declined to take part in a meeting on this basis, and as a result nobody “convened” any meeting in Vienna. It is accordingly not true that Hungary refused to take part in the first trilateral talks; on the contrary, it agreed to do so, on the reasonable basis that neither party would take unilateral action pending the completion of the EC’s work.

*(d) EC involvement prior to the diversion of the Danube*

2.73. In October 1992, the European Commission, learning of the growing tension between the two countries resulting from the accelerated work on Variant C, invited the representatives of the two parties to Brussels for further negotiations. The Slovak Memorial rather overestimates the power of Hungary vis-à-vis the EC in relation to these negotiations. It states that:

“After the failure of these negotiations, and with the damming of the Danube imminent, Hungary *increased its political pressures on members of the EC*...As a result, when trilateral discussions finally did take place in Brussels on 22 October 1992, Czechoslovakia found itself *under pressure from the Commission of the EC* to postpone the damming operation until at least mid-December 1992.”<sup>129</sup>

But “[a]s the Czechoslovak delegation explained [to the Commission], this was technically impossible”.<sup>130</sup>

2.74. The Slovak Memorial asserts that there was a chance even at the last minute before the diversion to reach a compromise. One day before the pontoon-bridge was built over the Danube and after a large number of

<sup>128</sup> For Mr Mádl’s hand-written contemporary note as to the proposed meeting see Hand-written Note of F Mádl, Minister without Portfolio, Regarding the Proposed Vienna Meeting, 16 May 1992; HC-M, Annexes, vol 3, annex 54. The content of this note was read by Mr Mádl in a telephone conversation with the EC Ambassador to Hungary on 16 May 1992.

<sup>129</sup> SM, para 4.95 (emphasis added). No further references are given.

<sup>130</sup> SM, para 4.95.

trucks, carrying large stones, had already lined up at Čunovo, the Czechoslovak delegation – according to the Memorial – proposed at the Brussels meeting on 22 October 1992 that:

“until the completion of the work of the tripartite [Committee] the flow of the Danube would not be diverted from the main riverbed... This, of course, was only a short-term commitment, for the tripartite [Committee] was expected to complete its mission by the end of October...”<sup>131</sup>

An *Aide Mémoire* “tabled at the meeting” in Brussels confirms this statement but goes on to say that:

“Measures taken presently by the CSFR cannot be considered as definite damming of the river. It will serve only to shift the navigation line to the bypass canal.”<sup>132</sup>

2.75. A day earlier, on 21 October 1992, the Hungarian Embassy in Prague received a Czechoslovak *Note Verbale*, which the Slovak Memorial fails to mention. According to the *Note*–

“The [Czechoslovak] Government decided that it will not start the closure of the Danube until the beginning of the work of the Committee, more precisely, until 2 November [1992].”<sup>133</sup>

By contrast the Czechoslovak delegation declared at the meeting in Brussels that the closure of the Danube had to be carried out in October, otherwise “grave ecological catastrophe and flooding” would endanger the surrounding area.<sup>134</sup>

2.76. Thus, the Hungarian delegation learned from Czechoslovakia during the negotiations on 21-22 October 1992 that:

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<sup>131</sup> SM, para 4.96.

<sup>132</sup> *Aide Mémoire* of the CSFR Delegation, 22 October 1992; SM, annex 126. The view that Variant C did not involve diversion of the Danube had been earlier expressed by the Prime Minister, who had said that “the realization of the provisional technical solution does not involve the diverting of the Danube but only the exploitation of part of the Danube waters in a way envisaged in the 1977 Treaty.” Letter of Czechoslovak Prime Minister to the Hungarian Prime Minister, 2 October 1992; SM, para 4.89 & annex 125.

<sup>133</sup> *Note Verbale* from Ministry of Foreign Affairs of the Czech and Slovak Federal Republic to the Embassy of the Republic of Hungary, 21 October 1992 (at 2:30 p.m.); HM, Annexes, vol 4, annex 101.

<sup>134</sup> See HM, para 3.185. SM para 4.95 similarly says that diversion could not be delayed “by even a day”.

- \* The diversion of the Danube would commence as planned on 23 October 1992.
- \* The diversion of the Danube might be postponed until the end of October 1992, while the Committee was at work.
- \* The diversion of the Danube might be postponed until 2 November 1992, until the beginning of the work of the Committee.
- \* The diversion of the Danube was not to be considered as a definite damming of the river, but would serve only to shift the navigation line.

2.77. Faced with these inconsistencies, Hungary did not see any possibility of reaching a compromise. On the following day, it saw the commencement of the diversion.<sup>135</sup>

#### (4) THE LONDON AGREEMENT

2.78. Meanwhile the British President of the EC Council was meeting the representatives of the Visegrád Group (Hungary, Czechoslovakia, Poland) in London. On 28 October 1992 Hungary, Czechoslovakia and the Commission signed Agreed Minutes (known as the London Agreement).<sup>136</sup> Its second paragraph reads as follows:

“The CSFR undertakes to guarantee to maintain the whole [not less than 95%] traditional quantity of water into the whole *Main Channel* riverbed...and to refrain from operating the power plant.”

2.79. The Slovak Memorial does not deny that the London Agreement gave rise to international obligations for the Parties, but it offers the following novel interpretation as to their duration:

“the text of the agreed minutes *shows* that the commitment of Czechoslovakia to maintain at least 95% of the traditional quantity of water into the Danube riverbed and not to operate the Gabčíkovo hydroelectric power plant was intended to relate

<sup>135</sup> The SM puts the commencement of the diversion of the Danube on 24 October 1992. In fact the closure started with the construction of a pontoon-bridge on 23 October 1992.

<sup>136</sup> Agreed Minutes of the Meeting Between the European Commission, the CSFR and Hungary, on the Gabčíkovo-Nagymaros Project, London, 28 October 1992; HM, paras 3.191-3.193, HM, Annexes, vol 3, annex 31.

to a very short period – the three-day period during which the fact finding mission was completed, *i.e.*, until 31 October 1992, when the report was issued. Such an interpretation is confirmed by the text of Czechoslovakia's Aide Memoire tabled at the 22 October meeting."<sup>137</sup>

Czechoslovakia itself never asserted that the Agreed Minutes would be valid for three days only. Neither does the Slovak Memorial explain the reasons for the unusually short life-span of the Agreement.

2.80. It is also difficult to see how the Czechoslovak *Aide Mémoire* "tabled at the 22 October meeting" confirms the Slovak interpretation of the Agreement. That *Aide Mémoire* states that:

"The Czech and Slovak Federal Republic takes commitment that *until the completion of the work of the Tripartite Commission* it will not divert the flow of the Danube river from its present main riverbed, and all the measures which are now underway on the territory of the CSFR will ensure that the whole natural flow of the Danube will pass through the old riverbed. In comparison with the present state the hydrological conditions in the border section of the river will not be changed."<sup>138</sup>

But the words italicised here do *not* appear in the London Agreement. The *Aide Mémoire* cannot be used to contradict the meaning of an Agreement reached in different words some days *after* the diversion of the Danube.

2.81. The subsequent practice of the parties is also inconsistent with Slovakia's view of its duration. On 4 November 1992 the Czechoslovak Government "notified the Commission that it had approved these [M]inutes..."<sup>139</sup> The first three days had already passed, but the Government – far from drawing attention to this crucial point – added that:

"As regards the question of...maintaining of waters in the original riverbed of the Danube, [Czechoslovakia] will respect the positions of the fact-finding mission and the expert working

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<sup>137</sup> SM, para 4.99 (emphasis added to "shows").

<sup>138</sup> *Aide Mémoire* of the CSFR Delegation, 22 October 1992; SM, annex 126 (emphasis added).

<sup>139</sup> SM, para 4.100.

group which will be an important means of interpretation of the commitments arising from the Minutes.”<sup>140</sup>

This entirely contradicts the notion that the commitments in question had *already* expired.

2.82. “However, this issue was rendered irrelevant shortly afterwards” – according to the Slovak Memorial, referring to the results of the trilateral meetings of 27 November and 10-11 December 1992.<sup>141</sup> It fails to provide any explanation as to why this should have been so. It also fails to mention what happened in fact: Czechoslovakia did not provide 95% of the water to the main Danube riverbed at all, even for the first three days. In other words, the Agreed Minutes were breached by Czechoslovakia for every minute of those three days.

2.83. The Slovak Memorial betrays some awareness of the difficulties in explaining why an international commitment was made for three days only. It adds that –

“it is apparent from the face of the document that these [M]inutes were hurriedly prepared and their status between the parties was not entirely clear.”<sup>142</sup>

But as the Court pointed out in the *Case concerning Maritime Delimitation and Territorial Questions (Qatar v Bahrain)*, “international agreements may take a number of forms and be given a diversity of names”; what is crucial are the actual terms of the instrument and the surrounding circumstances. If these go beyond a description of discussions and “enumerate the commitments to which the Parties have consented” they will constitute an international agreement.<sup>143</sup> And the application of this principle to the London Agreement was expressly accepted by Czechoslovakia at the time: for it, the issue was rather how to interpret “*the commitments arising from the Minutes*”,<sup>144</sup> of which the

<sup>140</sup> Letter from the Czechoslovak Government [unsigned] to the Vice-President of the Commission of the European Communities, Mr Frans Andriessen, 4 November 1992; SM, annex 129, cited in SM, para 4.100.

<sup>141</sup> SM, para 4.102.

<sup>142</sup> SM, para 4.100.

<sup>143</sup> ICJ Reports 1994 at p 121, citing *Aegean Sea Continental Shelf* case, ICJ Reports 1978 at p 39.

<sup>144</sup> Letter from the Czechoslovak Government [unsigned] to the Vice-President of the Commission of the European Communities, Mr Frans Andriessen, 4 November 1992; SM, para 4.100, annex 129; above, paragraph 2.81 (emphasis added).

commitment as to the quantity of water to be kept in the Danube was by far the most important.

(5) BRINGING THE CASE BEFORE THE INTERNATIONAL COURT OF JUSTICE

2.84. At a certain point Hungary came to the conclusion that the dispute could not be settled by further negotiations and recommended bringing the case before this Court. The Slovak Memorial admits that it was Hungary which initiated this proposal. On the other hand it mistakenly states that Hungary made this proposal on 18 August 1992 and only with regard to Variant C:

“The question proposed to be submitted concerned only proceeding with Variant ‘C’, as if this alone comprised the dispute between Czechoslovakia and Hungary...”<sup>145</sup>

2.85. In fact, the Hungarian Prime Minister had proposed earlier, in a letter dated 6 August 1992, to bring the whole dispute before the Court. Mr Antall wrote that:

“The construction [of Variant C], continuing without interruption, strengthens the belief that the Czech and Slovak parties do not intend to resolve the problem within the framework of bilateral negotiations. For this reason the Hungarian Government will consider the involvement of highly respected non-partisan authorities in the resolution of the Danube dispute, first of all the International Court of Justice in The Hague would be advisable...In this spirit, I emphasise that the Government of the Republic of Hungary is ready to enter into bilateral negotiations concerning a settlement of the consequences *arising from the termination of the 1977 Treaty.*”<sup>146</sup>

Thus the Hungarian Prime Minister proposed bringing the complete case of the Gabčíkovo-Nagymaros Project in its entirety before the Court and not only with regard to Variant C. His proposal received no response.

2.86. The specific proposal with regard to Variant C was sent to Czechoslovakia on 18 August 1992, because the Hungarian Prime

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<sup>145</sup> SM, para 4.85.

<sup>146</sup> Letter from Hungarian Prime Minister J Antall to Czechoslovak Prime Minister J Strásky, 6 August 1992; HM, para 3.168; Annexes, vol 4, annex 90 (emphasis added).

Minister had learned in the meantime that the Czechoslovak representative to the Danube Commission had announced officially that the diversion of the Danube would begin on 15 October 1992.<sup>147</sup> The Czechoslovak Prime Minister – without responding to Mr Antall's earlier letter – expressed his dissatisfaction in a letter dated 2 October 1992. In his view, “[t]he process of seeking means of settlement of the dispute would thus again be prolonged...”<sup>148</sup> Rather than seeking to expand the terms of reference so as explicitly to include the whole dispute, he simply refused to discuss a Special Agreement.

2.87. The Slovak Memorial – failing to refer to the first Hungarian proposal – views the second as a further kind of “pretext”:

“It was possibly through politeness that the Czechoslovak Prime Minister did not categorise Hungary's new tactic as deliberately dilatory: in fact, the Hungarian proposal to *divert* attention to a different set of negotiations...had the additional, if disguised, aim of postponing the damming of the Danube for yet another year.”<sup>149</sup>

And a similar approach to the Hungarian offer of judicial settlement underlay the letter dated 2 October 1992 from the Czechoslovak Prime Minister to the Hungarian Prime Minister. According to that letter:

“The opening of new talks on referring the dispute to the International Court of Justice in The Hague would mean impeding the results of the talks held so far between the two sides and the EC Commission.”<sup>150</sup>

2.88. In fact no result had been reached between the two sides and the EC Commission in the trilateral talks, due to the Czechoslovak refusal to comply with Mr Andriessen's third condition.

<sup>147</sup> Letter of Mr R Chmel, Vice President of the Danube Commission to Mr H Strasser, Director, Secretariat of the Danube Commission, 5 August 1992; HM, para 3.172; Annexes, vol 4, annex 88.

<sup>148</sup> Letter from the Czechoslovak Prime Minister to the Hungarian Prime Minister, 2 October 1992; SM, para 4.88 & annex 125.

<sup>149</sup> SM para 4.87 (emphasis added).

<sup>150</sup> Letter of the Czechoslovak Prime Minister to the Hungarian Prime Minister, 2 October 1992; SM, para 4.89 & annex 125.



**SECTION D: THE CONTINUING HISTORY OF VARIANT C**

2.89. On the subject of Variant C itself, there is a clear discrepancy between the parties as to the history of its planning and construction. This essentially factual issue will be dealt with here, leaving an assessment of the scientific and environmental impacts of Variant C to the next chapter.

2.90. According to the Slovak Memorial, Variant C was adopted reluctantly, only after lengthy consideration of various alternatives, and after public discussions of which Hungary was kept informed. In particular, Variant C is depicted as a response to the Hungarian Parliament's decision on 23 April 1991 empowering the Hungarian Government to negotiate the termination of the 1977 Treaty.<sup>151</sup>

2.91. Thus according to the Slovak Memorial, Czechoslovakia considered a "series of alternatives" as a response to the Hungarian withdrawal from the Project:

"In total, Czechoslovakia considered six main variants...carefully studied and assessed for feasibility, without any preconception as to the suitability of any particular variant. Czechoslovakia's aim was to find the variant that *would be acceptable to both parties*...taking into account specific anxieties about the environment."<sup>152</sup>

Variant C had three, Variant D had as many as six sub-variants.<sup>153</sup> The Slovak Memorial provides a short description of these, and recalls the conclusion that only Variant C was appropriate, despite the fact that it was not "acceptable to both parties". But nothing was done without careful consideration:

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<sup>151</sup> SM, paras 5.24, 5.25.

<sup>152</sup> SM, para 5.14 (emphasis added).

<sup>153</sup> SM, para 5.19.

"The consideration of variants was carried out openly; and at all stages, Hungary and Czechoslovakia were meeting at both the political and technical level, at some of which meetings the variants were naturally discussed."<sup>154</sup>

"The evidence of Slovakia's cooperation with Hungary regarding Variant 'C' is ample..."<sup>155</sup>

2.92. Closer analysis shows that plans for the unilateral diversion of the Danube were made much earlier, and most probably were under development continuously from summer 1989 onwards. There is no evidence that Czechoslovakia ever studied in depth the various alternatives other than Variant C. The planning and construction of the latter has always been a confidential matter in Czechoslovakia, hidden as much as possible from public view. In particular, throughout this process little or no information was made available to Hungary.

#### (1) THE EARLY PLANNING AND IMPLEMENTATION OF VARIANT C

2.93. It should be stressed that the "provisional substitute technical solution" frequently alluded to in the discussions of 1989 was nothing other than the first phase of Variant C, although the term "Variant C" was not then current. The technical solutions actually carried out up to the commencement of construction on the middle section of the Čunovo dam in 1994 precisely correspond to the scheme described at the meeting of Deputy Prime Ministers Medgyessy and Hrivnák on 9 September 1989.<sup>156</sup> The concept of diverting the Danube at the section where both embankments are under Czechoslovak jurisdiction, and of utilising the joint investment solely for Czechoslovak economic purposes, was the unchanged core of Czechoslovak plans. This amounted to an attempt to exclude the other riparian State from control over the upstream sector of the Project and over the water discharge into the boundary river. No doubt some details of Variant C were only elaborated later – even after the actual construction, if regard be had to the date on blueprints handed over to Hungary in December 1993. But this does not alter the fact that

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<sup>154</sup> SM, para 5.25.

<sup>155</sup> SM, para 7.78.

<sup>156</sup> View of the Czechoslovak Party; HM, Annexes, vol 4, annex 25.

the developments from the first official threat of a unilateral solution in August 1989<sup>157</sup> until the diversion of the Danube in October 1992 form one barely interrupted continuum.

2.94. This interpretation is confirmed by the Slovak Memorial itself, which treats the 1989 threats as the background to Variant C.<sup>158</sup> It reveals that approximately four months after announcing its intention to proceed to a unilateral diversion, Czechoslovakia “stopped design work on the provisional solution on Slovak territory”.<sup>159</sup> Given the rapid construction of the first phase of Variant C (requiring less than 2 years but said to cost more than CSK 2.5 billion<sup>160</sup>), it seems likely that four months of design work brought the planned solution to a fairly advanced stage. This impression is strengthened by the fact that design costs do not appear among the costs related to Variant C enumerated in the Slovak Memorial,<sup>161</sup> although all manner of other costs, such as the cost of protecting the Project structures, “[i]ncreased overhead costs, additional studies and research” are separately listed.<sup>162</sup>

2.95. The early start on Variant C is reflected in a contemporary press report that:

“In connection with the Hungarian decision to interrupt work on Gabčíkovo water project and not dam the river at Dunakiliti, Czechoslovakia has been forced to apply a temporary solution as a substitute. The position for a new right-bank dam for a new navigation channel began to be marked out on 13th November [1989].”<sup>163</sup>

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<sup>157</sup> HM, para 3.88.

<sup>158</sup> SM, para 7.07.

<sup>159</sup> SM, para 7.07 (emphasis added).

<sup>160</sup> According to SM, para 9.37. This is equivalent to US\$ 76.5 million.

<sup>161</sup> SM, para 9.37.

<sup>162</sup> SM, para 9.34.

<sup>163</sup> BBC, Summary of World Broadcasts, EE/W0105 A/I, 30 November 1989, referring to Prague 1730 gmt, 13 November 1989; HC-M, Annexes, vol 3, annex 83.

2.96. It is instructive to set out here a short chronology of Variant C. This is distilled from documents and the media, and covers the period prior to the Hungarian Parliament's decision of 23 April 1991 which, according to Slovakia, triggered Variant C.<sup>164</sup>

**23 August 1989:** J Obložinský, Deputy Director of the Water Conservancy Project Enterprise, Bratislava, says that in the following week his company will "survey the terrain" for the alternative "technical solution".<sup>165</sup>

**1 September 1989:** J Obložinský says that the "technical alternative" is "at the planning and design stage".<sup>166</sup>

**9 September 1989:** Slovak Premier and Federal Deputy Premier Pavel Hrivnák states that if Hungary further violates the 1977 Treaty "Czechoslovakia will begin a technical solution exclusively on her own territory which would ensure the operation of the water power system at Gabčíkovo".<sup>167</sup>

**12 October 1989:** Czechoslovak Premier Adamec states that his "own conviction is that if we are unable to thrash out an agreement by 31st October then on 1st November we ought to begin work on our solution on our sovereign territory".<sup>168</sup>

**13 November 1989:** According to a Prague radio report: "The position for a new right-bank dam for a new navigation channel began to be marked out on 13th November."<sup>169</sup>

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<sup>164</sup> SM, paras 5.24-5.25.

<sup>165</sup> *Práce* (Bratislava), 23 August 1989, as cited in BBC, Summary of World Broadcasts, EE/W0093 A/1, 7 September 1989; HC-M, Annexes, vol 3, annex 80.

<sup>166</sup> *Rudé Právo* (Bratislava), 1 September 1989, as cited in BBC, Summary of World Broadcasts, EE/W0095 A/1, 21 September 1989; HC-M, Annexes, vol 3, annex 79.

<sup>167</sup> BBC, Summary of World Broadcasts, EE/W099 A/1, 19 October 1989, referring to CTK, 1332 gmt, 11 October 1989; HC-M, Annexes, vol 3, annex 81.

<sup>168</sup> BBC, Summary of World Broadcasts, EE/W0100 A/1, 26 October 1989, referring to Prague home service, 1730 gmt, 12 October 1989; HC-M, Annexes, vol 3, annex 82.

<sup>169</sup> BBC, Summary of World Broadcasts, EE/W0105 A/1, 30 November 1989, referring to Prague 1730 gmt, 13 November 1989; HC-M, Annexes, vol 3, annex 83. The report is headed "Beginning of Czechoslovak work on new shipping channel on Danube near Gabčíkovo".

- 15 December 1989:** Preparatory work on the modified alternative solution is suspended "to show Czechoslovakia's willingness to complete the Gabčíkovo-Nagymaros system jointly".<sup>170</sup>
- 25 April 1990:** Following two Slovak reports critical of the alternative technical solution, the Slovak Government "orders [Vodohospodárska Výstavba] to scale down constructions". The main state contracting company, Hydrostav, "rejects the order".<sup>171</sup>
- 25 May 1990:** Slovak Ministers fail to agree to scale down constructions in accordance with the directive of 25 April 1990 and construction continues.<sup>172</sup>
- 27 September 1990:** "Czechoslovak energy officials have confirmed that the hydro power complex on the Danube at Gabčíkovo will go into service in 1991. Earlier the government *slowed* work on the Project due to cost overruns and Hungary's decision to suspend the Nagymaros project..."<sup>173</sup>
- 17 January 1991:** It is reported that on this day the Slovak Government "approved further progress in the construction" of the alternative solution.<sup>174</sup>
- 2 April 1991:** "In Slovakia the construction of the so-called 'version C' of the [Gabčíkovo] power station has begun..."<sup>175</sup>
- 5 April 1991:** Slovak Vice Premier J. Čarnogurský states that Slovakia has "done no work whatsoever, that they had not begun the

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report is headed "Beginning of Czechoslovak work on new shipping channel on Danube near Gabčíkovo".

- <sup>170</sup> ČTK, 15 December 1989, as reported in BBC, Summary of World Broadcasts, EE/W0109 A/1, 4 January 1990; HC-M, Annexes, vol 3, annex 84.
- <sup>171</sup> East-West Centre, "Slovakia. The Gabčíkovo Water Works", January 1993, p 6; HC-M, Annexes, vol 3, annex 93.
- <sup>172</sup> East-West Centre, "Slovakia. The Gabčíkovo Water Works", January 1993, p 6; HC-M, Annexes, vol 3, annex 93.
- <sup>173</sup> Power Europe, 27 September 1990; HC-M, Annexes, vol 3, annex 86 (emphasis added).
- <sup>174</sup> BBC, Summary of World Broadcasts, EE/0989 B/5, 6 February 1991, referring to Prague home service 1500 gmt, 4 February 1991; HC-M, Annexes, vol 3, annex 87. The report is headed "Slovak government approves completion of Gabčíkovo-Nagymaros".
- <sup>175</sup> Budapest Home Service, 1600 gmt, 2 April 1991; cited in BBC, Summary of World Broadcasts, EE/1037 A2/2, 4 April 1991; HC-M, Annexes, vol 3, annex 89.

construction of the canal which would divert the Danube onto Slovak territory".<sup>176</sup>

2.97. One further point concerns the relative timing of the plans for Variant C and studies of its environmental impact. The Slovak Memorial states that a large number of studies on environmental impact were made "from 1991", with the implication that everything had started after the 23 April 1991 Resolution of the Hungarian Parliament.<sup>177</sup> But the Hungarian authorities learned as early as February 1991 that the Slovak Government had already approved the plans for Variant C.<sup>178</sup> That decision could not have been taken without a major planning exercise at the level of both construction and design: the evidence that this process began no later than 1989 was reviewed in the preceding paragraphs. If environmental studies were indeed carried out only after April 1991, it was much too late to stop the process.

## (2) "CO-OPERATION" WITH HUNGARY ON VARIANT C

2.98. According to the Slovak Memorial, Slovakia was fully prepared to co-operate with Hungary in respect of Variant C: "it is Slovakia who has complied with, and Hungary who has ignored...the general obligation to cooperate..."<sup>179</sup> The Memorial does not explain why the co-operation of the victim of an internationally wrongful act is required, nor does it provide any reference regarding the "total" non-co-operation of Hungary.

2.99. "Slovakia's cooperation with Hungary regarding Variant 'C'"<sup>180</sup> should have included, as a minimum, the provision of information both about Variant C itself and the various alternatives to it. The Slovak Memorial seeks to suggest that there was such co-operation.<sup>181</sup> In fact,

<sup>176</sup> Budapest Home Service, 1400 gmt, 5 April 1991; cited in BBC, Summary of World Broadcasts, EE/1042 A2/3, 10 April 1991; HC-M, Annexes, vol 3, annex 90.

<sup>177</sup> SM, para 5.25.

<sup>178</sup> See *Aide Mémoire* of the Negotiations Between the Experts of the Hungarian and the Slovak Academies of Sciences, signed by Dr M. Ruzička, President of the Environment Committee of the Slovak Academy of Sciences, and Mr Berczik, Director of Research Institute for Ecology and Botany of the Hungarian Academy of Sciences, 13-14 February 1991, penultimate para; HM, Annexes, vol 4, annex 43. See also HM, para 3.122.

<sup>179</sup> SM, para 7.87.

<sup>180</sup> SM, para 7.78; above, paragraph 2.91.

<sup>181</sup> SM, para 5.25; above, paragraph 2.91.

the Slovak Memorial was almost the first official document handed over to Hungary which contains a brief description of various alternatives and a longer description of Variant C. Only a list of seven "hypothetical" alternatives had been presented on a single occasion by the Czechoslovak Environment Minister to his Hungarian counterpart in September 1990.<sup>182</sup> On other occasions the Czechoslovak negotiators always stressed that either the Original Project should be completed, or the Czechoslovak Government would proceed with the construction of Variant C.<sup>183</sup> Hungary has never been informed about the details of the discussion of alternatives, which was not carried out openly. The Slovak Memorial fails to provide any reference to the date and venue of such discussions, or of the bilateral meetings with Hungarian experts. As far as Variant C was concerned, the "ninety studies" carried out and listed in Annex 36 of the Slovak Memorial<sup>184</sup> have never been presented to Hungary.

2.100. In fact Czechoslovakia never presented any plans or data regarding the diversion, nor did Slovakia do so after its independence until as late as December 1993.<sup>185</sup> Hungary repeatedly requested a detailed description of the structure of Variant C. For example, such a request was made at a meeting of the Joint Operative Group in 1991, but the Czechoslovak delegate stated that he was not empowered to provide these descriptions.<sup>186</sup> Hungary again requested the detailed plans of construction and documentation in December 1993. Slovakia then handed over some maps, drawings and brochures. Responding to further Hungarian requests, Slovakia stated on 1 February 1994 in a *Note Verbale* that other documents could be obtained from the Governmental Plenipotentiary.<sup>187</sup> By contrast the Plenipotentiary stated that:

"the Slovak Republic has not authorised me...to release any fundamental information to the [Hungarian] party in relation to the proceedings before the International Court of Justice".<sup>188</sup>

No documents were subsequently supplied.

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<sup>182</sup> See HM, paras 3.123-3.124.

<sup>183</sup> See HM, para 3.124.

<sup>184</sup> SM, para 5.25 & annex 36.

<sup>185</sup> HM, para 3.194.

<sup>186</sup> 82nd meeting of the Joint Operative Group from 17 to 21 June 1991.

<sup>187</sup> HM, Annexes, vol 4, annex 136.

<sup>188</sup> Letter from Mr Kocinger, Slovak Governmental Plenipotentiary, to Mr L Zsámboki, Managing Director of OVIBER; HM, Annexes, vol 4, annex 138.

## (3) LACK OF LEGAL CANDOUR

2.101. Accompanying this lack of co-operation as to the technical and planning elements of Variant C was a failure to elaborate on its legal justification. The Slovak Memorial does not list or quote any Czechoslovak letter or diplomatic correspondence spelling out the reasons why Variant C is consistent with the international law. Czechoslovakia was always content to state flatly – as Prime Minister Čalfa did in one of his letters quoted by the Slovak Memorial – that: “In any case, this decision [of the Czechoslovak Government on 12 December 1991 to complete Variant C] does not violate international law...”<sup>189</sup> The only basis offered in these communications is – to quote the same letter – that:

“Provided these conclusions and results of monitoring the test operation of the Gabčíkovo part confirm that negative ecological effects exceed its benefits the Czechoslovak side is prepared to stop work on the provisional solution and continue the construction upon mutual agreement.”<sup>190</sup>

2.102. This sentence contains a certain contradiction: the letter promises cancellation of the work on Variant C *after* the Gabčíkovo sector had been put into operation, while any test operation presupposes the completion of Variant C *before* that event. Such contradictions were not reassuring. It was most unlikely that Czechoslovakia would come to the conclusion that “the negative ecological effects exceeded the benefits” of the operation after having incurred further expenses amounting to many millions of dollars. This was all the more so since the most important environmental problems raised by the Barrage System were long-term in nature. Thus the “legal” approach adopted by Czechoslovakia amounted to a pre-judgement that no scientific or other investigations would stand in the way of the operation of Variant C. And it was entirely consistent with this “legal” approach that the studies of environmental impact should post-date, rather than precede, the definitive decision to go ahead with the Project.<sup>191</sup>

2.103. Nevertheless, it was maintained continuously by Czechoslovakia that construction of Variant C would be a “temporary solution” only. This was one of the official names of Variant C; even Chapter V of the

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<sup>189</sup> Letter from the Czechoslovak Prime Minister to the Hungarian Prime Minister, 23 January 1992; SM, para 4.75 & annex 102.

<sup>190</sup> Letter from the Czechoslovak Prime Minister to the Hungarian Prime Minister, 23 January 1992; SM, annex 102. This is quoted in SM, para 4.75.

<sup>191</sup> See above, paragraph 2.97.



Slovak Memorial is entitled "The Temporary Solution: Variant 'C'".<sup>192</sup> Czechoslovakia always maintained that if Hungary returned to the Original Project, it would restore the *status quo ante*.

2.104. The Slovak Memorial repeats this assertion on a number of occasions.<sup>193</sup> Elsewhere, however, it no longer foresees demolishing the structures of Variant C under any circumstances:

"Once the Nagymaros section is completed...all weirs at Čunovo complex may be opened. The reservoir in accordance with the 1977 Treaty would therefore be created. The new reservoir dyke, constructed for Variant 'C' would be surrounded by water but could fulfil the function of directing the water flow inside the reservoir...[As far as navigation would concern] auxiliary navigation locks at the Dunakiliti weir would make possible the navigation between the reservoir and the *Main Channel* riverbed."<sup>194</sup>

In other words, no *status quo ante* is to be restored under any circumstances. Apart from the auxiliary locks the structures of Variant C would remain untouched in the same place. The technical issues at stake here are developed in Chapter 3 of this Counter-Memorial,<sup>195</sup> its legal consequences in Chapter 7.<sup>196</sup>

2.105. In connection with Variant C the Slovak Memorial also refers to Hungarian allegations which have never been made. For example, it states that:

"It is a strange phenomenon for a State to insist that it has lost territory to a neighbour when the neighbour has made no such claim...But this is the position adopted by Hungary – partly, it would seem, to secure some sort of psychological advantage..."<sup>197</sup>

Elsewhere, and to rather different effect, it asserts:

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192 SM, p 187.

193 See e.g., SM, paras 7.28, 7.29, 7.44, 7.91.

194 SM, paras 5.65-5.66.

195 See below, paragraphs 3.115-3.122.

196 See below, paragraphs 7.09.

197 SM, para 7.51.

“Hungary...proclaims that Slovakia...has altered the frontier to Hungary’s advantage and thereby violated its territorial integrity. This claim can only be described as surrealistic.”<sup>198</sup>

2.106. Hungary has never claimed that it lost territory, let alone that its frontiers were altered to its advantage. The Slovak Memorial does not quote any source which would support this allegation. Hungary claimed merely that the Danube has lost most of its water and that “Czechoslovakia’s unilateral action changed the characters of the border in a way which the 1977 Treaty certainly did not authorise”.<sup>199</sup> In form and in law the line of the original boundary remained unchanged, while its *character* as a boundary river was drastically affected.<sup>200</sup>

#### **SECTION E: NEGOTIATIONS FOR A TEMPORARY WATER MANAGEMENT REGIME AND ARTICLE 4 OF THE SPECIAL AGREEMENT**

2.107. According to Article 4 of the Special Agreement:

“The Parties agree that, pending the final Judgement of the Court, they will establish and implement a temporary water management regime for the Danube.”

Hungary always considered this Article a central and inseparable part of the Special Agreement. The implementation of Variant C deprived the main riverbed of 80% of its water. A temporary water management regime was, and remains, absolutely necessary to reduce the damage resulting on the Hungarian side of the river.

2.108. By contrast Slovakia does not seem to consider Article 4 as a matter for the Court. The Slovak Memorial only touches upon this issue briefly,<sup>201</sup> without commenting on developments after April 1993 and on why an agreement has not yet been reached. It states merely that:

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<sup>198</sup> SM, para 7.62 (emphasis in original).

<sup>199</sup> HM, para 7.31.

<sup>200</sup> See HM, paras 3.09, 3.16, 3.25, 3.32, 3.37, for the fruitless pre-1977 negotiations about a change of boundaries associated with the Project, and HM, para 10.111 for the legal conclusion that the 1977 Treaty was not one relating to the regime of a boundary.

<sup>201</sup> See SM, paras 5.41-5.43.

"The *hope* is to arrive at a temporary agreement... This *hoped for agreement* will determine the amount of water to be retained in the old riverbed."<sup>202</sup>

That which in the case of the 1977 Treaty is a rigid and immutable obligation – *pacta sunt servanda* – is reduced in the case of Article 4 to a mere hope.

2.109. The Hungarian Memorial dealt with this issue in detail,<sup>203</sup> outlining the positions of the parties and the experts of the European Commission. It concluded by stating that:

"At the time of the completion of this Memorial [Spring 1994] the vegetation period is imminent, but there is no sign at all of Slovak's compliance with Article 4 of the Special Agreement."<sup>204</sup>

This was primarily due to the fact that in February 1994 Slovakia refused to accept the compromise presented by the experts of the European Commission.<sup>205</sup> Since then, the situation has not changed. Slovakia had not shown any interest whatsoever in increasing the water discharge to the main Danube riverbed. In fact the average discharge has been reduced.

2.110. In Spring 1994, the growing season being imminent, Hungarian experts examined the possibilities of providing additional water to the Szigetköz region. The Szigetköz was facing its second growing season since the diversion of the Danube and was ecologically in a very serious situation. Referring to the recommendations of the EC experts – who suggested both increasing the water supply to the main riverbed and the construction of underwater weirs – Slovakia suggested that the latter should be built in the main Danube riverbed, thus enhancing the water level.<sup>206</sup> However, Slovakia did not promise any increase in the water discharge at all. Hungarian experts felt that underwater weirs alone would not solve the problem. The EC experts agreed.<sup>207</sup>

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<sup>202</sup> SM, para 7.71 (emphasis added).

<sup>203</sup> HM, paras 3.187-3.223.

<sup>204</sup> HM, para 3.223.

<sup>205</sup> HM, para 3.221. Hungary accepted the EC proposal in a letter of 14 January 1994: see HM, Annexes, vol 4, annex 132, and see also HM, paras 3.218-3.219.

<sup>206</sup> See Letter from Mr Jan Lišuch, Slovak State Secretary for Foreign Affairs, to Mr Pablo Benavides, EC Director for External Political Affairs, 8 February 1994; HM, Annexes, vol 4, annex 137.

<sup>207</sup> See HM, para 3.222; HM, Annexes, vol 4, annex 139.

2.111. The issue was also discussed by the Hungarian Parliament which passed a Resolution on 29 March 1994. The Parliament requested the Government to continue efforts aimed at the conclusion of an agreement on the Temporary Water Management Regime with Slovakia. The Resolution provided that:

“Pending the conclusion of the [Temporary Water Management Regime] treaty...the water supply to the branch system of the Szigetköz shall be ensured by an appropriate sharing of water supplied to the Mosoni Danube and by pumping from the Danube.”<sup>208</sup>

2.112. Accordingly, Hungary started pumping water from the main riverbed, though aware of the fact that this would not provide a solution for the problems even prior to the judgement of the Court. This was a measure which was short-term and reversib[e]. Slovakia, however, expressed sharp concern about the Resolution. In a *Note Verbale* of 8 April 1994 it stated that:

“the Slovak Republic has learned with great concern about the recent decision of the Hungarian Parliament which prevented again the construction of two underwater weirs...”

It described this as a “categorical refusal” of the EC experts’ recommendation. The *Note* did not promise more water to the main riverbed but said that Slovakia was ready to enter negotiations toward the temporary water management regime.<sup>209</sup> Hungary responded in a *Note Verbale* dated 14 April 1994, pointing out that the Parliament’s refusal to construct underwater weirs is entirely consistent with the EC recommendation, because—

“the Resolution [of the Parliament] deals only with the position pending the conclusion of an agreement on the temporary water management regime [with Slovakia]...The [EC] experts had recommended the construction of two weirs at different places, in connection with and subsidiary to a substantial increase in the [water] discharge regime.”<sup>210</sup>

<sup>208</sup> Resolution of the National Assembly On the Necessary Measures Due to the Unilateral Diversion of the Danube, 29 March 1994; HC-M, Annexes, vol 3, annex 59.

<sup>209</sup> *Note Verbale* from the Ministry of Foreign Affairs of the Slovak Republic to the Embassy of the Republic of Hungary, 8 April 1994; HC-M, Annexes, vol 3, annex 60.

<sup>210</sup> *Note Verbale* from the Ministry of Foreign Affairs of the Republic of Hungary to the Embassy of the Slovak Republic, 14 April 1994; HC-M, Annexes, vol 3, annex 62.

2.113. In further exchanges, a Hungarian *Note Verbale* of 27 May 1994 repeatedly called the attention of Slovakia to the wording of the above Resolution of the Parliament which stated that:

“any provisional technical measures shall, *pending the conclusion of the agreement on the temporary water management regime*, be decided by Parliament and should be *subject to the actual amount of the water to be discharged* by the Slovak side.

The resolution was in no sense intended to prevent the application of temporary technical measures whatever they may be, provided that it can be considered and decided in the context of the main factor of the regime, namely the amount of water discharge.”<sup>211</sup>

2.114. Slovakia responded in a *Note Verbale* of 8 June 1994, which stated that “[t]he discharge in the old river bed is not a goal in itself”.<sup>212</sup>

2.115. Hungarian elections were held in the spring of 1994, resulting in a new coalition government. Its Prime Minister, Gyula Horn, visited his Slovak counterpart Josef Moravčík on 5 August 1994 in Bratislava, where they discussed *inter alia* the problems of the temporary water management regime. Mr Horn described the situation in the Szigetköz region and demanded an increase in water supply. Mr Moravčík said that Slovakia – due to technical conditions and the need to maintain the recent level of energy production at Gabčíkovo – did not see any possibility of increasing the discharge in the main riverbed. However, Slovakia seemed to be ready to release some more water into the Mosoni Danube.

2.116 In its *Note Verbale* of 8 June 1994, Slovakia declared a willingness to increase the discharge at the Mosoni Danube intake structure.<sup>213</sup> At the bilateral expert meeting on 24 August 1994 Slovakia once again undertook

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<sup>211</sup> *Note Verbale* from the Ministry of Foreign Affairs of the Slovak Republic to the Embassy of the Republic of Hungary, 27 May 1994; HC-M, Annexes, vol 3, annex 69 (emphasis in the original).

<sup>212</sup> *Note Verbale* from the Ministry of Foreign Affairs of the Slovak Republic to the Embassy of the Republic of Hungary, 8 June 1994; HC-M, Annexes, vol 3, annex 70 (emphasis added).

<sup>213</sup> As the *Note Verbale* of 25 May 1994 put it “The Ministry of Foreign Affairs of the Slovak Republic uses this opportunity to inform the Ministry of Foreign Affairs of the Republic of Hungary, that starting mid June 1994 technical conditions will be created on the Slovak territory to allow the increase of the discharge of water from the reservoir to the Mosoni Danube. The discharge could be increased from 20 m<sup>3</sup>/s up to 40 m<sup>3</sup>/s.” HC-M, Annexes, vol 3, annex 68.

to double the discharge into the Mosoni Danube from 20 to 40 m<sup>3</sup>/s.<sup>214</sup> However, early September witnessed an increase to only 25 - 35 m<sup>3</sup>/s. Currently (mid-November 1994) for unexplained "technical" reasons the discharge is again about half of what Slovakia had undertaken to provide in August.

2.117 Another issue taken up by the 24 August meeting was the Hungarian proposal to increase water supply to the Szigetköz to 50-70 m<sup>3</sup>/s. This would require the installation of a new water intake structure in the reservoir dyke which currently has only a 40 m<sup>3</sup>/s discharge capacity and is plagued by technical problems. The Slovak side is presently considering the proposal, while maintaining limited discharge through the Mosoni Danube intake structure.

#### **SECTION F: CONCLUSION – SLOVAKIA'S RELIANCE ON BAD FAITH ARGUMENTS IN THE LIGHT OF THE HISTORY OF THE DISPUTE**

2.118. As shown in Section A of this Chapter,<sup>215</sup> a good part of the Slovak argument is based on a claim of bad faith. According to Slovakia, Hungary has for decades been animated by a secret desire to disregard its international obligations with respect to the Gabčíkovo-Nagymaros Project, and this for reasons wholly unrelated to any environmental concerns, concerns which the Memorial treats as minor or even spurious. Such a broad and general contention can in no way replace a rational demonstration of the bad faith attributed to Hungary.

2.119. As stated by this Court, "one of the basic principles governing the creation and performance of legal obligations, whatever their source, is the principle of good faith."<sup>216</sup> The principle of good faith is reiterated, for example, in Article 2(2) of the United Nations Charter, and in the Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States. The fundamental character of this principle explains precisely why a state should not lightly accuse another of having acted in bad faith. A claim of bad faith has to be clearly proved by substantial evidence.<sup>217</sup>

<sup>214</sup> See Memorial on the Expert Talks Held in Bratislava on 5 August 1994, 24 August 1994; HC-M, Annexes, vol 3, annex 73.

<sup>215</sup> Above, paragraphs 2.02-2.08.

<sup>216</sup> *Nuclear Tests Case*, ICJ Reports 1974, p 268. See also *Border and Transborder Armed Actions Case*, ICJ Reports 1988, p 105.

<sup>217</sup> For the most recent of many applications by the Court of this requirement see *Case concerning Certain Phosphate Lands in Nauru*, ICJ Reports 1992 p 240 at p 255.

2.120. In other words, it is a well established rule of international law that the bad faith of a state cannot be presumed. This is especially so where, as in the present case, the allegation of bad faith is such a diffuse and manifold one. Thus the onus of proof of bad faith is placed on the state which invokes it. As stated by Professor Elisabeth Zoller:

“Il faut remarquer que la bonne foi étant toujours présumée, c’est à la victime qu’il appartient de rapporter la preuve d’une intention malveillante et que celle-ci ne sera admise que sur la base d’une imputabilité de la faute à un agent déterminé.”<sup>218</sup>

2.121. Not only has this onus of proof not been discharged, but this Chapter has demonstrated Hungary’s good faith in relation to the dispute. In particular the constant efforts made by Hungary to propose sustainable solutions for amending the Original Project through negotiations with its counterpart have been recalled and illustrated.<sup>219</sup>

2.122. Slovakia argues that Hungary raised the environmental concerns only to divert attention from its own failings;<sup>220</sup> this ignores the fact that the Hungarian ecological concerns were (and still are) supported not only by the Hungarian Academy of Science and Hungarian non-governmental-organisations<sup>221</sup> but also by international NGOs acting in the field of the protection of the environment and by many international experts active in the same field.

2.123. The Slovak argument implies that more than 230 non-governmental organisations (including Greenpeace, the Sierra Club and World Wildlife Fund USA) already in 1987,<sup>222</sup> then Ecologia (USA) and the World Wildlife Fund (Germany) in 1989,<sup>223</sup> then Equipe Cousteau, commissioned by the European Bank for Reconstruction and Development in March 1993,<sup>224</sup> had as their purpose to participate, together with the Hungarian Government, in a collective ecological

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<sup>218</sup> E Zoller, *La bonne foi en droit international public* (Paris, Pedone, 1977) p 247. On the principle of good faith generally, see RY Jennings & A Watts (eds), *Oppenheim’s International Law* (9th edn, Longmans, London, 1992) vol I, p 38.

<sup>219</sup> See above, paragraphs 2.26-2.56.

<sup>220</sup> See e.g., SM, paras 3.52, 3.56.

<sup>221</sup> See HM, appendices 1-3, pp 345-490.

<sup>222</sup> HM, para 3.58.

<sup>223</sup> See respectively HM, para 3.74; HM, Annexes, vol 5 (part I) annexes 5 & 6; and HM, para 3.94.

<sup>224</sup> See HM, Annexes, vol 5 (part I), annex 12 and HM, Annexes, vol 5 (part II), annex 16.

exercise of "bad faith". On the contrary their concerns were genuine, and were shared by prominent Czechoslovak figures, by Czech and Slovak non-governmental organisations, and by responsible governmental bodies both in Prague and Bratislava.

2.124. Moreover the concerns have been recently reaffirmed by the World Wildlife Fund (WWF), a respected non-governmental organisation which had been specifically briefed on the Slovak position and had specifically undertaken to consider that position carefully and *de novo*. In particular the WWF had been presented with a detailed report by Professor I Mucha, the head of Groundwater Consulting Ltd.<sup>225</sup> In response, the WWF concluded:

"the report of Prof. Mucha is seriously limited. It is concerned with only a partial aspect of the changes brought about by the drastic alteration of the hydrology, deals with only a part of the area affected, and encompasses a very limited time horizon. It therefore does not invalidate WWF's scientifically based argumentation.

In the light of these facts, WWF can see no reason to change its position laid out in its study published in January 1994..."<sup>226</sup>

All positions such as these the Slovak Memorial infers to be manifestations of *bad faith*.

2.125. The Slovak claim of bad faith is not merely untrue and unproven in fact. It is wholly implausible. It would be difficult – as a mere matter of history, leaving aside the requirements of proof which international law imposes on those who allege bad faith – even to *understand* the action of successive Hungarian Governments since 1989, except on the basis that they were acting in good faith. The gravity of the issues at stake, the emphatic and even threatening posture of the other party, the aggravation to Hungarian-Czech and to Hungarian-Slovak relations, the damage done to the region, the grievances of its inhabitants, all these were faced by successive Hungarian governments acting – according to the Slovak Memorial – in bad faith.

<sup>225</sup> I Mucha, "Gabčíkovo – WWF. The pros and cons" (Bratislava, April 1994); HC-M, Annexes, vol 4 (part 1) annex 2.

<sup>226</sup> Letter from C Martin, Director General of the WWF, to D Kocinger, Slovak Government Commissioner for GNBS, 3 October 1994; HC-M, Annexes, vol 3, annex 74. See also WWF Press Release Reaffirming the Organisation's Concern About the Gabčíkovo Dam", 4 October 1994; HC-M, Annexes, vol 3, annex 75. For the earlier WWF Report see HM, Annexes, vol 5 (part: II), annex 20.



2.126. The Court is consequently called on, in the very first place, to vindicate the good faith of Hungary, which itself initiated the reference to judicial settlement of this difficult and protracted dispute.

2.127. There is, however, a further implication to be drawn from the pervasive character of the Slovak bad faith argument. On the one hand, it suggests an unwillingness on the part of Slovakia to engage in the real issues which have divided the parties. On the other hand it supports the view that Slovakia, rather than attempting to understand Hungarian concerns or to engage in genuine negotiation, was content to follow a predetermined policy of the *fait accompli*. To dismiss environmental and other concerns about the Project under the all-embracing rubric of "bad faith" is to fail to negotiate with a view to the settlement of the dispute.

2.128. If the Court accepts Hungary's submission that it was acting and continued to act in good faith in relation to the dispute, there is thus a further legal consequence to be drawn. The repeated Slovak reliance on bad faith goes a long way to excluding other Slovak arguments, or rendering them wholly implausible. In particular Slovakia argues that Czechoslovakia, and later Slovakia, were prepared to negotiate seriously with a view to arriving at a satisfactory solution to the difficulties. Yet if it was genuinely believed that Hungary was acting in bad faith, how can this be true? How can genuine negotiations be conducted between two States one of which is convinced that the other is acting in bad faith? The negotiations would be a charade.

## CHAPTER 3

## THE IMPACT OF VARIANT C

3.01. This Chapter discusses the aims and impacts of Variant C, drawing on the data and conclusions of the *Scientific Evaluation* and its annexes,<sup>1</sup> and responding to Chapter V of the Slovak Memorial.

## SECTION A. THE IMPLEMENTATION OF VARIANT C: AN OVERVIEW

3.02. Slovakia argues that Variant C will allow the basic objectives of the 1977 Treaty to be fulfilled.<sup>2</sup> These objectives it identifies as flood control, navigation, hydropower generation, limiting riverbed erosion, restoration of the natural balance in the side-arms, and the establishment of a monitoring system.<sup>3</sup> Hungary's more focused view of the 1977 Treaty's two fundamental objectives, objectives *expressed* in that Treaty, was described in its Memorial,<sup>4</sup> and is further elaborated in Chapter 1 above.<sup>5</sup> In this Chapter Hungary argues that the design and realisation of Variant C differs fundamentally from the Original Project and has aims which are distant indeed from those of the 1977 Treaty.

3.03. By suggesting that its unilateral harnessing of the benefits of the Gabčíkovo installation is somehow equivalent to the joint operation and exploitation of the investment envisaged in the Original Project, Slovakia misrepresents the 1977 Treaty. In particular, Variant C differs markedly from the Original Project because it is premised upon unilateral (rather than joint) decision-making and because it fails to apply the carefully drafted balance of powers and responsibilities which were intended to govern the construction and operation of the Original Project.

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<sup>1</sup> See below, "Scientific Evaluation of the Gabčíkovo-Nagymaros Barrage System Original Project and Variant C", and for the scientific annexes see below, HC-M, Annexes, vol 4.

<sup>2</sup> SM, para 5.26.

<sup>3</sup> SM, para 5.26.

<sup>4</sup> HM, paras 4.04-4.08, 10.73-10.75.

<sup>5</sup> See above, paragraphs 1.12-1.19.

3.04. The Original Project was designed and constructed in a spirit of comradeship. The parties agreed that the investors and designers would form a joint co-ordination team which "continuously gives its opinion of and checks the completed parts of the Joint Contractual Plan".<sup>6</sup> Engineering problems were frequently solved at a technical level by discussion, without being reduced to writing. Such arrangements might be incorporated into formal protocols of the Government Plenipotentiaries only months later.

3.05. Key elements of the operation of the completed investment were to be distributed equally between the parties. Hungary would physically control the distribution of discharges between the bypass canal and the main riverbed, and Czechoslovakia would control the supply of electricity generated by Gabčíkovo to the Hungarian and Czechoslovak grids. In this respect the 1977 Treaty was unequivocal:

"The Contracting Parties shall participate in the use and in the benefits of the System of Locks in equal measure. The output of the hydroelectric power plants shall be available to the Contracting Parties in equal measure and they shall participate in kind, in equal measure, in the base load and peak load power generated at and conducted from the said plants."<sup>7</sup>

3.06. The 1977 Treaty also provided that:

"Works of the System of Locks constituting the joint property of the Contracting Parties shall be operated, as a co-ordinated single unit, and in accordance with the jointly-agreed operating and operational procedures, by the authorised operating agency of the Contracting Party in whose territory the works were built."<sup>8</sup>

3.07. Variant C was designed in full secrecy and Hungary had no opportunity to comment upon its design or operation. Variant C provides no economic or political benefits for Hungary, but brings about the extensive adverse effects described in this Chapter, which supplements Chapter 5 of the Hungarian Memorial.

3.08. Variant C was constructed in haste, without the benefit of a prior environmental impact assessment, and without any assurances of the

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<sup>6</sup> Agreement regarding the drafting of the Joint Contractual Plan concerning the Gabčíkovo-Nagymaros Barrage System, 6 May 1976, Art 5; HM, Annexes, vol 3, annex 18.

<sup>7</sup> 1977 Treaty, Art 9; HM, Annexes, vol 3, annex 21.

<sup>8</sup> 1977 Treaty, Art 10; HM, Annexes, vol 3, annex 21.

proper application of sound engineering practices and technologies. This is the more troublesome because there have been numerous accidents and malfunctions with Variant C structures. Examples include a flood gate being swept away, a barge sinking during the construction of the Čunovo dam, the incomplete spillways of floodgates, the partly inoperable state of the gates of the bypass weir and the shiplocks at Gabčíkovo being out of operation for extended periods of time (one for over seven months and the other for several weeks). These have considerably restricted the operating capabilities of Variant C.

3.09. The Slovak Memorial refers to six intended benefits of Variant C, although it has more to say about some than others:<sup>9</sup>

- \* It remains silent about flood control concerning the period between 1992 and 1995 or 1996 when Phase 2 of Variant C is to be completed.
- \* It details no actual benefit to navigation, in terms of an increase of the number of ships crossing this section, or a growth in harbour use at Bratislava, or other elements which would have economic significance justifying the investment, although it does refer to an increase in capacity.
- \* In terms of electricity production the amount of energy harvested by Slovakia in 1993 was estimated to be 2,000 GWh,<sup>10</sup> whereas according to the Original Project it would have been 1,838 GWh.<sup>11</sup> Other benefits include production from small hydroelectric power plants in the course of construction.<sup>12</sup>
- \* It correctly states that riverbed erosion has halted below Bratislava, but does not mention the riverbed erosion and deformation occurring on the 40 km section between the Čunovo dam and the junction between the tailrace canal and the Danube.
- \* In connection with the restoration of a natural balance in the side-arms "at least on Slovak territory" the Slovak Memorial refers to uncertainty concerning flora and fauna and notes the so far largely unevaluated impacts on agriculture and forestry.<sup>13</sup>

<sup>9</sup> See the enumeration in SM, para 5.26.

<sup>10</sup> 1993 December EC report, point 4.11; HM, Annexes, vol 5 (part II), annex 19.

<sup>11</sup> HM, para 1.15 (3,675 GWh shared equally).

<sup>12</sup> SM, para 5.51.

<sup>13</sup> SM, paras 5.57, 5.61.



**Plate 7 “A regularly dried up branch near the community of Vojka –  
the same branch after being filled with water, May 1993”**

On a closer inspection, the pictures were taken in the same vegetation season. In the first one, the leaves of the trees and bushes are a little smaller, i.e., younger, but the shape remains the same although the detail in the centre is enlarged in the second one. Again the riverbed shows raw soil without any plants. This proves that this side arm, as all the other examples given, is still active – at least during high water.

- \* The monitoring system is presented as having been "evaluated favourably" by the EC Working Group Report of 2 November 1993; it fails to add that the monitoring system for impacts on flora and fauna was found inadequate and that a seven point list of requirements formed part of the same Report.<sup>14</sup> Findings of the monitoring system are not reproduced or referred to in the Slovak Memorial or in its annexes.

3.10. As compared with the benefits of Variant C claimed by Slovakia, the following points should also be noted:

- \* Variant C increased the flood risk significantly; from its inception it was unable to handle the hundred year flood.<sup>15</sup>
- \* Navigation on this section of the Danube was limited by the closure itself and later by an ice jam in the headrace canal, and by the accidents paralysing both shiplocks at Gabčíkovo simultaneously. Under the Original Plan blockage of the bypass canal for any reason would not have led to a total halt of international navigation because the shiplock at Dunakiliti and the main Danube channel would have provided an emergency navigation route.<sup>16</sup> It is true that there has been an increase in capacity, which now vastly exceeds demand.<sup>17</sup>
- \* The erosion of the riverbed induced by excessive dredging could be halted by stopping the dredging, but the operation of Variant C entails its own effects on river morphological degradation, beginning with the enormous erosion following the flood of November 1992.<sup>18</sup>
- \* Variant C has not restored the natural balance in the Danube side-arms, but has caused severe damage to the ecology of those on the Hungarian side and significant changes to those on the Slovak side. As to the claimed benefits of the artificial discharge system on the Slovak side, the Slovak Memorial itself states that:

"It is not yet possible to quantify the impact of the implementation of Variant 'C' on the region's flora and

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<sup>14</sup> Working Group of Monitoring and Water Management Experts for the Gabčíkovo System of Locks, Data Report, 2 November 1993; HM, Annexes, vol 5 (part II), annex 18, point 8.4.

<sup>15</sup> See above, paragraphs 1.172-1.177.

<sup>16</sup> See below, paragraphs 3.90-3.93, 3.67.

<sup>17</sup> See above, paragraphs 1.185-1.187.

<sup>18</sup> See below, paragraph 3.83.

fauna, due to the long response time of natural ecosystems."<sup>19</sup>

- \* The putting in place of a sophisticated monitoring system would indeed be in accordance with the purposes of the 1977 Treaty. But either that system is not in place or its results are being kept secret, as shown by the absence of available data concerning sedimentation in the Čunovo reservoir. In any event, even the most perfect monitoring system can not by itself ensure the safe functioning of the System and the quality of surface and groundwater. Monitoring is simply a tool to observe adverse changes. But these changes may not be apparent for years or decades, and technological solutions cannot be presumed to exist. Water quality depends on the discharges into the river, flow velocities, and other factors, rather than on monitoring *per se*.

### SECTION B. THE FAILURE TO CARRY OUT ENVIRONMENTAL IMPACT ASSESSMENT OF VARIANT C

3.11. Slovakia claims that Variant C was "carefully considered" from an ecological point of view<sup>20</sup> and that "steps towards implementation of Variant 'C' were not made without extensive and detailed research of its specific impacts on the Danube basin".<sup>21</sup> Indeed, Slovakia claims that "from 1991 nearly ninety studies were carried out, a list of which, together with a brief summary of each study, appears as Annex 36".<sup>22</sup> The reality is rather different. Not one of the nineteen conditions adopted in the Declaration of the Slovak Environmental Committee on 25 June 1991 requires a comprehensive assessment of the environmental effects of Variant C.<sup>23</sup> According to the Communiqué of the Slovak Ministry of Environment to the 4 December 1992 session of the Slovak Government, no proper environmental impact assessment was performed prior to the design or implementation of Variant C, or subsequently.<sup>24</sup>

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<sup>19</sup> SM, para 5.57.

<sup>20</sup> SM, para 5.24.

<sup>21</sup> SM, para 5.25.

<sup>22</sup> SM, para 5.25.

<sup>23</sup> See HM, Annexes, vol 4, annex 168. The Declaration requires the effect of the main river bed on the groundwater system to be assessed only "following the closure of the Danube river-bed" (condition 8). Many of the conditions required by the Declaration have not been fulfilled, see below, paragraph 6.124.

<sup>24</sup> See HC-M, Introduction, paragraph 23, note 53; HC-M, Annexes, vol 3, annex 57.

3.12. Annex 36 does not withstand close scrutiny. It is entitled "List of Studies, Research Tasks and Experts' Accounts elaborated for putting the hydroelectric power project Gabčíkovo into operation by means of the Temporary Solution, Variant 'C', 1991-1993". These studies, tasks and accounts were only prepared some two years after the decision to commence work on Variant C had apparently been taken.<sup>25</sup> Even if these studies had been adequate, they could only be an *ex post facto* justification of a decision already taken.<sup>26</sup>

3.13. The studies, tasks and accounts listed in Annex 36 do not individually or collectively amount to an environmental impact statement or assessment within the accepted meaning of those terms. Not one of the 89 studies referred to in Annex 36 is described as an environmental impact assessment. They are a motley collection of studies which address a range of mostly technical matters, such as the economic aspects of Variant C (see e.g., No 23), hydraulic aspects of proposed weirs (see e.g., No 36), exploitation of gravel (see e.g., No 46), and even a re-evaluation of research tasks (see e.g., No 81). Not one of these studies purports to address the overall environmental impacts of Variant C, or its effects on such matters as biodiversity or water quality on the Hungarian side.

3.14. Slovakia has chosen not to Annex these studies to its Memorial. Accordingly, no conclusions can be drawn as to their findings. Nor can any reliance be placed upon the brief summaries which Slovakia has provided. The studies listed in Annex 36 do not support Slovakia's claim that the environmental effects of Variant C were "carefully considered". Rather they confirm the view that Variant C was designed, prepared, implemented and operated without ever being subject to a proper environmental impact assessment in accordance with relevant international standards.

### SECTION C. THE SIGNIFICANT ADVERSE EFFECTS OF VARIANT C

3.15. The unilateral diversion of the Danube by Czechoslovakia in October 1992 occasioned by Variant C has had significant adverse effects.<sup>27</sup> Over the past six months more information has become available on these adverse effects, and this is set out here and in the appended *Scientific Evaluation*.

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<sup>25</sup> See above, paragraphs 2.95, 2.96.

<sup>26</sup> At the time Variant C was implemented, Czechoslovakia had signed the 1991 Espoo Convention. Art 2(3) imposes an obligation to carry out an environmental impact assessment "prior to a decision to authorise or undertake" a major project.

<sup>27</sup> HM, paras 5.106-5.134.



3.16. It has to be emphasised again that processes induced by the unilateral diversion of the Danube unfold according to different time scales and that considerable uncertainties surround some of the impacts. Hydrogeological processes or ecological successions take decades: pointing to the absence of certain large scale changes in two years to show that no significant long-term adverse effects will occur<sup>28</sup> is a fundamental misunderstanding.

3.17. Impacts of Variant C are presented below, broken down by different sectors. This is done for the sake of clarity and with a view to the different time scales applying to the different sectors. It should be noted that in the longer term the various impacts can acquire a synergistic character, reinforcing and accelerating each other. In themselves controllable and remediable negative impacts may together trigger off unforeseen and uncontrollable effects.

#### (1) RIVER MORPHOLOGY

3.18. The issue of degradation of the riverbed, causing the drop in surface water level and the groundwater table, technical though it may be, occupies a central position in this dispute. The Slovak Memorial asserts that "flood control and navigation measures have led to the lowering of the water level downstream of Bratislava"<sup>29</sup> leading to a declining groundwater table<sup>30</sup> and the drying out of riverside vegetation.<sup>31</sup> It is the remedying of these impacts, rather than anything actually stated in the 1977 Treaty, which constitute its main aim.

3.19. This issue is extensively treated in Chapter 1,<sup>32</sup> in the *Scientific Evaluation*,<sup>33</sup> and in its annexes.<sup>34</sup> The conclusion to be drawn is that the Original Project was not so much the solution to the problem as one of its causes, although the main cause was excessive industrial dredging.<sup>35</sup>

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28 Cf SM, paras 5.46, 5.53. The point is conceded at SM, para 5.57, but "preliminary conclusions" are nonetheless presented.

29 SM, para 1.57.

30 SM, para 1.58.

31 SM, para 1.59.

32 See above, paragraphs 1.56-1.75.

33 *Scientific Evaluation*, HC-M, vol 2, chap 2.

34 HC-M, Annexes, vol 4 (part 1), annex 6.

35 See above, paragraphs 1.65-1.68.

3.20. As to the impacts of Variant C on river morphology, certainly Variant C has stopped the sinking of the riverbed downstream of Bratislava to rkm 1852, by the expedient of eliminating the riverbed itself (Plate 2). The reservoir has fundamentally changed morphological conditions, replacing riverbed degradation with extensive dredging for the present navigation channel and producing substantial sedimentation in areas which used to be floodplains and are now more or less permanently covered with water.

3.21. Downstream of the Čunovo reservoir in the main riverbed, morphological processes have started which were not described by the Slovak Memorial.<sup>36</sup> However that Memorial gives a clue to what is expected to happen in the main channel:

“...[I]n the old riverbed the proposed underwater weirs would prevent further cutting into the terrain.”<sup>37</sup>

3.22. Thus the impact of Variant C will be further “cutting into the terrain” unless underwater weirs are built.<sup>38</sup> Slovak experts predict that in the long run at rkm 1813.4 incision may reach three metres,<sup>39</sup> but the overall picture is also disquieting since the extremely low base discharge carrying no bedload at all will also degrade the riverbed at other locations, cutting into it by one metre or more. The unnaturally sudden rise and fall of discharges during floods are believed to lead to destruction of riverbed structures and possible riverbank failures.<sup>40</sup>

3.23. Riverbed degradation will exacerbate the present situation in which the side-arms are practically cut off from the main channel and most can only expect a natural water supply in times of large floods, occurring once in 5-10 years. That is not only intolerable from the ecological point of view, but also means that the water supply available under Variant C is insufficient to prevent clogging and other negative changes.<sup>41</sup>

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36 But see HM, para 5.115.

37 SM, para 2.86.

38 On the eventual effect of underwater weirs see below, paragraphs 3.104-3.110.

39 HC-M, Annexes, vol 4 (part 1), annex 5.

40 *Scientific Evaluation*, HC-M, vol 2, chap 2, Table 2.6.

41 *Scientific Evaluation*, HC-M, vol 2, chap 2, Table 2.7.

## (2) SURFACE WATER

3.24. The Slovak Memorial notes with satisfaction that the water level has increased by 1-2 metres at Bratislava, and adds that:

“Downstream of Čunovo there has been a decrease in surface water levels but... this has not necessarily had a significant impact on groundwater levels. Moreover, the level of water in the Danube main channel could easily be increased by construction of the underwater weirs, originally designed by Hungary.”<sup>42</sup>

3.25. The dramatic drop of water levels by 2.5-3 metres, to levels far below those ever previously measured in the main channel and in the side-arms, produced a severe contraction of the width of the river. This is illustrated in this Counter-Memorial by *Plate 8*.<sup>43</sup>

3.26. Not only have harbours of the affected 40 km section become useless, but resort sites have lost their former value of being located on the river bank. Inland water transportation in the stretch has become impossible.

3.27. The suggestion that water levels in the Danube could be increased by underwater weirs is correct but simplistic.<sup>44</sup> The fact that Variant C has led to a dramatic drop in water levels and in water surface area, radically changing the character of Europe's second largest river, is indisputable.<sup>45</sup> The reasons why underwater weirs do not offer a solution are discussed below.<sup>46</sup>

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<sup>42</sup> SM, para 5.52.

<sup>43</sup> See also HM, para 5.111; HM, Annexes, vol 2, photos No 11-28.

<sup>44</sup> Hungary did not, however, design weirs to restore the water level to its pre-existing status (cf paragraph 3.24). The Slovak Memorial refrains from offering any documentary evidence concerning their “design”. To the best knowledge of competent Hungarian authorities only very low underwater structures were ever designed, not in order to increase the water level but to stabilise the bottom of the riverbed, preventing further degradation. Plans associated with temporary water management – some of which incorporate one or more underwater weirs – should not be confused with designs predating Variant C.

<sup>45</sup> See *Plate 9* comparing the monthly average flow rates before and after the unilateral diversion.

<sup>46</sup> See below, paragraphs 3.102-3.108.

**Plate 8b The Danube, Six Days after the Diversion  
29 October 1992**  
Sand flats are revealed as the water level falls



**Plate 8a Aftermath of the Diversion  
Dunaremete, 29 October 1992**  
The recreational use of the river and its side-arms clearly affected  
by the fall of water level



3.28. Contrary to the Slovak Memorial's claim,<sup>47</sup> the drop in water level has indeed had a significant impact on groundwater levels:<sup>48</sup> this will be discussed in the next subsection. The other major issue relating to surface waters is that of changes in water quality.

3.29. Due to the high variability, and sensitivity to combined effects of flow, meteorology and upstream water quality, trends in water quality frequently manifest themselves only over a long period of time (years to decades). Therefore the finding in December 1993 according to which:

"With the exception of November-December 1992, when sudden changes of regime and a high flood event occurred, no significant changes in surface water parameters as compared to pre-dam conditions can be detected after damming the Danube..."

is not surprising, or necessarily an indication for the future.<sup>49</sup>

3.30. The Szigetköz hydrological system is complex. Not only are the water quantity and quality of the main channel and the associated patterns of sedimentation important; consideration has to be given to water quantity and quality in the side branches, in the waterbodies on the protected side of the dykes and in the Mosoni Danube. All these have a significant influence on aquatic habitats and fisheries as well as on shallow and deep groundwater, which in turn is a major factor in soil formation, and sets limits to developments concerning drinking water reserves, habitats, flora, fauna, forestry and agricultural production.

3.31. Impacts of Variant C on surface water quality in the main channel include actual and potential changes.<sup>50</sup> As a result of diverting the Danube in 1992 and of increased sedimentation in the new reservoir, the suspended solids concentration dropped markedly in 1993: the annual average at Medve was 24 mg/l in comparison to 48, 47, 36 and 36 mg/l monitored in the course of the preceding four years (1989-1992). It is noted that the reduction is higher in the variance and extreme values characterising fluctuations within the year. Simultaneously, the chemical and biological quality also showed slight changes: whereas COD<sub>p</sub> and COD<sub>a</sub> mean values were somewhat reduced. The situation with dissolved oxygen shows a deteriorating trend primarily with respect to the smaller

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<sup>47</sup> SM, para 5.52, proposing that the water level decrease has not necessarily had a significant impact on groundwater levels.

<sup>48</sup> See below, paragraphs 3.43 - 3.44.

<sup>49</sup> *Scientific Evaluation*, HC-M, vol 2, chap 3.3.3.2.

<sup>50</sup> The material in this paragraph derives from chap 3.3.3.2 of the *Scientific Evaluation*, HC-M, vol 2.

minimum value detected (6.2 mg/l) which was less than observed for the preceding ten years.

3.32. Bacteriological quality data available for 1994 do not support the improving trend in bacteriological quality which might be suspected from the 1993 observations. From the bacteriological point of view the Danube remains of poor quality.

3.33. The algal biomass depends on the processes in the reservoir. Model computations showed that the increase of algal biomass in the main channel of the reservoir is relatively small, about 10%, since the residence time here changes only to a small extent. The situation is different in floodplain regions as the residence time can be much longer than in the main channel. Also the water depth is significantly less and thus the relative photic zone is much thicker than in the main river. As a result of all these factors, chlorophyll-a can increase by 50% when it leaves the Čunovo reservoir. The expected eutrophication within the reservoir<sup>51</sup> might require modification of the technology of the surface waterworks as far away as Budapest; this surface water intake is used primarily during the summer period. It would also have impacts on the groundwater recharge system. Further significant impacts of the changed water quality and potential eutrophication relate to groundwater quality and are discussed in the following sub-section.<sup>52</sup>

3.34. Increased biomass causes an internal load of organic material which – unlike organic material of sewage origin – increases downstream in the vegetation period when algal growth exceeds mortality. It was noted for the Original Project, but essentially applies also in connection with Variant C, that in the vegetation period the BOD5 increase stemming from algal growth can be equivalent to (or larger than) the total external organic material load between Rajka and Budapest, and thus BOD5 (biological oxygen demand) levels would not improve even if all the waste water were treated biologically.<sup>53</sup> Clearly, the solution of the eutrophication problem of the Danube stretch does not depend only on waste water treatment along the given reach: it would require a co-ordinated international programme to reduce the phosphorus in the entire upstream basin.

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<sup>51</sup> HC-M, Annexes, vol 4 (part 2), annex 10. Professor A Berczik, of the Hungarian Academy of Sciences maintains that "As a result [of unlimited phosphorus and nitrogen supply, increased transparency, temperature and reduced flow velocity] an algal bloom is inevitable" (p 15).

<sup>52</sup> See below, paragraphs 3.38-3.41, and above, paragraphs 1.107-1.121.

<sup>53</sup> *Scientific Evaluation*, HC-M, vol 2, chap 3.3.2.3.



BRATISLAVA

AUSTRIA

SLOVAKIA

HUNGARY

### Changes in the Monthly Average Flow-Rate 1991-1994

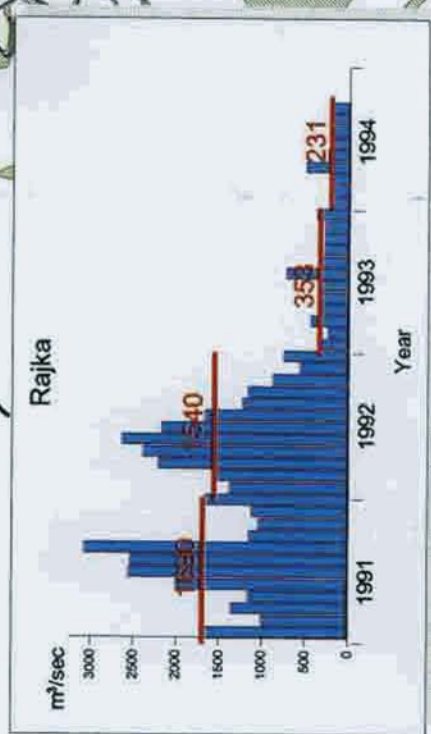
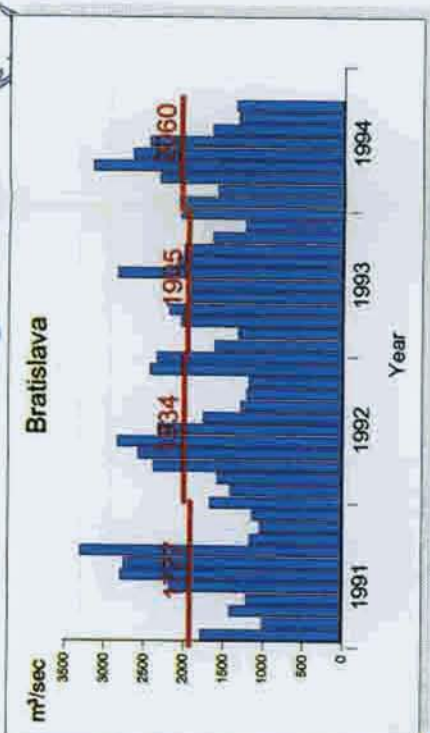
Scale: M = 1:175.000

Legend

- Monthly Average
- Yearly Average
- River km



Upper Danube River Section  
Gabčíkovo-Nagymaros Barrage System



Prepared by:



Edited by:



ECOPLAN Ltd.  
1011 Budapest Corvin tér 3.

3.35. The surface water quality changes in the side branch system are more radical. The total lack of floods in the side-arms changes the chemical and biological character of the waterbodies, provided they are still in existence. The mosaic-like nature of the system has changed, leading to a basically different pattern of water quality than in the past, and having negative repercussions on biodiversity in the region.

### (3) SUB-SURFACE WATER

3.36. This subsection first reviews the Slovak view of groundwater issues and then turns to the observed impacts on Hungarian territory.

3.37. The argument in the Slovak Memorial as to groundwater issues is as follows. The groundwater level in Žitný Ostrov and Szigetköz would follow the drop of the surface water level in the Danube which is a major concern.<sup>54</sup> Therefore two sets of correcting measures should be taken:

- building a water supply system which would feed the side-arms and replace the infiltration from the riverbed into the aquifer;<sup>55</sup>
- building underwater weirs in the main channel, thereby raising the surface water level in the river and consequently the groundwater table.<sup>56</sup>

3.38. The Slovak Memorial refers to another major threat to the groundwater evoked by Variant C, namely to the impact of the reservoir:

“there was a concern that pollutants from the river [flowing through the reservoir] might reach certain wells before sufficient purification had taken place and that these would have to be re-sited. This does not imply the large scale contamination of the aquifer in any way, it simply means that the pollutants carried in the Danube are potentially reaching different areas including areas in which drinking water wells have been sunk. The studies carried out in 1991 simply recommended the drilling of four new wells at Šamorín and proposed further water treatment and monitoring at Kalinkovo and Rusovce.”<sup>57</sup>

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<sup>54</sup> SM, para 5.54.

<sup>55</sup> SM, paras 5.54-5.55.

<sup>56</sup> SM, para 5.55.

<sup>57</sup> SM, para 5.45.



3.39. The direct threat to bank filtered well water supplies was not the only concern. In 1991 Slovak experts reported dangers involved in operating a reservoir as part of the Project. They listed the following concerns:<sup>58</sup>

- \* eutrophication;
- \* fine sediment deposition with high organic matter content, leading to reductive conditions<sup>59</sup> in the groundwater;
- \* clogging in the reservoir;
- \* groundwater level stagnation.

3.40. As a response to these concerns, which coincide with those enumerated in the Hungarian Declaration on Treaty Termination,<sup>60</sup> an impressive list of measures was designed with a view to avoid harm on Slovak territory:

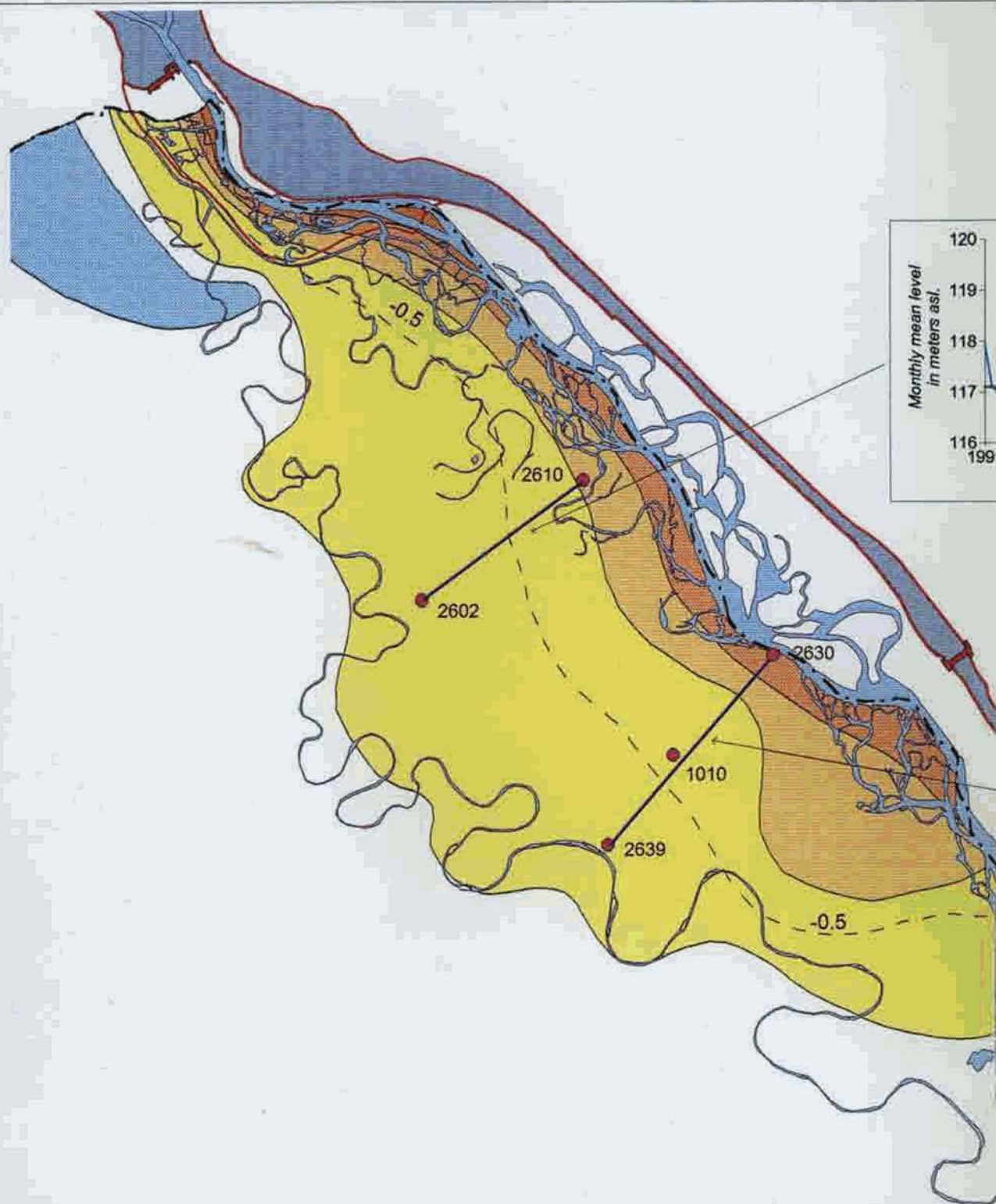
- increasing of flow velocity in the reservoir in places where infiltration occurs;
- prolongation of the flow route of infiltrated water by means of sealing aprons;
- measures to influence flow direction of ground waters into the territory;
- elimination of stagnant water in the aquifer region by providing discharge into river branches;
- introducing monitoring systems for the well sites, thus ensuring optimum protection of water and a warning system against water deterioration in the future;
- removing to the greatest possible extent the organic matter from the area of the future reservoir;
- preventing sedimentation in reservoir localities where it could be undesired and directing it to areas where either it

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<sup>58</sup> HM, Annexes, vol 5 (part I), annex 11.

<sup>59</sup> As explained in the *Scientific Evaluation*, reductive conditions are expected to mobilise iron, manganese and ammonium. These concerns are borne out by international experience, including on the Austrian Danube. See *Scientific Evaluation*, HC-M, vol 2, chap 3.6.2.

<sup>60</sup> HM, Annexes, vol 4, annex 82.



Under Average

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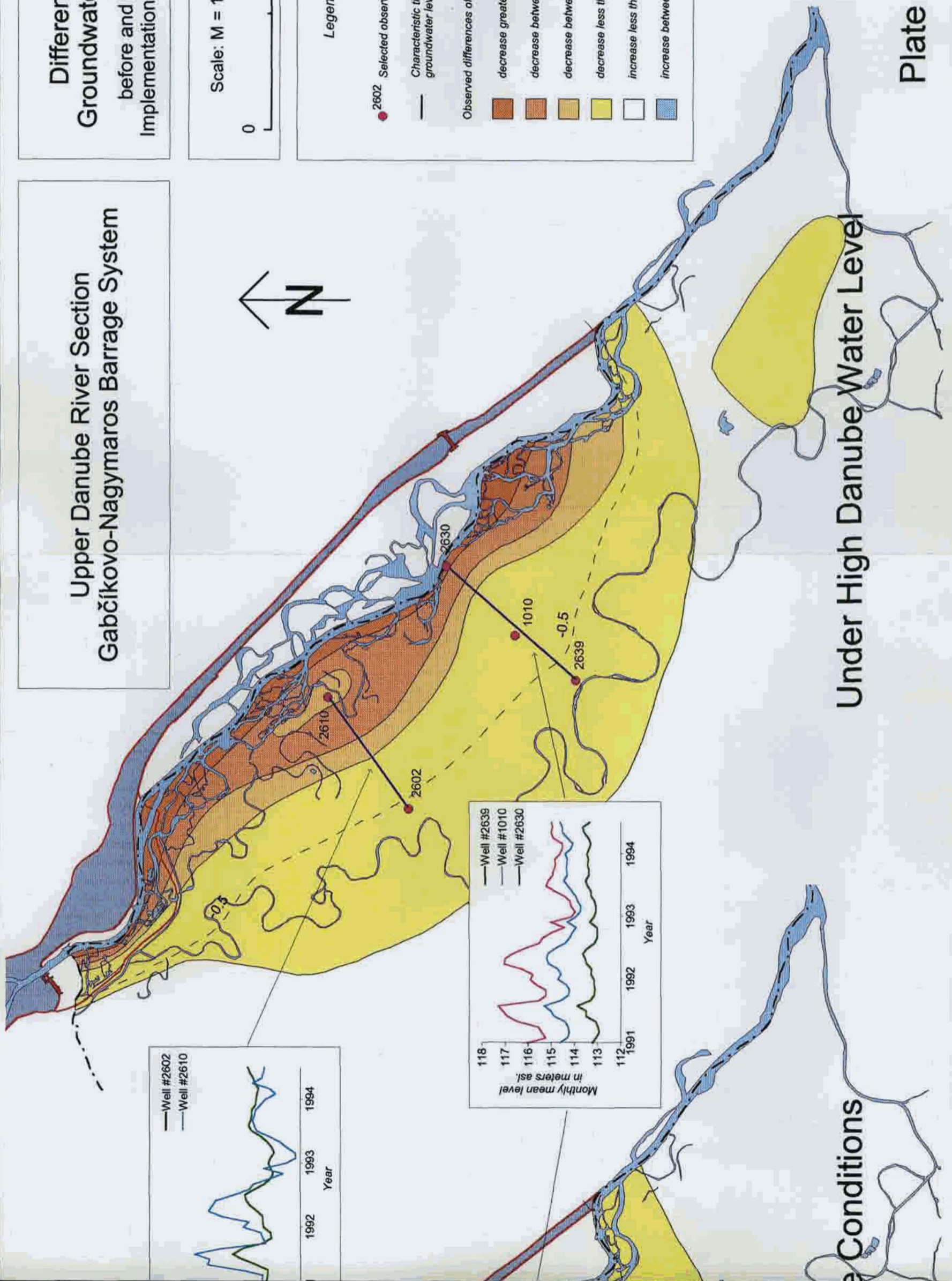
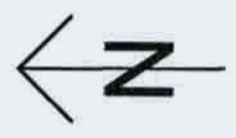
# Difference in Groundwater Levels before and after the Implementation of Variant C

Scale: M = 1:175.000

## Legend

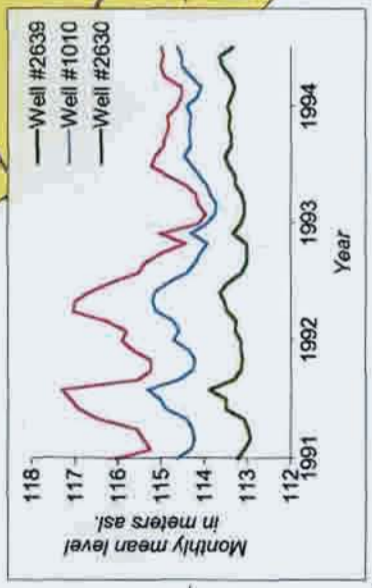
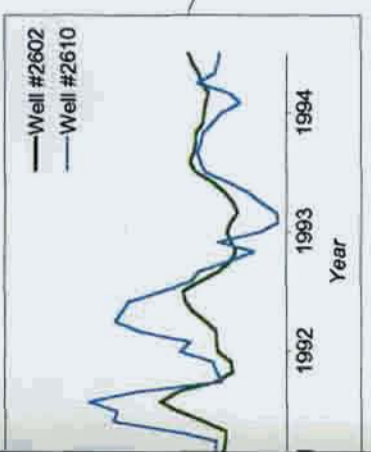
- 2602 Selected observation well (numbered)
  - Characteristic time series of groundwater level
- Observed differences of groundwater level:
- decrease greater than 3 m
  - decrease between 2 and 3 m
  - decrease between 1 and 2 m
  - decrease less than 1 m
  - increase less than 0.2 m or no impact
  - increase between 0.2 and 0.5 m

# Upper Danube River Section Gabčíkovo-Nagymaros Barrage System



# Under High Danube Water Level

# Under Low Water Level Conditions



could not harm water supplies or where the bed is protected by a layer of plastic sheeting."<sup>61</sup>

3.41. In connection with these remedies a few general points should be made. Shifting the sediment and its impact from one side to the other does not solve the problem; it only re-allocates the harm. Removing organic matter from the area does not prevent degradation of subsequently deposited sediment and other organic material. Eutrophication risks are discussed above, and can be expected to arise wherever sections of slow-moving water occur in the reservoir. Providing water discharge into the river branches on a constant basis does not lead to the necessary groundwater table fluctuation,<sup>62</sup> which is the prerequisite for gas exchange in the soils and the natural functioning of ecosystems.<sup>63</sup> In order to achieve the ecologically necessary groundwater fluctuations 2-3 floods annually must occur, which is excluded under the current mode of operation of Variant C, and can not be replaced by a small fraction of the volume of the flood water "flushing" the side branches.

3.42. As already noted, changes in groundwater pattern of flow, its quality and volume can have wide ranging repercussions.<sup>64</sup> Turning to actually observed or expected impacts of Variant C on groundwater, only direct impacts and threats are analysed in this sub-section: interference with flora and fauna, agriculture and forestry are dealt with in later sub-sections.

3.43. The unilateral diversion of the Danube resulted in a drastic decrease of the groundwater table.<sup>65</sup> The observed groundwater changes under average flow conditions and under high water flow are shown in Plate 10. Comparison with average flow shows that maximum reductions in excess of 3 metres have occurred in close proximity to the main Danube (3 km<sup>2</sup>) in the Upper Szigetköz. A riparian strip of 1.5 kilometres in width incorporating valuable forests experiences reductions in excess of 2 metres along most of the affected main Danube channel. A total of

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<sup>61</sup> SM, para 5.45.

<sup>62</sup> Plate 3.13. HC-M, vol 5.

<sup>63</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 4.3.1. See also HC-M, Annexes, vol 4 (part 2), annex 11 at p 7.

<sup>64</sup> See HM, paras 5.43, 5.45-46; and above, paragraph 1.104; see also *Scientific Evaluation*, HC-M, vol 2, esp chaps 4 & 5.

<sup>65</sup> The following statements are elaborated in more detail in the *Scientific Evaluation*, HC-M, vol 2, chap 3.4.3.

297 km<sup>2</sup> suffers water level reductions.<sup>66</sup> Groundwater level increases of up to 0.25 metres occur over an area of 24 km<sup>2</sup>

3.44. Considering typical high flow conditions in the Danube, as expected, impacts are greater (*Plate 10*). However, the total area affected by reductions in groundwater levels is not much larger (346 square kilometres). The extent of major reductions (up to 2 metres) is significantly increased. Reductions of 3 metres or more apply to a 22 square kilometre strip, 0.5-2 kilometres wide and some 25 kilometres long. Reductions of 2 metres or more apply to an area of 69 square kilometres, extending nearly 5 kilometres from the Danube. The main Danube channel, formerly a major recharge area, is now acting as a drain. The primary recharge to the aquifer is from the reservoir and the side-arm system.

3.45. As a consequence there is a large decrease in the area permanently or temporarily sub-irrigated by capillary action. The present situation (generally 200 m<sup>3</sup>/sec discharge) causes a loss in sub-irrigation over a 90 square kilometre area as compared with average flow conditions and 127 square kilometres as compared with high flow conditions.<sup>67</sup> The latter is especially important since that loss mainly occurs in the summer growing season when both crops and forests would mainly use sub-irrigation.

3.46. Another major harmful impact concerns the change in the recharge pattern of the drinking water reserve in the aquifer.<sup>68</sup> Results of studies produced after the suspension of the construction in 1989 largely confirm earlier predictions.<sup>69</sup>

3.47. Recharge is now primarily from the reservoir and the side-arm system. Groundwater quality problems associated with the reservoir have been discussed above.<sup>70</sup> Hungarian observations have focused on the quality of groundwater recharged from the side-arm system of the Szigetköz. A set of 62 observation wells in 11 groups was established along the banks of side-dams and canals in 1994, sampling the upper

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<sup>66</sup> See *Scientific Evaluation*, HC-M, vol 2, *Table 3.6*.

<sup>67</sup> See *Scientific Evaluation*, HC-M, vol 2, *Table 3.7*.

<sup>68</sup> *Scientific Evaluation*, HC-M, vol 2, chap 3.5.2.3.

<sup>69</sup> *Scientific Evaluation*, HC-M, vol 2, *Table 2.7* ("clogging has to be expected in large areas on both sides").

<sup>70</sup> HM, para 5.53.

14.5 m. From the results<sup>71</sup> it can be seen that in general reductive conditions predominate. Mean levels of iron exceed EC Maximum Allowable Concentrations for drinking water, and mean levels of manganese exceed EC guide levels. For all sites, maximum levels of ammonium exceed EC guide levels. Nitrate levels suggest that two well groups on the side-arm recharge system maintain aerobic conditions (although unacceptable levels of iron occur at one), and these sites have, as yet, little sediment deposition, in contrast to four locations on the side-arm system where clearly reducing conditions apply. Toxic elements are generally present below limit values for drinking water, but a notable exception is arsenic, for which mean values exceeded WHO limits at some of the well groups. Again, this occurrence is associated with the release of naturally occurring arsenic under reducing conditions.

3.48. A well group very close to the main Danube channel, is of particular interest. It was noted that recharge from the Danube before the implementation of Variant C was of high quality water. In 1994, the water quality at this site a few metres distance from the Danube has clearly shown reducing conditions and unacceptable groundwater quality, following the change in recharge pattern.

3.49. The *Scientific Evaluation*, after noting that before the damming of the Danube, good quality bank-filtered water recharged the alluvial aquifer from the gravel bed of the Danube, comes to the following conclusion:

“After the damming, the recharge pattern has dramatically changed. Although subject to uncertainty, calculations indicate that recharge from the reservoir is likely to be of poor quality. Concern over this issue is evident from Slovak activities. It has been demonstrated from Hungarian data that poor water quality has occurred adjacent to the side-arm system... Similar effects are also expected as a result of the remedial measures.”<sup>72</sup>

3.50. Not only the quality of the water in the aquifer is threatened but also its quantity. As already mentioned, the main riverbed over a 40 km long section has ceased to be the major recharge source. Therefore the refreshment of the water stored in the aquifer now mainly depends on the amount infiltrating from the reservoir and the side-arms. Clogging of the reservoir bed and of the side-arms is expected,<sup>73</sup> even if emptying of the

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71 The following three paragraphs reflect findings elaborated in more detail in the *Scientific Evaluation*, HC-M, vol 2, esp chap 3.

72 See above, paragraphs 3.46-3.48.

73 The detailed findings appear in the *Scientific Evaluation*, HC-M, vol 2, chap 3.5.2.3.

reservoir (which is technically impossible at present) and a sudden introduction of a large amount of water through the supply system to the side-arms (which is possible but not practised in Žitný Ostrov, and impossible in Szigetköz due to a lack of water supply) could wash away part of the settled sediment. Construction of underwater weirs without a significant increase of water discharge could only exacerbate this problem in the main channel where velocity parameters would be conducive to clogging, thereby neutralising the eventual beneficial impact of higher water levels on infiltration.

#### (4) FLORA, FAUNA AND ECOLOGY

3.51. The Slovak Memorial seeks to create the impression that the areas affected by the Original Project and Variant C have undergone changes due to past anthropogenic activities, and that present developments constitute a logical and acceptable progression of human impacts. In effect one artificial landscape will be replaced by another, nothing more.<sup>74</sup>

"It is beyond question that the current condition of the Danube and its floodplain is the result of centuries of human intervention... It is equally beyond question that whenever measures are taken to modify the flow of a river, as contemplated by the G/N Project, there will be environmental effects, some adverse... One important factor in the present case is that the same modern technology that has made possible complex river projects has also led to techniques to measure the environmental impacts and to avoid, offset, mitigate, or remedy them."<sup>75</sup>

3.52. Thus according to the Slovak Memorial, the replacement of floodplain vegetation by vegetation adapted to drier soils (such as oak steppe) is an acceptable consequence of significantly lower water discharges in the Danube. The revegetation proposal by Bechtel<sup>76</sup> is seen as a straightforward operation.<sup>77</sup>

3.53. The limited attention given by the Slovak Memorial to biodiversity and natural habitats reflects a lack of understanding of the need to integrate development and environment in the pursuit of sustainable development. It is an approach aligned with the Joint Contractual Plan,

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<sup>74</sup> SM, para 2.112.

<sup>75</sup> SM, paras 1.71-1.72.

<sup>76</sup> SM, para 2.113, citing the Bechtel Report, p 2-23.

<sup>77</sup> SM, para 2.115.

which failed to incorporate any environmental protection measures and left it to the parties to realise such measures (including water recharge systems into the side branches) as "national investments" (i.e. as additional unquantified costs).<sup>78</sup>

3.54. The impact of Variant C on the natural environment (flora and fauna) receives half a page in the Slovak Memorial, even less than the three pages given to the subject in its treatment of the Original Project.<sup>79</sup>

3.55. None of the Slovak annexes contains any scientific text from Slovak sources. Less than 6% of the long list of brief annotations on unpublished preparatory calculations related to Variant C appears to relate to ecology. These studies have not been exposed to review.<sup>80</sup>

3.56. In light of the rapid degradation of the habitats it is questionable that the losses to the fauna of Szigetköz will ever be fully assessed. Losses recorded so far are likely to be only the first stage of degradation. The determining ecological factor of floodplains is the cycle of flooding and drying. Otherwise, the whole ecosystem with its typical floodplain forests and other types of biotopes could not exist. The fish production of the floodplain waterbodies is highly correlated to the periodic flooding, as shown by numerous studies carried out in the braided side-arms of the Danube.<sup>81</sup>

3.57. Since Variant C has produced the same water level drop as the Original Project would have done, prognoses concerning the loss of habitats in the main channel prepared in connection with the implementation of the 1977 Treaty apply to Variant C (see *Plate 11*). According to the Slovak scientist J Holčík, 58% of the side-arms habitats were to be lost.<sup>82</sup>

3.58. The loss of floodplain character and the natural vegetation and wildlife on the areas nearby the regulated Rhine<sup>83</sup> illustrates what the "long response time of natural ecosystems"<sup>84</sup> may bring about.

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78 This alone suggests that the improvement of the conditions in the side-branches was not a main aim of the 1977 Treaty.

79 Cf SM, pp 97-100, 215.

80 See HC-M, Annexes, vol 3, annexes 16, 21, 24, 28, 30, 32 (Correspondence on non-transfer of documents, 1994).

81 See HM, Appendix 2; *Scientific Evaluation*, HC-M, vol 2, chap 4, for references.

82 *Scientific Evaluation*, HC-M, vol 2, chap 4.4.2.3.

83 *Scientific Evaluation*, HC-M, vol 2, chap 4.4.2.3.

84 SM, para 5.57.



3.59. On the other hand, there *were* significant short term impacts of Variant C, due to its sudden implementation and to the immediate effects of drying out: these are described in the Hungarian Memorial and will not be repeated here.<sup>85</sup> However it is necessary to review major findings of the scientific studies presented with this Counter-Memorial.<sup>86</sup>

3.60. The studies suggest that the diversity of the former active floodplain and of part of the protected floodplain, including a great variety of aquatic habitat types, will almost certainly cease to exist or will shrink to critical dimensions. The size of the populations will be significantly reduced. A decline in biodiversity is imminent.<sup>87</sup>

3.61. In the main channel Variant C threatens with extinction riparian communities of vegetation growing on silty sites and yet surviving sporadically – e.g. the moss cover on the rocks along the edge of the riverbed and the willow thickets. The general decline in the water level will enhance the rapid proliferation of weeds, particularly striking in the dry main channel. The huge mass of weed, in which ragweed (*Ambrosia elatior*) plays a significant role, enhances pollen pollution.<sup>88</sup>

3.62. With regard to the floodplain, waterweed communities grow in the aquatic sites, mainly in oxbow lakes, ponds and canals. They have been virtually eliminated in the upper and middle parts of the Szigetköz. The decline of the water-table also seriously threatens marsh communities in the Upper and Middle Szigetköz. Vegetation growing on silty sites, providing “dashes of colour”, will gradually disappear, and will probably become locally extinct.<sup>89</sup>

3.63. In the long run, the decline of the water-table in Szigetköz will cause the expansion of the drier forest types together with a fundamental change in the original landscape of this floodplain.<sup>90</sup>

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<sup>85</sup> HM, paras 5.126-5.131.

<sup>86</sup> See *Scientific Evaluation*, HC-M, vol 2, esp chap 4.5, and HC-M, Annexes, vol 4 (part 2), annex 17.

<sup>87</sup> See *Scientific Evaluation*, HC-M, vol 2, esp chap 4.5.2, and HC-M, Annexes, vol 4 (part 2), annex 17 at p 17.

<sup>88</sup> *Scientific Evaluation*, HC-M, vol 2, esp chap 4.4.2.3, and HC-M, Annexes, vol 4 (part 2), annex 17 at p 17.

<sup>89</sup> *Scientific Evaluation*, HC-M, vol 2, esp chap 4.5.2, and HC-M, Annexes, vol 4 (part 2), annex 17 at p 18.

<sup>90</sup> HC-M, Annexes, vol 4 (part 2), annex 17, at p 20.



**Plate 11 Infrared Imaging of the Dunasziget Branch System**

*upper:* 12 June 1990, before the diversion. Image ref. no. CIR SZIG 9900612

*lower:* 8 September 1993, after the diversion. Image ref. no. CIR SZIG 9930908

*Both mosaics were integrated from aerial colour infrared photos. Altitude 2,500 m.*

*Hasselblad camera. Processed by ARGOS Stúdió, Budapest*

3.64. The impact of the diversion of the Danube on the fish fauna was immediately felt,<sup>91</sup> but will continue to be felt also over the long term.<sup>92</sup> As a result of the diversion, the floodplains in the Upper and Lower Szigetköz became characteristically separated from each other and the order of and balance among communities was upset by the drastic changes in floodplain habitats. A further consequence was the loss of connection between the main channel and the branch system, the diversity of which was an important conservation factor for several species in the main channel. Thus, diurnal and seasonal migrations between the two areas in these upper reaches of the main channel is no longer possible. This is likely to harm the benthos and the plankton fauna as well as lead to a decline in fish populations in the longer term. The narrow main channel in many places lost its connection with the former riparian zone, which was of outstanding importance from the aspect of fish biology, representing the exclusive habitat for several species in the main channel.<sup>93</sup>

3.65. These adverse effects and others still to be determined have to be considered in the light of the specific value of alluvial ecosystems. One of the most comprehensive reports on the Danube's ecosystems stated that:

"These alluvial plains and forests are the richest regions in Europe, not only in terms of diversity of species but in terms of biomass and productivity as well. This richness is directly linked to river dynamics – proportional to the surface area flooded – and the extent and steadiness of the flooding. Because they combine the resources and diversity of terrestrial and aquatic ecosystems, while remaining a highly dynamic and original environmental interface, alluvial ecosystems are the richest and most productive ecosystems of the temperate regions."<sup>94</sup>

## (5) AGRICULTURE

3.66. The Slovak Memorial notes that Szigetköz and Žitný Ostrov are highly fertile tracts of land, where the implementation of the Original Project (i.e., the decrease of the discharge to 50-200 m<sup>3</sup>/sec in the Danube bed) "would undeniably have had an effect on productivity of

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<sup>91</sup> See HM, appendix 2.

<sup>92</sup> *Scientific Evaluation*, HC-M, vol 2, chap 4.4.2.3 and HC-M, Annexes, vol 4 (part 2), annex 17.

<sup>93</sup> *Scientific Evaluation*, HC-M, vol 2, esp chap 4.5 and HC-M, Annexes, vol 4 (part 2), annex 17.

<sup>94</sup> Equipe Cousteau, *The Danube ... For Whom and for What? Final Report (March 1993)*, HM, Annexes, vol 5 (part II), annex 16 at p 173.

these important regions if no plans had been made to maintain water levels: without the dedication of new flows, further productivity would have been reduced by one third.<sup>95</sup> Variant C is operated with approximately the same discharge into the Danube bed as the Original Project, and water levels in the Danube as well as groundwater levels have dropped to unprecedented depths. In addition the diversion resulted in a water distribution regime which excluded the operation of the recharge system designed for the Original Project, since the intake structure of the Dunakiliti Weir is unable to provide water into the floodplain because of low upstream water levels. The water supply to the Mosoni Danube alone is not adequate for this purpose.

3.67. One solution offered is to build weirs in the Danube; this is "not feasible without the transfer of navigation into the bypass canal".<sup>96</sup> Thus, apart from ecological considerations and flood management constraints, the trade-off for the rise and stabilisation of groundwater levels is the loss of the Danube for international and local navigation, as well as the loss of the emergency navigation route when the bypass canal becomes unnavigable for any reason.

3.68. The other alternative is to endure significant losses in agriculture. Hungary does not have the option which is available to Slovakia as a consequence of operating Variant C, namely to supply some of the impounded water through gravitational methods into the side-arms and canals of the protected area. Whereas Žitný Ostrov can be supplied from the Malý Dunaj and the intake structure at Dobrohošť, Szigetköz and its agriculture may only rely on pumping from the deeper main riverbed or the small amounts let down in the seepage canal and through the Mosoni Danube intake structure in Slovakia.

3.69. The depth of the water-table below the surface is of major importance for capillary moisture supply. If the water-table rises into the fine soils overlying the coarse alluvium of the aquifer, water can through capillary action contribute to agriculture. The complete loss of sub-irrigation on approximately one fifth of the arable land (approximately 4,200 ha out of 22,000 ha) causes significant damage to agriculture.

3.70. Irrigation may compensate for some of these losses. However the usual water sources of irrigation (dug and bored wells) have also been affected by the lowering of the groundwater table. In the Middle Szigetköz 18% of the boreholes are unusable and 50% operate at half

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<sup>95</sup> SM, para 2.116.

<sup>96</sup> SM, para 5.10.

their potential capacity, though using the same amount of fuel. 42 of the 44 dug wells provide a negligible amount of water. Overall, it has been estimated that irrigation supply has been reduced by 40% and irrigation costs increased by 60-80%.<sup>97</sup>

3.71. The impact of the diversion of the Danube is however difficult to predict as other factors influence annual agricultural yields. Precipitation, its temporal and spatial distribution, agricultural techniques and organisation, crop variety, and the amount of chemicals used in the production also contribute to the final results. 1993 was an extraordinarily dry year, whereas 1994 seems to provide a more beneficial "meteorological" background. However, long term trends established after a series of years will enable the identification of the precise scale of impacts of the man-made factor, and within that of Variant C. Precise quantifications are difficult to arrive at due to the variety of factors at work during the relevant period, including major readjustments in the structure of farming in the region, variability of seasonal conditions, etc. But that there has been a significant loss in productivity attributable to changes in groundwater levels is not in doubt.

#### (6) FORESTRY

3.72. In this connection Slovakia admits – although in somewhat euphemistic language – that with the operation of Variant C "less favourable conditions have been created in Hungary".<sup>98</sup> After quoting the 1993 November EC Working Group Report,<sup>99</sup> according to which forestry has been influenced negatively on the Hungarian side, it forecasts that unfavourable conditions will continue unless "underwater weirs are constructed in the Danube" and "full advantage is taken of the artificial recharge system on the right bank."

3.73. Hungary in fact does operate an artificial recharge system to the extent that water is available, and in certain periods of the year adds to it approximately 15 m<sup>3</sup>/sec pumped from the main channel of the river. But this does not prevent continuous deterioration of the state of the forests. That is not surprising in light of the fact that Slovakia, utilising much larger quantities for water supply in the Žitný Ostrov area, cannot avoid negative impacts on its forests. Whereas trees inundated with water along artificially and constantly filled-up side-arms are threatened with

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<sup>97</sup> *Scientific Evaluation*, HC-M, vol 2, chap 5.2.3.

<sup>98</sup> SM, para 5.61.

<sup>99</sup> HM, Annexes, vol 5 (part II), annex 18.

"drowning", the older white willows and Italian poplar in the riverside zone along the main channel seem to have died out — as observed from the other river bank. The reason for this is in the groundwater flow patterns: on both sides the almost empty riverbed, with water levels several metres below the side branches' artificial water level, acts as a drain, into which — according to Variant A simulations — water from the side branches runs through the gravel layer, not reaching the soil of the riparian forests. So far as the actual experience of Variant C is concerned, water-table decreases in excess of 3 metres have been observed adjacent to the main channel.

3.74. A further major adverse effect of Variant C is the virtual elimination of floods on the Hungarian floodplain.<sup>100</sup> Floods provide vital quantities of water and nutrient-rich sediment to the various forest types.

3.75. The combined effect of the drop in the water level of the Danube and the lack of floods has already manifested itself in the following symptoms: willows started to decline and die along the banks of the main channel; reduced growth has been registered; rodents and secondary pests have become abundant (see *Plate 12 A and B*). 93% of the tree species in the floodplain require more water than is supplied by precipitation. They will with all likelihood dry out as a consequence of Variant C.

3.76. Their replacement with more drought-tolerant species has been completed for 9.8 hectares near Kisbodak and Dunásziget and further replacements were accomplished on an additional 8.5 hectares near Rajka. The yield of these trees will be much smaller and can only be expected after several years. Moreover replacing trees does not mean reconstructing a forest with its complex web of population, involving several hundred macroscopic components, not to speak of thousands of microscopic ones.

## (7) FISHERIES

3.77. The Slovak Memorial is silent concerning the impact of Variant C on fisheries. Nothing could be said under the heading "benefits of Variant C" and the Memorial does not include a section on damage caused by Variant C. The Hungarian Memorial briefly recorded the major immediate impacts<sup>101</sup> and submitted a detailed study on the damage

<sup>100</sup> HC-M, *Scientific Evaluation*, vol 2, chaps 4.5, 5.3.4, 5.3.6.

<sup>101</sup> HM, para 5.126-5.129.





**Plate 12a Szigetköz and its Riparian Forests Drying out. Dunasziget, July 1994**

The first signs of drying can be seen on the top branches of willows due to a breakdown in the water household



**Plate 12b The Effect of the Breakdown of the Water Household on Young Willows Stand along the Danube**



**Plate 13 Fish Mortalities in the Cikola Branch System**  
Cikolasziget, 31st October, 1992  
*(Photograph by G. Guti)*



caused by the rapid drying out of the side branches and drop of water level in the main channel.<sup>102</sup>

3.78. Observations and studies performed since the submission of the Memorial confirm these statements (see *Plate 13*). According to the estimate of the Agricultural Office of Győr-Moson-Sopron County, the reduction of the available fish production may be of the order of 75% on the Danube between Bratislava and Komárom, as well as in the rivers of the Little Danubian Plain; in the Upper Szigetköz it could be as high as 90%. The commercial and recreational catch decreased by 19% (from 69 t to 56 t) in the Danube section between Rajka and Komárom in 1993.<sup>103</sup>

3.79. At the end of July 1994 there was considerable fish destruction in the main stream of the Danube between Dunakiliti and Nagybajcs (1842-1802 rkm). Its probable reasons were a long hot period and the low water level. On 30 July a huge volume of water was flushed into the bypass canal at Gabčíkovo and the discharge dammed up the water in the upstream section of the Danube in the Szigetköz. The flow of the main stream stopped and triggered the fish deaths. It is estimated that 15 tons of fish perished (0.2 ton zander, 0.3 ton carp, 0.5 ton asp, 4.0 tons of barbel and 10.0 tons of other cyprinid fish). Following catastrophic fish mortality in the Szigetköz resulting from Variant C, the Fishery Management Fund of the Ministry of Agriculture gave financial support for fish introduction to the local fishery company.<sup>104</sup>

3.80. The total value of fish which perished due to the operation of Variant C, the loss of catch for 1993 and 1994 and the financial support to save fisheries from extinction amounts to an estimated US\$ 583,000-758,000.<sup>105</sup>

3.81. The expected consequences of Variant C for fisheries are summed up in the *Scientific Evaluation* under the following headings:

- \* *Blocking of the branch systems*: Loss of floodplain habitats for spawning, nursery, feeding and wintering result in a considerable decrease of fish production. Fishery potential of the Szigetköz area will decline. Lack of large-scale fish recruitment will have

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<sup>102</sup> HM, Appendix 2, Ichthyological Aspects of the Gabčíkovo-Nagymaros Project, Section III.

<sup>103</sup> For further details see *Scientific Evaluation*, HC-M, vol 2, chap 5.4.

<sup>104</sup> For references and further details see *Scientific Evaluation*, HC-M, vol 2, chap 5.4.

<sup>105</sup> Data from *Scientific Evaluation*, HC-M, vol 2, chap 5.4.

detrimental effects on the fish populations of the Middle Danube for a few hundred kilometres downstream.

- \* *Changes in flood regime:* Subsequent reduction of habitat diversity, loss of species, diminishing productivity at community level due to the switch from the Alpine character flood regime to stable system dynamics.
- \* *Decrease of flow rate:* Shifts from rheophilic to limnophilic communities in the side-arms. Changes in flushing rate resulting in accumulation or low dilution of toxic wastes or anaerobic conditions leading to fish mortalities.
- \* *Decrease in suspended silt load.* Water transparency is higher. Increase in density of submerged aquatic vegetation leads to an increase in phytophil fish. Changes in fish community, that is a reduction in number of predators and omnivores. Risk of fish mortality due to anaerobic conditions caused by eutrophication.
- \* *Diversion of water into the bypass canal:* The higher discharge in the tail-race canal directs the shoals of fish during their spawning migration to the tailwater of the Gabčíkovo Barrage, which is an insurmountable barrier; the bypass canal is an unsuitable habitat for spawning.

#### (8) ENGINEERING ISSUES AND FLOOD CONTROL

3.82. The Slovak Memorial declares that the new structures "have been built to the same high standards as applied to the original Project constructions."<sup>106</sup> However, due to the almost total lack of information concerning engineering aspects of Variant C,<sup>107</sup> Hungary is not yet in the position to offer a detailed technical evaluation. Requests for the information have not yet been complied with.<sup>108</sup>

<sup>106</sup> SM, para 5.30.

<sup>107</sup> The Slovak Memorial is conspicuously silent about the period when the 10.5 km dyke connecting the weir to the bypass canal was built. The impacts of this weir were investigated in mid-1991. In October 1992, 160 million m<sup>3</sup> water was impounded by the still unfinished dyke. Whereas the reservoir dykes according to the Original Project would have been located at the site of the pre-existing flood protection dykes, the new connecting dyke was built in an area interwoven with side-arms, dead arms where the ground structure is much less stable than outside the floodplain.

<sup>108</sup> HC-M, Annexes, vol 3, annexes 67, 69. See also above, paragraphs 2.98-2.100.

3.83. The standards according to which the Original Project was designed were those of the 1950s and 1960s. Severe import restrictions were imposed on socialist countries, including COCOM regulations banning the export of sophisticated technology and equipment, including high capacity computers, into the Eastern Bloc. As a consequence, in many fields, standards suffered. For the Slovak Memorial to allude to "the same high standards as applied to the original Project constructions" is accordingly not reassuring.

3.84. The other indication is the actual functioning of installations. There have in fact been several failures of key elements of the Original Project and Variant C pointing either to faulty design or implementation.<sup>109</sup> For example, one episode involved a twenty ton iron flood gate being washed onto the Hungarian territory; it was subsequently handed back to Czechoslovakia.<sup>110</sup>

3.85. A worrying aspect of design and construction is the increase in flood risk produced by Variant C. The Slovak Memorial does not discuss the present level of flood protection,<sup>111</sup> although the following footnote is revealing:

"The designed capacity and safe releasing of a 10,000 year flood will be achieved after the completion of the second phase. In the meantime it was accepted that at certain flow and operation conditions there was a certain risk of damage to the spillways downstream of the weir, which could occur without endangering the stability of the main structures or inhabited areas along the Danube. This was shown during the November 1992 flood."<sup>112</sup>

This statement glosses over the fact that Hungary never "accepted... a certain risk of damage". But the *risk* was and remains real. The capacity of Phase 1 of Variant C is 1,760 m<sup>3</sup>/sec less than that required to pass the 100 year flood (10,600 m<sup>3</sup>/sec) and 2,220 m<sup>3</sup>/s less than that required for the thousand years flood (13,000 m<sup>3</sup>/sec).<sup>113</sup> It should also be noted that

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<sup>109</sup> See HM, para 5.132; below, paragraph 3.92 (break of a 500 ton shiplock gate); HM, para 5.116 (faulty design of the by-pass weir gates at Čunovo, limiting its capacity to half that designed); SM para 5.30 (unfinished spillway at the Čunovo dam, failure of the turbine in the small hydropower plant of the intake structure to the Mosoní Danube).

<sup>110</sup> HM, Annexes, vol 2, photograph 10; HM, para 3.198.

<sup>111</sup> See SM, para 5.30, note 19, paras 5.48-5.49.

<sup>112</sup> SM, para 5.30, note 19.

<sup>113</sup> *Scientific Evaluation*, HC-M, vol 2, Table 2.8 and chaps 2.4.4, 2.6.3. See also HM, para 5.116.

the November 1992 flood caused considerable damage and imperilled the structure of the Čunovo dam itself.<sup>114</sup>

#### SECTION D. THE ISSUE OF NAVIGATION

3.86. The general issue of navigation has been discussed in Chapter 1.<sup>115</sup> It has been seen that the Original Project, although potentially useful in the Bratislava-Budapest stretch, was neither necessary from an economic point of view nor critical for river navigation. This conclusion applies *a fortiori* to Variant C.

3.87. Conspicuously the Slovak Memorial does not refer to economic, business or traffic data or information in connection with navigation which could be at least remotely related to profit accruing either to Slovak or to foreign companies as a result of Variant C. The single paragraph dealing with the "navigational benefits" of Variant C has nothing to say about increase in traffic as a consequence of the new navigation route, or economic benefits reaped from the operation of the investment. It recounts the size of the shiplocks and reservoir and declares that the riverine-sea route has reached the port of Bratislava.<sup>116</sup>

3.88. The riverine-sea route may have reached Bratislava, but at present not very many ships do so. An average of less than 1.5 ships of all sizes passed each hour through the locks at Gabčíkovo in 1993.<sup>117</sup> Total traffic of the Slovak fleet in 1993 was estimated at about 2 million metric tons, compared with 1.98 million metric tons in 1992, and approximately 6-8 million metric tons per annum in the period 1985-1990.<sup>118</sup> This reflects the overall decline in river navigation, which was discussed in Chapter 1.<sup>119</sup>

3.89. The case for Variant C in terms of navigability of the relevant Danube reach was weaker than the navigation arguments for the Original Project in two respects. First, the actual decline in navigation volumes had already set in by 1989, so that this aspect of the economic case for

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<sup>114</sup> See HM, para 5.115.

<sup>115</sup> See above, paragraphs 1.178-1.189.

<sup>116</sup> SM, para 5.50.

<sup>117</sup> EC Report, November 1993: HM, Annexes, vol 5 (part II), annex 18, Table 12.1 (referring to the period January-August 1993).

<sup>118</sup> See the *Annuaire Statistique de la Commission du Danube* for the relevant years. The figures for 1993 are an estimate.

<sup>119</sup> See above, paragraph 1.185.

Variant C had already weakened.<sup>120</sup> Secondly, the most difficult section of the river affected by the Original Project was the Nagymaros reach; this is reflected in the recommendation of the Danube Commission as to the Vienna-Budapest sector, which identified Nagymaros (but not Gabčíkovo) as one of 4 sectors requiring attention.<sup>121</sup>

3.90. The remaining question relates to the actual performance of Variant C from the perspective of navigation. It was expected that the operation of Variant C would improve the conditions for navigation, but the results have been mixed. On the one hand navigation is more straightforward in the bypass canal than it would be in the main river bed. On the other hand, there have been difficulties leading to a suspension of navigation altogether on a number of occasions.

3.91. The Slovak Memorial does not refer to the two accidents which occurred in the Gabčíkovo sector at the beginning of 1994. On 11 February 1994 the Ukrainian ship Zernograd was impaled by the ice-breaking device in the right lock while entering the chamber and passing through the first lock. The gate had been closed before the ship got through the lock. The ship sank and blocked navigation. 88,000 litres of oil leaked out. A group of Ukrainian experts came to Gabčíkovo, but they were unable to remove the ship before 27 April 1994.

3.92. After the accident one of the chambers was still operating, but a month later, on 21 March 1994, the huge gate of the left chamber of locks crashed down, blocking this second chamber, and consequently the entire navigation on the Danube. The weight of the gate is about 500 tons. A new gate had to be constructed and in November 1994 is still being installed at Gabčíkovo. During the following weeks hundreds of ships were stopped at the Gabčíkovo sector or turned back, causing considerable financial damage. This was the first occasion in its peacetime history that the river was completely closed to all navigation (see Plate 14).

3.93. Navigation was fully blocked for 36 days. Even after the removal of the Ukrainian ship only one of the chambers was in operation. In a *Note Verbale* dated 24 March 1994 Hungary stated that:

“The lack of serviceability of the weir system of the only water way convenient for navigation constructed in the Slovak reach

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<sup>120</sup> See above, paragraph I.185.

<sup>121</sup> See above, paragraph I.181. As noted there, the problems affecting the Nagymaros reach can be resolved by traditional means: see further Traditional Solutions to the Navigational Problems in the Szigetköz Stretch of the Danube, HC-M, Annexes, vol 4 (part 1), annex 8.

of the Danube led to the paralysation of navigation on the Danube. The Hungarian Ministry of Foreign Affairs holds the opinion that the utilisation of the Gabčíkovo power canal as the only and exclusive water way is doubtful because of the technical and construction [problems] and errors which have taken place and the construction of an alternative water way in the region [would be inevitable] for the maintenance of continuous and safe navigation.”<sup>122</sup>

Hungary did not receive any response to this *Note*. Neither did Slovakia give any explanation to the Danube Commission, as it had promised. At the time of completion of this Counter-Memorial, only one of the chambers is operating. It is understood that the relevant Slovak company has commenced the construction of new locks within the system of Variant C in order to provide an alternative navigation line in the event of future accidents at Gabčíkovo.

#### SECTION E. THE COSTS OF VARIANT C

3.94. The Slovak Memorial presents what it describes as only “general guides” to the costs of constructing Variant C, and only “by way of illustration”.<sup>123</sup> All of those costs are stated to have been incurred in the years 1991-1992: there is no indication of costs incurred earlier, although work on Variant C took place as early as 1989, as has been shown.<sup>124</sup> It is true that for the purposes of dealing with any issues of quantification that may arise under Article 2 paragraph (2) of the Special Agreement, no detailed inquiry into costs is required at this stage of the proceedings.<sup>125</sup> On the other hand the costs of Variant C are relevant for other purposes at this stage – for example, to assist the Court in assessing whether Variant C was in financial terms an “approximate application” of the Original Project, or whether Variant C, in particular its Phase 2, can really be seen as a “temporary” solution from the point of view of Slovakia.

3.95. The Slovak Memorial contends that “by May 1989, a total of US\$ 2.3 Billion (CSK 13.8 billion) had been spent by Czechoslovakia on

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<sup>122</sup> *Note Verbale* from the Ministry of Foreign Affairs of the Republic of Hungary to the Embassies of Germany, The Netherlands, France and the Member States of the Danube Commission [including Slovakia], 24 March 1994; HM, Annexes, vol 4, annex 142.

<sup>123</sup> SM, para 9.33.

<sup>124</sup> SM, p 366 (heading D). For work on the “provisional solution” during 1989-1990, see above, paragraphs 2.89-2.97.

<sup>125</sup> See below, paragraphs 7.01-7.02.



**Plate 14a Damaged Lock Gate. Gabčíkovo, 22 March 1994**



**Plate 14b Ships Waiting to Pass. Bratislava, 22 March 1994**

the G/N project."<sup>126</sup> The total amount spent to date (i.e. as at early 1994) is stated in another section of the Memorial, where it is said that the "Project has cost Czechoslovakia and the Slovak Republic \$2.6 billion (CSK 24.3 billion) to date"<sup>127</sup> This suggests that between May 1989 and early 1994, only US\$ 300 million was spent on the Project, although that figure is represented by CSK 10.5 billion.<sup>128</sup>

3.96. Although there is no explanation in the Memorial for this discrepancy, it would appear that it arises partly at least from applying an exchange rate of US\$ 1 = CSK 6 for the period from 1977-1989 and on an exchange rate of US\$ 1 = CSK 35 for the period since 1989.<sup>129</sup> The US\$ 1 = CSK 6 rate, although it may have been one of many possible exchange rate calculations before 1989,<sup>130</sup> was not internationally accepted or used in inter-state transactions. Indeed, it bore no relation to the real value of the two currencies at the time.

3.97. By substantially overstating the strength of the Czech currency in expenditures before 1989, the Slovak Memorial gives the impression that relatively more economic investment was at stake during the 1989-1992 negotiations than was the case. Conversely, the impression is given that Variant C involved only a small percentage of what had already been spent on the Original Project and that most of the money spent on the Project had already been spent by the time Variant C was commenced.

3.98. According to the Slovak Memorial, Variant C will ultimately cost approximately SK 8 billion.<sup>131</sup> Other sources indicate approximately SK 8.5 billion.<sup>132</sup> Thus, the expenditures on Variant C constitute 61-65% of the *stated* expenditure on the Project as a whole.

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<sup>126</sup> SM, para 5.01.

<sup>127</sup> SM, para 2.01.

<sup>128</sup> The expenditures up to 1989 were calculated to be US\$ 2.3 billion (CSK 13.8 billion), and the expenditures up to date were calculated to be US\$ 2.6 billion (CSK 24.3 billion). This is a difference of US\$ 300 million (CSK 10.5 billion).

<sup>129</sup> CSK 13.8 billion must be divided by 6 to equal US\$ 2.3 billion. The difference of CSK 10.5 billion must be divided by 35 to equal US\$ 300 million.

<sup>130</sup> In annex 13 of the SM, it is acknowledged that a variety of different rates existed.

<sup>131</sup> Figures incorporated to arrive at this amount are taken from SM, para 9.37 and accompanying note 28, para 5.27 (works part of Variant C), para 5.28 (CSK 416 million), para 5.37 (CSK 203 million).

<sup>132</sup> Report No 239, prepared by Slovak Government on 15 January for the Slovak National Assembly about the Construction Progress of the Gabčíkovo Nagymaros Plant, giving the Expense Calculation of the Hydro-Electric Power Plant to be Commissioned by the Provisional Solution, as of 1991 Price Indexes. The one item



3.99. Moreover, of this total amount spent on Variant C, Phase 2 (the Čunovo portion), which Slovakia began to construct only in 1993, is costing SK 4.5 billion; the remaining costs are for Phase 1 (SK 3.5-3.9 billion).

3.100. There is comparatively little information in the public domain about the precise costs of Variant C, or of the time lines within which those costs were incurred. Hungary will return to this issue in its Reply, in light of such further information as is then available.

#### SECTION F. MITIGATION MEASURES TAKEN BY THE PARTIES

3.101. The underlying Slovak philosophy is based upon the assumption that negative effects of Variant C can be corrected, once they have been discovered and monitored.<sup>133</sup> The Slovak Memorial even indicates that *any* negative impacts of Variant C concerning flora, fauna, agriculture, forestry and surface and subsurface waters can be remedied *immediately*.<sup>134</sup>

3.102. According to the Slovak Memorial:

“It is self evident that if Hungary were to implement the full recharge system planned for its side-arm region, the impact of the lower flow in the Danube would be dramatically, if not completely, reduced – especially if this were coupled with the construction of at least some of the Hungarian designed underwater weirs in the main channel. It may be noted that a budget of 2.4 billion Czechoslovak Crowns was set aside for the construction of such weirs by the Czechoslovak government in 1992.”<sup>135</sup>

3.103. It is of course Variant C which calls for this remedial measure – at a price of 2,400,000,000 crowns (US\$ 80 million), 70% of the total

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listed on the Expense Calculation is modification of inundation work over the area of the by-pass canal. For that to be accomplished, a price of 4 million kronas is listed. It is unclear whether the 4 million kronas is being claimed elsewhere in the Slovak Memorial under one of its other categories.

<sup>133</sup> See e.g., *Aide Mémoire* concerning the consultation of scientific experts on 17-19 July 1989: HM, Annexes, vol 3 annex 18.

<sup>134</sup> SM, para 5.62 (“It is essential that the impact of Variant ‘C’ in all the above areas is constantly monitored so that any negative impacts can be identified and remedied immediately”).

<sup>135</sup> SM, para 5.55.

cost of Phase 1 of Variant C according to Slovak figures. It is not clear whether this sum was calculated on the basis that Hungary would contribute some proportion of the total cost, but the result is that for somewhere between 70% and 140% of what is said to be the cost of Phase 1, some of its negative impacts could have been "dramatically if not completely" neutralised.

3.104. The consequences of underwater weirs in entirely excluding navigation have already been pointed out.<sup>136</sup> Underwater weirs have other significant adverse effects.<sup>137</sup> They create a series of impounded reservoirs with significant water level differences. If water discharges remain close to present levels then the potential for eutrophication increases. Colmatation of the riverbed caused by increased sedimentation would within a few years limit the groundwater recharge function of the river and sedimentation is likely to create the adverse water quality effects already observed in the side-arm system. Dredging to remove sediment would be expensive, ecologically damaging and has yet to be proven viable. There would be "loss of species typical for streams, of rheophile organisms, especially of fish species spawning on gravel ground".<sup>138</sup> In short, according to the WWF:

"From the many years of experience about these weirs on the Upper Rhine and the many scientific data produced on its impacts it can be stated that [the building of underwater weirs] will be inappropriate, inefficient, and ecologically detrimental for the Danube and it will rather worsen the situation."<sup>139</sup>

3.105. In responding to this view, Professor Igor Mucha who was the Slovak member of the Working Group of Monitoring and Water Management Experts for the Gabčíkovo System of Locks, failed to address certain issues. His paper speaks of "very shallow weirs", whereas those actually contemplated in the 1993 December Report<sup>140</sup> would have been 3-5 metres high, leaving only a small part of the original water

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<sup>136</sup> See above, paragraph 3.67.

<sup>137</sup> For a more detailed analysis of the impact of underwater weirs see *Scientific Evaluation*, HC-M, vol 2, chaps 2.5, 4.6.1.

<sup>138</sup> Working Group of Monitoring and Water Management Experts for the Gabčíkovo System of Locks, Report on Temporary Water Management Regime, 1 December 1993: HM, Annexes, vol 5 (part II), annex 19 at point 7.9.

<sup>139</sup> WWF, *A new solution for the Danube* (December 1993): HM, Annexes, vol 5 (part II), annex 20 at p 853.

<sup>140</sup> Working Group of Monitoring and Water Management Experts for the Gabčíkovo System of Locks, Report on Temporary Water Management Regime, 1 December 1993: HM, Annexes, vol 5 (part II), annex 19, *Table 7.1*.

depth above the crest of the weirs. Professor Mucha claims that discharges would be large enough to ensure needed velocities; the 1993 Report, however, unambiguously states that even 400 m<sup>3</sup>/sec (i.e., approximately double the present average low-flow discharge) would not allow flow velocities in the main river "to provide adequate living conditions for the species requiring higher velocities, for example fish species like Streber."<sup>141</sup> Professor Mucha also denies any "cascade" effect, although calculations show that underwater weirs would definitely produce hydraulic effects separating the different sections in such a way that most of the fish species could not cross the hydraulic barriers.<sup>142</sup> Without "cascades" no electricity could be generated by the heads at the weirs, as contemplated in the official publication describing Variant C.<sup>143</sup>

3.106. Moreover, inherent in the Slovak approach to mitigation measures is the assumption that there will be no increase in water discharges to the main riverbed.<sup>144</sup> This is, of course, driven by the desire to maximise electricity generation.

3.107. In 1994 the base level of discharge into the main channel has been about 200 m<sup>3</sup>/sec, lower even than the 1993 average. At that rate underwater weirs would have little, if any, beneficial impact, but would occasion significant adverse effects. It was this which led the EC experts (including Professor Mucha's colleague in the PHARE programme, Mr Refsgaard) to recommend as a temporary solution "for the short period until the conclusions from the judgement of the International Court of Justice can be implemented", that 800 m<sup>3</sup>/sec average yearly discharge to the main channel of the Danube be secured by Slovakia, and that this increase in discharge be accompanied by building two underwater weirs.<sup>145</sup>

3.108. Hungary accepted this recommendation, while pointing out that:

"[T]he proposed regime falls short of the minimum necessary to provide real protection to the environment, including natural

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<sup>141</sup> Ibid, point 7.9.

<sup>142</sup> *Scientific Evaluation*, HC-M, vol 2, chap 2, Figure 2.7.

<sup>143</sup> "Gabčíkovo-Nagymaros Project, The Temporary Solution on the Territory of the CSFR-Slovakia"; SM, annex 37.

<sup>144</sup> See e.g., the Proposal for the Temporary Water Management Regime of the Gabčíkovo System of Locks: HM, Annexes, vol 4, annex I37.

<sup>145</sup> Working Group of Monitoring and Water Management Experts for the Gabčíkovo System of Locks, Report on Temporary Water Management Regime, 1 December 1993, HM, Annexes, vol 5 (part II), annex 19 at point 9.3.

resources, of the region. It is in no way a model or even an indication of an acceptable long term solution."<sup>146</sup>

Slovakia rejected the recommendation, and has done nothing since to comply with its obligation to agree on and implement a satisfactory temporary water management regime.<sup>147</sup>

3.109. The Slovak Memorial argues that:

"Put simply, the side arms, which prior to the implementation of Variant 'C' were dying areas, are now flourishing and even replacing the function of the Danube channel in terms of providing water to the region."<sup>148</sup>

It adds:

"given that ground water levels increased on Slovak territory as a result of Variant 'C', any impact on flora and fauna should be beneficial"<sup>149</sup>

3.110. This fails to grasp the various processes at work, or the complexity of wetland habitats and the biodiversity they support.<sup>150</sup>

3.111. The photographs in the Slovak Memorial reproduced in support of these statements are slightly misleading. One would have expected the pairs of photographs to compare pre-diversion conditions with post-diversion conditions. In fact, the pairs of photographs were taken *after* the unilateral diversion of the river.<sup>151</sup>

3.112. The subtitles in the upper photographs fail to state the month and year in which they were taken, suggesting that this was the ordinary condition of the side-arms before the diversion.<sup>152</sup> If the dry parts of the riverbed had lost water for longer periods one would have expected colonising weeds to have appeared within weeks, as occurred on the

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<sup>146</sup> Letter of Mr János Martonyi, Hungarian State Secretary for Foreign Affairs, to Mr Pablo Benavides, EC Director for External Economic Relations, 14 January 1994: HM, Annexes, vol 4, annex 132.

<sup>147</sup> HC-M, Annexes, vol 3, annexes 67, 68, 69, 70.

<sup>148</sup> SM, para 5.43.

<sup>149</sup> SM, para 5.57.

<sup>150</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 4.3.3.4.

<sup>151</sup> See *Plate 7*, HC-M, Annexes, vol 5.

<sup>152</sup> SM, para 5.40.

Hungarian side branches.<sup>153</sup> Moreover, the contour of the bushes in a prior season would not be exactly the same as in the following season. It appears that the photograph pairs were taken before and after the Slovak water supply system was instituted, in about May 1993. They do not provide evidence on which to compare the pre- and post-diversion conditions.

3.113. With the environment on its side under extreme pressure and in the context of the limited options available for multiple river-use, Hungary is seeking to limit the significant adverse effects resulting from Variant C. Several hundreds of millions of forints was invested in developing the water pipe system in Szigetköz to provide households and businesses with water. More than 1 million forints *per day* was spent on the operation of the water supply system in Szigetköz, providing a limited supply of approximately 15 m<sup>3</sup>/sec to the floodplain. On 24 August 1994 Hungary proposed to Slovakia a water supply system in the Szigetköz based on channelling water from the Čunovo reservoir to Szigetköz, in a manner similar to that described in the December 1993 EC Expert Report.<sup>154</sup> At the time of submission of this Counter-Memorial no agreement had been reached.

3.114. Slovakia's suggestion to build underwater weirs without *any* increase in the discharge rate is unacceptable even as a temporary *modus vivendi* until the judgement of the Court. Such an approach would probably aggravate the existing significant adverse effects, particularly in relation to surface water quality, bed filtering capacity, loss of habitat, and navigation.

#### SECTION G. VARIANT C AS A PERMANENT STRUCTURE

3.115. Slovakia claims that Variant C is merely a temporary structure which will be operated until Hungary comes to its senses and returns to the full implementation of the Original Project. This implies both that Variant C is technically reversible and that Slovakia is in truth prepared to return to the Original Project.

3.116. Under the Original Project, the Gabčíkovo Power Plant based on the use of Dunakiliti weir was intended to start two or three years before

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<sup>153</sup> See HM, vol 2, photos 13-30.

<sup>154</sup> See HC-M, Annexes, vol 3, annex 73; see also HM, Annexes, vol 5 (part II), annex 19 at point 5.2.1a.

the first turbine at Nagymaros entered into operation.<sup>155</sup> Slovakia's present position is that it will return to the Original Project only *after* the completion of the Nagymaros section.<sup>156</sup>

3.117. From a technical perspective it is doubtful that hydrological conditions in the Dunakiliti-Hrušov reservoir after stopping Variant C could correspond to those designed for the Original Project. The massive new structures of the connecting dyke and the prolongation of the right-side dyke of the bypass canal, situated in the middle of the reservoir, alter the flow and sedimentation conditions, with so-far uncalculated impacts on surface and ground water quality. Such effects would occur in the 11 kilometre long stagnant section downstream of the Čunovo dam from which the water flow could not enter the bypass canal. This situation would differ markedly from the Original Plan, according to which the whole discharge of the Danube would have reached Dunakiliti and have provided a constant renewal of the waterbody in the whole reservoir.

3.118. The Slovak Memorial does not offer any hint with regard to the problems associated with the Variant C structures which would be surrounded by water and subject to repeated water level changes under peak operation mode. Neither does it say anything about manipulation of ice under the changed conditions – a major concern when designing the operational regulations of the Original Project. The new dam at Čunovo would present severe difficulties, as would the 10.5 km long connecting dyke between the bypass weir and the bypass canal. The four turbines now being installed in the Čunovo dam (which would be surrounded by water) would be useless.

3.119. The Slovak Memorial refers to the EC Working Group Report of 23 November 1992 as proof of the reversibility of Variant C.<sup>157</sup> That Report envisaged either the total demolition of the Variant C structures or the full opening of all gates *and* the removal of the closure of the Danube.<sup>158</sup> By contrast the Slovak Memorial envisages neither.

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<sup>155</sup> According to the Mutual Assistance Agreement of 1977 and its 1983 Protocol the time lag between the entry into service of the first unit of Gabčíkovo and Nagymaros respectively would have been three years (HM, Annexes, vol 3, annexes 22, 29). According to the 1989 Protocol (HM, Annexes, vol 3, annex 30) it would have been 2 years.

<sup>156</sup> SM, para 5.65.

<sup>157</sup> HM, Annexes, vol 5 (part II), annex 14; SM, para 5.65.

<sup>158</sup> As an alternative it considers opening a new bypass for the river if the removal of the closure would be too complicated.

3.120. In this context it is important to differentiate between Phase 1 and Phase 2 of Variant C.<sup>159</sup> Phase 1 was already operational, although not fully completed, by the time the Special Agreement to submit this case to the Court was signed. Phase 2 did not exist. In November 1994, Slovakia is entering into a venture estimated to cost 5 thousand million Kcs, almost 50% more than the total cost of Phase 1.<sup>160</sup> This venture is intended to be completed before the case is decided by the Court. Phase 2 will not mitigate the losses of Hungary caused by Phase 1, with the exception of reducing flood and ice risks and restoring small boat navigation on the Danube. With these exceptions, it only serves to maximise benefits to Slovakia from the illegal diversion of the water flow.

3.121. Phase 2 not only prejudices the rights and duties of the parties whilst the case is pending before the Court, but also seeks to transform Variant C into a permanent installation, one which would massively increase the cost of returning the river to its natural flow. Nothing man-made is permanent, as history tells, but huge stone or concrete pyramids tend to survive the regimes responsible for them. The scale of the construction, its cost, the design and mounting of four turbines with 20 MW capacity which would be inoperative under the Original Project, all indicate that Slovakia has no intention to abandon Variant C, but instead plans to operate it on a permanent basis.

3.122. The intention to operate Variant C after the completion of Phase 2 as a permanent structure was confirmed during the August 1994 discussions on a temporary water management regime.<sup>161</sup> Nowhere in Slovakia's December 1993 "Summary technical description of Variant C - Phase 2"<sup>162</sup> is it stated or suggested that the construction is temporary. Hungary is not aware of a single scientific or environmental study commissioned by Slovakia which examines the feasibility of reverting to the Original Project. All the evidence suggests that Variant C is intended as a permanent structure. Slovakia once again is striving to create a situation of *fait accompli*, saying one thing (including in its pleadings before the Court) while doing another.

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<sup>159</sup> SM, para 5.35.

<sup>160</sup> "G/N Project, The Temporary Solution on the Territory of the CSFR-Slovakia"; SM, annex 37.

<sup>161</sup> See above, paragraph 2.116.

<sup>162</sup> "Sústava Vodných Diel Gabčíkovo-Nagymaros. Uvedenie VD Gabčíkovo-Nagymaros do prevádzky dočasným riešením Dočasné riešenie zdrže na území SR-II etapa".

**PART II: THE LAW**





## CHAPTER 4

## HUNGARY'S LEGAL POSITION

## SECTION A: OVERVIEW

4.01. Hungary's legal position was set out in detail in its Memorial. In important respects, the Slovak Memorial fails to deal with the relevant arguments. For example, it hardly mentions the difficulty presented by the disappearance of Czechoslovakia as a state on 31 December 1992.<sup>1</sup> It does not deal with the issue of whether Variant C might have been justified as a countermeasure.<sup>2</sup> It assumes that there is no need to analyse in any detail the Special Agreement which is the foundation of the Court's jurisdiction in the present case.<sup>3</sup> It assumes that the Court has no interest or concern with the issue of a temporary water management regime, despite the following salient facts: (1) the parties are obliged by Article 4 of the Special Agreement to agree on and implement such a regime, (2) this obligation is stated to be essential to the object and purpose of the Special Agreement itself, and (3) the norm *pacta sunt servanda* is deliberately placed at the heart of the Slovak case, to the exclusion of almost all other considerations.<sup>4</sup> On the other hand the Slovak Memorial does deal at some length with matters which are not and have never been at issue between the parties.<sup>5</sup>

4.02. Under these circumstances it is difficult at this stage to form a comprehensive view of the legal issues which divide the parties. In this

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<sup>1</sup> Cf HM, paras 10.107-10.120.

<sup>2</sup> Cf HM, paras 7.88-7.118.

<sup>3</sup> See SM, Introduction, para 3 ("no need for an extensive analysis of the Special Agreement").

<sup>4</sup> See SM, Introduction, para 6. Cf SM, para 6.90 where it is argued that Hungarian termination of the 1977 Treaty was a breach of that Treaty, without considering any of the justifications for termination. This is one of a number of indications of a failure to confront Hungary's arguments.

<sup>5</sup> See SM, para 6.14-6.23, where it is argued that the Treaty was in force until 1992, something Hungary has never denied; SM, paras 6.92-6.96, where it is argued that Hungary was not entitled to withdraw from the Treaty under the customary law equivalent of Art 56 of the Vienna Convention ("Denunciation or withdrawal from a treaty containing no provision regarding termination, denunciation or withdrawal"), although Hungary at no stage relied on Art 56.

Counter-Memorial Hungary will deal with a number of legal issues raised in the Slovak Memorial, without repeating arguments not yet addressed by Slovakia. It will also bring to the Court's attention developments which have occurred since the effective date of Hungary's Memorial.

4.03. Specifically, this Chapter will address the following issues:

- \* the relationship between the 1977 Treaty and other relevant agreements (see paragraphs 4.03-4.09);
- \* the context of the international law of the environment and its relationship to relevant treaties (see paragraphs 4.10-4.39).

This forms the necessary background to consider, in Chapter 5, the dispute over suspension of performance and subsequent termination of the 1977 Treaty; in Chapter 6, the illegality of Variant C, and in Chapter 7, the remedial issues arising in the case, so far as they can be dealt with at this stage.

## **SECTION B: THE 1977 TREATY AND OTHER AGREEMENTS**

### **(1) AGREEMENTS LINKED TO THE 1977 TREATY**

4.04. According to the Slovak Memorial, the 1977 Treaty "refers to several other agreements that supplement and are an inseparable part of the Treaty".<sup>6</sup> In fact, two different types of agreements related to the 1977 Treaty were entered into by the Contracting Parties. On the one hand, a Protocol concerning the Amendment of that Treaty, adopted on 10 October 1983, modified its Article 4(4) in order to modify the commencement of the operation of the power generation plants from the period 1986-1990 to the period 1990-1994. This Protocol was ratified as required by its Article 2 and entered into force on the day of the exchange of instruments of ratification.<sup>7</sup> In this it conformed with the 1977 Treaty which it modified, applying the rule of "parallélisme des actes". Nothing in the 1977 Treaty provided for modification or amendment of its clauses.

4.05. On the other hand, another agreement "linked to the 1977 Treaty", the Agreement on Mutual Assistance in the Course of Building the Gabčíkovo-Nagymaros Dam, was signed at Budapest on 16 September 1977 and entered into force on the same day as the 1977

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<sup>6</sup> SM, para 6.24.

<sup>7</sup> HM, Annexes, vol 3, annex 28; SM, annex 7.

Treaty (30 June 1978). It was not submitted to ratification.<sup>8</sup> Several instruments later modified it. On 10 October 1983, a Protocol amending the 1977 Agreement on Mutual Assistance was signed; under Article 5, this was not subject to ratification either.<sup>9</sup> This instrument was then abrogated by a Protocol signed on 6 February 1989, which, again, was not subject to ratification.<sup>10</sup>

4.06. There were thus two different sets of treaties: the "basic Treaty" of 1977 as amended by the Protocol of 1983, both of which required ratification, and, on the other hand, the Agreement on Mutual Assistance, as amended, which was in a simplified form and did not require ratification. The latter had a purely technical character, setting or modifying the timetable for future works and the sharing of works and of the expected production of energy. This explains the difference in the legal nature of the two sets of instruments. On the basis of the 1977 Treaty as amended and its modification certain details – important, no doubt, but which were considered as distinct from the 1977 Treaty itself – were settled by the series of Agreements on Mutual Assistance, taking into account the factual situation. It is clear that these agreements could not modify the Treaty itself: they had to be – and were – instruments to further its implementation in pursuance of its purposes. They had thus to be in conformity with the provisions of the Treaty, especially with its Article 15 related to the protection of water quality and its Article 19 concerning the protection of the natural environment. When the requirements resulting from these provisions were not fulfilled, the Contracting Parties had to adapt the timetable and the sharing of the work in order to implement their basic obligation. When Hungary suspended work in accordance with the timetable set in the amended Mutual Assistance Agreements for a limited period, it used its right flowing from the 1977 Treaty to ask for the full and correct implementation of the two articles. This was in conformity with the 1977 Treaty itself.<sup>11</sup>

4.07. This was clearly expressed in the demands for new negotiations on this issue. Until the beginning of work on Variant C by Slovakia, the continued validity of the basic Treaty was not contested. The suspension only concerned secondary instruments, the application of which in the circumstances could not ensure the full implementation of the principal treaty.

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<sup>8</sup> HM, Annexes, vol 3, annex 22; SM, annex 5.

<sup>9</sup> HM, Annexes, vol 3, annex 29; SM, annex 8. See also SM, para 3.11.

<sup>10</sup> HM, Annexes, vol 3, annex 30; SM, annex 9.

<sup>11</sup> Cf HM, paras 4.15, 6.46-6.49.

4.08. Two further remarks should be made here on the question of related agreements. The first concerns the status of the Joint Contractual Plan, which was the set of substantive plans and specifications for the Barrage System. The Joint Contractual Plan was subordinate to the 1977 Treaty: it was not subject to ratification, could be and was readily amended, and was never registered with the United Nations under Article 102 of the Charter.<sup>12</sup> Indeed the Agreement regarding the Drafting of the Joint Contractual Plan of 1976<sup>13</sup> itself was not registered, and it carefully did not give to the Plan itself any specific legal status. Thus it is not the case that the Joint Contractual Plan was "no doubt...an agreement at the same level as the other interrelated treaties and inter-State agreements".<sup>14</sup> It had such status as was given it by the 1977 Treaty itself.

4.09. The second point concerns the "related instruments" to which reference is made in the first preambular paragraph of the Special Agreement. The Slovak Memorial is unclear and equivocal about what it understands to be the "related instruments" which were terminated along with the 1977 Treaty in May 1992.<sup>15</sup> The position is as explained in the Hungarian Memorial: there were in all seven "related instruments", all specifically dealing with the Barrage System in one respect or another.<sup>16</sup> By contrast Hungary never suggested that the Boundary Waters Convention of 1976 was a related instrument or that it was in any way affected by the events of 1989-1992. On the contrary the Parties agree that the 1976 Convention is still in force.<sup>17</sup>

### SECTION C: THE CONTEXT OF THE INTERNATIONAL LAW OF THE ENVIRONMENT

4.10. The contrast between the Hungarian and Slovak Memorials on the issue of the international law of the environment is stark. While Slovakia claims that Variant C is good for the environment of the region, it appears equally to claim that this benefit is on its part a voluntary act,

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<sup>12</sup> Cf HM, para 4.15.

<sup>13</sup> HM, Annexes, vol 3, annex 18; HM, para 4.03.

<sup>14</sup> As asserted by SM, para 6.11.

<sup>15</sup> See e.g., SM, Introduction, para 4, and paras 6.42, 6.54.

<sup>16</sup> HM, paras 4.52-4.54.

<sup>17</sup> SM, para 6.43, 6.46; HM, paras 4.33-4.35, 10.119, note 124. The 1976 Convention remains in force because it is a treaty relating to the regime of a boundary, and because the parties have so agreed: cf HM, para 10.110 (incorporating errata). For the text of the 1976 Convention see Annexes, vol 3, annex 19.

and that general international law imposes no relevant obligations on it in this regard. In part it does so by claiming that the 1977 Treaty is a *lex specialis*, which contained its own regime, however inadequate, on the subject.<sup>18</sup> In part it does so by asserting that developments in the international law of the environment are the product of "soft law", and that they impose little or no constraints on state action.<sup>19</sup> Associated with this is the remarkable claim that Variant C has done little or no "significant" damage to Hungary.<sup>20</sup>

4.11. It is necessary briefly to revisit the issues, and in particular to refer to a number of important developments since the filing of the Memorials.

#### (1) THE INTERPRETATION OF ARTICLE 15 OF THE 1977 TREATY

4.12. It was argued in the Hungarian Memorial that Article 15 of the 1977 Treaty imposed on the parties an obligation to avoid pollution or the risk of pollution of the water of the Danube, broadly defined so as to include the subsurface water related to it, "as a result of the construction and operation of the System of Locks". That obligation was continuous: it arose at the onset of the planning process, existed throughout the construction phase and was intended to operate for the lifetime of the System.<sup>21</sup> Recent developments support these arguments on several points.

4.13. First, the Draft Articles of the International Law Commission on the Law of the Non-Navigational Uses of International Watercourses, adopted by the Commission on second reading, support Hungary's assertion as to the scope of Article 15 of the 1977 Treaty.<sup>22</sup> Article 15 requires the Parties to—

"ensure...that the quality of the water in the Danube is not impaired as a result of the construction and operation of the System of Locks."<sup>23</sup>

Hungary argues that this provision extends not just to surface but also subsurface waters.

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<sup>18</sup> SM, paras 8.106-8.112. See below, paragraphs 4.21-4.27 for discussion of this issue.

<sup>19</sup> SM, paras 7.74, 8.112.

<sup>20</sup> SM, paras 7.85, 8.94.

<sup>21</sup> HM, paras 6.13-6.20.

<sup>22</sup> HM, paras 6.13-6.20.

<sup>23</sup> HM, Annexes, vol 3, annex 21.

4.14. According to Article 2(b) of the 1994 Draft Articles:

“‘Watercourse’ means a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus...”<sup>24</sup>

4.15. The Commentary states that the term “underground waters” used on first reading was replaced by the term “groundwaters” to better reflect contemporary usage. It refers—

“to the hydrologic system composed of a number of different components through which water flows, both on and under the surface of the land. These components include rivers, lakes, aquifers, glaciers, reservoirs and canals. So long as these components are interrelated with one another, they form part of the watercourse. This idea is expressed in the phrase, ‘constituting by virtue of their physical relationship a unitary whole’. Thus, water may move from a stream into the ground under the stream bed, spreading beyond the banks of the stream, then re-emerge in the stream, flow into a lake which empties into a river, be diverted into a canal and carried to a reservoir, etc. Because the surface and groundwaters form a system, and constitute by virtue of their physical relationship a unitary whole, human intervention at one point in the system may have effects elsewhere within it.”<sup>25</sup>

4.16. A Note annexed to the Second Rapport of the International Law Commission on the Law of the Non-Navigational Uses of International Watercourses also emphasised the importance of aquifers in the non-navigational uses of international watercourses,<sup>26</sup> and in particular stressed that aquifers related to existing surface waters are naturally included in the measures protecting surface waters. The Hungarian thesis is reinforced by the insistence of the Special Rapporteur on the need of the management of all water resources in an integrated manner.<sup>27</sup>

<sup>24</sup> *Report of the International Law Commission on the Work of its 46th Session, 2 May-22 July 1994* (UN Doc A/49/10) at p 199. See also HM, Annexes, vol 3, annex 21.

<sup>25</sup> *Report of the International Law Commission on the Work of its 46th Session, 2 May-22 July 1994* (UN Doc A/49/10) at pp 200-201.

<sup>26</sup> International Law Commission, 46th Session, Mr R Rosenstock, Special Rapporteur, Second Report on the Law of the Non-Navigational Uses of International Watercourses, UN Doc A/CN.4/462, 21 April 1994, pp 22-35.

<sup>27</sup> *Ibid*, para 3. See also Note, *ibid*, p 28, para 22.

4.17. The Note annexed to the Second Report refers to a series of recommendations and resolutions on the proper utilisation and management of water resources, starting with the United Nations Water Conference at Mar del Plata, Argentina, in 1977, continuing with the 1982 Dakar inter-regional meeting, the Charter on groundwater management adopted by the European Economic Community and the recommendations of the United Nations Conference on Desertification.<sup>28</sup> It concludes by quoting the conclusions of the International Conference on Water and the Environment, held at Dublin from 26 to 31 January 1992:

“The extent and severity of contamination of unsaturated zones and aquifers has long been underestimated due to the relative inaccessibility of aquifers and the lack of reliable information on aquifer systems. A strategy for the protection of groundwater must be aimed at protecting aquifers from becoming contaminated and preventive efforts should be directed first at land-use activities and point and non-point sources that pose a high risk of causing pollution. Care must be exercised to avoid groundwater development that leads to the degradation of groundwater quality or the depletion of groundwater supplies. By the year 2000 assessments of known aquifers and their vulnerability to contamination should have commenced in all countries, while potential sources of groundwater pollution should be identified and plans for their control developed”.<sup>29</sup>

4.18. These texts underline the lack of merit of Slovakia’s allegation that the quality of the water in the aquifer in the areas where the hydropower plant was to be built could be ensured by simple monitoring after the construction was finished.

4.19. No better conclusion could be found than that of a former Special Rapporteur:

“Despite problems in collecting data regarding groundwater under varying hydrologic and geologic conditions, there can be no doubt that groundwater is an integral and vital part of unbroken cycle of movement through which the supply of fresh water is continually replenished...It is necessary to consider as well the effects of the existence of available reserves of

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<sup>28</sup> Ibid, pp 29-32.

<sup>29</sup> Ibid, p 33. The ILC decided not to include unrelated transboundary groundwaters in the Draft Articles as adopted on second reading, but recommended that similar principles be applied to confined groundwaters: see *Report of the International Law Commission on the Work of its 46th Session, 2 May-22 July 1994* (UN Doc A/49/10) at p 326.



groundwater, and of the contribution of water flowing in water-courses to the quantity of groundwater.”<sup>30</sup>

## (2) GENERAL PRINCIPLES OF ENVIRONMENTAL LAW

4.20. According to Article 2 of the Special Agreement, the Court is requested to decide on the basis of the 1977 Treaty and rules and principles of general international law, as well as such other treaties as the Court may find applicable. This means that the Court’s task is to consider both the Treaty, other relevant treaties and the rules and principles of general international law.

4.21. Hungary has demonstrated that the Treaty itself allowed for the application of such rules and principles, especially for the implementation of the two articles which are the most important for the present issue, Articles 15 and 19. These provisions aim at preventing the impairing of the quality of the water “as a result of the construction and operation of the System of Locks”, and at ensuring “compliance with the obligations for the protection of nature arising in connection with the construction and operations of the System of Locks”. In both cases the applicable international law rules are those which are in force during the whole lifetime of the System of Locks. This includes those new rules which have appeared since the entry into force of the 1977 Treaty. These must also be implemented for every issue which concerns the operation of the “System of Locks”,<sup>31</sup> in conformity with Article 2 of the Special Agreement. Slovakia’s contention that the international law rules protecting the environment which have emerged since the entry into force of the 1977 Treaty are not to be applied because the Treaty is a “*lex specialis*”<sup>32</sup> ignores the text of the 1977 Treaty itself, as well as Article 2 of the Special Agreement.

4.22. The application of new norms to assess and interpret treaties is also supported by the jurisprudence of the Court:

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<sup>30</sup> Mr S Schwebel, Special Rapporteur, First Report on the law of the non-navigational uses of international watercourses, *ILC Yearbook 1979*, vol II (Part One), p 149, para 21.

<sup>31</sup> HM, paras 6.20, 6.25.

<sup>32</sup> SM, paras 8.106-8.112.

"...an international instrument has to be interpreted and applied within the framework of the entire legal system prevailing at the time of the interpretation."<sup>33</sup>

4.23. This jurisprudence can be applied in the present case so as to take into account the important modifications which were introduced into the international legal system by the need to protect the environment at different levels, national, regional and world-wide. The principles and rules which were adopted since the conclusion of the 1977 Treaty by the international community cannot be ignored today. In order to characterise such transformation one may quote Article 22(1) of the Convention on Biological Diversity, adopted at Rio de Janeiro on 5 June 1992, which entered into force on 29 December 1993 and which has been ratified by both Hungary and Slovakia:

"The provisions of this Convention shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause serious damage or threat to biological diversity."<sup>34</sup>

4.24. The fundamental principles which have thus emerged have already been invoked by Hungary: the principle of co-operation in order to protect the environment,<sup>35</sup> especially in transboundary relations,<sup>36</sup> the principles of prevention<sup>37</sup> and of precaution,<sup>38</sup> the duties to perform thorough environmental impact assessment<sup>39</sup> and to conserve biological diversity,<sup>40</sup> the protection of human rights against the exercise of countermeasures,<sup>41</sup>

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<sup>33</sup> Legal Consequences for States of the Continued Presence of South Africa in Namibia (Southwest Africa) notwithstanding Security Council Resolution 276 (1970), Advisory Opinion, ICJ Reports 1971, pp 16 ff, at p 31.

<sup>34</sup> UNEP/Bio.Div/CONF/L.2, reprinted in (1992) 31 ILM pp 822 ff, at p 832.

<sup>35</sup> HM, paras 6.70-6.71.

<sup>36</sup> HM, paras 7.45-7.82.

<sup>37</sup> HM, paras 6.57-6.63, 7.05, 7.76.

<sup>38</sup> HM, paras 6.64-6.68, 8.31, 10.52.

<sup>39</sup> See UN Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, Finland, 25 February 1991), (Arts 2, 4 and appends I and II), 30 ILM 800 (1991). Appendix I refers specifically to activities involving large dams and reservoirs.

<sup>40</sup> See UN Conference on Environment and Development: Convention on Biological Diversity (Rio de Janeiro, 5 June 1992), (Arts 3, 8, 9, 10 and 14), 31 ILM 818 (1992).

<sup>41</sup> HM, para 7.114.

the right to life<sup>42</sup> and the duty of the State to protect it,<sup>43</sup> as well as the right to a healthy and ecologically sound environment.<sup>44</sup> Slovakia contends that the Stockholm Declaration and other international instruments which make such principles explicit are "at most soft law" and do not constitute discrete binding rules of international law.<sup>45</sup> By contrast, the Slovak Memorial itself invokes Principle 21 of the Stockholm and principle 2 of the Rio Declarations,<sup>46</sup> and the present legislation applicable in Slovakia reflects many such principles.<sup>47</sup> Under that legislation, Variant C was unlawful from its inception and until early 1994 when the relevant Committee found it necessary to reduce the discharge levels, coincidentally, to those provided for in the Joint Contractual Plan.<sup>48</sup>

4.25. Slovakia invokes its "right to development" and relies on the fact that Principle 21 of the Stockholm Declaration was modified at the Rio Conference by adding the words "and developmental" before the word "policies".<sup>49</sup> In fact, Principle 2 has the same meaning and effect as Principle 21, the modification merely making clear that which was already implicit in Principle 21. Even before the inclusion of the new words each state had the right to exploit its own resources pursuant to its own developmental policies. If States had intended the introduction of the new words to alter the meaning of Principle 21, they would not have relied upon the Principle 21 version of the text in three other instruments which they also adopted in June 1992, namely Article 3 of the Biodiversity Convention, Agenda 21,<sup>50</sup> and the Non-Legally-Binding Authoritative Statement of Principle for a Global Consensus on the Management, Conservation and Sustainable Development of all Forests.<sup>51</sup> Slovakia also ignores Principle 3 of the Rio Declaration, which proclaims that the "right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and

42 HM, para 7.122. See also Art 10(2) of the ILC Draft Articles on the special regard which must be given to the requirements of vital human needs in the event of a conflict between uses of an international watercourse.

43 HM, para 10.24.

44 HM, para 10.38.

45 SM, para 8.112.

46 SM, para 7.46.

47 HM, para 7.59.

48 For the illegality of Variant C under Slovak law see HM, para 7.61.

49 SM, para 7.46.

50 Agenda 21, para 15.3; UN Doc A/CONF.151/26/Rev 1 (vol I) (1993).

51 Para 1(a); UN Doc A/CONF.151/26/Rev 1 (vol I), 480 (1993).

future generations”, and Principle 4 which states unequivocally that “environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it”.

4.26. The construction and operation of Variant C was certainly not an application of the right to sustainable development, since it harmed and continues to harm the environmental and probably also the developmental needs of future generations.

4.27. In addition, Slovakia disregards Hungary’s right to permanent sovereignty over its natural resources, which is an essential component of development.<sup>52</sup>

(3) THE CONVENTION ON CO-OPERATION FOR THE PROTECTION AND SUSTAINABLE USE OF THE DANUBE RIVER, SOFIA, 29 JUNE, 1994

4.28. This new Convention<sup>53</sup> is based in large part on the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, drafted in the framework of the UN Economic Commission for Europe and adopted at Helsinki on 17 March 1992.<sup>54</sup> It has been signed by Hungary and Slovakia.

4.29. According to its preamble, the Convention aims at a lasting improvement and protection of the Danube River and of the waters within its catchment area by ensuring sustainable and equitable water management, including the conservation, improvement and the rational use of surface waters and groundwater (Article 2(1)). Like other modern international instruments,<sup>55</sup> it recognises the unity of surface and subsurface waters. Article 2(5) recognises the need for a sustainable and equitable water management according the criteria of a stable, environmentally sound development—

“which are at the same time directed to:

- maintain the overall quality of life;
- maintain continuing access to natural resources;

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<sup>52</sup> HM, paras 6.75, 7.83-7.87.

<sup>53</sup> See Convention on Co-operation for the Protection and Sustainable Use of the Danube River (Danube River Protection Convention), July 1994; HC-M, Annexes, vol 3, annex 71.

<sup>54</sup> 31 ILM (1992), p 1312 ff; see also HM, paras 6.66, 7.51, 7.62.

<sup>55</sup> See HM, paras 6.16-6.17.

- avoid lasting environmental damage and protect ecosystems;
- exercise [a] preventive approach".

It proclaims that the precautionary principle constitutes a basis for all measures aiming at the protection of the Danube river and of the waters within its catchment area (Article 2(4)).

4.31. The duties of Contracting Parties are to take all appropriate legal, administrative and technical measures, to at least maintain and improve the current environmental and water quality conditions of the Danube river and of the waters in its catchment area and to prevent and reduce as far as possible adverse impacts and changes occurring or likely to be caused (Article 2(3)). The urgency of water pollution abatement measures and of sustainable water use is emphasised and taking this into account, the Parties shall strengthen, harmonise and co-ordinate measures aiming at sustainable development and environmental protection of the Danube river. This objective is particularly directed-

"to ensure the sustainable use of water resources for municipal, industrial and agricultural purposes as well as the conservation and restoration of ecosystems and to cover also other requirements occurring as to public health."<sup>56</sup>

4.32. These principles and rules confirm the views developed by Hungary concerning the priority of the protection of the environment and the application of principles such as sustainable development, prevention and precaution. The Convention also confirms that not only planned, but also ongoing measures must be submitted to the rules concerning environmental protection, as far as they cause or are likely to cause transboundary impacts (Article 3(2)).<sup>57</sup> The Convention mentions in this regard planned activities and measures in the field of water construction works, as well as other planned activities and measures for the purposes of water use, such as water power utilisation, water transfer and withdrawal and the operation of the existing hydrotechnical constructions such as reservoirs and water power plants. Some specific problems resulting from such activities are also mentioned, such as erosion and abrasion. The Convention is applicable to fishery and inland navigation as far as problems of water protection against pollution caused by these activities are concerned (Article 3), which shows how much this instrument is focused on the preservation of the quality of the Danube River and of the waters of its catchment area.

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<sup>56</sup> Art 2(3).

<sup>57</sup> As argued in HM, paras 6.20, 6.25.

4.33. Articles 5 and 6 of the Convention concern prevention, control and reduction of transboundary impact and provide for specific water resources protection measures. They seek to ensure efficient water quality protection and sustainable water use and thereby to prevent, control and reduce transboundary impact (Article 5). Water protection measures are particularly important: Article 6 provides that:

“The Contracting Parties shall take appropriate measures aiming at the prevention or reduction of transboundary impacts and at a sustainable and equitable use of water resources as well as at the conservation of ecological resources, especially:

(a) enumerate groundwater resources subject to long-term protection as well as protection zones valuable for existing or future drinking water supply purposes;

(b) prevent the pollution of ground-water resources, especially those in a long-term perspective reserved for drinking water supply...

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(d) take into account possible influences on the water quality resulting from planned activities and ongoing measures pursuant to Article 3 paragraph 3;

(e) evaluate the importance of different biotope elements for the riverine ecology and propose measures for improving the aquatic and littoral ecological conditions.”

4.34. Among the particular measures, the Convention declares that States shall ensure that environmental impact assessment in line with supranational and international regulations or other procedures for evaluation and assessment of environmental effects are applied (Article 7(5)(f)). They also shall report to an International Commission created by the Convention on planned activities, which by reason of their character are likely to cause transboundary impacts (Article 10(f)). They shall exchange information with other States involved at the request of one or several Contracting Parties concerned and shall enter into consultations on planned activities which are likely to cause transboundary impacts: prior to a decision on such activities they shall wait for the results of the consultations (Article 11).

4.35. By signing this instrument, Hungary and Slovakia have indicated their general acceptance of the principles and rules which are to be applied for the conservation of the quality of the water of the Danube and in the aquifer connected to it and for the protection of nature. This is significant in the present case for several reasons.

4.36. First, although the 1994 Convention is not retrospective in the sense of making unlawful acts done prior to its entry into force, it applies to the *future* conduct of the parties even though this may relate to existing facilities or projects which may impact on the Danube. It makes no provision for "vested rights" to harm the environment. Thus in the event of conflict between the standards of the Convention in the future and any provision of an earlier bilateral treaty, the Convention will prevail.

4.37. This conclusion is explicitly drawn by the Convention itself so far as concerns existing and supplementary agreements. According to Article 21:

"The Contracting Parties, on the basis of equality and reciprocity shall adapt existing bilateral or multilateral agreements or other arrangements, where necessary to eliminate contradictions with basic principles of this Convention, and shall enter into supplementary agreements or other arrangements where appropriate."

4.38. Secondly, according to Article 18 of the Vienna Convention on the Law of Treaties, which now reflects international law on the point, a State which has signed a treaty must not undermine the object and the purpose of a treaty, pending a decision on ratification. The parties to the present case are thus obliged to respect the obligations which result from its signature, and to take all appropriate measures to prevent and reduce adverse impacts and changes occurring or likely to be caused, if necessary on the basis of the precautionary principle, to the extent that this is necessary to avoid undermining the object and purpose of the Convention.

4.39. Thirdly, the Convention is an appropriate reference point for the Court in relation to the future of the region affected by the Project. The Court is not only concerned in this case with the past, with a historical dispute which has limited consequences for the future. The essential disagreement between the Parties *is* as to the future. In this regard the articulated standards of the Convention, reflecting as they do modern legal principles of protection and use of transboundary rivers, are entirely appropriate as guidelines for the Court in seeking to resolve this dispute.

## CHAPTER 5

THE DISPUTE OVER PERFORMANCE AND  
SUBSEQUENT TERMINATION OF THE 1977 TREATY

5.01. This Chapter discusses a number of issues relating to the performance and termination of the 1977 Treaty, to the extent necessary to deal with arguments on those issues presented in the Slovak Memorial.

5.02. Specifically the issues dealt with are as follows: (1) the relation between treaty law and the law of state responsibility, so far as it concerns the dispute (below, **Section A**, paragraphs 5.03-5.22); (2) issues relating to the suspension and subsequent abandonment of works, and to the termination of the 1977 Treaty (**Section B**, paragraphs 5.23-5.48); and the consequences of that termination (**Section C**, paragraphs 5.49-5.51).

SECTION A: TREATY LAW AND THE LAW OF STATE  
RESPONSIBILITY AS THEY RELATE TO THE DISPUTE

5.03. Throughout its Memorial, Slovakia focuses, to the virtual exclusion of all other legal arguments, on the law of treaties. It asserts and reasserts Hungary's disregard of the international law of treaties. Within the law of treaties it focuses, to the substantial exclusion of other elements of that law, on the norm *pacta sunt servanda*. Correlatively it seeks to exclude or to subordinate elements of the law on which Hungary has relied throughout the dispute. It does this in a number of ways.

5.04. Its *first* argument in this regard is that Hungary seeks to evade the application of the rules laid down in the Vienna Convention on the Law of Treaties by relying on the argument that the Convention entered into force for both countries after 1977.<sup>1</sup> Hungary has already clarified this matter in its Memorial.<sup>2</sup> While reaffirming that the Vienna Convention was not binding on the Parties in 1977, a point which is a pure matter of fact, it recognises, as the Court itself has repeatedly recognised, that the Convention "may in many respects be considered as a codification of existing customary law..."<sup>3</sup>

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<sup>1</sup> SM, para 8.10.

<sup>2</sup> See esp HM, para 10.47.

<sup>3</sup> *Fisheries Jurisdiction Cases (Jurisdiction)*, *UK v Iceland* ICJ Rep 1973 p 3 at p 18; *Federal Republic of Germany v Iceland* ICJ Rep 1973 p 49 at p 63.



5.05. There is then no difficulty in using the Vienna Convention as a guide to the content of general international law, even if, as the Court's statement clearly requires, it must be verified in each case whether the provision referred to does reflect general international law, or whether it constitutes a "progressive development" in some respect. As follows from the arguments developed in its Memorial, Hungary relies on the customary international law of treaties in order to demonstrate the lawfulness of its conduct.<sup>4</sup>

5.06. The *second* way in which Slovakia attempts to exclude all other norms than *pacta sunt servanda* merits more attention. It is the attempt to demonstrate an inconsistency between the law of treaties on the one hand and the law of state responsibility on the other, and thereby to exclude the latter.<sup>5</sup> The purpose of this endeavour is to assert that Hungary cannot invoke any "circumstances precluding wrongfulness" belonging to the law of state responsibility to justify its suspension of performance under the 1977 Treaty, or its subsequent termination. In Slovakia's view, the only grounds for suspension or termination are contained in Articles 54-62 of the Vienna Convention. According to Slovakia, Article 42 of the Vienna Convention establishes the law of treaties as the only ground for suspending the performance of a treaty or for terminating it.<sup>6</sup>

5.07. Without entering into an academic discussion, an initial observation should be made. In the circumstances of the present case, every element of Hungary's conduct has to be considered in the context

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<sup>4</sup> Slovakia also argues that the Vienna Convention applied *en tant que tel* to the 1977 Treaty because the 1989 Protocol "affirmed the substantive obligations of the 1977 Treaty", and the Vienna Convention was by 1989 in force for the parties: SM, para 6.59. The argument is misconceived for a number of reasons. First, the 1989 Protocol did not amend the 1977 Treaty but only the Mutual Assistance Agreement: see above, paragraph 4.06, and also HM, para 4.23. The detailed timetable for the completion of work was not contained in the 1977 Treaty. Secondly, in accordance with Art 4 of the Vienna Convention, that Convention did not apply to the 1977 Treaty, and there is nothing in the 1989 Protocol which would have the effect of retrospectively applying the Vienna Convention to a treaty concluded long before. Thirdly, there is no rule of international law that a protocol or other amendment to a treaty is to be regarded as substantively re-enacting the treaty itself, as it were by implication; a protocol or other amendment has independent force as far as it goes, and no more. The provisions of the Vienna Convention on amendment to treaties (Arts 39-41) deal with amendments between all or some parties to a treaty on the footing that they are separate agreements. Thus even if the 1989 Protocol had amended the 1977 Treaty (which it did not), it would not have had the effect of applying the Vienna Convention retrospectively to that Treaty.

<sup>5</sup> SM, para 8.12 ff.

<sup>6</sup> SM, paras 8.12, 8.18.

of the wrongful acts previously committed by Czechoslovakia. In particular, the reason Hungary relied on a state of "environmental necessity" first to suspend the work and then to terminate the 1977 Treaty is that it was confronted with a situation created by Czechoslovakia's breach of its treaty obligations.<sup>7</sup>

5.08. But there is – quite apart from this consideration – no basis for Slovakia's attempt to exclude the law of state responsibility, either in the mandate of the Court in the present case or in public international law more generally.

5.09. As to the mandate of the Court, under Article 2(1) of the Special Agreement the Court is requested to decide "on the basis of the Treaty and rules and principles of general international law". Those rules and principles cover *inter alia* two branches, the law of state responsibility and the law of treaties. According to the wording of the Special Agreement, the law of state responsibility is as relevant to this case as the law of treaties.

5.10. Moreover, the questions put to the Court in Article 2(2)(a) and (b) of the Special Agreement are characteristic of a proceeding involving state responsibility, since they ask whether, first, Hungary's conduct, and then Czechoslovakia's actions, were lawful or unlawful in regard to their legal obligations as they derive from the sources enunciated in Article 2(1). It is therefore entirely natural to apply the law of state responsibility.

5.11. As to the position under general international law, Slovakia's attempt to exclude the law of state responsibility raises important issues for the settlement of the present dispute.

5.12. Slovakia argues that, under the law of treaties, a party to a treaty is not entitled to rely on grounds of general state responsibility to excuse its non-performance. This suggests, first, that there is a substantial inconsistency between the provisions of the Vienna Convention and the general law of state responsibility. If this were the case, it might well be a sign that the pertinent provisions of the Vienna Convention, and in particular Article 60, are not consistent with the general international law of treaties. For there is at least a very strong presumption that these two branches of customary international law, established by the practice of states throughout the centuries, fit one with the other, so as to constitute a coherent *corpus juris*.

5.13. Assuming that the general law of treaties and the general law of state responsibility do not contradict each other, the position taken by

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<sup>7</sup> See HM, chap 6 for particulars.

Slovakia would mean that the pertinent provisions of the Vienna Convention go beyond the general law of treaties – in which case these provisions would not be applicable here. For the reasons recalled in paragraph 5.04, the Vienna Convention is not applicable *qua* treaty to the present case.

5.14. But it is also the Slovak view that the law of treaties is distinct from and prevails over the law of state responsibility as far as the *consequences* of the non-performance of treaty obligations are concerned. According to this position, the law of treaties, or at least the provisions of the Vienna Convention relating to the consequences of a breach of treaty, are a kind of “self-contained regime” of responsibility under Article 60,<sup>8</sup> completed by Articles 61 and 62 insofar as they deal with the circumstances authorising the non-performance of treaty obligations by a party. They would create a specific regime of responsibility for breach of treaties, parallel to “normal” state responsibility for other categories of wrongful acts.

5.15. The Slovak view is not convincing. This very issue was systematically examined by the International Law Commission when drafting the first part of its project on State Responsibility. In its Report on its 28th session, the Commission observed in particular that:

“...an examination of the enormous number of international decisions which recognize the existence of an internationally wrongful act (and, consequently, of the international responsibility of the State), is sufficient to show that the wrong attributed to the State in these decisions is in some cases the breach of an obligation established by a treaty, in others the breach of an obligation of customary origin, and more rarely the breach of an obligation arising from some other source of international law. This alone should be sufficient proof that, in the opinion of the judges and arbitrators who have made these decisions, a breach of an international obligation is always an internationally wrongful act, regardless of the origin of the obligation in question. Furthermore, there are even cases in which international adjudicators and arbitrators have stated explicitly the principle that the breach of an international obligation is always an internationally wrongful act regardless of the origin of the obligation in question.”<sup>9</sup>

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<sup>8</sup> SM, paras 8.14-8.18.

<sup>9</sup> ILC Ybk 1976, vol II, pt 2, p 81, para (8).

5.16. The Commission's Report then turned to the question of whether the origin of the international obligations breached has any bearing on the international responsibility arising from a wrongful act. Its conclusion, again based on international jurisprudence, is clear:

"The customary, conventional or other origin of the obligation breached is not invoked to justify the choice of one form of reparation in preference to another..."<sup>10</sup>

5.17. These considerations persuaded the Commission to adopt Draft Article 17 of Part I of the Law of State Responsibility, which reads as follows:

"Article 17 – Irrelevance of the origin of the international obligation breached

1. An act of a State which constitutes a breach of an international obligation is an internationally wrongful act regardless of the origin, whether customary, conventional or other, of that obligation.
2. The origin of the international obligation breached by a State does not affect the international responsibility arising from the internationally wrongful act of that State."

This leaves no room for any special regime of responsibility for breach of treaty in general international law. All subsequent ILC work on the law of state responsibility has proceeded on the basis of these conclusions.

5.18. The position taken by the ILC is furthermore consistent with the principle laid down in Article 73 of the Vienna Convention itself, which provides expressly that the Convention does not "prejudice any question that may arise...from the international responsibility of a State." This savings clause may be explained by the fact that the drafters of the Vienna Convention were conscious of the incompleteness of the Convention, especially with regard to claims of invalidity, suspension or termination, as well as to the legal consequences of such claims. This incompleteness has been stressed by authors.<sup>11</sup>

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<sup>10</sup> ILC Ybk 1976, vol II, pt 2, p 82, para (11).

<sup>11</sup> See I Sinclair, *The Vienna Convention on the Law of Treaties* (Manchester, Manchester University Press, 2nd edn, 1984) at p 165; F Capotorti, "L'extinction et la suspension des traités" (1971/III) 134 *Recueil des cours* pp 527-535; P Reuter, *Introduction au droit des traités* (Paris, Presses Universitaires de France, 1985) p 153; S Rosenne, *Breach of Treaty* (Cambridge, Grotius Publications, 1985) p 72.

5.19. These conclusions as to the relationship between the law of state responsibility and the law of treaties were endorsed and applied in a recent arbitral award in the *Rainbow Warrior Case* between New Zealand and France.<sup>12</sup> There the Tribunal refused to speculate on the possibility of contradiction between the law of treaties and the law of state responsibility.<sup>13</sup> It rejected a New Zealand argument that France could not rely on the "circumstances excluding wrongfulness" which exist in the law of state responsibility in the context of a treaty. The Tribunal said in particular that:

"...the legal consequences of a breach of a treaty, including the determination of the circumstances that may exclude wrongfulness (and render the breach only apparent) and the appropriate remedies for breach, are subjects that belong to the customary Law of State Responsibility. The reason is that the general principles of International Law concerning State responsibility are equally applicable in the case of breach of treaty obligation, since in the international law field there is no distinction between contractual and tortious responsibility..."<sup>14</sup>

5.20. Confronted with this most recent reaffirmation of a classical rule of international law, Slovakia shows an abrupt reaction which is of an unusual character. It "contends that this arbitral award does not correctly state the relationship between the law of treaties and the law of state responsibility; and reserves its right to invite the Court so to find, in the context of the dispute between Hungary and Slovakia".<sup>15</sup>

5.21. Of course the *Rainbow Warrior Award*, as any other judicial or arbitral decision, may be offered for the purposes of discussion. It is nevertheless suggested that the International Court of Justice is not called on to play the role of a court of appeal *vis-à-vis* an arbitral decision. This is especially so when the decision does no more than deny that there is any special regime of responsibility for breach of a treaty, and affirms the general compatibility of the law of treaties and the law of state responsibility.

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<sup>12</sup> *Rainbow Warrior Arbitration* (1990) 82 ILR 499.

<sup>13</sup> "...for the decision in the present case, both the Customary Law of Treaties and the Customary Law of State Responsibility are relevant and applicable." *Rainbow Warrior Arbitration* (1990) 82 ILR 499, at p 550, para 75.

<sup>14</sup> *Ibid*, p 551, para 75.

<sup>15</sup> SM, para 8.16.

5.22. In the present case, what flows from this firmly established rule of international law is simply that, as Hungary contends in the present case, the conduct of a state in relation to a treaty may at one and the same time be justified on the basis of the law of treaties *and* on the law of state responsibility. Hungary is thus not precluded from arguing that its termination of the treaty was concurrently justified under the law of treaties and also by the existence of a state of necessity.

### SECTION B: THE SUSPENSION AND SUBSEQUENT ABANDONMENT OF WORKS AND THE TERMINATION OF THE TREATY

5.23. In Chapter IV the Slovak Memorial discusses the factual situation and the diplomatic exchanges relating to Hungary's suspension and subsequent abandonment of work, and eventual termination of the Treaty, before going on to draw certain legal consequences from that recital in Chapter VI.

5.24. Some comments are necessary on the conclusions drawn by Slovakia from its presentation of the legal issues. There is, however, little to be said on this score, since the Slovak Memorial limits itself to the repeated assertion of Hungarian non-compliance with treaty provisions, without bothering to examine the legal grounds on which Hungary claimed to be acting (these are only examined in a subsequent chapter, and then only partially<sup>16</sup>). Moreover these repeated assertions are based on a set of factual and scientific assumptions which were and are in dispute between the parties, and which are discussed elsewhere in this Counter-Memorial.

#### (1) THE SUSPENSION AND SUBSEQUENT TERMINATION OF WORKS

5.25. So far as the suspension and termination of works are concerned, Hungary's legal position is set out in Chapter 9 of its Memorial, and need not be repeated here. In particular it has been shown in Chapter 2 that

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<sup>16</sup> The illogicality of the Slovak Memorial on this point appears clearly from para 6.90:

"It is not the purpose of this Chapter to deal with these so-called 'justifications'. It suffices to show that such a unilateral termination that relates to the 1977 Treaty... is per se an extremely serious breach of well-established and fundamental principles of general international law."

It hardly needs saying that until it has been shown that a purported termination is unjustified, that termination cannot be described as a breach of international law.

Hungary acted in good faith throughout. The Slovak assertion, an assertion which was not made by Czechoslovakia in 1989, that Hungary did not believe that a state of necessity existed is groundless.<sup>17</sup> Only two points of a more general character remain to be made.

*(a) The invocation of necessity*

5.26. The first of these relates to the invocation of the defence of necessity in the context of environmental harm. That a state may be entitled to rely on that defence to suspend or even terminate a treaty has already been established.<sup>18</sup> That the circumstances existed to justify the invocation of necessity was shown in Chapter 9 of the Hungarian Memorial.<sup>19</sup> In response to the brief account of this issue in Slovakia's Memorial<sup>20</sup> the following points may be briefly recalled.

5.27. Hungary had become more and more concerned about the threats to the aquifer and to groundwater level and quality.<sup>21</sup> At the time when suspension of works was decided on, Hungary anticipated severe damage to flora, fauna, agriculture and silviculture in the region, and had concerns over the seismic integrity of the Project. But, above all, irreversible damage was foreseen which could affect the drinking water for millions of people.

5.28. That this was a matter of vital interest was recognised at the time by more than 200 NGOs active in the field of the protection of the environment, including Greenpeace, Ecologia (USA), WWF (USA and Germany), and later in the study by Equipe Cousteau commissioned by the European Bank for Reconstruction and Development.<sup>22</sup> It was even recognised by Czechoslovakia itself, at least during a limited period, in spring 1989. Mr Pavel Hrivnák, then First Deputy Federal Premier, had declared in an interview on Czechoslovak television on 31 May 1989:

“We have been aware from the very beginning that the project will represent, naturally, interference with nature. That is why ecological points of view have to be considered – firstly – the influence of the water barrage on forests, the influence of the

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<sup>17</sup> See SM, paras 8.29-8.57, and for refutation see above, paragraphs 2.117-2.127.

<sup>18</sup> See above, paragraphs 5.03-5.22.

<sup>19</sup> See HM, paras 9.18-9.42, and see also HM, paras 10.17-10.34.

<sup>20</sup> See SM, paras 8.26-8.28.

<sup>21</sup> See HM, paras 10.19-10.22, 10.27-10.29, 10.32

<sup>22</sup> See above, paragraph 2.122.

water barrage on the underground water level, the influence of the water barrage on the preservation of fauna and flora..."<sup>23</sup>

5.29. Such a view was confirmed a year later by Czechoslovakia, when it stated, on 26 October 1990, that "[t]he trends in the quality of groundwater are worrying. Degradation and pollution of groundwater is far more serious than we thought and that the quality of the groundwater is deteriorating faster than has hitherto been assumed."<sup>24</sup>

5.30. Despite such statements, Czechoslovakia always refused to suspend work at Gabčíkovo in order to facilitate further scientific inquiries and diplomatic negotiations. The work on Variant C threatened to realise the environmental risks Hungary had been trying for years to avoid.<sup>25</sup> Eventually it became clear that, to avoid any pretext for the diversion, Hungary had no other option than to terminate the Treaty.<sup>26</sup>

*(b) The relevance of Article 27 of the Treaty*

5.31. The second point relates to Article 27 of the Treaty, which according to Slovakia "envisages its own dispute settlement procedure – namely, bilateral negotiation (necessarily based on objective scientific data and not on unverified unilateral assertion)".<sup>27</sup>

5.32. Article 27 paragraph 1 of the Treaty provided for the settlement of disputes in "matters relating to the realisation and operation of the System of Locks" to be dealt with by the two Plenipotentiaries. If they could not reach agreement on the matter, it was to be referred to "the Governments of the Contracting Parties for decision" (paragraph 2).

5.33. In practice the system of Plenipotentiaries and of regular communication between the parties operated in a relatively flexible way.

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<sup>23</sup> Deputy Federal Prime Minister P Hrivnák on Czechoslovak TV, 31 May 1989, as reported in BBC, Summary of World Broadcasts, EE/0476 A2/1, 7 July 1989; HC-M, Annexes, vol 3, Annex 95.

<sup>24</sup> Draft Agreement on Joint Czecho-Slovak and Hungarian Co-operation on PHARE – Environment Protection: "Surface Water and Ground Water Model of Danubian Lowland Between Bratislava and Komárno: Ecological Model of Water Resources and Management", 26 October 1990. Proposal handed over by Czechoslovakia to Hungary on 26 October 1990; SM, Annex 82, p 189; HC-M, Annexes, vol 3, annex 49. See above, Introduction, paragraph 22.

<sup>25</sup> See HM, paras 10.26-10.31.

<sup>26</sup> See HM, paras 10.32-10.34.

<sup>27</sup> SM, para 8.58.



Issues would be raised at different levels depending on their seriousness and on the perceptions of those involved as to whether they were of an operational or political character. Thus issues might be dealt with at the lower official level of the Plenipotentiaries, or by the relevant Ministers, or even at Prime Ministerial level. As the record of interactions between the parties in the years before and after 1989 shows, the provisions of Article 27 of the Treaty were not taken as constituting a hierarchy. More senior members of the Government would not have been – and were not – deterred from dealing with an issue because of anything the Plenipotentiaries may or may not have done.<sup>28</sup>

5.34. That this was well understood on both sides is shown by the fact that no-one thought to complain in 1989 that the issue of suspension had been raised by Hungary through diplomatic channels, rather than through the forum of the Plenipotentiaries. With an issue of this significance, that was precisely what the parties would have expected. On receiving notification of the suspension, the Czechoslovak authorities did not complain about the fact that it had not been communicated through the “forum” of the Plenipotentiaries; on the contrary, they agreed to consider it on its merits, while objecting to the suspension of work on substantive grounds – i.e., on the grounds that the suspension was not legally justified as such.<sup>29</sup> No merely procedural point was taken.

5.35. Moreover the plethora of “mechanisms for monitoring and addressing any ecological problems”, to which the Slovak Memorial refers,<sup>30</sup> existed for the operational purpose of effectuating the Barrage System, of “fixing” the problems it would cause. The extent of these problems – not to mention their potential irreversibility – had gone unexamined notwithstanding the many “mechanisms”.<sup>31</sup> When an issue arose not about *how* the Barrage System could be made to work but about *whether* it should be continued, it was not surprising that this was raised at a higher level, and at a level not institutionally connected with the Barrage System.

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<sup>28</sup> This was true, for example, when Mr Marjai raised doubts about the Project at a ministerial meeting on 21 September 1981. No one suggested that these first be discussed by the Plenipotentiaries. See HM, para 3.43.

<sup>29</sup> See HM, paras 3.74-3.115 for a detailed account, and see further above, paragraphs 2.27-2.37.

<sup>30</sup> SM, para 8.60.

<sup>31</sup> As many sources, then and later, conceded: see e.g., above, Introduction, paragraphs 16-19, 22-23.

5.36. The Slovak argument on this point implies that Hungary should have continued in every respect with the construction of the Barrage System, notwithstanding its conviction of the ecological damage this would produce, until it had obtained the agreement of Czechoslovakia to a modification. Carried to its conclusion, it implies that – unless Czechoslovakia’s agreement could be obtained – Hungary was required to divert the Danube, and could only respond after the event once potentially irreversible harm had been caused. Indeed it was precisely in that spirit that Slovakia – contrary to international law and to its own law – *did* divert the Danube. Its Prime Minister said on 2 November 1992, after the diversion had already been completed, that: “If practice shows that the Gabčíkovo water barrage is harmful to the environment, then we would halt it”.<sup>32</sup> The argument of the Slovak Memorial is consistent with this approach. According to this argument, under Article 27 each party was given a veto over modifications to the Project; in the absence of “dispute resolution” under Article 27, each had no choice but to comply, whatever the consequences. All that would be possible was mitigation after the event.

5.37. The Slovak argument based on Article 27 seeks to read too much into what was a rather routine “dispute settlement” provision of its time. In particular Article 27 (2) of the Treaty envisaged no new or existing organ of dispute settlement, even at the level of mediation; it referred disputes *to the disputants*. Consistently with Eastern European practice of its time, its principal importance lay in its rejection of any kind of third party or independent dispute settlement, of any body which could have impartially assessed the “objective scientific data” and the other factual and legal arguments which were relevant. Article 27 did not deal with the consequences of failure to agree, which a genuine dispute resolution provision would do. What it said was that the parties should seek to resolve their disputes at the appropriate level, without reference to any “objective” mechanism.

5.38. And, as shown in further detail in Chapter 2, this is precisely what they did. Czechoslovakia was well aware of the Hungarian misgivings prior to termination.<sup>33</sup> These very much corresponded to misgivings held by many people on its own side. Hungary was throughout prepared to negotiate a satisfactory resolution to the dispute, including by reference to this Court.<sup>34</sup>

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<sup>32</sup> BBC, Summary of World Broadcasts, EE/1527 i, 2 November 1992; HC-M, Annexes, vol 3, annex 96.

<sup>33</sup> See above, paragraphs 2.32-2.34.

<sup>34</sup> See above, paragraphs 2.26-2.56.

## (2) THE TERMINATION OF THE 1977 TREATY

5.39. In the context of termination, the Slovak Memorial devotes a surprising amount of attention to Article 56 of the Vienna Convention, which deals with denunciation or withdrawal from a treaty containing no provision regarding termination, denunciation or withdrawal. Having earlier castigated Hungary for seeking to "evade" the provisions of the Vienna Convention (and having earlier argued that the Convention applied *en tant que tel* to the 1977 Treaty<sup>35</sup>), Slovakia now seeks to show that the provisions of Article 56 do not reflect general international law.<sup>36</sup> This discussion is however irrelevant.

5.40. In the first place, there is no reason to doubt that Article 56 is anything but a fair reflection of the current rule of international law.<sup>37</sup>

5.41. Secondly, Hungary at no stage suggested that the 1977 Treaty was subject to unilateral denunciation or withdrawal pursuant to the customary international law equivalent of Article 56. A State which acts under Article 56 need give no reason for termination or withdrawal. In relation to a treaty to which Article 56 applies, the mere notification of withdrawal in accordance with the Treaty is sufficient to produce the desired legal effect. Thus where Article 56 applies, the withdrawal by a state is (subject to any limitation in the treaty itself) a matter of policy for that state to decide. Article 56 is not concerned with termination of treaties for cause, i.e., for one of the reasons referred to in other provisions of the Vienna Convention such as breach (Article 60), impossibility of performance (Article 61) or fundamental change of circumstances (Article 62).

5.42. The Slovak Memorial gives only a rather cursory account of these – which are among the real issues in the case – in its Chapter VIII.<sup>38</sup> By contrast the Hungarian arguments are set out in detail in Chapter 10 of its Memorial, to which the Court is again referred.

5.43. Apart from disagreements on issues of fact (which are discussed in Chapter 2 of this Counter-Memorial) and of scientific assessment (which are discussed in Chapters 1 and 3), there are only a few points in the Slovak discussion of termination which require consideration here.

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<sup>35</sup> SM, para 6.59; and for refutation see above, paragraph 5.05.

<sup>36</sup> SM, paras 6.92-6.99.

<sup>37</sup> Interpretation of the Agreement of 25 March 1951 between the WHO and Egypt, Advisory Opinion, ICJ Reports 1980, p 73, at pp 94-95.

<sup>38</sup> SM, paras 8.61-8.97.

5.44. Its reference to the *South West Africa Case*<sup>39</sup> in the context of termination of treaties by fundamental change of circumstances is eccentric. It is clear that the Mandate for South West Africa *qua* treaty had expired with the dissolution of one of the parties, the League of Nations. The issue in that case was whether the Mandate as an “objective regime” had also been extinguished.<sup>40</sup> The Court’s decision that it had not is irrelevant here. Slovakia does not contend that the 1977 Treaty was an objective regime or a “real” treaty.<sup>41</sup>

5.45. The Slovak Memorial treats the fundamental change of circumstances argument as if it related solely to the “political changes in Hungary and Slovakia”.<sup>42</sup> This seriously misapprehends the Hungarian argument as set out in its 1992 Declaration and developed in its Memorial.<sup>43</sup>

5.46. In and after 1989 the control hitherto exercised by the Soviet Union over Eastern Europe, including both Hungary and Czechoslovakia, was ended. The Berlin Wall fell, not least because of the access Hungary provided to East Germans travelling to the West. These events led to the termination of the Warsaw Pact and of COMECON, the withdrawal of Soviet troops, the first free elections in any country in the region since 1948, drastic changes in the economies of the region, the end of the Cold War, etc. These the Slovak Memorial describes as “internal political changes”.<sup>44</sup>

5.47. Hungary has never suggested that these political changes were sufficient *by themselves* to constitute a fundamental change of circumstances in relation to the 1977 Treaty, although they were an essential part of the overall situation. In its Declaration of May 1992 and

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<sup>39</sup> International Status of South-West Africa, Advisory Opinion, ICJ Reports 1950, p 128.

<sup>40</sup> See ICJ Reports 1950 p 128 at p 132 (“an international institution with an international object – a sacred trust of civilization”). See also *ibid* at pp 132, 133, 136, where the League’s role is analysed as that of a supervisory organ, not an equal treaty partner. Similarly Lord McNair stated that “the new régime... has more than a purely contractual basis, and the territories subjected to it are impressed with a special legal status, designed to last...”: Separate Opinion by Sir Arnold McNair, *ibid* at p 154.

<sup>41</sup> Cf SM, para 7.22 (“the doctrine of approximate application is not limited to treaties establishing a regime *in rem*”). See below, paragraphs 6.91-6.92, 6.95.

<sup>42</sup> SM, para 8.77.

<sup>43</sup> See HM, paras 10.59, 10.72-10.77.

<sup>44</sup> SM, para 8.78.

again in its Memorial, Hungary relied on a *combination* of elements, including each of the elements which the preamble to the 1977 Treaty itself specified as constituting its essential purposes.<sup>45</sup> They included: the dissolution of COMECON under whose auspices the Treaty was included and under whose economic "system" the Project has originally been justified as an investment; the increasing economic irrationality of the Project; the increasing indications that it would be environmentally damaging; the justified rejection of the Nagymaros Barrage, which brought with it the collapse of the conception of a "single and indivisible operational system", and the apparently irrevocable determination of Czechoslovakia to proceed to unilateral diversion of the Danube, which of itself put an end to the idea of joint control and joint investment. The political changes were important in that they opened the Project to public scrutiny, and even more in that they saw the end of the political, military and economic bloc which was its *raison d'être*. But they were intimately associated to changes in the very circumstances of the Project itself. As demonstrated in the Hungarian Memorial, these changes were clearly sufficient to satisfy the requirements of general international law in relation to fundamental change of circumstances.<sup>46</sup>

5.48. As to termination of the 1977 Treaty for breach, by far the most important breach relied on was the continued and active insistence by Czechoslovakia on constructing and operating Variant C.<sup>47</sup> The question whether Variant C violated the 1977 Treaty will be discussed in Chapter 6.<sup>48</sup> If it did, it clearly constituted a material breach within the meaning of Article 60 of the Vienna Convention and of customary international law (despite the assertion to the contrary in the Slovak Memorial<sup>49</sup>). Than Variant C, nothing could be more material.<sup>50</sup>

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<sup>45</sup> See HM, para 10.73.

<sup>46</sup> See HM, paras 10.72-10.85.

<sup>47</sup> See HM, paras 10.86-10.90.

<sup>48</sup> See below, paragraphs 6.78-6.104.

<sup>49</sup> SM, para 8.94. Reference is made to the separate opinion of Judge Hersch Lauterpacht in the *Hearing of Petitioners* case ICJ Reports 1956 p 35 at p 49, as if it were authority, *inter alia*, on "material breach": see SM, para 8.95. For the meaning of that opinion see below, paragraphs 6.89-6.97.

<sup>50</sup> See above, paras 3.15-3.93 for the effects of Variant C.

### SECTION C: CONSEQUENCES OF TERMINATION

5.49. The consequences of termination of the 1977 Treaty are outlined in Chapter 11 of the Hungarian Memorial.<sup>51</sup> The primary and immediate consequence was to terminate the necessary authorisation to the parties to carry out activities involving the waters of the shared boundary river.<sup>52</sup> Legally that authorisation did not extend to Variant C, which was contrary to the 1977 Treaty. But the problem was that Czechoslovakia consistently presented Variant C as if it *was* the Original Project. The termination of the Treaty put an end to any residual credibility that argument may have had.

5.50. As pointed out in Chapter 11, the termination of the Treaty did not put an end to property rights created prior to May 1992 in accordance with its terms, or to the legitimate financial claims of the parties in relation to the situation as it then existed.<sup>53</sup> Hungary was always prepared to discuss these, and even to submit them to international adjudication. But of course there could be – and were – no property rights in the waters of the Danube as such. The 1977 Treaty does not purport to confer any vested right to divert a river away from a shared boundary. Any authorisation in relation to the boundary waters (which anyway had no application to Variant C) disappeared when Hungary's consent to the 1977 Treaty was withdrawn.<sup>54</sup>

5.51. The Slovak Memorial does not discuss the consequences of termination of the 1977 Treaty. It is accordingly not necessary to do more than recall these issues here.

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51 See HM, paras 11.02-11.16.

52 That authorisation was necessary both under general international law and under the 1976 Boundary Waters Convention. See below, paragraphs 6.42-6.41; and for the 1976 Convention see also HM, paras 7.04-7.43.

53 See HM, paras 11.08-11.18.

54 See also below, paragraphs 7.13-7.16, for the impact of the principle of permanent sovereignty over natural resources.

## CHAPTER 6

### THE ILLEGALITY OF VARIANT C

6.01. This Chapter responds principally to Chapter 7 of the Slovak Memorial, which is devoted to demonstrating the "lawfulness of Variant C".

6.02. The Hungarian argument will consider the wrongful acts of Slovakia first under general international law (Section A, paragraphs 6.03-6.61), then under the applicable treaties (Section B, paragraphs 6.62-6.77), and in particular under the 1977 Treaty itself (Section C, paragraphs 6.78-6.118). It is true that the Treaty had already been lawfully terminated by Hungary in October 1992, when Variant C began operation. But it was still in force at the time when the operation of Variant C had been decided on and undertaken, in clear violation of its provisions. The Chapter concludes by demonstrating that, even if Variant C was lawful in its inception, the way it has been operated is unlawful (Section D, paragraphs 6.119-6.138).

#### SECTION A: THE ILLEGALITY OF VARIANT C UNDER GENERAL INTERNATIONAL LAW

6.03. Chapter 7 of the Hungarian Memorial established that the diversion of the Danube was, and as a continuing act remains, unlawful under general international law.<sup>1</sup> It is not necessary to repeat this demonstration here, but a number of specific matters dealt with in the Slovak memorial do require attention:

- (1) the relation between customary international law and treaty in the present case (see below, paragraphs 6.04-6.17);
- (2) the identification and application of the relevant rules of customary international law (see below, paragraphs 6.18-6.41);
- (3) Slovakia's argument that Variant C is lawful apart from the 1977 Treaty (see below, paragraphs 6.42-6.61).

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<sup>1</sup> See HM, paras 7.44-7.123.

(1) RESPECTIVE ROLE OF TREATY LAW AND CUSTOMARY  
INTERNATIONAL LAW

6.04. The Slovak argument on this point is suggested rather than developed, and this is symptomatic of Slovakia's approach to general international law in this case. In paragraph 7.72, Slovakia begins by saying that "Variant 'C' is to be understood in the context of treaty arrangements entered into in 1977 and which remain in existence to this day". It immediately adds that: "In pointing to principles arising under the developing customary international law, Hungary seeks to divert attention from the applicable regime of law: *pacta sunt servanda*". According to Slovakia, customary international law has little or no relevance here – with the single and solitary exception of the rule *pacta sunt servanda*, which it presents not as a rule but as a "regime".

6.05. Hungary submits, first, that it has always given full consideration to the various treaty obligations bearing on the two Parties to the present dispute; second, that the Slovak view of the relationship existing between treaty law and customary law is inaccurate.

6.06. The Hungarian Memorial demonstrated that the diversion was illegal under a number of applicable treaties, including but not limited to the 1977 Treaty itself.<sup>2</sup> The operation of Variant C is primarily to be considered as a violation of Czechoslovakia's treaty obligations, which in turn are manifestations of the obligation to co-operate<sup>3</sup> and to protect the environment.<sup>4</sup>

6.07. Nevertheless, this very "applicable regime of law" entails, on the same footing, the applicable rules of customary international law, a fact Slovakia evidently finds uncomfortable, since its Memorial devotes only one brief passage to the point, affirming by way of demonstration that "in any event, Variant 'C' also conforms with general international law". It adds no further arguments in support of this assertion.<sup>5</sup>

6.08. It must be stressed that, as shown *inter alia* by Article 38 of the Statute of the Court, the application of the pertinent treaties to an interstate dispute does not exclude the concurrent application of customary law rules binding on both parties.

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<sup>2</sup> See HM, paras 7.04-7.43.

<sup>3</sup> HM, paras 7.06-7.16.

<sup>4</sup> HM, paras 7.17-7.43.

<sup>5</sup> SM, para 7.73.



6.09. It is a well established and fundamental rule that there is no hierarchical relationship between treaties and customary rules in public international law. But quite apart from this, in simple terms of treaty interpretation article 31(3)(c) of the Vienna Convention on the Law of Treaties lays down the classical rule according to which, in the interpretation of a treaty, "there shall be taken into account, together with the context...any relevant rules of international law applicable in the relations between the parties".

6.10. Among the "relevant rules of international law", one must consider, evidently, the relevant customary international rules. Three consequences follow.

6.11. The first is that a treaty cannot be isolated from the general international law prevailing at the time of its conclusion. As stated by Manley Hudson:

"Any international instruments must be interpreted in the light of the prevailing international law, by which the parties must be taken to have charted their course."<sup>6</sup>

6.12. The second implication was stressed by the International Court of Justice in the *Namibia Case*, where it said that:

"an international instrument has to be interpreted and applied within the framework of the entire legal system prevailing at the time of the interpretation."<sup>7</sup>

This is important to the present case, since some basic customary rules of international law such as the principle of equitable use of transboundary natural resources and the general obligations to co-operate and to avoid transboundary pollution were already in force at the time of the conclusion of the 1977 Treaty, and are relevant in the interpretation of its provisions.

6.13. The third implication is that the interpretation of a treaty during the period of its implementation, in particular if that is a lengthy period,

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<sup>6</sup> MO Hudson, *The Permanent Court of International Justice, 1920-1942* (1943), p 655 (para 573). See also Judge Verzijl, President of the French-Mexican Mixed Commission, who stated that the general rules of interpretation of treaties included the following: "Toute convention internationale doit être réputée s'en référer tacitement au droit international commun, pour toutes les questions qu'elle ne résout pas elle-même en termes exprès et d'une façon différente". *Georges Pinson (France) v United Mexican States* (1928) 5 UNRIAA 327 at p 422 (para 50).

<sup>7</sup> *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) Notwithstanding Security Council Resolution 276*, ICJ Reports 1971 p 6 at p 31 (para 53).

must take into consideration the evolution of the pertinent rules of general international law taking place during the life of the treaty. Professor Mustafa Kamil Yasseen, a former member of the ILC at the time it codified the Law of Treaties, declared while commenting on the scope and bearing of article 31(3)(c) of the Vienna Convention:

“Même écrites, les règles de droit ne sont pas à l’abri de l’évolution subséquente de l’ordre juridique dont elles font partie. Il est donc aisé de présumer que les parties à ces traités ne s’opposent pas à ce que ces traités ou certaines de leurs dispositions soient interprétés à la lumière du droit international en vigueur à l’époque de cette interprétation.”<sup>8</sup>

6.14. Such a statement is particularly pertinent in the context of the protection of the environment, the rules for which have developed markedly since the 1970s. This is illustrated, for example, by the development of the general obligation of prevention, which has progressively given rise to the precautionary principle.<sup>9</sup>

6.15. This position is confirmed and reinforced by the fact that in the present case the Court is specifically requested, under Article 2 of the Special Agreement, to decide on the basis of rules and principles of general international law as well as on the basis of the 1977 Treaty and such other treaties as the Court may find applicable.

6.16. Furthermore, there is no contradiction between the 1977 Treaty and general international law. Hungary has already demonstrated in its Memorial that the Treaty itself allowed for the application of customary rules and principles in particular in its articles 15 and 19.<sup>10</sup> The obligations of the Parties with regard to the protection of the environment were continuous: they had to be complied with during the whole lifetime of the Barrage System.

6.17. This implies that new rules which have appeared since the entry into force of the 1977 Treaty, making more precise the elements of due diligence necessary for the protection of the environment, must also be taken into account in every issue concerning the operation of the Project. And this is perfectly in conformity with Article 2 of the Special Agreement.

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<sup>8</sup> MK Yasseen, “L’interprétation des traités d’après la convention de Vienne sur le droit des traités” (1976/III) 151 *Recueil des cours* 1 at p 67. See generally *ibid* at pp 62-68.

<sup>9</sup> See HM, paras 6.56-6.69.

<sup>10</sup> See HM, paras 6.13-6.26, 7.04-7.43.

(2) IDENTIFICATION AND APPLICATION OF THE RELEVANT RULES OF  
INTERNATIONAL LAW

*(a) Identification of the relevant customary rules*

6.18. In the present case, the applicable customary international law involves, in particular:

- \* the rule of prevention of transboundary damage;<sup>11</sup>
- \* the general obligation to co-operate with the other watercourse states,<sup>12</sup> a duty which implies in particular the obligation of prior notification and consultation;<sup>13</sup>
- \* the obligation not to cause damage to the environment beyond one's border;<sup>14</sup> and
- \* respect for the principle of non-discrimination,<sup>15</sup> which together with the principle of prevention of transboundary damage requires the establishment of a reliable impact assessment.<sup>16</sup>

6.19. The salience and specific applicability of these rules were demonstrated in the Hungarian Memorial. They have been reaffirmed as the applicable rules in the relations between the Parties by the Convention on Co-operation for the Protection and Sustainable Use of the Danube River, Sofia, 29 June 1994.<sup>17</sup>

6.20. It should be noted that a close relationship exists between each of these rules and another, which is at the core of the law of non-navigational uses of international watercourses: the principle of the reasonable and equitable use of transboundary natural resources, of which an international watercourse such as the Danube provides an archetype.<sup>18</sup>

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<sup>11</sup> HM, paras 6.56-6.69.

<sup>12</sup> HM, paras 6.70-6.81.

<sup>13</sup> HM, paras 7.57-7.65.

<sup>14</sup> HM, paras 7.45-7.56.

<sup>15</sup> HM, paras 7.69-7.82.

<sup>16</sup> HM, para 7.59.

<sup>17</sup> See above, paragraphs 4.28-4.39.

<sup>18</sup> See HM, paras 7.69-7.82.

6.21. Slovakia suggests that this principle constitutes only a "soft" norm, and relies on the argument that the Hungarian 1992 Declaration referred to various "soft" instruments with regard to it.<sup>19</sup>

6.22. No doubt the principle of equitable use of transboundary natural resources has been further developed during the last two decades. But this principle has for a long time belonged to general customary international law as a "hard law" principle. This was clearly demonstrated in 1981, in the Third Report of the then Special Rapporteur to the International Law Commission on the Law of the Non-navigational Uses of International Watercourses. He showed convincingly that the principle is deeply rooted in some of the most essential rules at the basis of the international legal order, such as, in particular, the fundamental principle of the equality of rights of sovereign states.<sup>20</sup>

6.23. As early as 1929, the Permanent Court of International Justice in the *Case concerning the Territorial Jurisdiction of the International Commission of the River Oder* declared that:

"This community of interest in a navigable river becomes the basis of a common legal right, the essential features of which are the perfect equality of all riparian States in the use of the whole course of the river and the exclusion of any preferential privilege of any one riparian State in relation to the others."<sup>21</sup>

6.24. As stated by the Special Rapporteur, the many agreements which, explicitly or implicitly, put the notion of "equitable sharing" in concrete form are illustrations of the strength of the principle in general international law.<sup>22</sup> This view is shared by most authors and scientific associations which have considered the issue.<sup>23</sup>

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<sup>19</sup> See SM, para 7.74.

<sup>20</sup> S Schwebel, Third Report on the Non-navigational Uses of International Watercourses, Doc A/CN.4/348, 11 December 1981, para 41.

<sup>21</sup> *Territorial Jurisdiction of the International Commission of the River Oder*, PCIJ Ser A No 23 (1929) at p 27.

<sup>22</sup> Schwebel, Third Report, para 41.

<sup>23</sup> See HM, paras 7.69-7.82. Among the authors affirming the customary character of the principle of equitable use of international watercourses, see in particular J Lipper, "Equitable Utilization", in A Garretson, R Hayton & C Olmstead (eds), *The Law of International Drainage Basins* (Dobbs Ferry, Oceana, 1967) 15, esp at pp 44-47; R Johnson, "The Columbia Basin", *ibid*, pp 168-170, 203-207, 234-240; J Barberis, *Los recursos naturales compartidos entre estados y el derecho internacional* (Madrid, 1979) pp 16-23; G Handl, "The Principle of Equitable Use and Transfrontier Pollution", in *Transfrontier Pollution and the Role of States* (OECD, Paris, 1981) pp 98-126; J Lammers, *Pollution of International*

6.25. No subsequent ILC Special Rapporteur on this topic challenged the bearing and status in customary law of the principle of equitable use.<sup>24</sup> At the final stage of development of the Draft Articles, the Special Rapporteur, Mr Robert Rosenstock recommended no change to Article 5 as adopted on first reading by the ILC at its forty-third session (1991).<sup>25</sup>

6.26. In fact Article 5 was left unchanged in the final version of the Draft Articles adopted on the second reading in 1994. It reads as follows:

“Article 5

Equitable and reasonable utilization and participation

1. Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse States with a view to attaining optimal utilization thereof and benefits therefrom consistent with adequate protection of the watercourse.

2. Watercourse States shall participate in the use, development and protection of an international watercourse in an equitable and reasonable manner. Such participation includes both the right to utilize the watercourse and the duty to cooperate in the protection and development thereof, as provided in the present articles.”<sup>26</sup>

6.27. The Commentary to Article 5 states that the principle is “one of the most basic” in the field, and that it is “well established”.<sup>27</sup> It goes on to state that:

“...there is overwhelming support for the doctrine of equitable utilization as a general rule of law for the determination of the rights and obligations of States in this field.

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*Watercourses* (Martinus Nijhoff Publishers, 1984) p 580; J Bruhács, *The Law of Non-navigational Watercourses* (Martinus Nijhoff Publishers, 1993) pp 155-185, esp at p 157.

<sup>24</sup> See J Evensen, First Report, Doc A/CN.4/367, 19 April 1983, paras 80-86; S McCaffrey, Second Report, Doc A/CN.4/399, 19 March 1986, para 92 ff.

<sup>25</sup> See R Rosenstock, First Report, Doc A/CN.4/451, 20 April 1993, para 22.

<sup>26</sup> *Report of the International Law Commission on the Work of its 46th Session, 2 May-22 July 1994* (UN Doc A/49/10) at p 218. See also Art 6, which sets out factors relevant to equitable and reasonable utilization, without qualifying the basic obligation in Art 5: *ibid*, p 231.

<sup>27</sup> *Ibid*, p 218.

The basic principles underlying the doctrine of equitable utilisation are reflected, explicitly or implicitly, in numerous international agreements between States in all parts of the world...[T]heir unifying theme is the recognition of rights of the parties to the use and benefits of the international watercourse or watercourses in question that are equal in principle and correlative in their application."<sup>28</sup>

6.28. Bearing in mind the rule of interpretation of treaties recalled in paragraph 6.11 above, the 1977 Treaty must in the first place be interpreted in the light of the international law prevailing at the time of its conclusion, including the general principle of equitable use of international watercourses, which already belonged to general international law. This is true *a fortiori* if we consider the treaty in relation to general international law prevailing at the time of its interpretation and taking into account its evolution since the treaty was concluded.<sup>29</sup>

*(b) Violation by Slovakia of the equitable use principle and of the obligation not to cause appreciable harm to another watercourse state*

6.29. As noted in the Hungarian Memorial, Slovakia has violated a number of related principles which are an established part of international law.<sup>30</sup>

6.30. There are several ways in which Slovakia has violated the principle of *equitable use of shared natural resources* through the operation of Variant C.

6.31. In particular it has done so through its acquisition, through unilateral and unauthorised action, of exclusive control over the production of electricity, navigation and water discharge in a vital common reach of the Danube. Slovakia has placed itself in the position of exercising manifold pressure on its downstream neighbour. This creates a situation incompatible with the inherent "perfect equality of rights" characterising the community of interest which is at the core of the principle of equitable use.<sup>31</sup> That position must be true *a fortiori* for a boundary river, such as the Danube is in the relevant sector.

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<sup>28</sup> Ibid, pp 222-223 (references omitted).

<sup>29</sup> As expressed by the Court in the *Namibia Opinion*: see above, paragraph 6.12.

<sup>30</sup> See HM, paras 7.44-7.87.

<sup>31</sup> See above, paragraph 6.23.

6.32. With respect to the amount of water discharge into the main Danube and its side-arms, which is of vital importance for the entire Szigetköz region, the Hungarian Memorial stressed the dramatic decrease in the quantity of water received on Hungarian territory since October 1992.<sup>32</sup> Since then, due in particular to the refusal by Slovakia to accept the compromise presented by the experts of the European Commission to establish a temporary water management regime or otherwise to comply with Article 4 of the Special Agreement, the situation has become even worse. This has been documented in Chapter 3.<sup>33</sup>

6.33. It must be stressed that the adverse consequences resulting from the operation of Variant C are different on both sides of the river. On the Slovak side mainly long-term detrimental effects to the environment will occur. By contrast, Hungary has suffered severe environmental changes immediately after the diversion.<sup>34</sup>

6.34. In addition, the unilateral diversion of the Danube by Czechoslovakia and subsequent development by Slovakia has created a situation that constitutes the archetype of a violation of the *obligation not to cause appreciable or significant harm to another watercourse state*. This is one of the most essential customary rules of the law of territorial sovereignty, and is deeply rooted in international practice.

6.35. It is set out, for example, in Principle 21 of the 1972 Stockholm Conference's Declaration on the Human Environment and in Principle 2 of the 1992 Rio Declaration: these statements seek to incorporate the undisputed principle "*sic utere tuo ut alienum non laedas*", otherwise known as the principle of "harmless use of territory". The principle is illustrated, *inter alia*, by the *Trail Smelter Case*, the *Corfu Channel Case* and the *Lac Lanoux Case*.<sup>35</sup>

6.36. This obligation has also been included in the Draft Articles of the International Law Commission on the Law of the Non-Navigable Uses of International Watercourses, Article 7 of which reads as follows:

"1. Watercourse States shall exercise due diligence to utilise an international watercourse in such a way as not to cause significant harm to other watercourse States.

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<sup>32</sup> See HM, paras 7.71-7.72.

<sup>33</sup> See above, paragraphs 3.106-3.110.

<sup>34</sup> See *Scientific Evaluation*, HC-M, vol 2, chaps 4 & 5.

<sup>35</sup> See HM, paras 7.46, 7.47, 7.48, respectively.

2. Where, despite the exercise of due diligence, significant harm is caused to another watercourse State, the State whose use causes the harm shall, in the absence of agreement to such use, consult with the State suffering such harm over:

(a) the extent to which such use is equitable and reasonable taking into account the factors listed in Article 6;

(b) the question of ad hoc adjustments to its utilization, designed to eliminate or mitigate any such harm caused and, where appropriate, the question of compensation.”<sup>36</sup>

6.37. Article 7 differs from its equivalent in the ILC Draft Articles adopted on first reading in 1991<sup>37</sup> in a number of respects.

6.38. First, the obligation is now one of “due diligence”; a watercourse state does not guarantee that another state will not suffer harm as a result of activities on its territory. The Commission explained this change in the following terms:

“The obligation of due diligence contained in article 7 sets the threshold for lawful State activity. It is not intended to guarantee that in utilizing an international watercourse significant harm would not occur. It is an obligation of conduct, not an obligation of result. What the obligation entails is that a watercourse State whose use causes significant harm can be deemed to have breached its obligation to exercise due diligence so as not to cause significant harm only when it has intentionally or negligently caused the event which had to be prevented or has intentionally or negligently not prevented others in its territory from causing that event or has abstained from abating it.”<sup>38</sup>

6.39. Secondly, Article 7 as now formulated only applies to “significant” as distinct from “appreciable” harm. The term “appreciable” was seen to be equivocal; it could refer to measurable harm, in the sense of harm that could be detected by measurements, although trivial in nature, or to harm which reached a certain threshold of seriousness.<sup>39</sup> Curiously

<sup>36</sup> *Report of the International Law Commission on the Work of its 46th Session, 2 May-22 July 1994* (UN Doc A/49/10) at p 236.

<sup>37</sup> *Report of the International Law Commission on the Work of its 43rd Session, 29 April- 19 July 1991* (UN Doc A/46/10) at p 164.

<sup>38</sup> *Report of the International Law Commission on the Work of its 46th Session, 2 May-22 July 1994* (UN Doc A/49/10) at p 237.

<sup>39</sup> The term “appreciable” was retained in the Special Rapporteur’s Second Report (A/CN.4/462, 21 April 1994, at p 11), but was altered in the Drafting Committee for



there is no definition of “significant” in the Commentary to Article 7. But the term is explained in this sense in the Commentary to Article 3, which requires that watercourse agreements should not “adversely affect, to a significant extent, the use by one or more other watercourse States of the waters of the watercourse”. The Commentary reads as follows:

“...the term ‘significant’ is not used in the sense of ‘substantial’. What are to be avoided are localized agreements, or agreements concerning a particular project, programme or use, which have a significant adverse effect upon third watercourse States. While such an effect must be capable of being established by objective evidence and not be trivial in nature, it need not rise to the level of being substantial.”<sup>40</sup>

6.40. It is unnecessary for the purposes of the present case to determine whether the changes made to Article 7 by the ILC in 1994 correspond or not to the position under general international law. The reason is simple: in the present case, there is no doubt (a) that Slovakia “intentionally...caused the event which had to be prevented”, (b) that it has – in particular through its studied failure to agree on an interim water management regime as required by Article 4 of the Special Agreement – “abstained from abating” the harm it has caused, and (c) that, as shown in Chapter 3 and in further detail in the *Scientific Evaluation* to this Counter-Memorial, the harm caused is significant.<sup>41</sup>

6.41. Moreover the possibility – contemplated by Article 7 in its final formulation – that significant harm might be caused to another State in no sense absolves the responsible State from its obligation not to use a watercourse in an inequitable or unreasonable way, as reflected in Article 5 of the Draft Articles. That obligation is, in the ILC’s words, “fundamental”, “basic” and “well-established”.<sup>42</sup> For the reasons given, it was clearly violated in the present case.

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the reason explained in the text, “and not as a means of raising the threshold” of harm: see A/CN.4/SR.2353, 6 July 1994 at p 27 (Mr Bowett, Chairman of the Drafting Committee).

<sup>40</sup> Ibid, at p 212. For the text of Article 3 see p 206.

<sup>41</sup> See above, paragraph 3.15 *et seq.* See below, *Scientific Evaluation*, HC-M, vol 2, chaps 2, 3, 4 & 5.

<sup>42</sup> *Report of the International Law Commission on the Work of its 46th Session, 2 May-22 July 1994* (UN Doc A/49/10) at p 218. And see above, paragraph 6.27.

(3) SLOVAKIA'S ARGUMENT THAT VARIANT C WAS LAWFUL APART  
FROM THE 1977 TREATY

(a) *The argument of the Slovak Memorial*

6.42. The Slovak Memorial<sup>43</sup> seeks to argue that Variant C was and is lawful under customary international law – while at the same time disputing the relevance of any rule of customary international law other than the norm *pacta sunt servanda*.<sup>44</sup>

6.43. The question here is not whether there is a “peremptory rule prohibiting the diversion of boundary rivers”.<sup>45</sup> No doubt Hungary *could* have consented to the diversion of the Danube through the construction and operation of Variant C, but it is clear that it did not so consent, and as will be shown later in this Chapter, the 1977 Treaty did not involve any consent to unilateral diversion. Quite apart from the fact that the Treaty was legally terminated at the time of the diversion, Hungarian consent had been given in the framework of the organised joint operation and control of a barrage system, and not of the unilateral implementation of a partial and different system.<sup>46</sup>

6.44. The section of the Slovak Memorial specifically devoted to the conformity of Variant C with customary international law,<sup>47</sup> after casting doubt on the “no-harm” principle on the grounds that it is “evolving” or “soft law”, does little but refer back to the 1977 Treaty.<sup>48</sup> Despite the vague and undocumented assertion that Variant C is “well within the accepted bounds of State practice”,<sup>49</sup> the passage is little more than a repetition of the “approximate application” argument under another guise. It fails to address the question of whether Variant C would have been lawful apart from the 1977 Treaty, which is the initial hypothesis on which the passage is ostensibly based.<sup>50</sup>

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<sup>43</sup> SM, paras 7.43-7.47, 7.72-7.86.

<sup>44</sup> SM, para 7.72, and cf above, paragraph 6.04.

<sup>45</sup> See SM, para 7.43.

<sup>46</sup> See below, paragraphs 6.82-6.104 for the Slovak Memorial's novel attempt to justify Variant C as an “approximate application” of the 1977 Treaty.

<sup>47</sup> SM, paras 7.72-7.86.

<sup>48</sup> SM, paras 7.77, 7.83, 7.84, 7.85, 7.86.

<sup>49</sup> SM, para 7.81.

<sup>50</sup> SM, para 7.73 (“*In any event* [i.e., apart from the 1977 Treaty], Variant ‘C’ also conforms with general international law”).

6.45. At the same time the Slovak Memorial contends that Hungary has suffered no significant harm as a result of Variant C, asserting for example that Hungary "has not...lost the use of 40 km of its waters".<sup>51</sup> As the photographs of the relevant stretches of the Danube show, there has been such a loss (*See Plate 8*). It is associated with the loss of several harbours in the affected stretch, and by damage and loss which were identified in the Hungarian Memorial and are further discussed in Chapter 3 of this Counter-Memorial.<sup>52</sup> To assert that the loss of 80 per cent and more of the flow of a river – quite apart from the threat to groundwater and to the environment – is not "significant harm" is remarkable. It recalls the statement of the EC Commissioners, in response to a similar Slovak claim:

"It may be that the evaluation scale for environmental impacts in the Slovak Republic is quite different, but every expert in the rest of Europe will regard it as a significant ecological damage if the average discharge of a river is reduced to about 20% as compared to natural conditions, if 4500 ha of alluvial forests are seized (see the Fauna-Flora-Habitat Directive of the CEC), if there is a reduction of the natural fluctuations of the ground and surface water levels nearly to zero and so on."<sup>53</sup>

6.46. Thus it is beside the point to speculate whether a harmless unilateral diversion might be permitted under general international law. The point is that the unilateral diversion operated under Variant C was far from harmless.

#### (b) *The Lac Lanoux Case*

6.47. In this context the Slovak Memorial makes several references to the *Lac Lanoux* case in order to justify under general international law its diversion of water by the operation of Variant C. According to Slovakia, the arbitral award establishes the rule that:

"So long as the waters are returned, even substantial changes in river flow require no consent of the other riparian".

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<sup>51</sup> SM, para 7.85.

<sup>52</sup> See HM, Chapter 3, Section C; above, paragraphs 3.24-3.35.

<sup>53</sup> Professor J Schreiner, Head, EC Experts Group, Letter to Mr P Benavides, Director, External Political Relations, European Commission, 10 February 1994; HM, Annexes, vol 4, annex 139.

6.48. A careful reading of the arbitral award<sup>54</sup> contradicts the Slovak claim. Lake Lanoux is entirely situated on French territory and receives its waters from sources and rivers in France. Its only outlet is the stream Font-Vive which is one of the origins of the river Carol, which flows for 25 km on French territory before reaching Spain and flows on Spanish territory for 6 km before joining the Spanish river Sègre. At no stage does it constitute the boundary between the two States. Spain and France signed at Bayonne on 26 May 1866 a Treaty and an Acte Additionnel in order to determine the boundary and the regime of the boundary waters. The Acte Additionnel recognises the right of each State to use such waters (Article 9), but the other State must be informed of any project or works which could change the regime or the volume of watercourses to be used by the other State, and has the right to be consulted (Article 11).<sup>55</sup>

6.49. In 1950, the French establishment Electricité de France instituted a project to divert the waters of Lake Lanoux towards a different French river, the Ariège, to use them first for a hydroelectric power plant and then to take downstream an equivalent quantity of waters from the Ariège which would be restored to the Carol by a tunnel under the mountains. The Spanish authorities received the assurance that the project would not change in any way the water regime on Spanish territory, since a quantity of water strictly equal to that diverted from Lake Lanoux would be restored to the river Carol, before it reached Spain.<sup>56</sup> Moreover, there was to be no difference in the quality of the water returned as compared with that diverted.

6.50. There is a huge difference between the *Lac Lanoux* case and the present one. One of the basic elements in the *Lac Lanoux* case was that an equal quantity and quality of water would be restored to the River Carol before it reached Spanish territory. Here, the bulk of the Danube's water is diverted before it reaches Hungarian territory and is restored only 40 kilometres downstream, drying out a large Hungarian area on the right bank. While in the *Lac Lanoux* case it could be argued that the obligation to obtain prior agreement could not restrict the territorial competence of France concerning matters which took place entirely on its territory, here the diversion of the water diminishes considerably the quantity of the water of the Danube on Hungarian territory, thereby violating its sovereignty.

6.51. There are other differences. The Arbitral Tribunal stated that its decision should be based on the 1866 Treaty and its Acte Additionnel,

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<sup>54</sup> (1957) 12 UNRIAA 285.

<sup>55</sup> (1957) 12 UNRIAA 285, at p 289.

<sup>56</sup> *Ibid*, at p 292.

but it would also take into account the rules of general international law.<sup>57</sup> However, it considered that by its mandate it had to remain in the framework determined by the two parties. These considerations explain the following paragraphs, which are essential for the present case:

“...[G]râce à la restitution opérée selon le mécanisme décrit plus haut, aucun usager garanti ne sera lésé dans sa jouissance...; le volume à l'étiage des eaux disponibles du Carol, au passage de la frontière, ne subira, à aucun moment, une diminution...”

On aurait pu attaquer cette conclusion de plusieurs manières.

On aurait pu soutenir que les travaux auraient pour conséquence une pollution définitive des eaux du Carol, ou que les eaux restituées auraient une composition chimique ou une température, ou telle autre caractéristique pouvant porter préjudice aux intérêts espagnols. L'Espagne aurait alors pu prétendre qu'il était porté atteinte, contrairement à l'Acte additionnel, à ses droits. Ni le dossier, ni les débats de cette affaire ne portent la trace d'une telle allégation.

On aurait pu également faire valoir que, par leurs caractères techniques, les ouvrages prévus par le projet français ne pouvaient pas assurer en fait la restitution d'un volume qui corresponde aux apports naturels du Lanoux au Carol, par défektivité soit des instruments de mesure, soit des mécanismes de restitution. La question a été effleurée dans le Contre-Mémoire espagnol (p 86), qui a souligné “l'extraordinaire complexité” des procédés de contrôle, leur caractère “très onéreux” et les “risques d'avaries ou de négligence, dans le maniement de la vanne et d'obstruction dans le tunnel”. Mais il n'a jamais été allégué que les ouvrages envisagés présentent d'autres caractères ou entraînent d'autres risques que les ouvrages du même genre qui sont aujourd'hui répandus dans le monde entier. Il n'a pas été affirmé clairement que les ouvrages prévus entraîneraient un risque anormal dans les relations de voisinage ou dans l'utilisation des eaux.”<sup>58</sup>

<sup>57</sup> Ibid, at p 301.

<sup>58</sup> Ibid, at p 303. In translation (24 ILR p 123) this reads:

“[T]hanks to the restitution effected by the devices described above, none of the guaranteed users will suffer in his enjoyment of the waters...; at the lowest water level, the volume of the surplus waters of the Carol, at the boundary, will at no time suffer a diminution...”

One might have attacked this conclusion in several different ways.

6.52. The meaning of this long quotation is that, although the parties to the dispute did not submit certain arguments, if they had done so, the Tribunal would have had to consider them seriously. All these elements appear in the present case submitted to the Court which is being asked to consider the pollution and the quantity of the water due to the diversion as well as the credibility of technical arguments.

6.53. It is true that the Tribunal did not require prior agreement for a project which only affects the territory of one of the states concerned. However, having said that a "droit de veto" would be unacceptable in this matter, the Tribunal added:

"...[L]a pratique internationale recourt de préférence à des solutions moins extrêmes, en se bornant à obliger les Etats à rechercher, par des tractations préalables, les termes d'un accord, sans subordonner à la conclusion de cet accord l'exercice de leurs compétences. On a ainsi parlé, quoique souvent d'une manière impropre, de 'l'obligation de négocier un accord'. En réalité, les engagements ainsi pris par les Etats prennent des formes très diverses et ont une portée qui varie selon la manière dont ils sont définis et selon les procédures destinées à leur mise en oeuvre; mais la réalité des obligations ainsi souscrites ne saurait être contestée et peut être sanctionnée, par exemple, en cas de rupture injustifiée des entretiens, de délais anormaux, de mépris des procédures prévues, de refus systématiques de prendre en

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It could have been argued that the works would bring about an ultimate pollution of the waters of the Carol or that the returned waters would have a chemical composition or a temperature or some other characteristic which could injure Spanish interests. Spain could then have claimed that her rights had been impaired in violation of the Additional Act. Neither in the *dossier* nor in the pleadings in this case is there any trace of such an allegation.

It could also have been claimed that, by their technical character, the works envisaged by the French project could not in effect ensure the restitution of a volume of water corresponding to the natural contribution of the Lanoux to the Carol, either because of defects in measuring instruments or in mechanical devices to be used in making the restitution. The question was lightly touched upon in the Spanish Counter-Memorial (p 86) which underlined the 'extraordinary complexity' of procedures for control, their 'very onerous' character, and the 'risk of damage or of negligence in the handling of the watergates, and of obstruction in the tunnel'. But it has never been alleged that the works envisaged present any other character or would entail any other risks than other works of the same kind which today are found all over the world. It has not been clearly affirmed that the proposed works would entail an abnormal risk in neighbourly relations or in the utilization of the waters."

considération les propositions ou les intérêts adverses, plus généralement en cas d'infraction aux règles de la bonne foi..."<sup>59</sup>

6.54. The award went on to add that:

"Par ailleurs, pour qu'une négociation se déroule dans un climat favorable, il faut que les Parties consentent à suspendre, pendant la négociation, le plein exercice de leurs droits. Il est normal qu'elles prennent des engagements à cet effet. Si ces engagements devaient les lier inconditionnellement jusqu'à la conclusion d'un accord, elles perdraient, en les signant, la faculté même de négocier; cela ne saurait être présumé."<sup>60</sup>

6.55. This shows very clearly that under general international law, the obligation to negotiate goes together with behaviour not incompatible with the good faith to achieve an agreement. This is exactly what the Hungarian Memorial called "meaningful negotiations". But, from May 1989 onwards, Czechoslovakia persistently refused to engage in meaningful negotiations, a prerequisite for which was, quite reasonably, the suspension of work on Variant C.<sup>61</sup>

6.56. The Tribunal in the *Lac Lanoux* case added in its last paragraph:

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<sup>59</sup> (1957) 12 UNRIAA 285 at pp 306-307. In translation (24 ILR p 128) this reads:

"International practice prefers to resort to less extreme solutions by confining itself to obliging the States to seek, by preliminary negotiations, terms for an agreement, without subordinating the exercise of their competences to the conclusion of such an agreement. Thus, one speaks, although often inaccurately, of the 'obligation of negotiating an agreement'. In reality, the engagements thus undertaken by States take very diverse forms and have a scope which varies according to the manner in which they are defined and according to the procedures intended for their execution; but the reality of the obligations thus undertaken is incontestable and sanctions can be applied in the event, for example, of an unjustified breaking off of the discussions, abnormal delays, disregard of the agreed procedures, systematic refusals to take into consideration adverse proposals or interests, and, more generally, in cases of violation of the rules of good faith..."

<sup>60</sup> (1957) 12 UNRIAA 285 at p 311. In translation (24 ILR p 134) this reads:

"Further, in order for negotiations to proceed in a favourable climate, the Parties must consent to suspend the full exercise of their rights during the negotiations. It is normal that they should enter into engagements to this effect. If these engagements were to bind them unconditionally until the conclusion of an agreement, they would, by signing them, lose the very right to negotiate; this cannot be presumed."

<sup>61</sup> See HM, para 10.34.

“...il faut souligner combien sont intimement liées l’obligation de tenir compte, au cours des tractations, des intérêts adverses et l’obligation de faire à ceux-ci, dans la solution retenue, une place raisonnable. Un Etat qui a conduit des négociations, avec compréhension et bonne foi, selon l’article 11 de l’Acte additionnel, n’est pas dispensé de faire, dans la solution retenue, une place raisonnable aux intérêts adverses, parce que les conversations ont été interrompues, fût-ce par l’intransigence de son partenaire.”<sup>62</sup>

6.57. These principles are entirely applicable to the present case, in both of its stages. First, Hungary’s proposals to collect further scientific data concerning the impact of the Project on vital aspects of its environment before continuing the construction of the Nagymaros barrage were not taken into consideration. Later, Czechoslovakia agreed to negotiate only while continuing to construct Variant C, and without consideration for the legitimate interests of Hungary.

*(c) The Diversion of Water from the Meuse case*

6.58. The Slovak Memorial also relies on the opinion of the Permanent Court in the *Diversion of Waters from the Meuse*, arguing that the test for the legality of unforeseen acts within the context of a watercourse treaty is whether the obligations of the parties under the treaty are interfered with and whether the achievement of the objectives of the treaty is harmed. According to the Slovak Memorial, the Court found that, in the absence of a provision requiring the consent of Belgium, the Netherlands was entitled to dispose of the waters of the Meuse at Maastricht, provided that the treaty obligations incumbent upon it were not ignored. The Slovak Memorial concludes from this that Variant C is fully compatible with the objectives of the 1977 Treaty regime.<sup>63</sup>

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<sup>62</sup> (1957) 12 UNRIAA 285 at p 317. In translation (24 ILR p 141) this reads:

“it must be stressed how closely linked together are the obligation to take into consideration, in the course of negotiations, adverse interests and the obligation to give a reasonable place to these interests in the solution finally adopted. A State which has conducted negotiations with understanding and good faith in accordance with Article II of the Additional Act is not relieved from giving a reasonable place to adverse interests in the solution it adopts simply because the conversations have been interrupted, even though owing to the intransigence of its partner.”

<sup>63</sup> SM, paras 7.82, 7.83, 7.96.



6.59. An attentive reading of the opinion of the Permanent Court undermines the Slovak allegations. Although one of the main issues raised in the case was Belgium's desire to obtain the Netherlands' consent to the construction of a new canal connecting Antwerp to the Rhine, the Court declared that it was in no way concerned with this question, stressing that its task was—

“limited to a decision on the legal points submitted to it as to whether or not certain works constructed by the Belgian government do or do not infringe the Treaty of 1863.”<sup>64</sup>

6.60. The Court added that, although in the course of the proceedings occasional reference had been made to the application of the general rules of international law as regards rivers—

“the points submitted to it by the Parties in the present case do not entitle it to go outside the field covered by the Treaty of 1863.”<sup>65</sup>

In similar vein the Court refused to consider an argument which “goes beyond what the text of the Treaty will support”.<sup>66</sup>

6.61. Thus, contrary to the allegations of Slovakia, the case related exclusively to the particular treaty obligation in force between Belgium and Netherlands. No general principles were enunciated or applied, and the opinion thus has no bearing on the present dispute.

#### **SECTION B: THE ILLEGALITY OF VARIANT C UNDER APPLICABLE TREATIES**

6.62. A number of comments are necessary in response to the sections of the Slovak Memorial asserting the legality of Variant C under applicable treaties:<sup>67</sup> these remarks supplement the treatment of this issue in Chapter 7 Section B of the Hungarian Memorial.

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<sup>64</sup> *Diversion of Water from the Meuse*, PCIJ Ser A/B No 70 (1937), p 16.

<sup>65</sup> *Diversion of Water from the Meuse*, PCIJ Ser A/B No 70 (1937), p 16.

<sup>66</sup> *Ibid*, p 20.

<sup>67</sup> See SM, paras 7.48-7.71.

(1) THE 1976 CONVENTION ON THE REGULATION OF WATER  
MANAGEMENT ISSUES OF BOUNDARY WATERS

6.63. Slovakia recognises that the Boundary Waters Convention, signed at Budapest on 31 May 1976,<sup>68</sup> is an essential instrument between Hungary and Slovakia which is still in force and governs the matter of water management.<sup>69</sup> Both Parties agree that the 1976 Convention is still in force. This means that the two Parties had to respect the obligation under Article 3(a)–

“not to carry out any water management activities without mutual agreement, which would adversely affect the jointly defined water conditions.”

6.64. According to Article 2 of the Convention, the material scope of “water management activities” is very large and includes in particular activities which may bring changes in the natural water conditions, such as, in particular, the regulation of water courses, the construction of reservoirs and flood control dykes, the utilisation of water resources and hydroelectric development. The Convention further provides that the parties shall inform each other of their long-term development plans of water management, mainly concerning water management activities on boundary waters (Article 3(c)) and shall engage in prior negotiations on the impacts of water management activities (Article 3(d)).

6.65. In the Hungarian Memorial it was shown that, by not giving due notice to Hungary of the construction of Variant C, and by not entering into consultations, Czechoslovakia did not observe these provisions, which reflect general international law.<sup>70</sup> Slovakia affirms that such obligations were in fact performed by the 1977 Treaty and its implementing measures, which have to be considered as a *lex specialis*.<sup>71</sup> Nothing supports this allegation. The obligation to co-operate in the utilisation of water resources, to inform the other Party of planned activities having an impact on boundary waters and to engage in prior negotiations on the impacts of water management activities, were not performed by the mere adoption of the 1977 Treaty. They were continuing obligations to be performed as occasion required.

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<sup>68</sup> See HM, Annexes, vol 3, annex 19.

<sup>69</sup> SM, paras 6.43-6.46. It also recognises that water purity remains under the regulation of the 1976 Agreement (SM, paras 7.70, 8.40). See also HM, paras 6.50-6.55, 7.25-7.27 and also HM paras 4.33-4.35.

<sup>70</sup> HM, paras 7.57-7.65.

<sup>71</sup> SM, paras 7.65-7.66.

6.66. In addition, Slovakia itself recognises that the 1976 Convention applies to all boundary waters and not only to the Danube. How then could the 1977 Treaty be considered as the "mutual agreement" foreseen by the Convention on Boundary Waters? In any case, Variant C was not foreseen by the 1977 Treaty.

## (2) THE 1948 DANUBE CONVENTION

6.67. Slovakia insists on the supposed benefits of the Barrage System and especially of Variant C for navigation on the Danube.<sup>72</sup> Article 18 of the 1977 Treaty contains precise obligations with regard to navigation on one hand and refers to the Convention Concerning the Regime of the Navigation on the Danube, signed at Belgrade on 18 August 1948,<sup>73</sup> on the other. It is thus necessary to examine first the scope and the meaning of Article 18.

6.68. Slovakia ignores in particular Article 18(4) according to which:

"The conditions for navigation in the old bed of the Danube shall be specified in the operating and operational procedures."

Thus it was agreed that there would be navigation in the old bed of the Danube, the conditions for which were to be determined by the two riparian States. This was not done, and there is now no international navigation in the main bed of the Danube, which has been largely deprived of water.

6.69. Article 18(1) of the 1977 Treaty also provides that Czechoslovakia and Hungary shall ensure uninterrupted and safe navigation on the international waterway both during the construction and during the operation of the System of Locks, in conformity with Article 3 of the 1948 Belgrade Convention. The obligation imposed by Article 3 on the Parties is to maintain their sections of the Danube in a navigable condition, as well as to carry out works necessary for the maintenance and improvement of navigation, and not to obstruct or hinder navigation on the navigable channels of the Danube.

6.70. Essentially, the objective of Article 18 of the Treaty is to ensure uninterrupted and safe navigation on the Danube during work on the Projects as well as during the functioning of the Barrage System, in order

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<sup>72</sup> SM, paras 6.47-6.49, 6.143-6.155.

<sup>73</sup> See Convention concerning the Regime of Navigation on the Danube, Belgrade, on 18 August 1948, 33 UNTS 181; HM, vol 3, annex 4.

to comply with the 1948 Danube Convention. In fact, Variant C is not able to guarantee such functions, and the main bed of the Danube is no longer available for navigation in emergencies, which can block navigation for weeks or even months.<sup>74</sup>

6.71. Slovakia argues that the 1977 Treaty and related agreements were the means by which Czechoslovakia and Hungary carried out their obligations under the 1948 Treaty in respect to the portion of the Danube affected by the Project.<sup>75</sup> But improvement of navigation is not one of the major objectives of the 1977 Treaty, the preamble of which only speaks in general terms of the interest of the Contracting Parties—

“in the broad utilization of the natural resources of the Bratislava-Budapest section of the Danube for the development of water resources, energy, transport, agriculture and other sectors of the national economy of the Contracting States.”

6.72. Slovakia refers to Article 3 of the 1948 Danube Convention to counter the argument that Variant C contravenes that Convention.<sup>76</sup> According to Article 3:

“The Danubian States undertake to maintain their sections of the Danube in a navigable condition for river-going and, on the appropriate sections, for sea-going vessels, to carry out the works necessary for the maintenance and improvement of navigation conditions and not to obstruct or hinder navigation on the navigable channels of the Danube...”<sup>77</sup>

6.73. Variant C is in clear violation of this article. The operation of Variant C made commercial navigation and the transit of international shipping in the Danube between river kilometres 1852-1811 impossible; it also eliminated growing small-boat tourism,<sup>78</sup> and impacted on the rights of Hungary as a riparian state in matters such as emergency prevention and management, customs and health regulations.

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<sup>74</sup> See above, paragraphs 3.86-3.93.

<sup>75</sup> SM, para 6.49.

<sup>76</sup> SM, paras 7.48-7.50. This reference to the Hungarian Declaration of 1992 is incorrect. It should read “para (5)f of Part III”, instead of “para 5(c) of Part III”.

<sup>77</sup> HM, Annexes, vol 3, annex 4.

<sup>78</sup> HM, para 5.132.

6.74. Given the experience of the functioning of Variant C and of Gabčíkovo, it may be asked whether Slovakia could ever ensure uninterrupted and safe navigation on the Danube.<sup>79</sup>

(3) THE 1958 BUCHAREST CONVENTION CONCERNING FISHING IN THE WATERS OF THE DANUBE

6.75. Slovakia insists on the links between the 1958 Bucharest Convention with the 1977 Treaty.<sup>80</sup> According to Article 20 of the 1977 Treaty, the Contracting Parties "shall take appropriate measures for the protection of fishing interests in conformity with the Danube Fisheries Agreement, concluded at Bucharest on 29 January 1958."<sup>81</sup> Under Article 5 the Parties also had to carry out improvement works and piscicultural operations to ameliorate the natural conditions for the breeding, growth and normal increase in stocks of fish of economic importance. However, Slovakia omits to refer to paragraphs 3 and 4 of Article 5 which provide that:

"3. In the event of the erection on the Danube of water engineering works, in particular dams, which may change the hydrological and hydrobiological regime of the river, those Contracting Parties which construct and use the said works shall prepare in advance and apply jointly a plan of action to safeguard the normal migratory movements of fish.

4. The Contracting Parties shall at the same time carry out such piscicultural operations as will safeguard the normal breeding and development of economically valuable species of fish, in the sections of the river situated above and below the said works, under the new environmental conditions created by the erection of those works."

6.76. Article 3 determines the territorial scope of the application of the Convention, including the tributaries of the Danube up to the maximum extent of its flood waters, and lakes, estuaries and pools permanently or temporarily connected with the Danube.

6.77. Czechoslovakia did not comply with these provisions, either before or after the construction of Variant C. It did not prepare in advance and apply jointly with Hungary – or even unilaterally – a plan of

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<sup>79</sup> See above, paragraphs 3.90-3.93.

<sup>80</sup> SM, paras 6.50-6.54.

<sup>81</sup> HM, Annexes, vol 3, annex 21.

action to safeguard the migratory movements of fish. It did nothing to safeguard the normal breeding and development of fish in the sections of the river situated above and below the new canal, especially under the new environmental conditions created by Variant C. In fact, important spawning and breeding waters of the Szigetköz – which were covered by the 1958 Convention – are dried out and lost for the purposes of that Convention.<sup>82</sup>

### SECTION C: THE ILLEGALITY OF VARIANT C UNDER THE 1977 TREATY

6.78. Slovakia contends that the 1977 Treaty was still in force at the time of the operation of Variant C in October 1992, and seeks to justify its unilateral action by reference to the Treaty. That is not an easy task since none of its provisions, even interpreted with the greatest flexibility, allows any ground for such an operation which was never contemplated by the drafters and which plainly contradicts several of its provisions, as already demonstrated in the Hungarian Memorial.<sup>83</sup>

6.79. The difficulty of the task explains Slovakia's attempts to rescue Variant C under the 1977 Treaty by resort to two novel and peripheral arguments. The first is that Variant C was an "approximate application" of the Treaty.<sup>84</sup> The second is that it was necessary by way of "mitigation of damage".<sup>85</sup> These arguments will be reviewed here.

#### (1) VARIANT C WAS NOT AUTHORISED BY THE 1977 TREATY

6.80. Slovakia's attempt<sup>86</sup> to persuade the Court that Variant C was implemented in conformity with the 1977 Treaty finds no ground in the provisions of the Treaty itself – not one of which is relied on in the Slovak argument. Of course, the Treaty was not in force when Variant C was implemented, and whatever argument there might have been on that

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<sup>82</sup> cf. A Vida, "Ichthyological Aspects of the Gabčíkovo-Nagymaros Project", HM, vol 1, appendix 2, 372-387 and Convention between the Governments of Romania, Bulgaria, Yugoslavia, USSR concerning fishing in the waters of the Danube signed at Bucharest, 29 January, 1958, HM, vol 2, annex 16.

<sup>83</sup> See HM, paras 1.16, 7.04-7.43.

<sup>84</sup> See SM, paras 7.11-7.33.

<sup>85</sup> SM, paras 7.34-7.40.

<sup>86</sup> See SM, para 7.11 ff.

matter dissolved with the dissolution of Czechoslovakia at the end of 1992.<sup>87</sup> But for the purposes of the Slovak argument it is necessary to assume that the Treaty remained in force. Even on that assumption, it is clear that Variant C was not authorised by the 1977 Treaty and that its operation was and is in conflict with the provisions of the Treaty in a number of respects, as already shown in the Hungarian Memorial.<sup>88</sup>

6.81. In particular by its unilateral character, the diversion contradicts the spirit as well as the object and purpose of the Treaty, which was to promote jointly an integrated and co-operative project.<sup>89</sup> The obligation to co-operate laid down in Articles 3, 7 and 11 was contradicted by the unilateral operation of Variant C. The same can be said concerning the obligations to protect the environment enunciated in Articles 15 and 19. As Variant C, unilateral in character, is irreconcilable with the provisions of the 1977 Treaty, it can in no way be qualified as an application, even "approximate", of any part of this Treaty. Moreover there were vital differences between the Original Project and Variant C, as already shown by Hungary.<sup>90</sup> This being so, the existence of any doctrine of "approximate application" hardly arises.

## (2) THE SO-CALLED "DOCTRINE OF APPROXIMATE APPLICATION"

6.82. Nonetheless, the main argument used by Slovakia to justify the lawfulness of Variant C is to rely on that doctrine. According to Slovakia, confronted by the purported refusal of Hungary to fulfil its obligations under the 1977 Treaty, Czechoslovakia had no alternative than "to attempt approximate application of performance as the only means of fulfilling not only the purposes of the 1977 Treaty, but the continuing obligation to implement it in good faith."<sup>91</sup> And again, some paragraphs later, "Variant C serves, by reference to the doctrine of approximate application, to implement the 1977 Treaty as far as possible in the face of Hungary's non-compliance..."<sup>92</sup>

6.83. Such an assertion is based on a biased presentation both of facts and law. The factual background to the introduction of Variant C is dealt

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<sup>87</sup> See HM, paras 10.107-10.120.

<sup>88</sup> HM, para 7.04 ff.

<sup>89</sup> HM, paras 4.10-4.12; above, paragraphs 2.98-2.100.

<sup>90</sup> HM, para 1.116.

<sup>91</sup> SM, para 7.20.

<sup>92</sup> SM, para 7.41.

with in detail in Hungary's Memorial as well as elsewhere in this Counter-Memorial.<sup>93</sup> Let us simply recall at this point that Hungary was not in breach of its treaty obligations at the time when Czechoslovakia decided unilaterally to implement Variant C. Throughout, Hungary was willing to resolve the dispute by negotiations, by involving third parties and even by resort to the Court.

6.84. Nevertheless, let us for the sake of argument consider the so-called "approximate application" of a treaty in its own right. Slovakia presents this notion as if it were a well-established and self-evident rule of positive international law. This is certainly not the case. There is no such rule in international law, and, particularly, in the international law of treaties.

6.85. Slovakia states in paragraph 7.17 of its Memorial that "the entitlement of a State to put, as best as it can, a treaty into effect in the face of unlawful refusal by the other party to fulfil its obligations, is entirely consistent with established principle". It locates its discussion of "approximate application" under the auspices of "*pacta sunt servanda*" (para. 7.19) as well as presenting it as the counterpart of the rule according to which "a State cannot benefit from its own wrongdoing" (para. 7.24). Both ideas are of long standing in international law; it is remarkable then that the doctrine of "approximate application" is virtually unheard of.

6.86. The idea of an "approximate application" of a treaty finds support neither in the practice of states nor in the jurisprudence of the Court or of any arbitral tribunal. For example, had the doctrine been an established principle, it could have been employed and should at least have been referred to in the *Interpretation of Peace Treaties Case (Second Phase)*.<sup>94</sup> But there is no trace of the doctrine in that Opinion.

6.87. The "approximate application" doctrine is not a customary rule, nor is it a general principle of law as understood in Article 38(c) of the Statute of the Court. The Slovak Memorial is unable to rely on any provision of the 1969 Vienna Convention on the law of treaties which would, even indirectly, support the authority of "approximate application" as a positive rule of public international law. The only article which deals with the conduct to be adopted by one state party to a treaty on account of breach by another party is Article 60. This leaves no other choice than invoking the breach "as a ground for terminating the treaty or suspending its operation..." Neither of these alternatives may be assimilated to an "approximate application" of the Treaty.

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<sup>93</sup> See HM, paras 3.109-3.126, 5.106-5.137; above, paragraph 3.07 *et seq.*

<sup>94</sup> *Advisory Opinion on the Interpretation of Peace Treaties with Bulgaria, Hungary and Romania (Second Phase)*, ICJ Reports 1950 p 221.



6.88. Nor is any trace of the so-called rule to be found in the law of state responsibility. This envisages that counter-measures may be taken in certain cases by a state confronted with an actual breach of a treaty, but in no way gives any credence to the idea that a state may otherwise rewrite treaty provisions so as to give effect to them in an "appropriate" way.

6.89. The Slovak Memorial implicitly recognises the non-existence of any such rule by referring to "approximate application" as a "doctrine".<sup>95</sup> But even as a "doctrine" it is virtually unknown. As far as can be discovered, this doctrine has been discussed by only one author, namely Shabtai Rosenne,<sup>96</sup> who bases his discussion on one separate opinion by Judge Sir Hersch Lauterpacht in 1956 in *Admissibility of Hearings of Petitioners by the Committee on South West Africa*.<sup>97</sup> There is no reference to the doctrine of "approximate application" in any leading text, as illustrated, for instance, by the silence of the ninth edition of *Oppenheim's International Law* on that point.<sup>98</sup> This alone would suffice to cast very serious doubt on the international recognition of this doctrine by states as an applicable rule of international law.

6.90. In any event, Judge Lauterpacht's separate opinion does not support the views expressed by Slovakia with respect to the value and implications of the so-called "doctrine". The same conclusion can be drawn from the commentary produced almost 30 years later by Rosenne.

6.91. The question asked of the Court in 1956 was very specific. The Court was asked whether it was "consistent with the advisory opinion of

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<sup>95</sup> SM, paras 7.21, 7.22, 7.41.

<sup>96</sup> S Rosenne, *Breach of Treaty* (Grotius, Cambridge, 1985) at pp 95-101.

<sup>97</sup> *Advisory Opinion on Admissibility of Hearings of Petitioners by the Committee on South West Africa*, ICJ Reports 1956 at p 46.

<sup>98</sup> *Oppenheim's International Law* (9th edn, ed Sir Robert Jennings & Sir Arthur Watts, Longman, London, 1992). No reference to the so-called doctrine is to be found in the following books (page references are to the sections where one might have expected to find some reference to the doctrine, if it existed): Lord McNair, *The Law of Treaties* (Oxford, Clarendon Press, 1961) pp 539-586; I Detter, *Essays on the Law of Treaties* (Sweet & Maxwell, London, 1967) pp 89-94; C Parry, "The Law of Treaties", in M Sorensen (ed) *Manual of Public International Law* (McMillan, London, 1968) pp 239-240; G Haraszti, *Some Fundamental Problems of the Law of Treaties* (Akadémia Kiadó, Budapest, 1973) pp 310-326, 322-323; Sir Ian Sinclair, *The Vienna Convention on the Law of Treaties* (Manchester, Manchester University Press, 1973) pp 188-190; TO Elias, *The Modern Law of Treaties* (Dobbs Ferry, Oceana Publications, 1974) pp 114-118; Reuter, *Introduction au droit des traités* (PUF, Paris, 1985) pp 158-168; American Law Institute, *Restatement of the Law Third. Foreign Relations Law of the United States* (St Paul, Minn, American Law Institute Publishers, 1986) vol 1, pp 216-218.

the International Court of Justice of 11 July 1950 for the Committee on South West Africa, established by General Assembly resolution 749 A (VIII) of 28 November 1953, to grant oral hearings to petitioners on matters relating to the Territory of South West Africa".<sup>99</sup> The legal problem to be solved by the Court was conditioned by its institutional character. The Court was dealing with the legal powers of a body, the Committee on South Africa, created by the General Assembly acting in effect as successor to the Council of the League of Nations as the competent body to supervise the continuation of the Mandate for South West Africa, after the League of Nations had disappeared. The question asked of the Court was furthermore closely connected with the obligations of the Mandatory under the Mandate System, the Court having held in 1950 that those obligations continued "unimpaired",<sup>100</sup> notwithstanding the fact that the Mandate as a treaty disappeared with the disappearance of one of the parties to it, the League of Nations.

6.92. As stated by Sir Hersch Lauterpacht, the legal rules to be considered and applied in this context were—

"connected with the nature of the régime of the territory of South West Africa as declared in the Opinion of 11 July 1950".<sup>101</sup>

He insisted then on the special character of this régime, which was—

"in the nature of an objective law which [was] legally operative irrespective of the conduct of the Union of South Africa."<sup>102</sup>

He also explained that—

"that status must be given effect except in so far as its application is rendered impossible, in terms of its general purpose, having regard to the attitude adopted by the Union."<sup>103</sup>

6.93. Interesting as it may be, this opinion was not supported in any passage of the Advisory Opinion itself, from which Sir Hersch Lauterpacht's view may be considered a virtual dissent. Judge Lauterpacht was able to arrive at the same result as the Court, but did so by an entirely different route.

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<sup>99</sup> ICJ Reports 1956 at p 24.

<sup>100</sup> Ibid, p 27.

<sup>101</sup> Ibid, p 46.

<sup>102</sup> Ibid, p 46.

<sup>103</sup> Ibid, p 46.

6.94. Furthermore, there are striking differences between the legal problems which arose in the Advisory Opinion of 1956, and those in the present case. These differences are due, *inter alia*, to the different legal nature of the relationships in the two cases, and in particular to the special rights and obligations involved in the Mandate as compared with the 1977 Treaty.

6.95. As to the legal nature of the relationships, the specific obligations bearing on the Mandatory were established on the basis of a *sui generis* regime, characterised by its objective nature, in the very special institutional context of the League of Nations, and subsequently of the United Nations. On the other hand, the 1977 Treaty was an ordinary bilateral treaty, established in accordance with classical rules of international law.

6.96. Furthermore, in the case of the Mandate, the upholding of the obligations of South Africa as a mandatory state was of paramount importance; this was because, as mentioned by the Court itself, the ultimate purpose of this regime was the protection and promotion of the rights of the people of South West Africa.<sup>104</sup> Obviously, no such a right was at stake in the situation in which Variant C was operated by Czechoslovakia. In one situation, there was the prolongation of a legal system placed under the authority and control of a universal institution representing the international community, with the aim of safeguarding "the sacred trust of civilisation through the maintenance of effective international supervision of the administration of the Mandated Territory".<sup>105</sup> In the other case, there was a quite ordinary situation of a bilateral treaty between neighbouring states in a matter of specific concern to both. The two situations are wholly different.

6.97. In fact – and contrary to what appears to be suggested in the Slovak Memorial – the opinion expressed by Sir Hersch Lauterpacht in 1956 insists very much on this difference of kind between the situation created by the existence of the Mandate and an ordinary treaty relationship between two states. Judge Lauterpacht stressed that breach of the Mandate –

"is unlike the case of a breach of the provisions of an ordinary treaty – which breach creates, as a rule, a right for the injured party to denounce it and to claim damage."<sup>106</sup>

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104 Ibid, pp 27-28.

105 Ibid, p 28.

106 Ibid, pp 48-49.

In other words, far from enumerating a doctrine on which Slovakia can rely, Sir Hersch Lauterpacht *affirmed* the fundamental rule that a state confronted with a breach of the provisions of a treaty has the option of denouncing it and claiming damage, but cannot insist on its specific performance – still less impose some approximation to performance on the other party.

6.98. In the present case, there is neither an objective regime nor a specific contractual relationship between an international institution and a member state committed to perform specific obligations aimed at promoting the rights of a distinct people placed under its authority.

6.99. The same conclusion may be reached from Professor Rosenne's discussion of the doctrine of "approximate application" (which he calls a "theory").<sup>107</sup> (It should be noted that, in the meantime, i.e., from 1956 until 1985, this doctrine or theory had gained no weight in the actual practice of states or in the process of preparation, conclusion and implementation of the 1969 Vienna Convention which took place precisely during that period.) In his commentary, Rosenne insists on the fact that "Lauterpacht, with his characteristic caution, seems to have presented his statement of doctrine as though it had a limited forward thrust".<sup>108</sup> He stresses also that "this was not a case of contract or even of an ordinary treaty analogous to contract", but that Lauterpacht saw it—

"as a case of the operation and application of multilateral instruments creating an international status or an international regime transcending a mere contractual relation."<sup>109</sup>

6.100. Of equal interest are the lessons which, according to Rosenne, may be drawn from such a theory. He declares:

"...what we have termed the doctrine of 'approximate application' means that, faced with a situation of established

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<sup>107</sup> Rosenne, *Breach of Treaty* (1985) p 96.

<sup>108</sup> *Ibid*, p 97.

<sup>109</sup> *Ibid*, p 98. Rosenne adds: "The essence of such instruments is that their validity continues notwithstanding changes in the attitudes or status or the very survival of the individual parties or persons concerned. Their continuing validity implies their continued operation..."

breach (and not merely alleged breach), the parties themselves in the first instance, renegotiate and apply the treaty in good faith and where they are not successful in doing this themselves, then acting through or with the assistance of a competent international organ, whether judicial or not, are legally obliged to take steps to redraft the treaty or reformulate the sub-system so as to ensure its continued effective application.”<sup>110</sup>

6.101. Such a result may only be achieved by way of negotiations. According to Rosenne:

“The doctrine of approximate application...if skilfully used may serve as a prod to the renegotiation, reinterpretation or readaptation of a treaty...”<sup>111</sup>

It is only in this respect, according to Rosenne, that the doctrine can be said “to contribute to the general stability of juridical relations”.

6.102. Thus even if the doctrine did exist as part of international law, and even if (which Judge Lauterpacht denied) it applied to “an ordinary treaty”, and even if the factual situation in the present case had warranted having recourse to it, the doctrine would only have entitled Czechoslovakia to renegotiate the substance of the treaty – something that it consistently refused to do. There is no trace in the two sources for the “doctrine” of any idea that it justifies a State adopting substantive unilateral solutions inconsistent with the treaty in question, especially where the solution, as with Variant C, is of a highly damaging nature.

6.103. It should be stressed that “approximate application” is the *only* Slovak argument seeking to demonstrate that no contradiction exists between the operation of Variant C and the obligations laid down in the 1977 Treaty. The consequences of rejection of that doctrine as a basis for Variant C will be correspondingly fatal to the Treaty – even on the assumptions of the Slovak argument.

6.104. Furthermore, even on those assumptions, the criterion laid down by Slovakia to justify Variant C as an “approximate application” of the 1977 Treaty is not satisfied.<sup>112</sup> In this passage of its Memorial, Slovakia stressed the “temporary” and “reversible” character of Variant C. But the reversible character of Variant C is highly questionable, quite apart from

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<sup>110</sup> Ibid, p 100.

<sup>111</sup> Ibid, p 100.

<sup>112</sup> SM, paras 7.28, 7.29.

the fact that its operation has already produced persistent damage, the long-term consequences of which are difficult to assess.<sup>113</sup>

(3) "MITIGATION OF DAMAGE" DOES NOT EXCUSE UNLAWFUL  
CONDUCT

6.105. The Slovak Memorial associates its argument from the "approximate application" doctrine with a second argument, according to which "it is a general principle of international law that a party injured by the non-performance of another contract party must seek to mitigate the damage he has sustained."<sup>114</sup> According to Slovakia, the operation of Variant C is justified because it mitigates the damage created by the purported wrongdoing of Hungary.

6.106. Like "approximate application", the "mitigation of damage" argument is difficult to reconcile both with the facts and the law. As for the facts, it was shown in the Hungarian Memorial that negotiation was the means to find practical solutions aimed at limiting the costs and damage created by the partial realisation of the Original Project. Only a negotiated solution would have secured an equitable outcome, balancing the share of costs and benefits among the two parties for the readjustment of the Project. Hungary was ready to envisage different solutions and had expressed its readiness to compensate for the losses arising from the situation.<sup>115</sup>

6.107. On the contrary, the unilateral operation of Variant C by Czechoslovakia was to produce in the region concerned a whole range of damage and risks, in particular to the aquifer, the groundwater, the drinking-water supplies and the environment at large together with economic consequences, as already described.<sup>116</sup>

6.108. In such a context, it is ironic that Slovakia attempts to invoke environmental arguments, namely "the prospect of expenditure to minimise the environmental damage and degradation caused by leaving existing constructions in their unfinished state".<sup>117</sup> It is impossible to regard in the same light or to place on the same scale, on one hand, the wide, multiple

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<sup>113</sup> See above, paragraphs 3.15, 3.115 *et seq.*

<sup>114</sup> SM, para 7.34.

<sup>115</sup> See e.g., HM, para 3.126.

<sup>116</sup> See above, para 3.15 *et seq.*

<sup>117</sup> SM, para 7.37.

and far-reaching environmental and economic damage created by the operation of the Original Project and *mutatis mutandis* of Variant C and, on the other hand, the limited and definite harm created by the interruption of work in one part of the Project, for the compensation of which technical solutions as well as financial arrangements could have been, and were, contemplated.

6.109. Turning to the legal value of the “mitigation of damage” argument, the first observation to be made is that the Slovak argument involves a categorical mistake. Assuming international law to admit an “obligation to mitigate losses”, this rule would be one of the “secondary obligations”; it would not be a primary obligation, in the terminology of the International Law Commission since the beginning of its work in the field of state responsibility. In other words, Slovakia seeks to use an argument concerning the estimation of damage to justify its engaging in substantively unlawful conduct. But mitigation of damage cannot excuse unlawful conduct.

6.110. In any event, the Slovak Memorial is unable to demonstrate where this purported “general principle of international law” comes from. Its only references are to certain decisions of the Iran-United States Claims Tribunal,<sup>118</sup> a tribunal of a special character oriented mainly to the settlement of commercial disputes of a transnational character.<sup>119</sup> Indeed the main Slovak reference is not to a decision of the Tribunal but to a concurring opinion of one of its members, Mr RM Mosk, in *Craig v Minister of Energy*.<sup>120</sup> That case involved a private dispute between an American citizen and the Ministry of Energy of Iran. It comes then as no surprise that the law applicable to the contract between Craig and the Ministry was not public international law but the municipal law of Iran.<sup>121</sup> Nowhere does the Tribunal’s decision mention what the Slovak Memorial calls the “mitigation of damage” principle. Nowhere does it speak of any “general principle of international law” of any kind whatever.

6.111. Nor does Judge Mosk himself speak of such a “principle” in an opinion serving as the main authority supporting the Slovak assertion as to the juridical value of this “principle”. In his concurring opinion, Judge Mosk simply expressed the view that “the claimant is not entitled to

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<sup>118</sup> SM, para 7.34, note 18.

<sup>119</sup> See e.g., B Audit, “Les ‘Accords’ d’Alger du 19 Janvier 1981 tendant au règlement des différends entre les Etats-Unis et l’Iran” (1981) 108 *Journal du Droit International* 713 at p 765.

<sup>120</sup> (1983) 3 Iran-US Claims Tribunal Reports 280 at p 293.

<sup>121</sup> *Ibid*, pp 284, 286, 287.

damage for losses he could have avoided by reasonable efforts".<sup>122</sup> As dictated by the substance of the case, he places his argument on the ground of municipal law, referring in particular to the works of a distinguished contracts scholar.<sup>123</sup>

6.112. The two other cases quoted by the Slovak Memorial are *Watkins-Johnson Company v Iran*<sup>124</sup> and *General Electric Company v Iran*.<sup>125</sup> Each of these cases refers to the reasonable efforts made by the private claimant to limiting its losses. In each case, the argument occurs as a very subsidiary one, and again in the framework of a decision based on the application of municipal law, not of any "general principle of international law".

6.113. What can be said in conformity with the law is that, when confronted with unexpected damage created by the implementation of an international treaty, a state party may protect its own interests as best as it can and may take steps for the prevention of damage. But this issue goes to quantification of damage; as Judge Mosk pointed out, a party cannot claim damage for losses which it could by reasonable efforts have avoided. This has nothing at all to do with the question of self-help, of unilateral measures which would otherwise be unlawful. Mitigation of loss goes to quantification, not to justification; an injured party is neither justified nor required to engage in unlawful conduct in order to mitigate its loss. The recovery of such losses is the function of the law of damage, and on the international plane of the law of state responsibility – on which the Slovak Memorial conspicuously fails to rely.

6.114. This is even more so when the treaty binding on the two parties contains a provision establishing negotiation as a regular process for implementation of treaty obligations as well as the chosen means for the settlement of disputes, as Article 27 of the 1977 Treaty does. If no negotiations could be achieved under Article 27, the dispute over whether there was a potential loss or danger for Czechoslovakia if the works of the unitary Project were interrupted would have to be resolved by the other means referred to in Article 33 of the Charter of the United

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<sup>122</sup> Ibid, p 293.

<sup>123</sup> G Treitel, "Remedies for Breach of Contract" paras 75-77, in 7 *Int'l Encyclopedia of Comparative Law* (1976).

<sup>124</sup> (1989) 22 Iran-US Claims Tribunal Reports 218 at p 244.

<sup>125</sup> (1991) 26 Iran-US Claims Tribunal Reports 148 at pp 161-162.



Nations. Hungary repeatedly sought ways of resolving the issue in such a way, including by reference to binding arbitration or to this Court.<sup>126</sup>

6.115. A final point is made in the Slovak Memorial in support of the "mitigation of damage" argument. According to the Slovak position, this argument is supported by Draft Article 24 of the ILC Draft Articles on The Law of Non-Navigational Uses of International Watercourses, which concerns "Prevention and mitigation of harmful conditions".<sup>127</sup> It was adopted without change on Second Reading in 1994 as Article 27, and will be cited in this version.<sup>128</sup>

6.116. In full, Article 27 reads as follows:

"Watercourse States shall, individually or jointly, take all appropriate measures to prevent or mitigate conditions that may be harmful *to other watercourse States*, whether resulting from natural causes or human conduct, such as flood or ice conditions, water-borne diseases, siltation, erosion, salt-water intrusion, drought or desertification."

6.117. However, the way in which this article is cited by Slovakia is misleading. It leaves out the words italicised, which make it clear that the "appropriate measures to prevent or mitigate conditions that may be harmful" are those which may affect the "other watercourse States". By omitting this passage, Slovakia modifies entirely the meaning of the article, which is aimed at the prevention or abatement of environmental damage *to other watercourse States*. Slovakia seeks to present the Draft Article as if it justified Variant C as an act of self-protection, exclusively dedicated to the protection of its own national environment. Unfortunately Variant C caused, and causes, significant harm to the other watercourse state, Hungary.

6.118. Hungary recognises the principle enunciated in Article 27, which is part of general international law. Yet it should be noticed not only that the rule laid down by Article 27 concerns the protection of the environment of other watercourse states but also that it occurs in the general

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<sup>126</sup> See *Note Verbale* from the Hungarian Ministry of Foreign Affairs to the Embassy of the Czechoslovak Socialist Republic, 1 September 1989, HM, Annexes, vol 4, annex 24; Letter from Hungarian Prime Minister L Adamec, 4 October 1989; HM, Annexes, vol 4, annex 27; Draft Treaty attached to *Note Verbale* from the Hungarian Ministry of Foreign Affairs to the Embassy of the Czechoslovak Socialist Republic, 30 November 1989; HM, Annexes, vol 4, annex 30, Art 3.

<sup>127</sup> A/CN.4/447, p 11, 3 March 1993, cited in SM, para 7.40.

<sup>128</sup> *Report of the International Law Commission on the Work of its 46th Session, 2 May-22 July 1994* (UN Doc A/49/10) at p 309 (emphasis added).

context of Draft Articles which embody principles of mutual co-operation (Article 8), notification to the other concerned watercourse States of planned measures with possible adverse affects (Articles 12-16), exchange of information (Article 11), consultations and negotiations with a view to ensuring an equitable and reasonable utilization of the watercourse (Articles 5, 14), and, generally, respect for the environment, including groundwater.<sup>129</sup> The design and operation of unilateral Variant C satisfies none of these requirements.<sup>130</sup>

#### SECTION D: THE ILLEGAL OPERATION OF VARIANT C

6.119. Even on the assumption – which is very far from being the case – that Variant C was lawful in its inception, the way in which it has been operated from that time until the present is clearly unlawful.

6.120. The factual elements associated with this operation have been summarised earlier in this Counter-Memorial,<sup>131</sup> building in turn on the presentation in the Hungarian Memorial.<sup>132</sup> In essence, Variant C suffers from the same inadequacies as the Original Project, in terms of its general technical conception, and of deficient scientific assessment of the risks and hazards created by its operation. But in addition, the lack of a balanced and equitable operation, the absolute priority given to energy production over all competing uses and especially over the volume of water supplied to the Danube and to the Hungarian side-arm system in the Szigetköz, bring Variant C and its operation into conflict with basic principles of international law.

6.121. Slovakia is unable to demonstrate that the way in which Variant C was planned was different from the conception of the Original Project, so far as the upstream sector is concerned. But in its execution Variant C is even more dangerous than the Original Project due to its hasty implementation. It is more damaging in its implementation because of the manifest failure of Slovakia to utilise the Danube waters “in an

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<sup>129</sup> See Robert Rosenstock, Special Rapporteur, Second Report on The Law of the Non-Navigational Uses of International Watercourses, UN Doc A/CN.4/462 (21 April 1994).

<sup>130</sup> See above, paragraphs 3.07-3.08

<sup>131</sup> See above, paragraph 3.10.

<sup>132</sup> See HM, paras 5.105-5.137.

equitable and reasonable manner",<sup>133</sup> or to take any steps to ensure that significant harm is not caused to other watercourse States.<sup>134</sup>

6.122. Thus much of the scientific and technical critique in this Counter-Memorial with regard to the Original Project is also applicable to Variant C. The process of decision-making in the case of Variant C provides another illustration of the inadequacy of Czechoslovakia's, and subsequently Slovakia's, mode of thinking. No integrated environmental impact assessment preceded the decisions, first to plan, then to implement Variant C. When it comes to this point, the Slovak Memorial remains allusive and vague, without providing any evidence of the purported safety qualities of Variant C. All it says is that "[t]hese structures have been built to the same high standards as applied to the original Project constructions",<sup>135</sup> Such an assertion may or may not be true, but it has not been accompanied by any specific or detailed information which would enable its truth to be assessed – and the facts of Variant C's operation have given little cause for comfort either.

6.123. In any case, whatever evaluation may have been envisaged or carried out by the other party in this respect would have been partial and inconclusive in the circumstances of this case. Variant C has been unilateral in character from the time of its inception until the present. This very feature disqualifies any Slovak attempt to evaluate the impact of Variant C on the transboundary environment: both the *fact* that Variant C would be implemented, and the *way* in which it would be implemented, were predetermined by the other party as a matter of policy, without regard to environmental considerations, in violation of its own environmental laws, and without waiting for the results of a project which it had itself described as necessary in order to implement "a scientifically based ground water control programme in the Danubian lowland territory".<sup>136</sup>

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<sup>133</sup> See HM, paras 7.69-7.82.

<sup>134</sup> To use the language of Draft Articles 5 and 7 of the ILC Draft Articles on Non-navigational Uses of International Watercourses; see above, paragraphs 6.26, 6.36-6.41.

<sup>135</sup> SM, para 5.30.

<sup>136</sup> See Draft Agreement on Joint Czecho-Slovak and Hungarian Co-operation on PHARE — Environment Protection: "Surface Water and Ground Water Model of Danubian Lowland Between Bratislava and Komárno: Ecological Model of Water Resources and Management", 26 October 1990; HC-M, Annexes, vol 3, annex 49. For the provenance and status of this Draft Agreement see above, paragraphs 2.60-2.63.

6.124. In particular, one decision, although not based on an environmental impact assessment, gave the Slovak Government guidance as to the basic requirements for the protection of the environment in relation to the operation of Variant C. On 25 June 1991, the Slovak Environmental Commission (whose functions were subsequently assumed by the Slovak Ministry for Environment) issued a binding "Statement" under Section 14 of the Slovak Water Act. According to this statement, 19 conditions had to be complied with as a legal prerequisite for the operation of Variant C. These conditions are reproduced in the Hungarian Memorial.<sup>137</sup> But, as revealed by the 1993 World Wildlife Fund Report<sup>138</sup> as well as in a Draft Communiqué prepared by the Slovak Ministry for the Environment, the majority of these requirements were not met, thereby creating major threats to the drinking water supply of the population of the Bratislava region.<sup>139</sup> The Draft Communiqué of the

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<sup>137</sup> See HM, para 5.135, and HM, Annexes, vol 4, annex 168.

<sup>138</sup> See 1993 WWF Report, p 7, HM, Annexes, vol 5 (part I), annex 20, at p. 847.

<sup>139</sup> The draft Communiqué issued by the Slovak Ministry of Environment reveals the following matters:

(1) The implementation of Variant C and the operation of the Gabčíkovo hydroelectric plant were realised in violation of the Slovak Water Act, 138/1973; the investor company acted unlawfully in establishing and using certain structures and utilising the water without having been granted the appropriate licences. According to the draft Communiqué: "the severe nature of the contractor's illegal conduct is especially manifest in his conscious violations of the laws providing for construction activities".

(2) The operation of the Gabčíkovo plant substantially disregarded the "19 criteria" earlier accepted by a consensus of relevant experts and local authorities; of particular concern here were conditions for the protection of sub-surface waters, having in mind that—

"the Žitný Ostrov region as a rich reservoir of potable water (17.8 m<sup>3</sup>/sec effectively) provides the drinking water supply to Western Slovakia (including Bratislava). It has become clear that there is no alternative supply, should the present wells cease to function."

Fulfilment of these criteria was mandatory and should have been ensured before the diversion.

(3) In addition "no study has been prepared hitherto on the complex impact of [Variant C] on subsoil waters."

(4) Since Variant C was brought into operation, "[t]he situation has been aggravated by the fact that preliminary results support the fears of experts that the subsoil water reservoirs of the Žitný Ostrov region will be destroyed".

(5) Furthermore:

Ministry for the Environment was rejected by the Slovak Government at its session of 4 December 1992. But this did not have the effect of making the operation of Variant C lawful even under Slovak law.<sup>140</sup> Eventually, rather than the operation of Variant C being made to conform with the legal requirements, the requirements were amended to conform with the operation of Variant C.<sup>141</sup> Thus Slovak environmental law was made to adjust to the fact of the Project, and to design parameters which precluded compliance with any reasonable standard of water management.<sup>142</sup>

6.125. As to the assessment of the geological or seismic risks associated with the construction of Variant C, it appears that no detailed risk analysis had been carried out with regard to the Original Project as late as 1989. Nor – on the information so far available – was one established with regard to Variant C thereafter.

6.126. Thus there remain real doubts as to whether the structures at Čunovo meet safety requirements adapted to seismic and liquidation risks. For example, according to the studies attached to this Counter-Memorial, “[t]he allowance for freeboard (typically 2 metres) is probably adequate to cover seismically induced waves, but may not be sufficient to deal with subsidence of the dyke foundations under extreme earthquake loading. The bulk fill forming the dykes is potentially easily eroded, and

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“[t]he present manipulation of the river prevents the regular flooding of the flood-plain areas.

...  
Because of the non-fulfilment of environmental conditions the connections of the branches with the Danube and with each other have been destroyed, resulting in a change in the hydrological life of the flood plain shrubbery.”

Communiqué of the Slovak Ministry of Environment to the 4 December 1992 Session of the Slovak Government; HC-M, Annexes, vol 3, annex 57.

<sup>140</sup> As pointed out by the WWF Report of December 1993, p 7; HM, Annexes, vol 5, annex 20. The facts set out by the WWF are not denied in Professor Mucha's reply of April 1994, although he asserts that “it is clear that the effort of the government is to optimize the whole system as much as possible with the special emphasis to the floodplain area”: I Mucha, “Gabčíkovo - WWF. The pros and cons” (Bratislava, April 1994) p 82; HC-M, Annexes, vol 4 (part 1), annex 2.

<sup>141</sup> For this decision (taken on 29 April 1994) see Resolution (and Report) of the Government of the Slovak Republic Concerning Disputed Issues of the Gabčíkovo-Nagymaros Barrage System and the Government Proposal in Connection With the Future Course of Action, 7 July 1994; HC-M, Annexes, vol 3, annex 72.

<sup>142</sup> The PHARE project concerns only one aspect, although an important one, of the overall problem: see above, paragraph 2.123.

overtopping would be very likely to develop into a major breach in a short space of time."<sup>143</sup>

6.127. But it is even not sure that the structures designed for Variant C comply with more elementary safety requirements, even under ordinary conditions of use. A document issued by the Slovak Union of Nature and Landscape Protectors reveals that:

"- the manner of construction has been slipshod and, to some extent, unplanned or undertaken without due regard to the plans.

- There are more indications and signs (e.g. flaws and cracks in the dam wall and canal, the halt in the prefilling of the canal with water in August 1991) which indicate the project does not comply with the required specifications concerning structural stability.

- The studies dealing with the dimension design of the earth dam of the Gabčíkovo Project concluded that there are earth dams sections which would not be able to withstand an earthquake of the presently-forecast intensity.

- Independent engineers and safety specialists, as well as people formerly working on the project, have repeatedly expressed misgivings in this respect, and consider an immediate examination and verification of the entire installation to be an absolute necessity."<sup>144</sup>

6.128. The dangers inherent in the project have been even considerably increased by the hasty way in which the damming of the Danube was carried out in October 1992, as already described in the Hungarian Memorial.<sup>145</sup> According to press reports, about 2000 people were working in the area day and night, in three shifts, with 500 trucks delivering stones and gravel for the closure of the river.<sup>146</sup>

6.129. A few weeks later, a practical demonstration was given of the inappropriate design of the structures involved in the operation of Variant C. The "unexpected" flood in November 1992 showed a serious risk to the structure from major floods.<sup>147</sup> 2-3 million cubic metres of sand and gravel eroded from the stretch running 500 metres downstream

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<sup>143</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 6.4.3.

<sup>144</sup> See HM, Annexes, vol 5, (part II), annex 17, at p. 628.

<sup>145</sup> See HM, para 3.182.

<sup>146</sup> See HM, vol 2, photos 1-8.

<sup>147</sup> See HM, vol 2, photos 9-10.

from the Čunovo dam, a consequence of the unfinished state of the construction.

6.130. The Slovak by-pass weir at Čunovo is also unsatisfactory.<sup>148</sup> It only permits discharge at less than half of what had been claimed to be its capacity.<sup>149</sup> As a consequence, Variant C Phase I can only cope with a flood of less than 10,000 cubic metres per second if every part of the system operates perfectly.<sup>150</sup> But there have been many weeks since October 1992 when either the Čunovo by-pass weir or one of the Gabčíkovo shiplocks could not be operated even in an emergency.

6.131. The incapacity of the Slovak authorities to provide the main bed of the Danube with a minimum water discharge in accordance with the recommendation for a Temporary Water Management Regime made by the experts appointed by the EC Commission is another example of the technical deficiencies which affect Variant C.<sup>151</sup> It has been said that this particular problem could be resolved within a few months,<sup>152</sup> which suggests that the failure to do so reflects a deliberate decision on the part of the relevant Slovak authorities. Whatever the reason may be, the fact is that the structure cannot provide for a discharge which is the minimum level acceptable according to independent experts.

6.132. It has been recalled earlier in this Chapter that, by its unilateral and damaging diversion of the Danube, Slovakia committed a clear violation of the customary rule of equitable use of international watercourses and of the obligation not to cause appreciable harm to another watercourse State.<sup>153</sup>

6.133. But independently of that issue, Slovakia has *in fact* carried out and operated Variant C in complete disregard of the requirement of due

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<sup>148</sup> See HM, para 5.116.

<sup>149</sup> This is confirmed in the EC Report of 1 December 1993: Working Group of Monitoring and Water Management Experts for the Gabčíkovo System of Locks, Report on Temporary Water Management Regime, HM, Annexes, vol 5 (part II), annex 19, p 757. See also HM, para 5.116.

<sup>150</sup> *Scientific Evaluation*, HC-M, vol 2, chap 2.4.4. A 10,000 m<sup>3</sup>/s flood is regarded as a 100 year flood - i.e., one which has to be expected in terms of normal planning for a structure of this kind. See above, paragraphs 3.10, 3.85.

<sup>151</sup> See HM, paras 3.214-3.223; above, paragraphs 3.107-3.108.

<sup>152</sup> "It is not the Slovakian government's objective to prepare the river bed for daily use. It is possible to carry out these works in a few months." I Mucha, "Gabčíkovo - WWF. The pros and cons" (Bratislava, April 1994) p 61; HC-M, Annexes, vol 4 (part I), annex 2.

<sup>153</sup> See above, paragraphs 6.29-6.33.

diligence in case of a transboundary dangerous activity operated on its territory. Slovakia has compounded the hazardous character of the activity, creating significant risks of harm for the environment and for the downstream population.

6.134. It was long ago stated by C Eagleton that "[t]he duty of prevention is not...an absolute one. Whether the State has fulfilled its obligations in this regard is measured by the rule of due diligence..."<sup>154</sup> In the context of the present case, due diligence is the means by which the general principle of the harmless use of territory is to be applied, taking into account the specific elements of the situation.

6.135. Due diligence is the diligence to be expected from a "good government" or a "well-governed state", as suggested by the Tribunal in the *Alabama Arbitration*.<sup>155</sup> In other words, it refers to the diligence to be expected from a government mindful of its international obligations. It establishes the link between the general law of international state responsibility and the actual standard of conduct to be expected in a given situation.<sup>156</sup>

6.136. Among the criteria to be taken into account in applying the standard of due diligence, the nature of the activity in question is a crucial consideration. Even if, for the sake of argument, one considers the inception of Variant C to have been licit, the fact is that Variant C involves the hasty and hazardous operation of damming of a major international river through "temporary" structures barely adapted to that purpose. Moreover this was done without meaningful environmental impact assessment, without adequate analysis of the danger of floods or of geological risk. There was thus a clear discrepancy between the specific behaviour of Czechoslovakia and subsequently Slovakia in this case and the reasonable conduct to be expected from a diligent government confronted with the same situation. This, *per se*, constitutes a wrongful act, which carries with it the international responsibility of Slovakia for the risks and damage created.<sup>157</sup>

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<sup>154</sup> C Eagleton, *The Responsibility of States in International Law* (New York University Press, 1928) p 88.

<sup>155</sup> Martens, 20 *NRG* pp 767-775; French text in Lapradelle-Politis, *Recueil des arbitrages*, Vol II, pp 889-894.

<sup>156</sup> *Negrete Case*, Moore, 6 *Digest* 962. See also R Pisillo Mazzeschi, "Due Diligence" e responsabilità internazionale degli stati (Milano, Giuffrè, 1989) esp at pp 128 ff, 352 ff; PM Dupuy, "Due diligence in the International Law of Liability", in *Legal Aspects of Transfrontier Pollution* (Paris, OECD, 1977) pp 369-379.

<sup>157</sup> See HM, paras 8.01-8.52.



6.137. Even if one prefers to analyse the situation within the framework of liability for conduct not prohibited by international law, it would remain the case that Slovakia would be liable for damage caused to Hungary. The International Law Commission has considered this topic at length in its work relating to the International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law.<sup>158</sup> In the course of its long-standing consideration of this issue, it has moved from the consideration of an eventual primary obligation of reparation, characteristic of a liability for harmful but licit activities, towards the codification of preventive measures to be taken, especially in the case of activities likely to damage the territory and environment of third states.<sup>159</sup>

6.138. The convergence of the rules thus identified with those governing the Law of the Non-navigable Uses of International Watercourses is striking. The basic principles proposed by Professor J Barboza in his Ninth Report include the obligation to co-operate, the prohibition against the harmful use of a territory, the necessity to assess the impact of a planned hazardous activity on the environment, and adequate notification to the concerned third states of the activity in question.<sup>160</sup> It is clear that Czechoslovakia and subsequently Slovakia did not comply with these rules.

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<sup>158</sup> For the current state of the project see *Report of the International Law Commission on the Work of its 46th Session, 2 May-22 July 1994* (UN Doc A/49/10) at pp 367-383.

<sup>159</sup> See in particular S Magraw, "Transboundary Harm: The International Law Commission's Study of 'International Liability'", (1986) 80 *AJIL* 305; C Caubet, "Le droit international en quête d'une responsabilité pour les dommages résultant d'activités qu'il n'interdit pas" (1983) 29 *Annuaire Français de Droit International* pp 99; J Barboza, "La responsabilité 'causale' à la Commission du Droit International" (1988) 34 *Annuaire Français de Droit International* 513; S McCaffrey, "International Liability and International Watercourses: The Work of the International Law Commission Relating to International Pollution" in DB Magraw (ed), *International Law and Pollution* (University of Pennsylvania Press, Philadelphia, 1991) esp pp 101-103; R Pisillo Mazzeschi, "*Due Diligence*" e responsabilità internazionale degli stati (Milano, Giuffrè, 1989) esp pp 128-189; Carlos Jimenez Piernas, *La Conducta Arriesgada y la Responsabilidad Internacional del Estado* (Universidad de Alicante, 1988) esp pp 281-294; PM Dupuy, "Le rôle de l'Etat dans l'indemnisation des dommages catastrophiques internationaux" in *La réparation des dommages catastrophiques* (Bibliothèque de la Faculté de droit de l'Université Catholique de Louvain, XIX, Bruylant, Bruxelles, 1990) pp 219-248; J Barboza, Ninth Report on International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law, UN Doc A/CN.4/450, 5 April 1993.

<sup>160</sup> *Ibid* at p 8 ff, para 12 ff.

## CHAPTER 7

### THE REMEDIAL ISSUES

7.01. In this Chapter, Hungary deals briefly with a number of the remedial issues which arise in the dispute, responding in particular to certain arguments raised in Chapter IX of the Slovak Memorial. As to the remedial questions, the parties agree that the Court should deal in the first phase of the case with the substantive questions referred to in Article 2 (1) of the Special Agreement, leaving consequential issues such as the quantification of losses and the modalities of implementation of the judgement for a possible subsequent phase of the proceedings.<sup>1</sup> This is expressly contemplated by Article 5 of the Special Agreement.

7.02. For these reasons it is not necessary to deal at this stage with questions of the ultimate remedies, the quantification of losses, or the implementation of the Court's decision. However a number of comments should be made which relate either to the task of the Court at this stage of the proceedings, or to the treatment of losses and damage in the Slovak Memorial.

#### SECTION A: THE RELATION BETWEEN JUDICIAL REMEDIES AND SELF-HELP

7.03. The first of these concerns the relationship between the judicial remedies sought in this case and the conduct of the parties during the dispute, in particular action taken by them by way of self-help.

7.04. There is a distinction to be drawn in this respect between - on the one hand - precautionary measures of an interim character, temporary action intended to mitigate damage pending a resolution of the dispute and - on the other hand - long-term action which effectively puts an end to any possibility of return to the *status quo ante* and constitutes an alternative disposition of the subject matter. A party confronted with a failed joint investment necessarily takes the risk of assuming sole management and control of that investment, especially if the new activity is quite different from that previously planned and envisaged. It cannot, having transformed the joint investment into something else, simply argue that nothing new has happened:

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<sup>1</sup> See HM, para 11.18; SM, para 9.28.

7.05. The present case is an *a fortiori* one, for many reasons. For example, Slovakia's use of Variant C entails using water to the equitable use of which Hungary has an entitlement,<sup>2</sup> and there are also issues of serious damage resulting to Hungary.<sup>3</sup> But the distinction between interim protection and repudiation by conduct nonetheless applies. Indeed Slovakia implicitly recognises this by consistently calling Variant C a "provisional", "temporary" and "alternative" solution, and by its repeated assertion that Variant C is reversible.<sup>4</sup>

7.06. It even does so in relation to its argument based on the doctrine of approximate application.<sup>5</sup> That doctrine is, as has been seen, a novelty, even an invention - and there is nothing that could be called a *corpus* of rules associated with it.<sup>6</sup> It is an idea wrenched out of its original context of the international supervision of the regime of mandates and applied to a bilateral joint investment treaty. Yet Slovakia expressly recognises that it can only be applied as a *temporary* doctrine, that it does not justify conduct of a permanent character creating a new situation not in any way envisaged by the treaty.<sup>7</sup>

7.07. Now there are many reasons why Slovakia's conduct in constructing, implementing and operating Variant C cannot be justified under the so-called doctrine of approximate application. In the first place, the doctrine simply does not exist as a matter of law, in relation to ordinary bilateral treaties, such as the 1977 Treaty.<sup>8</sup> As a matter of fact, Variant C is quite different from the Original Project: it is not even *approximately* the same.<sup>9</sup> Moreover, the doctrine would not serve to justify *the way* in which Variant C has been implemented in a manner which causes substantial harm to the environment and to Hungary as a co-riparian.<sup>10</sup>

7.08. But if, for the sake of argument, one sets aside these considerations, the Court is confronted with a situation which is by no means temporary. Whatever the position with those aspects of Variant C

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<sup>2</sup> See above, paragraphs 6.20-6.41.

<sup>3</sup> See esp above, Chapter 3 for a general account of these.

<sup>4</sup> See e.g., SM, paras 5.63-5.67.

<sup>5</sup> See SM, paras 7.28-7.29.

<sup>6</sup> See above, paragraphs 6.82-6.104.

<sup>7</sup> See SM, para 7.21.

<sup>8</sup> See above, paragraphs 6.94-6.102.

<sup>9</sup> See above, paragraphs 3.02-3.07.

<sup>10</sup> See above, paragraphs 3.15-3.85, 6.133.

which were hastily implemented, contrary to undertakings given by Czechoslovakia, and maintained in force, contrary to the commitments in the London Agreement, in October 1992 - the position with the so-called "Variant C (Phase 2)" is that it is a permanent structure, wholly controlled by Slovakia, progressively and expensively modified so as to maximise power production. That this is the case has been shown in Chapter 3 of this Counter-Memorial.<sup>11</sup>

7.09. Its legal consequence is as follows. Variant C has to be justified now as a structure which, despite protestations, is *intended* to have a permanent character. There is a clear discrepancy between the Slovak legal argument, under which Variant C is a mere temporary device, an expedient while Hungary comes to its senses, and the intent of its designers and operators, under which it is a "permanent solution". The Slovak Memorial does not even *purport* to justify Variant C as a permanent structure. Setting aside all other arguments, if the Court accepts that Variant C (Phase 2) is not intended to be merely temporary or provisional, then that structure is unlawful - not only in its operation, but unlawful *per se*, on the assumptions of the Slovak Memorial itself.

#### **SECTION B: THE PRINCIPLE THAT DAMAGE MAY NOT BE AWARDED FOR UNLAWFUL CONDUCT**

7.10. The Slovak Memorial states as a general principle that "a State may not benefit from its own wrongdoing".<sup>12</sup> This is no doubt the case, although the application of that general principle of law in a given case is a matter for the Court to determine - as well, of course, as to which of the two parties to the present case has been guilty of wrongdoing and in what respects.

7.11. But a corollary of that principle in the present case is as follows. If the Court holds that Variant C is unlawful, then the risks and burdens of the operation of Variant C naturally fall on the State responsible for it, that is to say, on Slovakia. A State which engages in unlawful conduct must be taken to have assumed the risks and burdens of that conduct.

7.12. Again the precise implications of this principle for the present case need not be determined at this stage. It is sufficient to note that rather than accepting Hungary's offer of judicial settlement of the dispute, which would have covered all aspects of the matter, Czechoslovakia chose to

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<sup>11</sup> See above, paragraphs 3.115-3.122.

<sup>12</sup> See SM, para 7.24, citing *Jurisdiction of the Courts of Danzig* PCIJ Ser B No 15 at pp 26-27.

implement, and Slovakia to adopt and continue, a system of *de facto* control and exploitation of the waters of the Danube which was unlawful both in its inception and in its execution. It must be taken to have accepted the risks and burdens of its conduct.

### SECTION C: REMEDIES IN RELATION TO THE EXPLOITATION OF SHARED NATURAL RESOURCES

7.13. The Danube river basin, together with the aquifer and the groundwater which form a single hydraulic system, constitute a natural resource shared by the different states through whose territory it flows. This fact implies certain rights and certain duties for each and every co-basin state, all deriving from the "community of interests" at the core of such situations.<sup>13</sup>

7.14. This is not to say that each one of the concerned states may not consider the portion of the international river located on its territory as part of its national natural resources. Yet the specificity of such resources, as recognised by the international community on the basis of the general practice inspired, *inter alia*, by UN General Assembly Resolution 1803 on Permanent Sovereignty over Natural Resources,<sup>14</sup> lies precisely in one feature: the right that states exercise over these resources is at the same time "inalienable" and "permanent".<sup>15</sup> This imposes limits both on the way states may use their resources and on the way other states should behave in respect to them, as well as on the extent of rights that *any* third parties can acquire over these natural resources.<sup>16</sup>

7.15. The principle of permanent sovereignty over natural resources, which has claims to being considered a norm of *jus cogens*, has a number of specific corollaries for the present case. In particular, in the remedial context it means that no state can be presumed to have alienated sovereignty or control over its natural resources. By the same token no

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<sup>13</sup> See above, paragraph 6.23.

<sup>14</sup> See GA Resolution 1803 (XVIII), adopted by a vote of 87 in favour, 2 against and 12 abstentions. See further I Brownlie, "Legal Status of Natural Resources in International Law" (1979*A*) 162 *Recueil des cours* pp 249-317.

<sup>15</sup> The term "inalienable" is to be found in the Preamble of GA Resolution 1803; the term "permanent" is in its title and in para 1. The French text has "inaliénable".

<sup>16</sup> Para 1 of UN Resolution 1803 reads as follows:

"The right of peoples and nations to permanent sovereignty over their natural wealth and resources must be exercised in the interest of their national development and of the well-being of the people of the State concerned."

state can be presumed to have acquired such sovereignty or control, whether by treaty or contract or otherwise. A state cannot "sell" the elements of its natural heritage, which are factors of its national development vital to the well-being of its population. This would be a violation of the rights of the people themselves.<sup>17</sup> *A fortiori*, no treaty or other arrangement should be interpreted as involving any such alienation.

7.16. It follows that the Hungarian Government could not impose on the Hungarian people a situation involving the *alienation* of its natural resources. Nor should the Court by an order effectively deprive a people of its natural resources on a permanent basis, especially if in the meantime they are subjected to major risks of harm.

#### SECTION D: THE "QUANTIFICATION" OF LOSSES

7.17. In a brief section at the end of its Memorial, Slovakia asserts that it has suffered losses which are set out "by way of illustration".<sup>18</sup> Both generally, and in relation to particular heads of damage, the Slovak Memorial gives no basis for its calculations, merely stating that at a later stage it will "itemise and explain each head of damage, justifying the amount claimed".<sup>19</sup> Under these circumstances, and having regard to the fact that the issues of compensation and damage cannot be resolved prior to a resolution of the disputed substantive legal issues in the case, no detailed response to the Slovak claims is necessary. Hungary reserves its position in relation to each of the claims, and will in due course quantify and justify its own claim in relation to damage caused by Variant C.

7.18. In the circumstances it is surprising that Slovakia claims what it describes as "the construction costs to Czechoslovakia" of Variant C in the years 1991-1992, although not – it would seem – in relation to the years 1989-1990.<sup>20</sup> Quite apart from the difficulty of claiming damage

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<sup>17</sup> In a related context this inspired, e.g., the position taken by the arbitral tribunal in the *Aminoil Case* (1982) 21 ILM 976. The tribunal there decided that, even in the case of an earlier contractual commitment limiting the right of a sovereign state to nationalise foreign private assets by the "stabilisation" of its national legislation, this did not involve any abrogation of its sovereignty over its natural resources. See *ibid* at para 95; and see also G Burdeau, "Droit international et contrat d'Etat, La sentence Aminoil Koweït du 24 mars 1982" [1982] *Annuaire français de droit international* 454.

<sup>18</sup> SM, para 9.33, and see SM, paras 9.34-9.47 for the "illustrations".

<sup>19</sup> SM, para 9.31.

<sup>20</sup> SM, para 9.37, note 28 warns that Hungary will also have to pay for Phase 2 of Variant C, which, as demonstrated above, is intended by Slovakia – despite

for wrongful conduct which caused serious harm to the other party, there is the further difficulty that Variant C is said by Slovakia to have been an "approximate application" of the 1977 Treaty, yet there is no explanation as to why the cost-sharing formula of the Treaty is not to be applied to it. It may be that the Slovak Memorial intends some parts of the Treaty to be applied more approximately than others.

7.19 The Slovak Memorial also ignores a number of factors in its calculations. Two examples only need be given.

7.20 Slovakia has appropriated the fruits of 15 years of Hungarian work now located on Slovak territory. Hungary had completed much of the required work on Slovak territory, with a few exceptions, including, *inter alia*:

- \* The Dunakiliti-Hrušov head-water installations on the right bank, in Czechoslovak territory, including the connecting dyke and the Dunakiliti weir;
- \* The tail-race canal of the by-pass canal, in Czechoslovak territory;
- \* Operational equipment of the Gabčíkovo System of Locks in Czechoslovak territory;
- \* The flood control works of the Nagymaros head-water installations in the Lower Ipeľ district in Czechoslovak territory.

7.21 All of this work is now used by Slovakia in implementation of Variant C. Only a small amount of work remained to be done by Hungary on Czechoslovak territory<sup>21</sup>. Czechoslovakia itself gave a budgetary calculation as to the cost of carrying out Hungary's unfinished work – an

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terminological pretensions – as a "permanent structure": see above, paragraphs 3.115-3.122. Since all benefits of the expenditures involved will also be accounted for (a state cannot be required to pay for an investment without being given the advantages of any profits arising from the investment), the implication of this claim is that Phase 2 of Variant C operates at a loss.

<sup>21</sup> Illustr No 31 in the Slovak Memorial is inaccurate. Hungary had provided most of the operational equipment of the GNBS in Czechoslovak territory, not "0" (item b-7). Other items are also in error: for example, Hungary had begun improvements of the bed of the Danube on Hungarian territory (item b-6) and had commenced production of works on the Nagymaros system of locks (item 10), which had been calculated by the Austrian lenders to comprise 36% of work, not "0" as contended in the Slovak Memorial.

amount of US \$14 million (415 million CSK<sup>22</sup>). This may be compared with the total amounts Slovakia claims to have spent on the Project (in which it includes Variant C), namely 13.8 billion CSK as of 1989,<sup>23</sup> or 24.3 billion CSK as of 1992.<sup>24</sup>

7.22 The Slovak Memorial does not account for the value received by Slovakia in using the substantial investments Hungary has carried out on Czechoslovak territory.

7.23 Another instance of the approach of the Slovak Memorial relates to the issue of "losses to the Czechoslovak navigation authorities".<sup>25</sup> Slovakia claims 178 million CSK (equivalent to US\$ 5.4 million<sup>26</sup>) for these losses. These include a number of items. To take an example just one of these, Item a) relates to "Costs from limiting ship tonnage" (79 million CSK, equal to US\$ 2.4 million). Even granted the underlying assumptions of the claim,<sup>27</sup> it would require proof of actual losses in relation to goods carried under the Czechoslovak flag, or of losses to Czechoslovakia in relation to goods carried under other flags, as a result of the non-existence of the by-pass canal in the years 1990-1992. Only the *difference* between the actual navigation that took place in those years and the navigation that would have occurred had the by-pass canal existed, and only the actual losses incurred as a result of that difference, could be taken into account. Slovakia makes no attempt to prove any such difference, or any such losses. As demonstrated in Chapter 3, Czechoslovak traffic on the Danube fell from 7.82 million tons in 1986 to 5.78 million tons in 1990 and to 1.98 million tons in 1992, and has hardly risen since.<sup>28</sup> At the same time Czechoslovak dead-weight capacity actually *grew* from 300,000 tons (1986) to 339,000 (1991), leading to a precipitous fall in the actual percentage of capacity used in that period. Given the existence of sharp competition in shipping on the Danube due to unused capacity, and the fact

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22 This amount appears in Report No 239, prepared by the Slovak Government on 15 January 1992 for the Slovak National Assembly about the construction progress of the GNBS by J Čarnogursky.

23 To calculate the sum, the 1992 exchange rate of \$1=29.50 CSK was used.

24 SM, paras 2.01, 5.01.

25 SM, p 366.

26 This calculation assumes the Slovak Memorial's 1994 exchange rate of \$US 1=32.68 SK; SM, para 9.37, note 28.

27 These appear to be that the by-pass canal *could* and *should* have existed during those years, and would have worked at some level of efficiency (unspecified in SM, para 9.36).

28 See above, paragraph 3.88.



that (except for the actual period of the diversion, and in contradistinction with the period since) the Danube was never closed to shipping in the period 1990-October 1992, there is no proof that the existence of the bypass canal would have made any difference at all.

7.24 These sections of the Slovak memorial offer no principled approach to the issue of losses, even "by way of illustration". It is more useful at this stage of the proceedings to turn to the real remedial issues at stake, which relate to the very existence of Variant C and the idea of the resurrection of the Original Project.

### **SECTION E: THE REAL REMEDIAL CONTEXT**

7.25. In the present case, as in any international litigation dealing with the protection of the environment, the following observation, inspired by common sense as well as by positive international law, applies. The first criterion for an equitable and appropriate remedy in this kind of dispute is that it cannot result in substantial injury to the national environments of the two litigating countries, or in a significant risk of such injury. The function of a remedy is to repair, not to harm. The function of a court is to do justice between the parties, not to require future generations to run unacceptable environmental risks.

7.26. In other words, one reason why the Court cannot accept the main submissions of Slovakia in respect of reparation is that the continued operation of Variant C - let alone the completion of the Original Project - would provoke irreparable damage and create major risks to the environment of the region, including to the ground-water and the drinking water supply, as already shown in Chapter V of the Hungarian Memorial and further developed in this Counter-Memorial.

7.27. This observation is consistent with current trends in international practice with regard to environmental protection, the main orientation of which is to reconcile economic development and the environment.

7.28. This is in particular reflected in the Rio Declaration on Environment and Development, adopted in June 1992 by more than 170 delegations taking part in the "Earth Summit". It is true that this document is not to be taken as a "hard law" instrument. Nevertheless, it reflects the emerging consensus of members of the international community with regard to the basic principles to be promoted, both individually and collectively.

7.29. According to Principle 4 of the Rio Declaration, "in order to achieve sustainable development, environmental protection shall constitute

an integral part of the development process and cannot be considered in isolation from it." Implicit in this notion of "sustainable development" is a harmonious combination of the right of each State to exploit its natural resources with its duty to protect the environment of other States.<sup>29</sup>

7.30. The Rio Declaration, together with the other texts adopted at the Conference, tends in particular to enhance the prevention of environmental damage<sup>30</sup> in the light of the precautionary approach<sup>31</sup> which, during the last few years, has been further elaborated and consolidated by many other international resolutions and conventions.<sup>32</sup> Indeed the precautionary principle is specifically recognised as "a basis for all measures aiming at the protection of the Danube River and of the waters within its catchment area" by the Sofia Convention of July 1994.<sup>33</sup> These instruments emphasise that an equitable share of natural resources "must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations".<sup>34</sup>

7.31. In the management of water resources, this general development has as a corollary a broader approach to fresh water problems. It has also provoked an enlargement of the scope of the legal principles applicable to water resources, so as to include the protection of ground-water against transfrontier pollution. This is shown in particular by Agenda 21's Section II as adopted in Rio,<sup>35</sup> as well as by recent ILC work on the law of the non-navigational uses of international watercourses.<sup>36</sup>

7.32. The application of this legal development may be seen in the actual practice of international organisations and of individual states.

7.33. As to international organisations, an institution such as the European Bank for Reconstruction of Development, which is specially devoted to the promotion of investments in the Central European coun-

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<sup>29</sup> See Rio Declaration, Principle 2.

<sup>30</sup> See in particular Principles 17 of the Rio Declaration (environmental impact assessment), 18 (notification to other States of any natural disaster), 19 (timely notification and relevant information to potentially affected states on activities able to damage the transboundary environment).

<sup>31</sup> Principle 15.

<sup>32</sup> See HM, paras 6.63-6.69; above, paragraph 6.14.

<sup>33</sup> Danube River Protection Convention, Art 2(4); above, paragraphs 4.28-4.39.

<sup>34</sup> Rio Declaration, Principle 3. See also HM, para 10.38 and note 24.

<sup>35</sup> UN Doc A/Conf 151/26, vol II, p 167.

<sup>36</sup> See above, paragraphs 4.14-4.17.

tries "in transition" like Hungary and Slovakia, exercises a very special care in the protection of the environment. When granting credit, the Bank conditions the attribution on the acceptance of a commitment by the beneficiary state to realise sustainable projects, respecting the human environment, both at the national and at the international level.<sup>37</sup> The same has become true for the World Bank which in the past had been strongly criticised for placing insufficient emphasis on the protection of the environment in the financing of projects.<sup>38</sup>

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<sup>37</sup> See European Bank for Reconstruction and Development, *Environmental Procedures* (London, 1992). The EBRD is pledged in its Agreement to place environmental management at the forefront of its operations to promote sustainable economic development in central and eastern Europe. It has adopted specific procedures to implement this approach; these guide its staff on how to exercise environmental due diligence to ensure that each project is environmentally sound, just as due diligence is required to ensure that projects are financially, economically and legally sound.

Environmental procedures need to be followed throughout the life of every Bank project. During project identification, Project Sponsors are requested to provide relevant information concerning the project, including environmental information, in accordance with the "Guide to Presenting Proposals" established by the Bank. The "screening category" of the project indicates what form of environmental analysis will need to be undertaken. This categorisation is carried out when a project is in the exploratory stage. Environmental investigations are then carried out by the Project Sponsor to generate the environmental information required by the Bank after screening. Environmental assessments and environmental audits are the main types of environmental investigations to be carried out on projects which have potential environmental implications.

The Bank's environmental staff carries out a review of every project before it is submitted to the Operations Committee for Final Review. Environmental changes which are identified as necessary during project preparation and environmental review will be incorporated into loan agreements as covenants. Environmental supervision is then undertaken while a loan is being supervised by the Bank, to ensure that the Project Sponsor carry out the environmental measures specified in the Agreement and takes appropriate actions in cases of non-compliance. Finally, at project completion an environmental evaluation will be conducted by the Environmental Staff at the request of the Team Leader.

<sup>38</sup> *Ibid.* From the early 1970s, environmental concerns have been an explicit part of World Bank activities. The Bank was the first multinational development agency to screen projects for environmental consequences and to adopt guidelines for the evaluation of future lending operations. These guidelines have been regularly updated to bring environmental issues into the mainstream of its lending activities, culminating in 1987 with the introduction of the Operational Directive on Environmental Assessment (OD 4.00, Annex A; modified in 1991 by OD 4.01), a comprehensive new policy mandating detailed environmental assessment for all projects that may have significant impacts on the environment. Bank staff review environmental assessment findings and negotiate environmental conditions (including mitigation plans) with the Borrower; these are then incorporated into the loan documents. The Bank's procedures are subject to annual review and have

7.34. Generally speaking, since the collapse of the socialist system in Eastern Europe in 1989-1990, there is a general movement to repair the major negative impacts on the environment of the region caused by the socialist approach to economic development through heavy industrialisation.

7.35. As for states acting jointly or individually, the re-evaluation of the sustainable balance to be struck between economic growth and the protection of the environment has led in several cases to the abandonment of major dam projects.<sup>39</sup>

7.36. In sharp contrast with the current evolution of environmental awareness, the Original Barrage System comes from another age, in which any consideration for the protection of the environment was systematically underestimated and subordinated to a narrow vision of development characterised by an effort to maximise heavy industry.

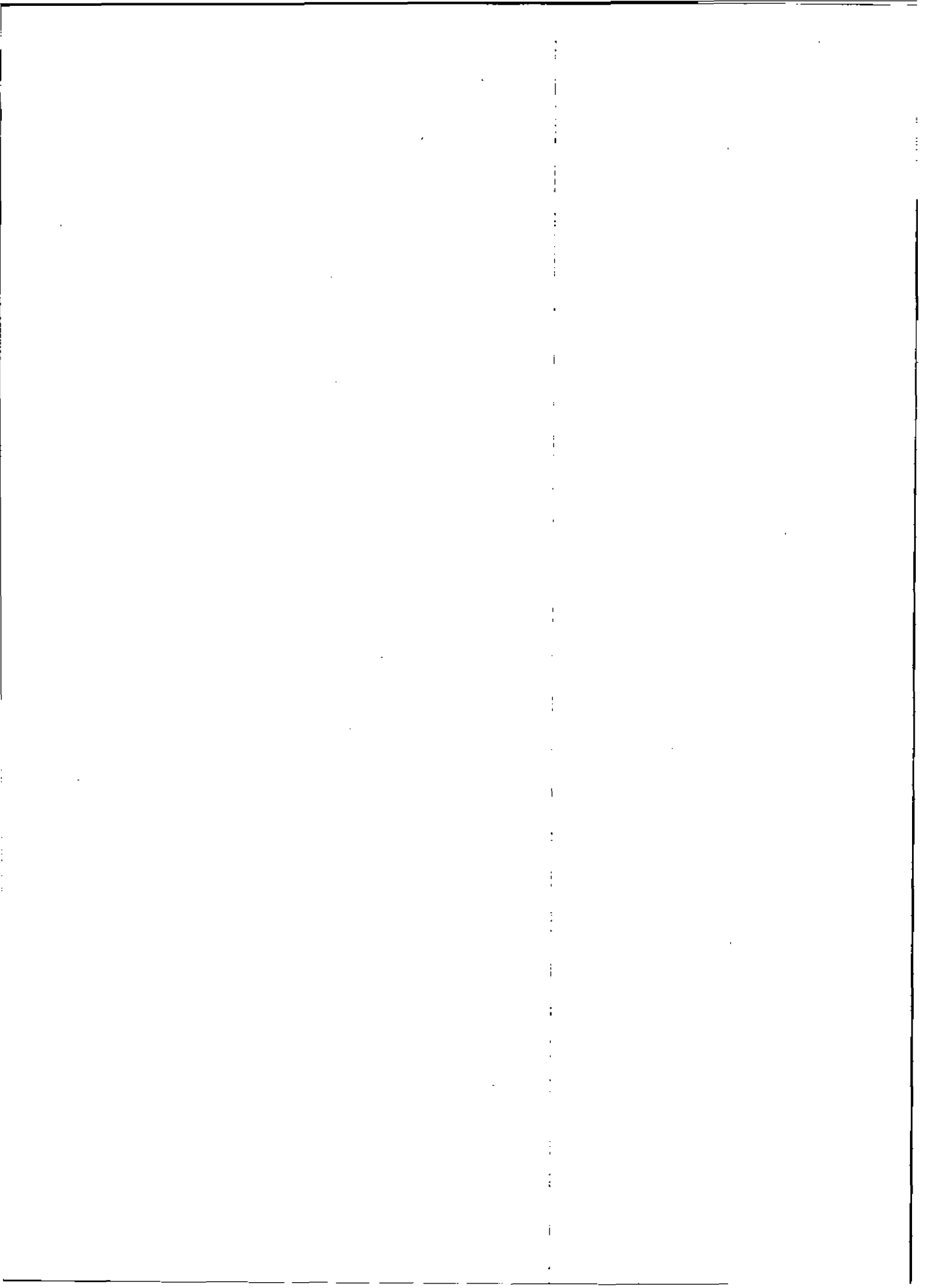
7.37. The primary Slovak contention in this case amounts to a request to the Court to return to this *ancien régime* in violation of the law, both as it was and as it has further evolved. Faced with such a demand, the Court, the principal judicial organ of the United Nations, is bound itself to apply a precautionary approach.

7.38. Slovakia wants to stop the clock in 1977, ignoring the fundamental economic, social, political and scientific changes which have happened since. Seen against any current criteria used to assess the impact on the environment of a major project, the Original Barrage System is a dinosaur. Slovakia cannot reasonably expect the Court to resurrect it.

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proven to be realistic, workable and instrumental in helping to improve development planning and environmental management.

<sup>39</sup> See *Scientific Evaluation*, HC-M, vol 2, chap 2.6.1, describing the cancellation of the barrage at Neuburgweier in Germany which had been agreed to in 1975 in a treaty between France and Germany. After doing a series of tests on the possibilities of sediment addition to replace eroded bed materials, both countries signed an amendment stipulating that sediment addition would be carried out instead of barrage construction at Neuburgweier.



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## SUBMISSIONS

On the basis of the evidence and legal argument presented in the Memorial and this Counter-Memorial, the Republic of Hungary

*Requests the Court to adjudge and declare*

*First*, that the Republic of Hungary was entitled to suspend and subsequently abandon the works on the Nagymaros Project and on the part of the Gabčíkovo Project for which the Treaty attributed responsibility to the Republic of Hungary;

*Second*, that the Czech and Slovak Federal Republic was not entitled to proceed to the "provisional solution" (damming up of the Danube at river kilometre 1851.7 on Czechoslovak territory and resulting consequences on water and navigation course);

*Third*, that by its Declaration of 19 May 1992, Hungary validly terminated the Treaty on the Construction and Operation of the Gabčíkovo-Nagymaros Barrage System of 16 September 1977;

*Requests the Court to adjudge and declare further*

that the legal consequences of these findings and of the evidence and the arguments presented to the Court are as follows:

- (1) that the Treaty of 16 September 1977 has never been in force between the Republic of Hungary and the Slovak Republic;
- (2) that the Slovak Republic bears responsibility to the Republic of Hungary for maintaining in operation the "provisional solution" referred to above;
- (3) that the Slovak Republic is internationally responsible for the damage and loss suffered by the Republic of Hungary and by its nationals as a result of the "provisional solution";
- (4) that the Slovak Republic is under an obligation to make reparation in respect of such damage and loss, the amount of such reparation, if it cannot be agreed by the Parties within six months of the date of the Judgement of the Court, to be determined by the Court;

- (5) that the Slovak Republic is under the following obligations:
- (a) to return the waters of the Danube to their course along the international frontier between the Republic of Hungary and the Slovak Republic, that is to say the main navigable channel as defined by applicable treaties;
  - (b) to restore the Danube to the situation it was in prior to the putting into effect of the provisional solution; and
  - (c) to provide appropriate guarantees against the repetition of the damage and loss suffered by the Republic of Hungary and by its nationals.

*(Signed)* György Szénási

*Agent for the Government of the Republic of Hungary,*

16 November 1994 .