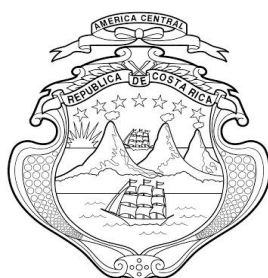


INTERNATIONAL COURT OF JUSTICE

***CERTAIN ACTIVITIES CARRIED OUT BY NICARAGUA
IN THE BORDER AREA***

(COSTA RICA v. NICARAGUA)

**REPLY OF COSTA RICA
ON COMPENSATION**



8 AUGUST 2017

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CHAPTER 1 INTRODUCTION

- 1.1. The dispute between the two States over Nicaragua's activities in Isla Portillos (and its subsequent claim to sovereignty over that territory) was submitted to the Court by Costa Rica in the case concerning *Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)*.
- 1.2. In the *dispositif* to its judgment on the merits in December 2015, the Court determined that:

Nicaragua has the obligation to compensate Costa Rica for material damages caused by Nicaragua's unlawful activities on Costa Rican territory.¹
- 1.3. On 16 January 2017, Costa Rica requested the Court to determine the amount of compensation due to it resulting from Nicaragua's internationally wrongful conduct. Pursuant to the Order of the Court dated 2 February 2017 Costa Rica filed its Memorial on 3 April 2017, and Nicaragua filed its Counter-Memorial on 2 June 2017.
- 1.4. Further, by an Order dated 18 July 2017, the President of the Court fixed 8 August 2017 and 29 August 2017, respectively, as the time-limits for the filing of a Reply by Costa Rica and a Rejoinder by Nicaragua on the sole question of the methodology adopted in the expert reports presented by the Parties in the Memorial and Counter-Memorial, respectively, on the question of compensation due in the case. This Reply on compensation is submitted in accordance with that Order.
- 1.5. In its Counter-Memorial, Nicaragua has adopted the position that Costa Rica's claim for compensation is "exorbitant",² and it is said that:

¹ *Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)*; *Construction of a Road in Costa Rica Along the San Juan River (Nicaragua v. Costa Rica)*, Judgment, 16 December 2015, para 229(5)(a).

“Nicaragua’s works in the disputed area caused only minor disturbances that were quickly remediated, both through natural processes and by the installation of the dyke in 2015. The only material damage caused by Nicaragua’s activities was the felling of trees in the vicinity of the 2010 caño”.³

1.6. Costa Rica disagrees with this assessment as to its legal and factual aspects,⁴ but notes that much of the difference between the Parties as to the extent of environmental damages that Costa Rica should correctly recover is tied to the question of the methodology used by the Parties’ respective experts. Costa Rica’s position, as developed in Chapter 2 below, is that the methodology used by its experts is appropriate, and is being criticised by Nicaragua on the basis of an inappropriate methodology that fails to take into account the true extent of environmental damage, in particular with respect to the richly diverse environment of the Caribe Noreste Wetland. In this respect, it is noted:

- a. According to Ramsar: “a wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.”⁵
- b. Also, under the Ramsar Convention, “wetlands included in the [International Protected] List acquire a new status at the national level and are recognized by the international community as being

² NCM, para 1.6.

³ NCM, para 2.19.

⁴ For the avoidance of doubt, Costa Rica does not accept that the obligation to compensate is limited to Nicaragua’s “works” in the disputed territory, but that it covers all the claims set out in Costa Rica’s Memorial on compensation.

⁵ See http://www.ramsar.org/sites/default/files/documents/library/ramsarsites_criteria_eng.pdf.

of significant value not only for the country, or the countries, in which they are located, but for humanity as a whole”.⁶

- 1.7. Nicaragua will have been well aware of the potential adverse impact of activities in this Costa Rican wetland, and yet it proceeded to fell many trees ageing up to several hundreds of years and to excavate a number of caños (including in contravention of the Provisional Measures Order of the Court) without any regard to that impact. Now, with respect to the actual impact of Nicaragua’s unlawful acts, the methodology that has been adopted by Nicaragua’s experts fails to recognise and allow damages for the specific and long terms impacts with respect to this specific environment. By contrast, and as explained in this Reply, the methodology followed by Costa Rica’s experts with respect to the assessment of the environmental damage caused by Nicaragua is well-recognized and enables the Court to make an appropriate award.

- 1.8. In Chapter 5 of its Counter-Memorial, Nicaragua addresses the monitoring expenses incurred by Costa Rica as a consequence of Nicaragua’s military presence in the area of Isla Portillos. Nicaragua’s methodology in assessing these expenses is based on two incorrect propositions: first, that the basis for them is an “imagined threat of Nicaragua occupying the disputed area” or “other parts of Costa Rica”; and second, that they are “unrelated to the material damage caused by Nicaragua’s work in the disputed area”.⁷ For the avoidance of doubt, Costa Rica does not accept that these have any foundation, although Costa Rica will not respond on the substance of these claimed expenses, in accordance with the Court’s Order on the submission of further written pleadings in the present case.

⁶ See <http://www.ramsar.org/sites/default/files/documents/library/sitelist.pdf>.

⁷ NCM, para 5.1.

1.9. This Memorial is accompanied by two annexes, contained in this Volume I. They are:

- a. *Report by Fundación Neotrópica on the Question of the Methodology for the Assessment of Environmental Damage, 2017 (Neotrópica Report, 2017), CRR Annex 1*, the principal authors of which include Bernardo Aguilar-González, who has more than two decades of experience in ecological economics. Fundación Neotrópica, which is based in Costa Rica, was founded in 1985 and has carried out technical projects globally, with an emphasis in but not limited to Central and South America. It has particular expertise in ecological economics. In addition to the expertise of the authors, the report contains references to the leading literature on quantification of environmental damage and is supported by appendices comprising the views of leading academics, including Professor Robert Costanza (Chair in Public Policy at the Australian National University), and Dr Rudolf De Groot, Chair of Ecosystems Services Partnership and Associate Professor at Wageningen University, amongst others.

- b. *Review of the report by G.M. Kondolf Phd (Annex 2)*, by Professor Colin R Thorne, 2017 (*Thorne Report, 2017*), **CRR Annex 2**. Professor Thorne, Professor of Physical Geography at the University of Nottingham, is well-known to the Court, having provided written and oral evidence in the present proceedings as well as in the *Construction of a Road* case.

CHAPTER 2 THE APPROPRIATE METHODOLOGY FOR QUANTIFICATION OF ENVIRONMENTAL DAMAGE

2.1. In this Chapter, Costa Rica responds on the issues of methodology that have arisen as between the Parties' respective experts with respect to Costa Rica's claim for US\$2,823,111 for environmental damages and its claim for US\$57,634 with respect to restoration measures i.e. (principally) replacement soil for the caños excavated by Nicaragua on Costa Rican territory. The differences between the Parties and their respective experts are stark. Nicaragua contends that the correct figure for environmental damages is approximately US\$35,000.

A. VALUATION OF ENVIRONMENTAL DAMAGES BY REFERENCE TO THE ECOSYSTEM SERVICES APPROACH

2.2. For their greater part, the stark difference in the figures referred to above is accounted for by the use of markedly differing approaches to the valuation of damages to the environment.

2.3. Costa Rica's experts have used the ecosystem services approach, which is internationally recognised, up to date and appropriate for the Ramsar protected wetland that Nicaragua has damaged.

2.4. The ecosystem services approach has been incorrectly characterised by Nicaragua, and Nicaragua is likewise incorrect to state that this approach is "intended only as a tool for helping policymakers appreciate the value of natural resources" and is not a method for evaluation of environmental damages.⁸ In Section V of its 2017 report, Neotrópica further explains the ecosystem services approach and demonstrates how this approach is well-recognised internationally, including in particular in the context of biodiversity conservation⁹.

⁸ Cf. NCM, paras 4.8-4.10.

⁹ Neotrópica Report, 2017, **CRR Annex 1**, Section V, pp. 13-15

2.5. In this respect, reference may be had to the *Guidelines for the development of domestic legislation on liability, response action and compensation for damage caused by activities dangerous to the environment*, adopted by the Governing Council of the United Nations Environment Programme in 2010.¹⁰ Pursuant to Guideline 3, paragraph 3(b), environmental damage is defined as an adverse or negative effect on the environment that is significant and “which is to be determined on the basis of factors such as: ... (iii) Reduction or loss of the ability of the environment to provide goods and services, either of a permanent nature or on a temporary basis”. As detailed further below, the Conference of the Parties to the Convention on Biological Diversity (the **CBD**, ratified by both Costa Rica and Nicaragua) has invited the CBD Parties *inter alia* to take these Guidelines into account as appropriate, including with respect to efforts to develop or adjust legislation or administrative measures concerning liability and redress for damage to biological diversity.

2.6. By contrast, Nicaragua’s experts have followed the approach used by the UNCC environmental claims panel with respect to claims arising from the first Gulf War. It is not just that the wetland environment that is the subject of the current claims is radically different from the environment at issue before the UNCC environmental claims panel; also, in more recent years, new methodologies have been developed – including within the framework of the United Nations and the Conference of the Parties of the Biodiversity Convention – that recognise the full and potentially long lasting extent of harm to the environment.

¹⁰ See UNEP, *Guidelines for the Development of Domestic Legislation of Liability, Response Action and Compensation for Damage Cause by Activities Dangerous to the Environment*, adopted by the Governing Council of the United Nations Environment Programme in decision SS.XI/5, part B of 26 February 2010.

2.7. The replacement cost approach adopted by Nicaragua’s experts is further described and analysed at Section VIII of the 2017 Neotrópica Report.¹¹ As to this, Neotrópica has sought input from Dr Rudolf de Groot, author of the 2006 Ramsar Technical Report on “Valuing wetlands”.¹² According to Dr de Groot:

“as far as I know the literature, and from my own studies, Replacement Cost (at the ecosystem level) is actually the least suitable of all ES-valuation methods as a proxy for the value (welfare effect) of the benefits of ecosystems (and their services) and thus what the welfare effects would be after the loss of an ecosystem, because it is unrelated to the actual benefits (value) provided by the intact ecosystem.”¹³

2.8. As explained in the 2017 Neotrópica Report, Nicaragua relies essentially on the practice of the UNCC. This is problematic because the UNCC concluded its claims processing in 2005, i.e. the very year of publication of the main instrument bringing the ‘ecosystem services’ approach and terminology into the mainstream – the Millennium Ecosystems Assessment.¹⁴ This instrument was considered favourably by the Conference of the Parties to the Convention on Biological Diversity in 2006.¹⁵

2.9. In this respect, as the Court will recall, pursuant to Article 14(2) of the Convention on Biological Diversity:

¹¹ Neotrópica Report, 2017, **CRR Annex 1**, Section VIII, starting p 40.

¹² Neotrópica Report, 2017, **CRR Annex 1**, Appendix 1.

¹³ Neotrópica Report, 2017, **CRR Annex 1**, Appendix 1, cited at p 41.

¹⁴ See Neotrópica Report, 2017, **CRR Annex 1**, p 13.

¹⁵ See Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Eighth Meeting, VIII/9. Implications of the Millennium Ecosystem Assessment, UNEP/CBD/COP/DEC/VIII/9, 15 June 2006, in particular paras 19, 21-22.

“The Conference of the Parties shall examine, on the basis of studies to be carried out, the issue of liability and redress, including restoration and compensation, for damage to biological diversity, except where such liability is a purely internal matter.”

- 2.10. At its twelfth meeting in 2014, the Conference of the Parties adopted Decision XII/14 on *Liability and redress in the context of paragraph 2 of Article 14 of the Convention*. Pursuant to paragraph 2 of this Decision, the Conference of the Parties:

“Invites Parties to take into account, as appropriate, the following in any efforts to develop or adjust national policy, legislation, guidelines or administrative measures concerning liability and redress for damage to biological diversity:

(a) ...;

(b) The United Nations Environment Programme’s Guidelines for the development of domestic legislation on liability, response action and compensation for damage caused by activities dangerous to the environment;

(c) The conclusions of the Group of Legal and Technical Experts on Liability and Redress in the context of paragraph 2 of Article 14 of the Convention on Biological Diversity;

(d) The synthesis report on technical information relating to damage to biological diversity and approaches to valuation and restoration of damage to biological diversity, as well as information on national/domestic measures and experiences;

(e) The guidance to ecosystem restoration as contained in decision XI/16, as well as in information documents UNEP/CBD/COP/11/INF/17 and UNEP/CBD/COP/11/INF/18);

(f) Tools for ecological valuation referred to in the annex to

decision VIII/25.”¹⁶

- 2.11. Reference has already been made to the UNEP Guidelines above. As is explained in the 2017 Neotrópica Report, the “synthesis report” referred to in sub-paragraph (d) is also of importance in the current context.¹⁷ In particular, this report states at its paragraphs 12-14:

“12. ... The Conference of the Parties defined “biodiversity loss” as ‘The long-term or permanent qualitative or quantitative reduction in components of biodiversity and their potential to provide goods and services, to be measured at global, regional and national levels.’

13. Though developed to measure the Convention’s implementation, key elements of the definition are useful in a liability and redress context. For example, liability and redress rules for biodiversity might usefully refer to a measurable, qualitative or quantitative reduction in components of biodiversity.

14. Liability and redress rules might also address not only the physical loss of components of biodiversity per se, but the loss of their ability to provide actual or potential goods and services. Consequently, a link would be built to ecosystem structure and function, as described within the Millennium Assessment, and the ecological and economic contributions of ecosystems to environmental quality and human well being. This would be a key consideration in any assessment of damage and consequent determinations needed to establish primary, complementary and compensatory measures to redress damage to biodiversity and

¹⁶ Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity, XII/14. *Liability and redress in the context of paragraph 2 of Article 14 of the Convention*, UNEP/CBD/COP/DEC/XII/4, 17 October 2014, paras 12-14.

¹⁷ Neotrópica Report, 2017, **CRR Annex 1**, p 14; *Liability and Redress in the Context of Paragraph 2 of Article 14 of the Convention on Biological Diversity, Synthesis report on technical information relating to damage to biological diversity and approaches to valuation and restoration of damage to biological diversity, as well as information on national/domestic measures and experiences*, UNEP/CBD/COP/9/20/Add.1, 20 March 2008.

the subsequent attachment of liability (see section III).”¹⁸

- 2.12. As follows from this, Nicaragua is not correct to say that the ecosystem services approach is not correctly regarded as a method for the assessment of environmental damage.¹⁹ This is a point that is developed in greater detail in Section V.C of the 2017 Neotrópica Report,²⁰ including by reference to State practice, which Nicaragua has sought to rely on. For example, as Neotrópica point out,²¹ the United States federal courts have recognised the relevance of services for the assessment of environmental damages in the context of three major US environmental statutes.²² Further, as explained in Section VI of the 2017 Neotrópica Report,²³ the methodology that Neotrópica has employed is of common use in tropical, biodiversity-rich States.²⁴
- 2.13. Nicaragua also contends that the reference materials that have been relied upon in the 2016 Neotrópica Report show that the ecosystem services approach is not suitable for evaluation of damages and is only intended to be used for policymaking.²⁵ This contention is expressly refuted by two authors of the sources on which Nicaragua has relied, namely by Dr de Groot (Wageningen University, The Netherlands) and Professor Costanza (Australian National University).²⁶ Further, as the 2017 Neotrópica Report explains, the validity of the approach that it has

¹⁸ Liability and Redress in the Context of Paragraph 2 of Article 14 of the Convention on Biological Diversity, Synthesis report on technical information relating to damage to biological diversity and approaches to valuation and restoration of damage to biological diversity, as well as information on national/domestic measures and experiences, UNEP/CBD/COP/9/20/Add.1, 20 March 2008, paras 12-14, emphasis added.

¹⁹ Cf. NCM, paras 4.10-4.11.

²⁰ Neotrópica Report, 2017, **CRR Annex 1**, pp. 15-18.

²¹ Neotrópica Report, 2017, **CRR Annex 1**, p. 16.

²² See references in Neotrópica Report, 2017, **CRR Annex 1**, p. 16.

²³ Neotrópica Report, 2017, **CRR Annex 1**, pp. 22-23.

²⁴ Neotrópica Report, 2017, **CRR Annex 1**, p. 22.

²⁵ NCM, paras 4.12-4.14.

²⁶ Neotrópica Report, 2017, **CRR Annex 1**, pp. 17-18.

adopted is recognised by Ramsar.²⁷ As a matter of fact, Ramsar Advisory Mission Report 69, which assessed the changes in the area following Nicaragua’s illegal actions carried out in 2010, expressly recalls that “Under the Ramsar Convention, the Contracting Parties, through Resolution IX.1 Annex A.j, adopted the relevant aspects of wetland ecosystem services from the Millennium Ecosystem Assessment”, and in Table 1 of the report lists the provisioning, regulatory and cultural services that would serve to define changes in ecological characteristics induced by human action.²⁸ Thus, by using the ecosystem services approach, Costa Rica is being consistent with its obligations under the Ramsar Convention. The use of the ecosystem services approach is also consistent with the common practice of Costa Rica’s courts.²⁹

- 2.14. Finally, it is noted that to arrive at their replacement cost figures, Nicaragua’s experts compound their inappropriate approach through the use of rates paid by Costa Rica’s FONAFIFO (National Fund for Forest Finance), which are not applied in public protected areas and which are not designed for wetlands. Moreover, as the Director of FONAFIFO explains, the rates to which Nicaragua’s experts have referred are aimed at incentivising forest conservation, not valuing environmental damage. He explains:

“Lastly, I would like to reiterate that it is incorrect to consider the payment for environmental services established by the National Forestry Financing Fund as a

²⁷ Neotrópica Report, 2017, **CRR Annex 1**, p. 22.

²⁸ Certain Activities Carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua) CRM, Vol IV, Annex 147, “Ramsar Secretariat, Ramsar Advisory Mission Report N°69: North-eastern Caribbean Wetland of International Importance, Costa Rica”, 17 December 2010, pp 94-95.

²⁹ Neotrópica Report, 2017, **CRR Annex 1**, pp. 23-29. Although Nicaragua appears not to rely on it, Payne & Unsworth criticize Neotrópica’s estimated values applying benefit transfer methods. For the reasons explained in Neotrópica Report, 2017, **CRR Annex 1**, Section VIII(D), the values adopted by Neotrópica are well-founded and justified.

mechanism to indemnify or set a value for the environmental damage. The environmental services have been calculated and established as a positive measure to incentivize forest conservation initiatives, a small retribution that society makes to compensate for the conservation efforts carried out. ...

The environmental damage involves a legally and technically different concept, where we are no longer protecting the forest, but rather we are dealing with human actions that have harmed it and transcend the concept of forest to a more extensive ecosystem, with a series or scale of damages in different elements, biotic or abiotic. The valuation of environmental damage cannot be limited to a small amount such as the payment for the environmental service given over a period of time (usually one year), because it never accounts for the replacement price of the resource or its estimated value. Environmental damage is much more complex; its temporality is greater than a year and repairing it can take decades or may even never be repaired.”³¹

B. THE APPROPRIATE MATTERS TO BE INCLUDED AS PART OF THE ECOSYSTEM SERVICES APPROACH METHODOLOGY

- 2.15. Nicaragua seeks to undermine Neotrópica’s methodology by contending that it has taken into account irrelevant factors, resulting in an over-estimation of damages. It focusses in particular on the inclusion of impacts on soil formation and erosion, natural hazards mitigation, gas regulation/air quality services, and it also criticizes the recovery period used in calculating the final valuation of damage. For the reasons explained below, as a matter of methodology, Neotrópica’s approach is entirely appropriate and gives rise to a reasonable and justified valuation of the damage caused by Nicaragua’s unlawful activities.

³¹ Neotrópica Report, 2017, **CRR Annex 1**, p. 42.

1. *Soil Formation and Erosion*

- 2.16. In criticising Neotrópica’s report, Nicaragua contends that soil formation/erosion control should not be included in the assessment of impacted environmental services.³² This contention is made relying on the opinions of Dr Kondolf³³ and Payne & Unsworth.³⁴ Those opinions are based on the assertion that the relevant area it is “an active river delta that is a zone of deposition of sediments eroded in the upper parts of the river basin”.³⁵ Dr Kondolf believes that as a result of alluvial sediment having settled in excavated areas erosion is not an issue.
- 2.17. As a matter of the appropriate methodology, soil formation is properly to be considered as part of affected environmental services. This is because, as explained by Professor Thorne, there is a difference between *recently deposited mineral, river sediments* and the long-term formation of an organic soil by natural, bio-chemical and physical processes which takes decades.³⁶ Professor Thorne explains:
- “...it must be decades before the organic content and fertility of soils currently forming from the caño-filling sediments can approach the values characteristic of soils beneath the old growth/mature tree stands cleared by Nicaragua to make way for the caños.”³⁷
- 2.18. In addition, Professor Thorne explains that microbes in soil form a rhizosphere around the subterranean root systems of plants, especially trees, which in turn forms an essential part of a healthy eco-system.

³² NCM, para 4.17.

³³ Professor Mathias Kondolf, Review of Costa Rica’s Claims for Compensation in the Rio San Juan Delta, May 2017 (*Kondolf Report, 2017*), NCM Annex 2, pp 2-4, cited in NCM, para 4.19.

³⁴ Cited in NCM, paras 4.19-4.19.

³⁵ Kondolf Report, 2017, NCM Annex 2, pp 2-4.

³⁶ Thorne Report, 2017, CRR Annex 2, p 7.

³⁷ Thorne Report, 2017, CRR Annex 2, p 9.

When the earth is excavated the capacity to maintain the fertility of soils remaining in place is reduced, rendering regrowth vulnerable to attack by pathogens and lengthening the recovery period.³⁸

- 2.19. Further, the sediment that typically would infill excavated areas are fine sands and silts and these are more susceptible to being displaced. In contrast and further, sediment and soil reinforced by roots of live vegetation is much more erosion-resistant. It follows that even though erosion control functions will recover, “it will take decades for their erosion resistance to return to pre-disturbance values.”³⁹
- 2.20. It follows that it is entirely appropriate to use a methodology which takes into account impacts on soil formation and erosion control, as Neotrópica has done in its valuation of environmental damage in the present case.⁴⁰

2. *Impact on Mitigation of Environmental Hazards*

- 2.21. Nicaragua also criticizes Neotrópica’s approach to assessment on the basis that it should not take into consideration potential impacts on the area’s ability to mitigate natural hazards, such as storms and other adverse conditions.⁴¹ This is based on Dr Kondolf’s assertion that within a wetland, excavation works such as those carried out by Nicaragua “would not impair natural regulation of flooding” and there would be “no material hydrological impact”.⁴²
- 2.22. This is incorrect. As Professor Thorne explains, as a matter of the appropriate methodology, it is correct to take account of the impact on

³⁸ Thorne Report, 2017, **CRR Annex 2**, p 9.

³⁹ Thorne Report, 2017, **CRR Annex 2**, pp 9-10.

⁴⁰ Neotrópica Report, 2017, **CRR Annex 1**, pp 30-31.

⁴¹ NCM, paras 4.19-4.22.

⁴² Kondolf Report, 2017, **NCM Annex 2**, pp 4-5.

mitigation of environmental hazards in a wetland such as the disputed territory. These hazards include coastal flooding, saline intrusion and coastal erosion. This is because “the freshwater wetland and its ecosystem are themselves valuable assets at risk from natural hazards associated with the wetland’s low elevation and proximity to the Caribbean Sea.”⁴³ This conclusion is supported by Ramsar’s Report No 69, which explained that any change in a pattern of freshwater flow, including by channelling, impacts the distribution and abundance of species. It further explained that such disruption can impact both the hydrodynamic balance of salt-water intrusion in the wetland, and flood control.⁴⁴ The fact that this is a wetland does not mean that excavation works have no impact on the area’s ability to mitigate environmental hazards.⁴⁵ It follows that, as a matter of the appropriate methodology, it is appropriate to take account of impacts on the ability of an area to mitigate environmental hazards.

3. *Impact on Gas Regulation/ Air Quality Services*

- 2.23. In its methodology for quantifying environmental damage, Neotrópica takes into account the impact of Nicaragua’s unlawful activities on the ability of the area to regulate gas and air quality.⁴⁶ Nicaragua criticizes Neotrópica’s approach on the basis that the impacts are suffered only on a global scale, and not merely to Costa Rica and its citizens.⁴⁷ As

⁴³ Thorne Report, 2017, **CRR Annex 2**, p 12. See also pp 13-16.

⁴⁴ Ramsar Secretariat, Ramsar Advisory Mission Report No. 69: North-eastern Caribbean Wetland of International Importance (Humedal Caribe Noreste), Costa Rica, 17 December 2010, *Certain Activities*, **CRM Annex 147**, pp 108-109, 112, 114 and 119.

⁴⁵ Thorne Report, 2017, **CRR Annex 2**, pp 12-15. See also Neotrópica Report, 2017, **CRR Annex 1**, p 31.

⁴⁶ Fundacion Neotrópica, “Monetary Valuation of the environmental damages arising from the construction of caños and clearing of trees and vegetation performed by the Government of Nicaragua in the Costa Rican territory on Isla Portillos, as required by the Judgment of the International Court of Justice of 16 December 2015”, 3 June 2016 (*Neotrópica Report, 2016*), **CRM Annex 1**, p 104.

⁴⁷ NCM, para 4.26, citing Report on Environmental Damage Valuation by Professor Cymie R. Payne, J.D., Rutgers University, and Robert E. Unsworth, Industrial

Neotrópica explains, this criticism is misplaced because this forms a part of the damage caused by Nicaragua,⁴⁸ and as the Court has held, Nicaragua has obliged “to compensate Costa Rica for material damages caused by Nicaragua’s unlawful activities on Costa Rican territory.”⁴⁹ The fact that some of the lost ecosystem services might have been enjoyed by the citizens of other countries is irrelevant to Nicaragua’s liability to provide compensation to Costa Rica for the harm caused by its unlawful activities.

4. *Recovery Periods*

2.24. As explained in Costa Rica’s Memorial, having identified the value of the loss for the first year after the loss was caused, Neotrópica provided a net present value calculation for a period of 50 years, adopting a discount rate of 4%. This approach is appropriate for the following reasons:

- (a) Some of the trees that were cut down by Nicaragua were over 200 years old (and the average age was 115 years⁵⁰). Thus, adopting a time period for the valuation of 50 years is conservative, because it would take much longer for the trees to recover to their pre-disturbed state, potentially

Economics, Incorporated, 26 May 2017 (*Payne & Unsworth Report*), **NCM Annex 1**, p 28.

⁴⁸ Neotrópica Report, 2017, **CRR Annex 1**, p 36.

⁴⁹ Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua); Construction of a Road in Costa Rica Along the San Juan River (Nicaragua v. Costa Rica), Judgment, 16 December 2015, para 229(5)(a).

⁵⁰ Fundación Neotrópica, “Explanatory addenda to the Report ‘Monetary Valuation of the environmental damages arising from the construction of caños and clearing of trees and vegetation performed by the Government of Nicaragua in the Costa Rican territory on Isla Portillos, as required by the Judgment of the International Court of Justice of 16 December 2015’ in view of the request for clarification by Nicaragua in the note address to Ambassador Sergio Ugalde (HOL-EMB-280) dated 18 November 2016 (*Neotrópica, Explanatory addenda, 2016*), 8 December 2016, **CRM Annex 2**, p 9; Neotrópica Report, 2017, **CRR Annex 1**, p 44.

more than a century.⁵¹ Further, although Nicaragua’s experts contend that Neotrópica has assumed that the timber from these trees would be harvested every year for 50 years,⁵² as Neotrópica clarifies, it has not assumed that the trees have been harvested, since they cannot be, forming part of a protected wetland. As Neotrópica explain:

“We do not assume that that it would have been possible to remove sustainably half of the annual growth of trees each year. We assume that the asset degradation will be reflected in Costa Rican physical natural and economic accounts every year as a decrease in the monetary value of the country’s natural assets, until it is fully recovered. This is why we account for the loss annually, deducting from the annual value the recovery of volume that we account for through the use of the discount rate.”⁵³

Additionally, Neotrópica recall that monitoring and reporting the state of environmental assets is more common every day and therefore these damages and their monetary value need to be annualized until their recovery is attained calculated as the present value of an annuity, discounting the loss in value of the asset every year.⁵⁴ It also follows that there is no need to demonstrate a market for the timber or take into account costs associated with harvesting. Rather, the use of stumpage prices is intended to represent the value of the resource on an annual basis.⁵⁵ As Neotrópica clarify, this approach is conservative because they have only assumed continued growth of the trees until the date of assessment and not for the full recovery period.⁵⁶ Further, this approach is also consistent with recent jurisprudence of the Costa Rican courts,

⁵¹ Neotrópica Report, 2016, **CRM Annex 1**, p 50; Neotrópica Explanatory addenda, 2016, **CRM Annex 2**, pp 7-9; see also Thorne Report, 2017, **CRR Annex 2**, p 16.

⁵² NCM, para 4.29, citing Payne & Unsworth Report, **NCM Annex 1**, pp 24-25.

⁵³ Neotrópica Report, 2017, **CRR Annex 1**, p 32.

⁵⁴ Neotrópica Report, 2017, **CRR Annex 1**, p 38.

⁵⁵ Neotrópica Report, 2017, **CRR Annex 1**, p 32.

⁵⁶ Neotrópica Report, 2017, **CRR Annex 1**, pp 32-33.

adopting a period of 50 years, in circumstances where the average age of the relevant trees in the two areas cleared were 112 and 83 years.⁵⁷

- (b) A discount rate of 4% is higher than the rates used in recent jurisprudence of the Costa Rican courts;⁵⁸ and notably higher than the rates suggested by leading studies (for example, TEEB suggests the use of a zero discount rate).⁵⁹ A higher discount rate results in a lower compensation claim because the discount rate reduces the present value of the claim.

2.25. Nicaragua argues that a “fundamental flaw” in the methodology used by Costa Rica consists in the use of a discount rate over a period of 50 years.⁶⁰ But Nicaragua’s criticisms are based on the inclusion of various items (soil formation/erosion control, natural hazard mitigation, and air quality/gas regulation services)⁶¹ and it does not address the reasons given for the use of a time period of 50 years provided in Neotrópica’s earlier reports.⁶² As Neotrópica clarify in the report annexed to this Reply, a 50 year period is appropriate in the circumstances that it is a conservative estimate of the time required for the trees to recover from the damage caused by Nicaragua, and in this wetland the trees determine the dynamics of the entire ecosystem over time.⁶³

2.26. The only substantive engagement with the appropriate recovery period is found in Dr Kondolf’s report. He asserts that “realistic recovery periods range from 1-2 years for refilling the caños, 1-5 years for the

⁵⁷ Neotrópica Explanatory addenda, 2016, **CRM Annex 2**, pp 7-9.

⁵⁸ Neotrópica Explanatory addenda, 2016, **CRM Annex 2**, p 10.

⁵⁹ Neotrópica Explanatory addenda, 2016, **CRM Annex 2**, pp 10-11.

⁶⁰ NCM, para 4.27. See also para 4.16.

⁶¹ NCM, paras 4.28 and 4.31.

⁶² See Neotrópica Report, 2016, **CRM Annex 1**, p 50; Neotrópica Explanatory addenda, 2016, **CRM Annex 2**, pp 7-9.

⁶³ Neotrópica Report, 2017, **CRR Annex 1**, p 35. See also pp 37-39.

regrowth of grass and underbrush, and 4-5 years for the re-establishment of trees”.⁶⁴ For habitat and biodiversity, Dr Kondolf suggests 10-20 years.⁶⁵ In respect of trees, Dr Kondolf contests that the average ages of the felled trees was 115 years.⁶⁶ In respect of refilling of caños and regrowth of grass and underbrush, Dr Kondolf merely asserts that his estimates are based on “the evidence available”, which appears to be based on “recovery patterns observed in aerial imagery”.⁶⁷

- 2.27. Despite these estimates put forward by Dr Kondolf, Nicaragua argues in its Counter-Memorial that the impacts on habitat and nursery and other raw materials have already entirely recovered.⁶⁸ That conclusion is not supported even by Nicaragua’s own expert, Dr Kondolf.
- 2.28. Likewise, Nicaragua’s other experts, Payne & Unsworth, appear to have ignored Dr Kondolf’s recovery period estimates: in their assessment of damages based on Neotrópica’s methodology “but correcting for Neotrópica’s errors” including the recovery period, they have not applied the periods suggested by Dr Kondolf but have only provided a present value loss, based principally on one-time values.⁶⁹
- 2.29. In sum, Nicaragua has put forward no meaningful reason why the use of a 50 year time period estimate the ongoing damage to the environment is inappropriate.
- 2.30. The estimates put forward by Dr Kondolf are said to be provided on the basis of his overflights, site visits and observations of aerial imagery.

⁶⁴ Kondolf Report, 2017, **NCM Annex 2**, p 1.

⁶⁵ Kondolf Report, 2017, **NCM Annex 2**, p 6.

⁶⁶ Kondolf Report, 2017, **NCM Annex 2**, p 5.

⁶⁷ Kondolf Report, 2017, **NCM Annex 2**, p 6.

⁶⁸ NCM, para 4.32.

⁶⁹ Payne & Unsworth Report, **NCM Annex 1**, Exhibit 1, p 135.

Professor Thorne explains that this methodology undermines the scientific and technical validity of his estimates. Professor Thorne notes:

“In Annex 2, Dr Kondolf states that in connection with the Certain Activities case, he has ‘overflown the river mouth five times from October 2012 to October 2016 and conducted three site visits over the same period, the most recent in October of 2016’.

It is clear that Dr Kondolf has both overflown the area affected by Nicaragua’s activities and made a site visit as recently as October 2016. This overflight and site visit presented Dr Kondolf with the opportunity to observe and record conditions in the affected areas at first hand. Had he chosen to do so, he could have taken photographs, made measurements of key variables (such as tree height) and collected technical data (for example, measurements defining the properties of sediments in-filling the caños). He would have then been able to analyse and interpret his observations and data as necessary to come to a view regarding the degree to which conditions in the areas excavated and cleared by Nicaragua have recovered. In preparing Annex 2, this course of action would have constituted a scientific and technically-sound methodology.

Due to the weakness of Dr Kondolf’s methodology, I believe that the opinions expressed in Annex 2 of Nicaragua’s counter memorial have no scientific or technical validity.”⁷⁰

- 2.31. As to the estimates put forward by Dr Kondolf on the basis of his observation of aerial imagery (which are ignored by Nicaragua and by its other experts), Professor Thorne explains in his report that these are far too short. He states:

⁷⁰ Thorne Report, 2017, **CRR Annex 2**, p 3.

“...if accepted, Dr Kondolf’s opinions would render ineffective much of the protection currently provided to wetlands of International Importance within Nicaragua by their Ramsar designation. This is the case because, intentionally or unintentionally, Dr Kondolf’s expert opinion may be interpreted as indicating that damage to wetlands protected under the Ramsar Convention that is caused by dredging, channel excavation and forest clearance is largely inconsequential and, in any case, time-limited, with recovery expected within 5 years or less.”⁷¹

2.32. So far as concerns the recovery period for felled trees is concerned, Professor Thorne notes that:

“several of the most valuable functions of primary forest like that felled by Nicaragua can never be replicated by secondary forest, and it takes decades to centuries for a secondary forest to mature to the point that it provides most of the functions expected from a primary forest.”⁷²

This view is supported by the literature quoted by Professor Thorne in Section C of his Report.⁷³

2.33. Neither Nicaragua nor its experts have engaged with the reasons and the authorities supporting the use of a period of 50 years to estimate the losses suffered by Costa Rica’s environment as a result of Nicaragua’s unlawful acts. For the reasons explained in Neotrópica’s Report, the use of this period is not double-counting and it is justified and reasonable in all the circumstances.⁷⁴

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⁷¹ Thorne Report, 2017, **CRR Annex 2**, p 6.

⁷² Thorne Report, 2017, **CRR Annex 2**, p 7.

⁷³ See Thorne Report, 2017, **CRR Annex 2**, pp 16-23.

⁷⁴ Neotrópica Report, 2017, **CRR Annex 1**, pp 35-37.

2.34. For the reasons explained in this Chapter 2, Nicaragua's critique of the methodology used by Costa Rica's experts to assess the value of the environmental damage is made relying on an inappropriate methodology that fails to take into account the true extent of environmental damage, in particular with respect to the richly diverse environment of the Caribe Noreste Wetland. The methodology followed by Costa Rica's experts with respect to the assessment of the environmental damage caused by Nicaragua is well-recognized and enables the Court to make an appropriate award.

SUBMISSIONS

1. Costa Rica respectfully requests the Court to reject Nicaragua's submissions and to order Nicaragua to pay immediately to Costa Rica:

(a) US\$6,711,685.26; and

(b) pre-judgment interest in a total amount of US\$501,997.28 until 3 April 2017, which amount should be updated to reflect the date of the Court's Judgment on this claim for compensation.

2. In the event that Nicaragua does not make immediate payment, Costa Rica respectfully requests the Court to order Nicaragua to pay post-judgment interest at an annual rate of 6 per cent.

Ambassador Sergio Ugalde
Co-Agent of Costa Rica
The Hague, 8 August 2017

CERTIFICATION

I have the honour to certify that the documents annexed to this Reply are true copies and conform to the original documents and that the translations into English made by Costa Rica are accurate translations.

Ambassador Sergio Ugalde
Co-Agent of Costa Rica
The Hague, 8 August 2017

LIST OF ANNEXES

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