

Forest Fires and Climate Change as They Affect Tourism

by Ahmad Redi

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ENVIRONMENTAL POLICY AND LAW

This international journal has been created to encourage and develop the exchange of information and experience on all legal, administrative and policy matters relevant to the natural environment and sustainable development. It is concerned in the widest sense with legal and policy aspects of air, water, soil and noise pollution; the protection of flora and fauna; solid waste management; protected areas and land-use control; and development and conservation of the world's non-renewable resources.

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EDITORIAL

At this writing, four on-going international processes are addressing critical aspects of the law and policy relevant to global conservation and the environment: the 69th Meeting of the Standing Committee of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the 53rd GEF Council Meeting; the 53rd Session of the International Tropical Timber Council; and the Third Meeting of the Open-ended Committee of Permanent UNEP Representatives (leading into the Third Session of the UN Environment Assembly). Like most of the environmental and conservation action at national and international levels, however, these critical discussions are taking a back seat in the media – even the environmental-policy-oriented media – to the negotiations of the 23rd Conference of Parties to the UN Framework Convention on Climate Change (UNFCCC) and related events.

With all due respect and admiration for the intense efforts involved in the numerous annual negotiations that have continued for 25 years without a break under the UNFCCC umbrella (to be covered in our next issue), we find it difficult to reconcile the apparent unification of all environmental issues under that single heading. The aspirational (national commitment) approach of the UNFCCC processes is commendable; however, we must not undervalue the real successes of more conventional approaches such as monitored bans and quotas under the Montreal Protocol on Substances that Deplete the Ozone Layer (the most successful multilateral environmental agreement (MEA)) and the UNEP Chemical Conventions; the trade-based non-compliance system under CITES; and the collaborative approach toward protecting the green web of life on Earth as exemplified by the text of the Convention on Biological Diversity and by that Convention's relationship with other MEAs.

Most important, despite the global focus on climate change, national progress on many of the substantive components of climate change (pollution of land, water and air; destruction of protected areas, forests and untouched ecosystems/landscapes; *etc.*) seems to be rolling back, whether by direct actions and threats of more such roll-backs (as in the US), by lack of enforcement, or by the determination that national standards should be altered to reflect the (lower) standards described under international instruments.

It seems important at this point to remember that progress in any overarching problem area, such as climate change, is best achieved by moving forward a step at a time – for example, by raising standards regarding particular pollution concerns in one environmental medium, while our climate change overview allows us to remain aware of and to close out the possibilities that these higher single-medium standards might be circumvented by switching to pollution of another medium.

Tomme R. Young
Editor, *Environmental Policy and Law*

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GLOBAL LAW AND POLICY DEVELOPMENTS

OEWG-39

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Kigali Amendment Implementation and Preparations for Multilateral Fund Replenishment

by Keith Ripleyⁱ

The 39th session of the Open-ended Working Group (OEWG-39) of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer took place 11–14 July 2017 in Bangkok, Thailand.¹ It was preceded on 10 July by a one-day Workshop on Safety Standards Relevant to the Safe Use of Low Global Warming Potential (GWP) Alternatives to Hydrofluorocarbons (HFCs). The workshop had been mandated by the 28th Meeting of the Parties (MOP-28), held in October 2016 in Kigali, Rwanda, as part of the package of decisions adopting the Amendment on HFCs (“Kigali Amendment”).

The OEWG essentially prepares the table for the annual MOP, by holding initial debates and drafting decisions on issues affecting the implementation of the Protocol and the operations of its technical bodies, the Technical and Economic Assessment Panel (TEAP), Scientific Assessment Panel (SAP) and the Environmental Effects Assessment Panel (EEAP).

This brief note sketches the key outcomes of OEWG-39 and suggests possible areas of focus that may arise in MOP-29, to be held 20–24 November 2017 in Montreal, Canada.

Starting the Work of Implementing the Kigali Amendment

The Kigali Amendment says that it will enter into force on 1 January 2019, provided that at least 20 instruments of ratification, acceptance or approval of the Amendment have been deposited by that date.² Given that 11 such instruments have been deposited as of the writing of this article,³ the Amendment appears on track to enter into force on 1 January 2019.

The Ozone Secretariat presented OEWG-39 with a roadmap through to 2047 for the MOP decisions and actions by Parties that must be taken in order to properly implement the Kigali Amendment.⁴ During the 2017–2018 period before the Amendment enters into force, the operational plan emphasises several tasks for the MOP: (1) setting in motion the national data reporting necessary to establish national baselines and identify trade in HFCs between Parties ratifying the Amendment and those which have not yet ratified; (2) deciding on the GWP values for any substances included in baseline calculations that do not yet have a GWP value assigned; (3) identifying

and approving technologies to destroy HFCs; and (4) deciding on the next 2018–2020 replenishment of the Multilateral Fund (MLF), which will cover preparations for entry-into-force and early implementation efforts. This fourth item is covered under a separate heading below, as the next MLF replenishment will fund not only initial implementation of the Kigali Amendment, but also implementation of prior Protocol amendments regarding the phase-out of hydrochlorofluorocarbons (HCFCs).

A fifth necessary task for the 2017–2018 period, the drafting by the MLF Executive Committee (ExCom) of guidelines for financing the phase-down of HFC consumption and production and their presentation to the MOP for input before finalising them,⁵ was only the subject of a brief progress report at OEWG-39⁶ and instead will be discussed in greater detail at MOP-29.

Data Reporting

One of the keys to the success of the Protocol has been the Article 7 requirement for each Party annually to provide statistical data on its production, imports and exports of controlled substances. Following the entry-into-force of the Kigali Amendment, all Amendment Parties must report to the Secretariat annual data on the production and consumption of HFCs now listed under Annex F of the Protocol and annual emissions of HFC-23.

The Secretariat flagged several issues for consideration by the OEWG and eventual MOP decisions,⁷ five of which are discussed below: (1) approval of the revised national data-reporting forms; (2) the timeline for reporting of baseline data for HFCs for Parties operating under paragraph 1 of Article 5 (Article 5 Parties, essentially developing countries); (3) reporting of mixtures and blends containing HFCs; (4) updating the GWP values of the substances to be included in calculating national baselines under the Kigali Amendment; and (5) destructive technologies.

Updating the Reporting Forms

The Secretariat presented OEWG-39 with a draft revision of the Article 7 data-reporting forms that takes into account the reporting that will be necessary under the Kigali Amendment.⁸ The Secretariat previewed it at OEWG-39 in the hopes of getting it approved at MOP-29, or if a second round of review proved necessary, by MOP-30 at the latest, since Parties will need to use this form to begin Kigali-related reporting in 2019. The

ⁱ Writer, IISD *Earth Negotiations Bulletin*; and frequent contributor to *EPL*.

Table 1. Baselines and reduction schedules under the Kigali Amendment

Baseline formula	Article 5 Parties, Group 1	Article 5 Parties, Group 2	Non-Article-5 Parties	
	Average HFC consumption levels for 2020–2022 + 65% of the HCFC baseline	Average HFC consumption levels for 2024–2026 + 65% of the HCFC baseline	Average HFC consumption levels for 2011–2013 + 15% of the HCFC baseline	Average HFC consumption levels for 2011–2013 + 25% of the HCFC baseline
Freeze	2024	2028		
1st step	2029 - 10%	2032 - 10%	2019 - 10%	2020 - 5%*
2nd step	2035 - 30%	2037 - 20%	2024 - 40%	2025 - 35%*
3rd step	2040 - 50%	2042 - 30%	2029 - 70%	
4th step			2034 - 80%	
Plateau	2045 - 80%	2047 - 85%	2036 - 85%	

*Belarus, Kazakhstan, Russian Federation, Tajikistan, Uzbekistan
Source: UNEP/OzL.Pro.WG.I/39/INF/1.

Secretariat proposal for revised reporting forms was generally well received, but several delegations wanted more time to review it and provide feedback, so Parties were given until 30 August 2017 to provide formal input. Given the positive reception of the draft forms at OEWG-39, it seems likely that they will be approved at MOP-29.

Timeline for Reporting Baseline Data

This issue resulted from a quirk in how the Kigali Amendment was drafted in the final hours of MOP-28. As amended at Kigali, paragraph 2 of Article 7 of the Protocol requires each Article 5 Party to provide data on HFC production, imports and exports for their three baseline years no later than three months after the date on which Kigali Amendment controls enter into force for that Party.⁹ Not so for non-Article 5 countries that ratify the Amendment before the end of their last baseline year (2022 in the case of Group 1, 2026 for Group 2),¹⁰ as they would have to report baseline data before all the data were actually available. While Article 7(2) does allow reporting best possible estimates where actual data are not available, Parties wanting later to replace estimates with actual data would have to first seek approval of the Protocol's Implementation Committee under the Non-Compliance Procedure. As a result, some Article 5 countries might delay ratifying the Kigali Amendment to avoid reporting estimates as their baselines.

After initial plenary discussion at OEWG-39 revealed general consensus that actual data were preferable to estimates, a contact group was assigned the task of determining how best to handle the issue of timing of reporting baseline data without resorting to reopening the text of the Kigali Amendment. A related question was raised in the contact group: whether Parties have to report each baseline year's data separately, or whether they can wait and report all three baseline years in a single batch (since in any case the baseline is calculated using an average of the three years). The contact group generally agreed that actual data were preferable, that baseline

years could be reported as a batch, and some sort of procedural fix was preferable to reopening the Kigali text, which might result in re-litigating other issues in the Amendment. Although no solution was agreed at OEWG-39, one possible fix discussed was a "compliance deferral", meaning Article 5 countries would not be penalised for waiting until real data for all three baseline years became available before reporting. This issue will be subject to further discussion at MOP-28.

Reporting Mixtures and Blends

Unlike substances previously controlled by the Protocol, a significant portion of trade in HFCs currently is conducted in the form of mixtures and blends containing HFCs rather than as pure substances. Hence, the Secretariat proposed a change in prior practice regarding reporting mixtures and blends: instead of requiring each Party to calculate the quantity of each pure substance in a mixture or blend and report only the pure substances involved, the Secretariat proposed that Parties report the quantities of mixtures and blends involving HFCs and let the Secretariat carry out calculations of the pure HFCs involved in said mixtures and blends. In cases of a non-standard mixture or blend not included in an illustrative list developed by TEAP, the Party would be required to inform the Secretariat of the composition of that non-standard mixture or blend.

While delegations at OEWG-39 were generally supportive of the approach suggested by the Secretariat, several indicated a desire for assistance in tackling this matter, either in the form of training or a separate tool for estimating mixture and blend consumption.

Reporting Trade with Non-Parties

Under Article 7, as amended by the Kigali Amendment, Parties would be required to report HFC trade with both Parties and non-Parties as part of their annual reporting obligations, which would take effect from the entry into force of the Amendment for each Party. Exports to non-Parties are treated as consumption by the exporting Party.

At OEWG-39, some delegations questioned the need for trade reporting when the Kigali Amendment says that the control provisions of the Protocol regarding trade with non-Parties do not take effect until 1 January 2033. The issue was assigned to a contact group, where deliberations produced general agreement that the Kigali Amendment language created problems and that reporting before the trade with non-Party provisions enter into effect may prove burdensome. As was the case with the baseline data reporting issue (see above), there was little appetite for re-opening the Amendment text, and some sort of administrative or procedural fix was sought. Discussions in this vein will continue at MOP-29.

GWP Values for HCFCs

As a briefing note provided to OEWG-39 participants illustrated, the Kigali baselines will be calculated based on GWP values.¹¹ Since the Kigali baselines are “baskets” that include a percentage of a Party’s HCFC baseline, all HCFCs included in those baselines must have official GWP values assigned. The Secretariat reported that for the HCFC baseline years, only six HCFCs – HCFC-121, HCFC-122, HCFC-133, HCFC-141, HCFC-142 and HCFC-225 – had been reported that did not have assigned GWP values. The Kigali Amendment allows for HCFCs that do not have a GWP value to be assigned a default value of zero until the MOP decides whether to adjust the GWP values listed for CFCs, HCFCs and HFCs controlled by the Protocol.¹² The Secretariat noted that for HCFCs 141 and 142, GWP values already exist for their most commonly used isomers, 141b and 142b, and suggested that their values be used for all forms of those two HCFCs.

Much of the OEWG plenary discussion on this issue focused on how GWP values would be assigned based on estimates provided by SAP, and how often the values might be revised, and how any adjustments might affect country baselines. An informal group was tasked with discussing the issue further. It did not complete its work before the end of the OEWG session, so talks are expected to continue at MOP-29.

Destructive Technologies

Paragraph 5 of Article 1 of the Montreal Protocol defines “production” of controlled substances, for the purpose of the Protocol, as “the amount of controlled substances produced, minus the amount destroyed by technologies to be approved by the parties and minus the amount entirely used as feedstock in the manufacture of other chemicals”.¹³ Thus defining production for the purposes of implementing the Kigali Amendment requires MOP approval of destruction technologies suitable for HFCs before the Kigali Amendment comes into effect (which, for some Parties, will be 2019).

The European Union, supported by Australia, Canada, China, Japan and the US, introduced a draft decision for MOP-29 that would provisionally approve existing HCFC destruction, while requesting the TEAP to further investigate the question and confirm that this was the best available option. Judging from the informal debate

in the contact group at the OEWG, this will probably be the solution agreed at MOP-29.

Mandated Kigali Follow-up

Safety standards and energy efficiency were flagged as a concern for any negotiations on a HFC amendment as far back as MOP-26.¹⁴ During the amendment negotiations concluded at Kigali, no easy fit into the amendment was found for these issues, but given the importance placed on them by many delegations for the proper implementation of the Kigali Amendment, MOP-28 adopted two decisions mandating follow-up work.¹⁵

Another issue raised at MOP-28 but without sufficient time to fully discuss it concerned a voluntary reporting mechanism for HFCs not controlled by the new amendment. The proponents of a draft decision on the issue, Norway and Switzerland, asked to have the conference room paper (CRP) forwarded to OEWG-39 and MOP-29 for further consideration.

Safety Standards

Decision XXVIII/4 had three principal mandates: (1) a request for TEAP to establish a task force to submit a report on safety standards relevant for low-GWP alternatives to OEWG-39, and provide relevant findings to the standards bodies; (2) a request for the Secretariat to organise a workshop on the safety standards relevant to the safe use of low-GWP alternative refrigerants back-to-back with OEWG-39; and (3) a request for TEAP to liaise with international standards-setting bodies “to support the timely revision” of relevant standards.

The mandated workshop was held on the day before the opening of OEWG-39.¹⁶ It looked at relevant international safety standards in the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) and the process for developing and revising them; the relationship between international and national safety standards; and how changes to existing standards might improve the uptake of the low-GWP alternative refrigerants, particularly flammable ones.

During OEWG-39, the workshop was generally praised as comprehensive and well organised. However, it did not dispel apprehension that safety-standard revisions will not come in time for flammable refrigerants to be used as HFC substitutes once the Amendment enters into force. There was general consensus that the standards reform process should not be rushed lest it result in standards that offer a lower level of safety, and that the Amendment deadlines should not be postponed solely to accommodate the safety standards reform schedule.

The TEAP Task Force delivered its report¹⁷ to OEWG-39 overviewing the current situation and the constraints it posed on the use of flammable refrigerants. The Task Force offered general recommendations, such as education and training of technicians handling and using flammable refrigerants, encouraging participation of national experts at the international level, and enabling

the transfer of international standards for flammable refrigerants into national regulations. It also requested clarification from the Parties about how they wished TEAP to liaise with standards bodies.

The OEWG-39 plenary briefly discussed how best to follow up on the issue, but reached no conclusions. Some delegations urged training and capacity-building work, some reiterated the need for liaising with standards bodies, and a few suggested perhaps another workshop might be useful. MOP-29 is due to discuss the way forward on this issue.

Energy Efficiency

At MOP-28, Rwanda and Morocco offered an ambitious proposal for follow-up on energy efficiency, but others argued that there was insufficient time to discuss the proposal, which resulted in Decision XXVIII/3 requesting the TEAP to review energy efficiency opportunities in the refrigeration, air-conditioning and heat-pump (RAC-HP) sectors related to a transition to climate-friendly alternatives and report on the matter to MOP-29.

At OEWG-39, Rwanda, citing a mandate from the African Ministerial Conference on the Environment (AMCEN)¹⁸ and with the support of the African Group caucus, offered a draft decision calling for a workshop at MOP-29 to examine a range of aspects of the nexus between switching to low-GWP refrigerants and improving energy efficiency. India introduced its own draft decision also requesting a workshop, but back-to-back with OEWG-40 instead of MOP-29, while also requesting TEAP to review the technical and funding requirements of Article 5 Parties to maintain and/or enhance energy efficiency in the RAC-HP sectors while phasing down HFCs. A broad swathe of Article 5 countries supported both proposals.

Australia, Canada, the EU and US blocked action on the proposals, arguing that it was inappropriate to act before TEAP submits its report to MOP-29, and in any case the MOP itself would have to authorise any follow-up, such as a workshop. Article 5 countries were not at all happy about this result, and in all likelihood will press for concrete follow-up on the energy efficiency issue at MOP-29.

HFCs Not Covered by the Kigali Amendment

The proposal by Norway and Switzerland was reintroduced at OEWG-39 and assigned for informal consultation. It became apparent, despite many Norwegian/Swiss assurances to the contrary, that many Parties suspected that this initiative had been intended as an opening gambit for eventual addition of these HFCs to the Amendment. The proposed compromise that emerged during the OEWG – to have TEAP report instead of member States – will be discussed further at the MOP.

Preparations for the MLF Replenishment Negotiations

The triennial replenishment negotiations are usually problematic. Fund donors and beneficiaries traditionally

differ on what constitutes sufficient funding for Protocol enabling and implementation activities. Negotiations for the 2018–2020 period at MOP-29 are expected to be particularly tricky, not only because it covers the start of the Kigali Amendment and the final stage of the HCFCs phase-out, but also due to uncertainty over the position of a major donor, the US, regarding future MLF contributions.

Decision XXVIII/5 called on TEAP to prepare a report on the appropriate level of replenishment for 2018–2020, and indicative figures for the 2021–2023 and 2024–2026 periods for review by OEWG-39, with a revised report taking OEWG input into account going to MOP-29. The TEAP told the OEWG that US\$602.71–748.85 million is needed, of which US\$391.77–420.9 million would be earmarked for HCFC phase-out management plans (HPMPs); \$67.2 million for HCFC production phase-out management plans; US\$114.08–124.08 million for non-investment and supporting activities; US\$21.5–44.2 million for HFC phase-down enabling activities; and US\$8–21.5 million for HFC-23 mitigation. As for the indicative figures for later trienniums, TEAP reported these as US\$634.8–771 million and US\$548.5–695.5 million, respectively.

A contact group was established to create a list of issues that TEAP should take into account when preparing its supplementary report to MOP-29. The contact group developed a list of 20 issues, such as cost breakdowns covering HFC phase-down enabling activities and HFC-23 mitigation. The most contentious of these was a proposal by the Africa Group and Gulf Cooperation Council countries to include an estimate of MLF funding needed for energy efficiency as part of the move to low-GWP refrigerants, which other Parties opposed because a specific MOP mandate for action on energy efficiency did not yet exist. In the end, the proponents withdrew this, but are expected to push to link any new energy efficiency mandate agreed at MOP-29 with a funding line item on the issue in the MLF replenishment.

Other Matters

While follow-up to the Kigali Amendment and preparations for the MLF replenishment negotiations were the main focuses of OEWG-39, the meeting also dealt with many traditional Protocol tasks, including:

- an essential-use exemption (EUE) nomination for laboratory and analytical use of carbon tetrachloride by China, with a CRP on the subject¹⁹ forwarded to MOP-29;
- critical-use exemption (CUE) nominations for methyl bromide for 2018, discussion of which will continue at MOP-29;
- a proposal by Australia, Canada, Japan, and the US²⁰ on essential uses of HCFCs by non-Article 5 Parties after 2020, forwarded to MOP-29, which seeks to request TEAP to assess non-Article 5 requirements for HCFCs after 2020 for uses such as fire suppression, solvent applications and “niche uses”;

- the periodic review of the use of controlled substances as process agents, where the EU introduced a proposal²¹ to eliminate three process agents from an approved list, urge Parties to update their information on use of process agents, and request TEAP to report on industrial application of alternative technologies. The proposal was forwarded to MOP-29.

Conclusion: Toward MOP-29

MOP-29 is convening in November 2017 on the Protocol's 30th anniversary in Montreal, Canada, the birthplace of the Protocol. Celebrations are planned to for the anniversary, and will likely include the entry-into-force of the Kigali Amendment. OEWG-39 demonstrated that while the adoption of the Amendment has renewed the cooperative spirit of the Protocol community often strained during the Amendment negotiations, significant work lies ahead to ensure the Amendment's smooth and timely implementation. The OEWG identified several tricky implementation-related issues that MOP-29 will have to grapple with, including possible follow-up regarding energy efficiency and safety standards, and how best to develop "administrative" or "procedural" fixes for problems presented by the Kigali Amendment text for baseline and non-Party trade reporting.

The MOP may be dominated, however, by the MLF replenishment negotiations. MLF replenishment talks are never easy, and this round was already expected to be difficult, as donors and beneficiaries try to set down markers about how the HFC phase-down will be funded. It may be further complicated, however, by concerns over the possible impact of the Trump Administration's intention, announced in budget proposals, to significantly scale back the US contribution to the MLF.

Notes

- 1 Lenhart, J., Ripley, K. and Sohler Zaman, N. 2017. "Summary of the 39th Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer". *Earth Negotiations Bulletin* 19(132), at <http://enb.iisd.org/download/pdf/enb19132e.pdf>.
- 2 Text of the Montreal Protocol, as amended at Kigali, at <http://ozone.unep.org/sites/ozone/files/Publications/Handbooks/Montreal-Protocol-English.pdf>.
- 3 Australia, Canada, Chile, Democratic People's Republic of Korea, Federated States of Micronesia, Mali, Marshall Islands, Norway, Palau, Rwanda and Tuvalu.
- 4 UNEP/OzL.Pro.WG.1/39/INF/1.
- 5 MOP decision XXVIII/2.
- 6 UNEP/OzL.Pro.WG.1/39/2, paras 16–23.
- 7 UNEP/OzL.Pro.WG.1/39/3. OEWG-39 also discussed the reporting issues applicable to trade with non-Parties.
- 8 *Ibid.*
- 9 *Supra*, note 2.
- 10 Group 2 is Bahrain, India, Iran, Iraq, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia and the United Arab Emirates; Group 1 encompasses all other Article 5 Parties.
- 11 UNEP. 2017. "Briefing Note: Calculation of control levels for production, consumption and baseline values of hydrofluorocarbons", at <http://conf.montreal-protocol.org/meeting/oewg/oewg-39/presentation/briefingnotes/calculation-of-control-levels%E2%80%A8-for-production-consumption-and-baseline-values%E2%80%A8-of-hydrofluorocarbons.pdf>.
- 12 This was modelled after a provision in earlier Protocol amendments which provided for Parties (e.g., the MOP) to adjust ozone-depleting potential values for controlled substances, as needed.
- 13 *Supra*, note 2.
- 14 Decision XXVI/9: Response to the report by the Technology and Economic Assessment Panel on information on alternatives to ozone-depleting substances.
- 15 Decision XXVII/4: Establishment of regular consultations on safety standards, and Decision XXVIII/3: Energy efficiency, respectively.
- 16 UNEP/OzL.Pro.WG.1/39/4.
- 17 TEAP Report May 2017, "Volume 3: Task Force Report: Safety Standards for Flammable Low Global-Warming-Potential (GWP) Refrigerants", at http://conf.montreal-protocol.org/meeting/oewg/oewg-39/presentation/Background-Documents/TEAP-XXVIII_4-TF-Report-May%202017.pdf.
- 18 AMCEN Decision 16/2 (Environment in Africa), Section II, para. 7, at <http://wedocs.unep.org/bitstream/handle/20.500.11822/21721/Note%20on%20the%20Africa%20Ministers%20Conference%20on%20Environment%20%28AMCEN%29.pdf>.
- 19 UNEP/OzL.Pro.WG.1/39/CRP.6/Rev.1
- 20 UNEP/OzL.Pro.WG.1/39/CRP.1
- 21 UNEP/OzL.Pro.WG.1/39/CRP.2/Rev.1.



INTERNATIONAL ADJUDICATION AND COMPLIANCE PROCESSES

ITLOS

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Tribunal Decides Ghana/Côte d'Ivoire Maritime Boundary Dispute

On 23 September, the International Tribunal on the Law of the Sea issued its final judgment in the Dispute Concerning Delimitation of the Maritime Boundary Between Ghana and Côte d'Ivoire in the Atlantic Ocean (Ghana/Côte d'Ivoire).¹ Although maritime boundary disputes under the UN Convention on the Law of the Sea (UNCLOS) are often highly complex, this one was relatively straightforward. In addition, it produced a clear statement of the applicable law on a central question of

fact and law – the existence or non-existence of a boundary agreement or other estoppel between the two States. The following is a brief summary of the dispute and the Tribunal's decision.

The Dispute

The case began in 2014, with Ghana's request for a judgment delimiting its maritime boundary with Côte d'Ivoire. In accordance with applicable rules, the case

was heard and adjudicated by a Special Chamber consisting of Judge Boualem Bouguetaia, President of the Special Chamber; ITLOS Judges Rudiger Wolfrum and Jin-Hyun Paik; and Judges ad hoc Thomas A. Mensah (Ghana) and Ronny Abraham (Côte d'Ivoire).

Ghana's request was connected to some of its petroleum concessions, which Côte d'Ivoire now claims to be on its side of the boundary. Both countries are apparently involved in petroleum activities at or near this boundary.

The Issues

The basic focus of this case was maritime delimitation. On this point, the Parties took relatively well recognised positions. Ghana proposed the view that the two countries had "mutually recognised, agreed, and applied an equidistance-based maritime boundary in the territorial sea, exclusive economic zone (EEZ) and continental shelf within 200 nm", which should be extended beyond the 200 nm as an "equidistance boundary along the same azimuth as the boundary within 200 nm, to the limit of national jurisdiction" over the outer continental shelf (OCS). On the basis of its claim of mutual recognition, agreement and application of this boundary, Ghana stated that Côte d'Ivoire was estopped from objecting to Ghana's proposed boundary delimitation.

Côte d'Ivoire called on the Special Chamber "to reject all Ghana's requests and claims". It specified a different boundary, alleging that Ghana's actions in the disputed area constituted a violation both of Côte d'Ivoire's sovereign rights and of Ghana's obligation to negotiate in good faith. It asked for compensation for damages resulting from these alleged violations. It specifically emphasised provisional measures prescribed by the Chamber, which had required Ghana to "transmit to Côte d'Ivoire all the documents and data relating to the oil exploration and exploitation activities which it has undertaken, or which have been undertaken with its authorization, in the Ivorian maritime area, including the oil transport and development operations". It also asked the Special Chamber to require an additional six months of negotiations to determine the amount of such reparations.

Thus, Ghana stated that its basic position was that no delimitation was necessary because a boundary had already been agreed. Hence the decision turned on the Special Chamber's conclusion as to whether there had been agreement on this point that estopped Côte d'Ivoire from asserting any other boundary. Only if this primary argument failed did Ghana wish/agree to obtain a delimitation decision. By contrast, Côte d'Ivoire viewed the case as a request for delimitation, stating that "Côte d'Ivoire and Ghana agree that [the Chamber] must determine a single delimitation line".

The Chamber viewed the matter as one calling for a delimitation decision, and determined that UNCLOS "in particular articles 15, 74, 76 and 83 thereof, and other rules of international law not incompatible with the Convention" constituted the applicable law. The four primary questions it addressed in its judgment were as follows:

1. First it asked "whether the Parties have already effected by agreement the course of their maritime boundary in the territorial sea, the exclusive economic zone and the continental shelf both within and beyond 200 nm", as claimed by Ghana. If the Special Chamber had agreed with Ghana's assertion, it would only have had to declare the existence of a maritime boundary.
2. In the absence of a tacit agreement, is Côte d'Ivoire estopped from asserting a different boundary by virtue of more than five decades of allowing Ghanaian activities based on Ghana's assumed "equidistance boundary"?
3. If neither of the above questions renders it unnecessary to decide – what is the appropriate delimitation as between Ghana and Côte d'Ivoire?
4. Whether Ghana incurred liability in its actions prior to the judgment.

Decision

The final judgment was accompanied by separate opinions enunciated by Judge Paik and Judge ad hoc Mensah, respectively. Their conclusions are summarised following a brief introduction of the facts and issues.

The Arguments

Pre-existing Tacit Agreement

The judgment provides concrete guidance on the relationship between two critical national/international conceptual elements: custom/practice and any kind of (tacit or express) agreement. While neither Party alleged that any agreement had been formally adopted, they disagreed about whether an informal or "tacit" agreement was reflected in their statements and activities over the years.

Basic Positions

The Chamber stated that "the Parties concur that they have not formally concluded a delimitation agreement concerning their common maritime boundary, [but] disagree as to the existence of an agreed maritime boundary between them". Ghana had argued that such an agreement existed by virtue of long-standing custom and practice – *i.e.*, that five decades (1957–2009) of acquiescence constituted a *de facto* agreement that recognises "their boundary as following an equidistance line, commencing from the land boundary terminus at BP 55". It offered "extensive evidence in the form of concession agreements, presidential decrees, legislation, correspondence, maps, public statements, representations to international organizations and oil companies, and the cooperative practice of both States" as evidence of such an agreement.

By contrast, Côte d'Ivoire denied the existence of a tacit agreement on a common maritime boundary, "especially in light of the absence of [a formal] delimitation of a common maritime boundary and the systematic refusal of Côte d'Ivoire to recognize the western limit of the Ghanaian oil concessions as a boundary". It cited its consistent indications of its "desire to achieve an agreement on the maritime boundary" as

well as its regular objections to Ghana's oil practices as proof that it had never tacitly acquiesced to Ghana's view. Among other evidence, it cited the fact that the two countries had participated in bilateral negotiations from 2008 to 2014, in an attempt to resolve this dispute, stating that, in its view, these activities "clearly show the absence of a tacit agreement".

The arguments of Côte d'Ivoire, as interpreted by the Special Chamber, specifically note five critical elements that must be addressed in a decision relating to the existence of custom, estoppel or a tacit agreement: scope, level of acquiescence, prior negotiations, treatment of other maritime activities, and the standard of proof required.

Applicable Law/Nature of the Claimed "Agreement"

One of the initial elements of this analysis is a determination of which body of law applies. Côte d'Ivoire noted that, in asserting the existence of bilateral custom, Ghana would have had to provide evidence of both a material element of the custom and a psychological element. Since the Ghanaian papers did not address these elements, Côte d'Ivoire assumed that Ghana was asserting a tacit agreement.² By contrast, the Special Chamber describe Ghana's position as follows:

According to Ghana, it "has never argued that this 'customary equidistance line' reflects a bilateral custom". Ghana explains that this term simply refers to the fact that both Parties have over time mutually followed an equidistance line in their practice. Ghana submits that the customary line is a reflection of the Parties' tacit agreement as to the existence of a maritime boundary following an equidistance line, as distinguished from a formal boundary treaty.

Thus, both Parties appeared to accept the view that Ghana was claiming the existence of a tacit agreement, and that the current dispute did not require consideration of the elements of bilateral custom.

Applying the law relevant to an agreement, Côte d'Ivoire alleged tacit agreement can be applied to bind both Parties only where it is clear exactly which areas and resources the tacit agreement applies to. In this case, Ghana's argument was that the two countries' mutual, consistent recognition and acceptance of such a boundary over many decades was evidence of more general acceptance of the principle underlying that boundary – an "equidistance line" that should apply to the entire boundary. By contrast, Côte d'Ivoire noted that those concessions run along a distance of, at most, the first 87 miles from the landward end of the boundary, but all of the 200 miles of EEZ boundary and 300 more miles of OCS boundary³ were included in Ghana's claimed pre-existing agreement. Even if Côte d'Ivoire had been bound to its historic acquiescence to the concessions or activities thereon, it argued that Ghana had given no support to its claim that the principles determining that boundary should apply to the remaining 413–445 miles of boundaries claimed.

Objections/Level of Acceptance

According to the Special Chamber,

Ghana contends that "the oil and gas activities carried out by, or under licence from, Ghana" have been in areas that fall on the Ghanaian side of that boundary, whereas similar Ivorian activities have been confined to the west of that boundary. Ghana further asserts that neither Party has ever protested, or objected to, any of these activities by the other.... Over a period of 52 years, Ghana claims, not a single concession offered by Côte d'Ivoire crossed over to Ghana's side and not a single one offered by Ghana crossed over onto Côte d'Ivoire's side. In Ghana's view, "[i]f this is not the basis of tacit agreement between two States ..., it is really difficult to see what would be a tacit agreement".

On this issue, the Chamber described three arguments put forward by Côte d'Ivoire. First, as a matter of precedent, it noted that "oil practices" have been accorded special treatment in maritime law, and especially that "international courts and tribunals have been reluctant to treat oil practice as proof of the existence of a maritime boundary".⁴ Côte d'Ivoire was therefore unwilling to agree that oil practices should have any impact on the sovereign rights, jurisdiction and duties of a coastal State. Second, Côte d'Ivoire argued that the oil practices in the present case were "equivocal". Third, it flatly contradicted Ghana's statement that neither Party had protested or objected. Here also, it cited its recent efforts to commence negotiations to formally designate the boundary as evidence of its objection to any view that continuing consistent reliance on the equidistance line constituted a tacit agreement. It describes its own decisions to draw the same boundary for its oil concessions as "an act of prudence and caution, an act of restraint, aimed at avoiding conflict with a neighbour". The Special Chamber also noted, however, Côte d'Ivoire's evidence "that it has been consistent by including in oil concession contracts a caveat that the coordinates for oil blocks are 'indicative and cannot under any circumstances be regarded as the limits of the national jurisdiction of Côte d'Ivoire'. According to Côte d'Ivoire, such wording would have had no *raison d'être* if there were already a delimited maritime boundary". Perhaps most tellingly, it quoted the following from a 2011 letter written by Ghana's Minister of Energy:

As regards the maritime boundary, ... it has always been publicly known that the Republic of Ghana and the Republic of Côte d'Ivoire have not yet delimited their maritime boundary. It is also publicly known that in recent years the two Governments have met in an effort to negotiate their maritime boundary in accordance with international law. Those negotiations remain ongoing.

The Parties made similar arguments regarding their respective seismic survey work and mapping undertaken in connection with their oil leases. Similarly, although Côte d'Ivoire claimed that it had objected to some of Ghana's drilling activities in 1992, Ghana interpreted the

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language of the relevant document as expressing hope, rather than protest. In this connection, Ghana alleged that “[i]t was only in 2009, after Ghana had discovered significant oil deposits just east of the agreed boundary, that Côte d’Ivoire abandoned its longstanding position and began to offer any protest”.⁵ On this point, Côte d’Ivoire cited a somewhat dubious position – the existence of domestic troubles between 1992 and 2007 – as the reason it did not lodge or take action on formal objections on matters it informally complained about.

Beyond this, Ghana also pointed to the national legislation of the two countries, which appeared to adopt the equidistance boundary. Côte d’Ivoire dismissed these documents noting that national legislation is not relevant to the existence, non-existence or contents of any relationship between States.

Significance of Prior Negotiations

In looking at the bilateral negotiations, Côte d’Ivoire emphasised the following excerpt from a 2009 communication from Côte d’Ivoire to Ghana:

Moreover, important exploration and evaluation works were undertaken in 1980 by Ghana in the maritime border zone between the two countries. These works are still ongoing, in spite of representations made by Côte d’Ivoire in 1988 and 1992 to Ghana requesting the latter country to stop any unilateral activity in the neighbouring maritime border until a determination by consensus of the maritime border between our two coastal States. Any works likely to potentially undermine the interests of Côte d’Ivoire must not be undertaken.

It noted a number of indications throughout those negotiations that Côte d’Ivoire did not intend to accept the equidistance boundary, although the records do not indicate that Côte d’Ivoire offered any evidence or alternative, which Ghana suggests constitutes an indication that the negotiations were intended merely to formalise the existing informal agreement. It also noted a dramatic increase in the number of Ghanaian drilling operations,⁶ as the reason for its formal expressions of opposition to these activities, pointing out that Ghana had never claimed any sort of “tacit agreement” until 2011.

Its final argument on this point is to explain its contact in terms of what it describes as “a fundamental principle of modern international law”, namely “the need to exercise restraint so as to maximize the chances of resolving disputes through peaceful means and avoiding conflict”, which is reflected in Articles 74(3) and 83(3) of the Convention. It argued that it should not be penalised for its “spirit of understanding and cooperation”.

Ultimately, on this point, the Special Chamber noted that the fact that these negotiations (whose specific context is unclear) took place is uncontested between the Parties. It concluded, however, that it had enough information to determine that “the Parties engaged in substantive discussion as to what should be the appropriate method to delimit their maritime zones” and that Ghana did not introduce its “tacit agreement” until 2011.⁷ Accordingly, the judgment notes, “[t]he Special

Chamber is therefore not convinced by Ghana’s argument that the purpose of the bilateral negotiations was simply to formalize a maritime boundary tacitly agreed upon between the Parties”.

Other Maritime Activities

The Chamber specifically asked the Parties whether and how they addressed other maritime activities. In response, Ghana alleged that there were no agreements between the Parties on fisheries and other marine matters, but that the FAO and EU have both published materials indicating the equidistance boundary in this context. Côte d’Ivoire contradicted this, citing a 1988 agreement on fishing and oceanographic research, which provides, *inter alia*, that: “[t]his Agreement shall not affect the rights, claims or views of either Contracting Party with regard to the limits of its territorial waters or its fisheries jurisdiction”.

Standard of Proof

A critical factor in this decision, with potentially major consequences for future delimitation cases, relates to the standard of proof that must be met in order to establish a tacit agreement. On this issue, although recognising the need for “compelling evidence”⁸ in order to establish the existence of a tacit agreement, Ghana argued that “this is not, and should not be, an unattainable standard”, and that it should not require evidence of subsequent confirmation by a written document.⁹ It reiterated its belief that its arguments based on “the history of both States’ conduct” both with regard to the oil concessions¹⁰ and in other contexts are decisive, particularly in light of the length of time that those activities have continued.

Côte d’Ivoire emphasised the burden of proof question, stating that Ghana had not met this burden and reiterating its position that oil concessions were insufficient evidence in this regard.

Estoppel

Ghana stated its estoppel arguments in terms of the traditional three-part *prima facie* case for estoppel:

- “conduct by one State creating the appearance of a particular situation”;
- “good faith reliance by the other State on such conduct”; and
- “a resulting detriment to the latter State”.

It cited “Côte d’Ivoire’s repeated recognition of the customary equidistance boundary in its laws, official correspondence with Ghana, and reports to the international community, as well as its representation of the customary equidistance line as an international boundary in its official maps” as its proof of clear, sustained and consistent conduct. It went on to state that it had acted “in good faith in relying upon the conduct and representations of Côte d’Ivoire in regard to the existence and location of an agreed international boundary”, and that these actions were taken in reliance on Côte d’Ivoire’s statements and conduct – noting the high levels of investment made in

the oil concessions over recent years. Finally it concluded by stating that “[i]f Côte d’Ivoire were permitted to now abandon the customary equidistance boundary after these many decades, the economic consequences for Ghana would be very severe...[in particular that]... a substantial portion of the enormous investment Ghana and its licensees have made would be lost”.

Predictably, Côte d’Ivoire contested this entire argument, alleging that estoppel “is very rarely applied in public international law”, and never in delimitation actions. It argued that the estoppel claim was merely Ghana’s attempt to get around the flaws in its tacit agreement argument. On the chance that this argument would not work, it also reiterated its earlier statements – that it had never acquiesced in the boundary – to contradict Ghana’s first elements, going on to note that Ghana’s reliance and harm elements were not relevant since the first was conclusively disputed.

Delimitation

With regard to the actual delimitation of the maritime boundary, Ghana placed heavy emphasis on UNCLOS Article 15, which in turn strongly emphasises the “equidistance principle”. It argued that, apart from its earlier claims of a tacit agreement or estoppel, there are no historic bases or special circumstances that would justify any change from the strict application of that principle. Côte d’Ivoire contradicted this, stating that special circumstances did in fact exist, and that the “bisector principle” should be used to address those places in which the boundary would need to vary from the equidistance line in order to respond to such special circumstances. Specifically, Côte d’Ivoire based this argument on “the existence of particular geographic and geomorphological characteristics which warrant the application of the bisector method”.

Regarding this argument, the Special Chamber noted that “the Parties have not put forward comprehensive arguments concerning the delimitation of the territorial sea on the basis of Article 15 of the Convention”. Thus it may be somewhat surprising that the Chamber went ahead with a delimitation decision.

Responsibility/Liability of Ghana

With regard to Côte d’Ivoire’s call for Ghana to pay reparations, the Parties again submitted essentially diametrically opposite positions. Côte d’Ivoire invoked three different grounds for this claim: (i) an alleged violation of Côte d’Ivoire’s sovereign rights by Ghana by conducting or licensing hydrocarbon activities in an area over which Côte d’Ivoire claims to have sovereign rights; (ii) a violation of Article 83 of the Convention; and (iii) that Ghana acted contrary to its obligations as set out in the Order of the Special Chamber of 25 April 2015.

Final Judgment

The Chamber came to unanimous agreement on its findings and interpretation of these arguments, as follows:

Pre-existing Tacit Agreement

Specific Findings Regarding the Oil Activities

- *The oil concession blocks licensed by the two Parties aligned with a line which Ghana claims as an equidistance line. Oil activities carried out by each of the Parties, such as seismic surveys and drilling operations, have been confined to the area lying on the respective Party’s side of the line.*
- *It is undisputed that neither Party attempted to undertake oil activities on the other side of the line.*
- *Each Party requested and obtained the other Party’s permission before crossing this line in order to conduct seismic surveys.*
- *[Thus] the line in question was of relevance to both Parties when conducting their oil activities.*

Specific Findings Regarding the Level of Acquiescence Demonstrated

- *Côte d’Ivoire had objected on several occasions to any development of Ghana’s “invasive activities” in the disputed area.¹¹... These objections – for whatever reason they were made – have to be taken into account when the practice linked to the oil activities of the Parties is considered.*
- *[Hence], the Special Chamber is not convinced that the practice linked to the oil activities of the Parties is indicative of a common understanding of the Parties that a tacit delimitation agreement existed between them.*

Other Evidence

The Special Chamber expressed doubts about the various Ghanaian arguments based on oil concession maps, and generally echoed the earlier argument that the oil activities of the Parties on the seabed of the territorial sea and inner continental shelf might not be sufficient to establish a single maritime boundary for the territorial sea, the EEZ and the continental shelf within and beyond 200 nm.

Regarding the prior bilateral negotiations on this issue, the Special Chamber noted that the fact that these negotiations took place is uncontested between the Parties and recognised that their specific content is unclear. It concluded, however, that it had enough information to determine that “the Parties engaged in substantive discussion as to what should be the appropriate method to delimit their maritime zones” and that Ghana did not introduce its “tacit agreement” until 2011. Accordingly, the judgment notes that “[t]he Special Chamber is therefore not convinced by Ghana’s argument that the purpose of the bilateral negotiations was simply to formalize a maritime boundary tacitly agreed upon between the Parties”.

It also rejected Ghana’s evidence relating to the national legislation of the two countries, which appeared to adopt the equidistance boundary. On this point, the Special Chamber noted that national legislation, as a unilateral act of a State, is of limited relevance to proving the existence of an agreed maritime boundary, stating also that the legislation cited in this case was not

sufficiently clear. It also cited both Parties' submissions to the Commission on the Limits of the Continental Shelf (CLCS) as clearly indicative of "the existence of overlapping maritime claims with neighbouring States", placing heavy emphasis on their inclusion of "a disclaimer that their consideration will be without prejudice to the determination of each Party's lateral maritime boundaries".

With regard to the two countries' other maritime activities, the Special Chamber appeared to agree with Ghana (that no agreement had been reached concerning such activities), but to use this conclusion to bolster Côte d'Ivoire's position:

[T]he Parties' answers to the question ... indicate that there are no specific arrangements between them on fisheries or other maritime matters. Although it appears that the Parties follow an equidistance line in their fishing activities, there is no evidence to suggest that the Parties recognize such line as their fishery or maritime boundary. In the view of the Special Chamber, the other maritime activities of the Parties fall short of proving the existence of any agreed maritime boundary between them.

Agreeing with the point made earlier that "the oil practice, no matter how consistent it may be, cannot in itself establish the existence of a tacit agreement on a maritime boundary", the court went on to note, "[m]utual, consistent and long-standing oil practice and the adjoining oil concession limits might reflect the existence of a maritime boundary, or might be explained by other reasons". Removing the oil concession evidence, the Chamber found that the evidence provided was insufficient to establish a pre-existing tacit agreement that would delimit their territorial sea, EEZ and continental shelf both within and beyond 200 nm.

Estoppel

The Special Chamber was quick to note that it did not accept Côte d'Ivoire's interpretation that estoppel was rare in international public law, and not appropriate at all in the context of maritime boundary delimitation. It cited clear precedent for the application of the principle in international law cases under UNCLOS.¹² That said, however, it agreed with Côte d'Ivoire as to the estoppel arguments put forward by Ghana, finding that "the conduct of Côte d'Ivoire cannot be considered to amount to the 'clear, sustained and consistent' representation required for the recognition of estoppel", and thereby rejecting Ghana's estoppel claim.

Delimitation

Although it began by noting that "the Parties have not put forward comprehensive arguments concerning the delimitation of the territorial sea on the basis of article 15 of the Convention", the Special Chamber rendered a decision on the basic approach to be applied in establishing the maritime boundary. Specifically, it chose the "equidistance approach" advocated by Ghana.

It responded to Côte d'Ivoire's various arguments in favour of a "bisector" approach as follows: firstly, the claim of special circumstances requiring resort to bisectoral factors applies at most only within the EEZ. In other words, special circumstances could not be applied to the entire boundary, since "different rules apply to the delimitation of territorial seas and the delimitation of exclusive economic zones and continental shelves", although both Parties in this case appeared to request a single approach for all areas. Secondly, it noted specifically that "it has to be borne in mind that the rights of the coastal States concerned are not functional but territorial since they entail sovereignty over the seabed, the superjacent waters and the air column above. However, neither Ghana nor Côte d'Ivoire raised sovereignty-related considerations in respect of the delimitation of the territorial sea between them".¹³ Finally, it dismissed specific factors, including macro-geographical features, the relatively small number of base points and the potential precedential impact on other West African States as inappropriate, ultimately concluding that "the Special Chamber sees no convincing reason to deviate in this case from the equidistance/relevant circumstances methodology for the delimitation of the territorial sea, the exclusive economic zone and the continental shelf".

Responsibility/Liability of Ghana

With regard to the liability issue, the Special Chamber began by finding that the words "dispute concerning the delimitation of their maritime boundary in the Atlantic Ocean" did not also embrace a dispute on international responsibility deriving from hydrocarbon activities in the disputed area:

[Although] the word 'concerning' may be understood to include within the scope of the dispute other issues which are not part of delimitation but are closely related thereto... it would stretch the meaning of the words 'dispute concerning the delimitation of their maritime boundary' too much to interpret it in such a way that it included a dispute on international responsibility.

After arguing with itself for several more paragraphs, the Special Chamber stated, "[t]herefore, the Special Chamber finds that it has jurisdiction to decide on Côte d'Ivoire's claim against Ghana on the latter's alleged international responsibility as well as on reparation", looking instead at Ghana's alleged international responsibility under customary international law, as reflected in the ILC Articles on Responsibility of States for Internationally Wrongful Acts.

Noting that Ghana was certainly aware of the dispute by the time it entered into its most recent large number of contracts, the Chamber expressed concern that Ghana went forward anyway. It went on to state "that maritime activities undertaken by a State in an area of the continental shelf which has been attributed to another State by an international judgment cannot be considered to be in violation of the sovereign rights of the latter if those activities were carried out before the judgment was delivered and if the area concerned was the subject of

claims made in good faith by both States". This conclusion disposed of the first of Côte d'Ivoire's claims. The second (violation of UNCLOS Article 83), the court notes that it cannot hold Ghana responsible for the failure of prior negotiations, in the absence of any evidence that the negotiations were not conducted in good faith.

Specifically, with regard to Article 83(3), the Special Chamber noted that this clause "contains two interlinked obligations for the States concerned, namely to 'make every effort to enter into provisional arrangements of a practical nature' and 'during this transitional period, not to jeopardize or hamper the reaching of the final agreement'". It reiterated earlier holdings that this language does not constitute a requirement that the States come to an agreement. Given that Côte d'Ivoire never requested provisional measures on the points raised, and that Ghana suspended new drilling during the pendency of the judgment, the Chamber found that it had not violated this clause.

Finally, regarding Ghana's compliance with the Special Chamber's 2015 Order, it stated that Ghana had complied with the "no new drilling" provision, and its other activities generally supported this compliance.

Separate Decisions

As noted above, Judges Paik and Mensah each submitted a separate concurring opinion. Judge *pro tem* Mensah's concurrence generally underscores the primary arguments that led him to join in the unanimous decision. Judge Paik's concurrence lays out greater detail regarding the decision that Ghana had not violated UNCLOS Article 83(3). In particular, he noted,

Ghana did not immediately provide all the information requested by Côte d'Ivoire and that it did so only after the President of the Special Chamber requested it to comply by letter dated 23 September 2016. The Special Chamber nevertheless considers that such conduct cannot reasonably be considered to constitute a violation of the measures prescribed in the Order of 25 April 2015.

This leads him to the question, "What actions would hamper the reaching of the final agreement?" In other words, if Ghana's delaying tactic is not a violation, what is? He answers his question by noting that

In my view, a key criterion is whether the actions in question would have the effect of endangering the process of reaching a final agreement or impeding the progress of negotiations to that end. In other words, it is a result-oriented notion. As such the answer ... depends much on the particular circumstances of each case.

Accordingly, he declined to offer examples, noting that even a "permanent physical change to the marine environment" is only "one of several factors, but should not be applied as a hard and fast threshold". He continued with a thoughtful and detailed analysis of Ghana's alleged activities in this context. This argument is less useful, however, given that it ends with Judge Paik stating that he finds Ghana's "invasive activities" in the disputed area "quite troublesome" and regrettable, but

despite this he joined in the Chamber's unanimous decision.

Conclusion

Given the number of decades that have passed since the 1958 adoption of the CLCS¹⁴ and since 1982 when UNCLOS's clarification of the maritime delimitation issues and process was adopted, it is increasingly likely that any future disputes over boundary delimitation will have to face questions of the relevance of the Parties' custom and practice, the existence of a *de facto* agreement between them, and other estoppel arguments. The Special Chamber's decision offers some important precedent in this area. [TRY]

Notes

1 ITLOS Case No. 23. Judgment. Online at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.23_merits/C23_Judgment_23.09.2017_corr.pdf.

2 The Special Chamber restated Côte d'Ivoire's claim as follows: "the notion of 'customary equidistance boundary' has no basis in international law and that the use of this expression adds nothing to Ghana's tacit agreement argument except confusion".

3 In fact, Côte d'Ivoire stated that Ghana's actual activities occurred on a much smaller part of the boundary – approximately 55 miles.

4 In this connection, the Special Chamber notes "Côte d'Ivoire relies on the jurisprudence of the International Court of Justice (ICJ) and arbitral tribunals, which, according to it, have consistently expressed reticence to treat an oil concession line as a maritime boundary. In this regard, Côte d'Ivoire refers to the statement made by the ICJ in *Cameroon v. Nigeria* that '[o]nly if [oil concessions and oil wells] are based on express or tacit agreement between the parties may they be taken into account'. Consequently, in the view of Côte d'Ivoire, the existence of such an agreement must first be proven for oil concessions to provide effective support for proof of the existence of maritime boundary". Contrary to this position, Ghana referred to the ICJ's statement in *Land and Maritime Boundary (Cameroon v. Nigeria; Equatorial Guinea intervening)* that "the existence of an express or tacit agreement between the parties on the siting of their respective oil concessions may indicate a consensus on the maritime areas to which they are entitled"; as well as *Continental Shelf (Tunisia/Libyan Arab Jamahiriya)*, in which the ICJ emphasised that the line "of adjoining concessions, which was tacitly respected for a number of years ... does appear to the Court to constitute a circumstance of great relevance for the delimitation".

5 As quoted in the judgment at para. 131.

6 Four undertaken before 2009 and 34 after that date.

7 In opposition to this and other points, Ghana stated that Côte d'Ivoire's abandonment of the long-agreed boundary in February 2009 marks "the critical date when the dispute between the two States crystallized".

8 *Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v. Honduras)*. Judgment, I.C.J. Reports 2007 (II), p. 659, at p. 735, para. 253.

9 Ghana cited *Maritime Dispute (Peru v. Chile)*, Judgment of 27 January 2014, online at <http://www.icj-cij.org/files/case-related/137/137-20140127-JUD-01-00-EN.pdf> for this principle, noting that the ICJ did not require confirmation in the form of a written agreement as a condition for recognition of a tacit agreement in that case, and concluding that "there is no reason as to why the Special Chamber should be more demanding in this respect".

10 See *supra*, note 4.

11 In this connection, it indicated that these facts are not in dispute: "Although the frequency and intensity of such objections are not fully clear, the Special Chamber notes that Ghana did not deny that such objections were made".

12 *Delimitation of the Maritime Boundary in the Bay of Bengal (Bangladesh/Myanmar)*. Judgment. ITLOS Reports 2012, p. 4, at p. 42, para. 124.

13 *Citing Maritime Delimitation and Territorial Questions between Qatar and Bahrain (Qatar v. Bahrain)*. Merits, Judgment, I.C.J. Reports 2001, p. 40, at p. 93, paras 173–174.

14 Geneva, 29 April 1958. Entry into force, 10 June 1964. Superseded by UNCLOS.

REGIONAL LAW & POLICY DEVELOPMENTS

3 Shared Nuclear Waste Repository:
Is It Wanted or Unwanted?

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by Borut Strazisar¹

Waste – a politically unpopular noun, especially in the context of nuclear energy – is defined in the Merriam Webster Dictionary as “an unwanted by-product of a manufacturing process, chemical laboratory or nuclear reactor (toxic waste, hazardous waste, nuclear waste)”. High-level radioactive waste and spent fuel pose a great problem for waste management policy makers due to their possible negative impacts on the environment. In hospitals, the doors to the rooms in which X-ray machines operate are posted with explicit signs about the impact of radiation on health. A higher incidence of cancer has been officially registered in areas that have experienced unwanted nuclear events. The pictures of people from Nagasaki and Hiroshima dying of radiation reflect the common public perception of nuclear waste. Together these images also affect the public’s attitude towards radioactive waste management.

Radioactive waste management policy is thus not only limited by the strict requirements of the international legal order (regarding environmental protection and non-proliferation of nuclear weapons), but also by the expectations and fears of local populations. In such a legal and political environment, the concept of shared repositories is attractive. It has been discussed in many international documents created by the International Atomic Energy Agency (IAEA),¹ international projects² and academic papers.³ These sources cover different aspects and questions connected to the concept, addressing the issues in a rather neutral way.

The internationally cooperating nuclear industry (including ventures engaged in radioactive waste management) has become an element of political discussion. As a result, the main question regarding radioactive waste management policies relates to the veracity of the political intention to foster international cooperation – is it true or false? The answer lies in a careful analysis and synthesis of relevant international legal documents. Based upon such an analysis, this article shows that the concept of a shared repository is more fiction than reality.

This article is divided into four parts. First, it considers the definition of “shared repository” as seen in literature. Next, it presents the international legislative texts that regulate radioactive waste management (including shared repositories). Third, it discusses whether the international legal (and underlying scientific) environment is favourable

to the establishment of shared repositories, and what should be done to really promote them. The last part deals with possible future developments.

The “Shared Repository”

The concept of a shared nuclear waste facility (herein called the “shared repository”) is known under several different names: international repository, regional repository, multinational repository, each given a slightly different meaning. The latter seems to be the most universal and has lately been widely accepted.⁴ According to Boutellier *et al.*, there are several primary advantages to the use of shared repositories:⁵

- *Economics*: Countries, especially the smaller ones, appear to favour the idea of shared multinational repositories for economic reasons. Each country participating in a common project could gain significant financial advantages from the economies of scale involved in constructing and operating a single repository as opposed to many.
- *Access to safe disposal facilities*: Some countries may not be able to afford to implement safe disposal facilities on their own, and may, for economic reasons, save up for several decades before constructing repositories. A shared repository could provide these countries with earlier access to safe repositories.
- *Enhanced global nuclear security*: With regard to the prevention of misuse of nuclear materials by terrorists or as potential weapons, the construction of one state-of-the-art disposal facility instead of several less expensive facilities reduces this risk.
- *Environmental protection*: Here also a single high-quality facility may significantly reduce the negative conventional impacts that individual facilities might have on the environment.
- *Expanded range of geological options*: If several countries participate in a shared repository, a larger geological area may be examined and a larger choice of geological formations is available. Simple geological environments that are particularly suitable for repositories may not be available in every small country.
- *Increased technical capacity*: Scientists and specialists from several countries can cooperate and share their knowledge and experience in pursuit of a common goal.

All of these potential advantages favour the “shared repository” concept.

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There is, however, one notable systemic problem – the use of a shared repository may confuse the concept of responsibility for radioactive waste. Primary responsibility for radioactive waste in such a facility would rest with the operator rather than with the State. The State would be responsible only in the case of “orphan sources” and where the operator fails to perform its duties.

The literature and IAEA documents regarding shared repositories point out that there is almost no obligation for a nuclear State to have its own repository. The reality is worse, there is no such obligation. The State’s only obligation is to regulate radioactive waste management in an effective way. There are various solutions by which the State can comply with this obligation, one of which is a national radioactive waste repository and another is participation in a shared repository (as surrogate for a national repository). Another possible solution is the conventional one in which facility operators are required to enter into commercial waste management agreements with waste management organisations. This option leaves the responsibility with the facility operators rather than the State.⁶

The shared repository concept assumes that the States will be the contracting Parties. If so, it would, effectively, socialise environmental responsibility,⁷ in a manner similar to the formal international approach to responsibility for nuclear damages, where such responsibility is mostly shifted from operators to the State. The same approach can also be seen in the field of spent fuel, as currently considered within various international initiatives and working groups.

Another problem relates to the definition of “shared repository”. The concept assumes that the waste originating from more than one State is being deposited in a common repository. Any country – regardless of geographical location – may participate in such a collaborative scheme. In contrast to this, the “regional repository” concept involves only countries that belong to the same geographical region.⁸ In practice, shared repositories could include any of the following scenarios:⁹

- *Add-on scenario*: A national repository accepts waste from other States as part of its waste inventory.
- *Cooperation scenario*: Several States agree to deposit their waste in a repository of one of their number (the hosting State), with all participating States directly involved in repository development and implementation.
- *International scenario*: The host State effectively cedes control of the site to an international body (this scenario seems unlikely in the foreseeable future due to the extreme political sensitivity of such a transfer of sovereignty).

Based on this list, the main question is whether the term “shared repository” is used appropriately. The term appears to be proper only in the second or third examples – that is, where two or more States are contractually

involved in repository operation. If the repository is operated by a private entity, then the facility is a “private” or “commercial” repository, and the term “shared repository” should not be used. A commercial repository operates for profit, without direct involvement of States, apart from domestic legislation of the host State. Domestic law determines whether the import of radioactive waste is allowed or prohibited.

International Legal Framework

Radioactive waste management is implicitly or explicitly regulated in several international legal instruments, each dealing with a specified set organised around the following questions and aspects: safety; non-proliferation and security; general environmental protection; and liability and compensation for nuclear damage.

The primary legal instruments directly addressing the problem of radioactive waste management are the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the “Joint Convention” – the first legal instrument to directly address these issues on a global scale)¹⁰ and, in Europe, Council Directive 2011/70/Euratom of 19 July 2011 (establishing an EU Community framework for the responsible and safe management of spent fuel and radioactive waste).¹¹ Both of these documents address the problem of radioactive waste management in the same way. Their main principles can be summarised as follows:¹²

- *Protection of human health*: Radioactive waste shall be managed in such a way as to secure an acceptable level of protection of human health;
- *Protection of the environment*: Radioactive waste shall be managed in a way that protects the environment;
- *Protection beyond national borders*: Radioactive waste shall be managed in such a way as to ensure that possible effects on human health and the environment beyond national borders will not be greater than what is acceptable within the country of origin;
- *Protection of future generations*: Radioactive waste shall be managed in such a way that the predicted impact on the health of future generations does not exceed relevant levels that are acceptable today;
- *Burdens on future generations*: Radioactive waste shall be managed in a way that will not impose undue burdens on future generations;
- *Legal framework*: Radioactive waste shall be managed within an appropriate legal framework including clear allocation of responsibilities and provision for independent regulatory functions;
- *Control of radioactive waste generation*: Generation of radioactive waste shall be kept to the minimum practicable;¹³
- *Management interdependencies*: Interdependencies between all the stages in radioactive waste generation and management shall be appropriately taken into account;

- *Safety of facilities:* Safety of facilities for radioactive waste management shall be appropriately assured during their lifetime.

Based on these principles, the main responsibility for the radioactive waste is with the licence holder (facility operator) – State responsibility for such waste management is secondary. Member States should implement internal legislation in such a way that the licence holder has enough human and financial resources for decommissioning and safe management of radioactive waste. Each State will independently address the issue of declaration/definition of the nuclear cycle and of radioactive waste as an internal matter.

For these purposes, the main difference between storage and disposal is the possibility of retrieval. Thus, the operating licence should be granted only if the operator presents a plan for decommissioning and radioactive waste management.¹⁴ The State in which the radioactive waste is produced must bear the main responsibility for appropriate legislation and regulation of radioactive waste management.

Both the Joint Convention and EU Council Directive 2011/70/Euratom include the notion of the shared repository, but mentioned it only in the preamble and not in the main text.¹⁵ Full regulation of shared repositories is thus left to bilateral or multilateral international agreements.

In October 2004, the IAEA published a study on developing multinational radioactive waste repositories.¹⁶ This study presents the “multinational repository” concept as a possible solution for States with small nuclear programmes. It also deals with possible challenges.¹⁷ Although the Joint Convention is focused on the fuel cycle and wastes deriving therefrom, there are many States that derive some radioactive waste from other kinds of use (in medicine or industry). This suggests that the shared repository concept needs to be broader – covering more kinds of waste than those derived from the fuel cycle.

Neutrality of International Legal Documents: A Help or a Hindrance?

International policy on shared repositories is two-fold. International initiatives, and working (or technical) documents, have been prepared to help interested States begin projects to develop shared repositories, thus promoting the concept. On the other hand, however, international legal documents are intended to be neutral regarding how their objectives are met. Shared repositories are named as an option, but choosing that option and its implementation is left to the Contracting Parties or Member States, who may rely on internationally developed technical documents to help, but must adopt their own agreements. This approach clearly respects States’ sovereignty, contractual liberty and free will, but in the context of waste repositories, one must ask whether this approach is really neutral or actually has a negative impact? To answer this question, States will need to

clarify certain essential points in their respective radioactive waste management policies.

Firstly, each State must decide what position it will have in the overall system of radioactive waste management. Specifically, will radioactive waste management be an ordinary economic activity (in which the State’s role is as a regulator) or a public service or even an activity in the public interest (in which the State may take other roles)? If a State considers radioactive waste management to be a State activity, then it is likely to be interested in the shared repository concept. On the other hand, State responsibility may mean that private initiatives and the search for flexible solutions, often found where private operators are responsible, will be exchanged for the State’s rigid, slow and bureaucratic decision-making procedures.

A second challenge arises in connection with a concept known as “the circular economy”. As described by economist Kenneth Boulding in 1966, a circular economy is a long-term aim compatible with economic growth, sustainability and zero waste. All major global challenges involving nature, geological deposits, society and the economy are connected to the highly tangible question of how to manage resources.¹⁸ Central to the circular economy is the idea that open production systems – in which resources are extracted, used to make products and become waste after the product is consumed – should be replaced by systems that reuse resources and conserve energy.¹⁹ In this connection, Greyson introduced the term “precycling” which he defined as actions taken now to prepare for current resources to become future resources, rather than wastes accumulating in the biosphere. Precycling actions deal with resources before they become wastes in the air, land or water. Precycling covers a wide range of actions by a wide range of actors, which both minimise problems from wastes and maximise stocks of resources for the economy.

In connection with radioactive waste, the circular economy concept is neither addressed nor supported in international legal documents. The shared repository concept focuses on disposal and not storage. A State’s policy on a shared repository is necessarily connected to its policy about the definition and purpose of that repository.

Thirdly, interested States need to clearly determine whether their policies and their past and present relationships with other interested States actually allow open international cooperation on these matters. Some States use their international relations policy as a tool or weapon in internal political disputes. Others have a legacy of international relations that may work against their efforts to collaborate in a shared repository. States seeking to work in this area should be clear about their real intentions.

Lastly, States need to be prepared for the fact that collaborating over a shared repository may require them to transfer some of their authority to other States (e.g., in the EU). The shared repository concept seems to demand such a transfer. Each State must make a political decision regarding what authority it is willing/able to transfer and

to what extent. Collectively, all involved States will need to reach a decision on this issue, in order to effectively work toward the establishment of a shared repository.

These necessary preconditions constitute the first step towards a shared repository. But after that step, interested States may have wide latitude, to be, *e.g.*, a generator of new solutions and approaches, particularly where all participating States are pragmatic and prepared to cooperate.²⁰

At present, however, such pragmatism and cooperation is not a reality in the field of radioactive waste. Waste management is not a popular political question, and often devolves into a “not-in-my-backyard” approach, in which locals may not be prepared to accept waste management facilities. This attitude is also found, even more strongly, in connection with radioactive waste management. It has been seen in procedures for the siting of radioactive waste management repositories all around the world.²¹ In these cases, it’s almost impossible for all sides to come to an agreement. Opponents cite nuclear events like Chernobyl or Fukushima, to fuel negative public attitudes towards the nuclear sector and alter the community demands.

To promote the idea of shared repositories, it could be helpful to rely on practices from international trade, which are sometimes thought inaccessible due to inadequate domestic legal systems and/or lack of knowledge of interested parties. To overcome such limitations, international trade law enables the use of instruments like international conventions²² and model laws. Someone can argue that use of a convention for this kind of relationship could be too restrictive or binding for the Parties. There are, however, examples of conventions that leave Parties entirely free to regulate each question differently. The international trade approach appears likely to be an effective tool for the promotion of shared repositories for several reasons:

- Interested States would see which questions require negotiation or should be regulated in a different way;
- Interested States could enter into possible international agreements about shared repositories with more confidence that all necessary questions are properly regulated (either by convention or by bi/multilateral agreement);
- Local people in the host community would see whether the proposal reflects internationally accepted practice regarding their concerns;
- Local people in the host community would also gain international legal protection for their rights;
- There would be a clear system of checks and balances regarding the operation and safety of the shared repository;
- The general public would gain confidence that future uncertainties (*e.g.*, changes of government, wars, natural disasters...) would be properly taken into account and dealt with;
- Interested States could put more effort and time into finding the proper technical, technological and geological solutions, rather than wasting time on dealing with legal questions.

Clearly, the present neutrality of international legal documents puts the brakes on the shared repository concept, and does not actually promote it.

Conclusion

Today’s society relies on a high level of energy consumption, which in turn requires high levels of energy production. Up to now, most energy production has been based on carbon. Production of “green” energy has been introduced in the 21st century. One energy source with a very low carbon imprint is nuclear energy.

In dealing with the question of future societal energy needs, nuclear energy has been viewed as a particular problem, based on concerns about radioactive waste and spent fuel, which require different treatment from other hazardous waste. So far, the only recognised safe way to deal with spent fuel and high-level radioactive waste has been their disposal in deep geological repositories – an option that depends on available geological structures. The lack of domestic access to this particular geologic characteristic is a major problem for many nuclear States. The concept of a shared repository was introduced as a possible way to resolve such a problem.

Although widely considered, shared repository discussions have focused on technical and technological questions. The international legal documents dealing with radioactive waste management have generally tried to be neutral, mentioning, but not regulating, the possibility of a shared repository. In the current situation, this neutrality actually works against the need to give due consideration to the shared repositories approach. The best solution would be to introduce an international convention on shared repositories, giving its Member States the option to regulate most of the questions in whatever manner they see fit. With such an approach, public acceptance of shared repositories would also become more likely.

Notes

1 *E.g.*, IAEA. 2016. *Framework and Challenges for Initiating Multinational Cooperation for the Development of a Radioactive Waste Repository*. IAEA Nuclear Energy Series No. NW-T-1.5. Vienna: IAEA; IAEA. 2004. *Developing multinational radioactive waste repositories: Infrastructural framework and scenarios of cooperation*. IAEA-TECDOC-1413. Vienna: IAEA; and IAEA. 2006. *Potential for Sharing Nuclear Power Infrastructure between Countries*. IAEA-TECDOC-1522. Vienna: IAEA.

2 *E.g.*, SAPIERR – Strategic Action Plan for Implementation of European Regional Repositories: a project under the 6th Euratom Framework Programme of the European Union; ERDO WG – a multinational working group established to study the feasibility of setting up a not-for-profit European Repository Development Organisation that would implement one or more shared geological repositories in Europe; and the Pangea proposal – a major research programme in the 1990s by Pangea Resources, a UK-based company, which identified Australia, southern Africa, Argentina and western China as having the most appropriate geological credentials for a deep geologic repository, with Australia being favoured on economic and political grounds.

3 *E.g.*, Boutellier, C., McCombie, C. and Mele, I. 2006. “Multinational repositories: ethical, legal and political/public aspects”. *International Journal of Nuclear Law* 1(1): 36–48; Newman, A., Isaacs, T. and Constantin, A. 2016. “International Approaches to Spent Fuel Management: Challenges and Opportunities”. *Universal Journal of Physics and Application* 10(5): 170–175; and McCombie, C. 2011. “New Nuclear Programmes Must Not Neglect Waste Management”. Paper presented at 14th International Conference on Environmental Remediation and Radioactive Waste Management, Reims, France, 25–29 September 2011.

4 See Boutellier *et al.*, *ibid.*

5 *Ibid.*

6 The only condition would be that the host country’s legislation allows the importation of radioactive waste.

7 For a certain amount of money. Due to the long-term costs of such a repository it is questionable whether all the expenses could be covered in this way.

8 *Supra*, note 1.

9 See Portier, J.M. and Hossain, S. 2004. "Considerations on Multinational Repositories; WM'04 Conference, February 29–March 4, 2004, Tucson, AZ". Also mentioned in IAEA (2004), *supra*, note 1.

10 The Joint Convention opened for signature on 29 September 1997. It entered into force on 18 June 2001. It has 69 Parties and 42 signatories.

11 Bear in mind that States enter into "contracts" to further interests; they enter into "covenants" to manifest normative commitments. See Abbott, K.W. and Snidal, D. 2000. "Hard and Soft Law in International Governance". *International Organization* 54(3): 421–456.

12 Ojovan, M.I. and Lee, W.E. 2013. *An Introduction to Nuclear Waste Immobilisation*. Second Edition. Elsevier.

13 In general, the preferred focus of radioactive waste management should be concentrating and containing radionuclides to prevent dilution and dispersion into the environment.

14 Austria's first nuclear power plant at Zwentendorf, for example, has never been operational. It stands idle as a result of a referendum in November 1978 in which voters voted against the plant being opened due to the lack of a clear plan for the disposal of its waste. In Sweden, a 1977 law prohibiting construction or operation of any new reactors unless plans are provided for the absolutely safe disposal of their wastes has prevented operation of two fully-constructed facilities for nearly a year and delayed construction plans for a number of other plants. West Germany has also suffered a reactor construction moratorium because of the lack of an acceptable nuclear waste disposal programme. See Spector, L.S. and Shields, G.B. 1979. "Nuclear Waste Disposal: An International Legal Perspective". *Northwestern Journal of International Law & Business* 1(2): 559–656.

15 A few international institutions and issue areas approach the theoretical ideal of hard law, but most international law is "soft" in distinctive ways. The term "hard law" as used in this particular way refers to legally binding obligations that are precise (or can be made precise through adjudication or the issuance of

detailed regulations) and that delegate authority for interpreting and implementing the law. The realm of "soft law" begins once legal arrangements are weakened along one or more of the dimensions of obligation, precision and delegation. This softening can occur in varying degrees along each dimension and in different combinations across dimensions. *Supra*, note 11.

16 IAEA (2004), *supra*, note 1.

17 See ERDO WG, *supra*, note 2. ERDO WG is a multinational working group, which is investigating the feasibility of implementing regional solutions for the safe management and disposal of long-lived radioactive waste. Important goals of the ERDO WG are to exchange information, to build up competence and to promote the concept of shared repository development as a complement to the national facilities being developed. (The author does not approve of this initiative.) See also Zagar, T. and Kegel, L. 2015. "Preparation of the national program for the spent fuel and radioactive waste management taking into account possibility of potential European Repository Development Organisation development". *Proceedings of the 24th International Conference Nuclear Energy for New Europe*. Portoroz: Nuclear Society of Slovenia.

18 Greyson, J. 2007. "An economic instrument for zero waste, economic growth and sustainability". *Journal of Cleaner Production* 15(13): 1382–1390.

19 Preston, F. 2012. "A Global Redesign? Shaping the Circular Economy". Briefing Paper. Energy, Environment and Resource Governance. London: Chatham House (Royal Institute of International Affairs).

20 Consider, as one example, the Belgium/Luxembourg agreement on this topic signed in July 2016. It was the first such agreement in Europe. "Belgium and Luxembourg Sign Radioactive Waste Agreement – A First in Europe". *Chronicle.lu*, 6 July 2016. Available at <http://www.chronicle.lu/category/energy/17883-belgium-and-luxembourg-sign-radioactive-waste-agreement-a-first-in-europe>.

21 *E.g.*, Yucca Mountain in the US or Gorleben in Germany or Vrbinja in the Republic of Slovenia.

22 *E.g.*, The United Nations Convention on Contracts for the International Sale of Goods. Articles in such conventions are dispositive – Parties can regulate questions in their own way. But Parties can form contracts merely by referencing the convention.

NATIONAL LAW & POLICY DEVELOPMENTS

Chile

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Public Interest Regulation? The Polluter-Pays Principle in Environmental Impact Assessments: A Case of "Bipolar" Regulatory Failure

by Ezio Costa Cordellaⁱ

One of the main roles that literature has given to regulation is that of determining how to address particular challenges, once the overall legal approach has been determined. This idea is linked not only to the ambition of having perfect markets, but also to the concept of the public interest. It is deemed that regulation will be in line with the public interest if its goal is to fix market failures. This idea pervades many different sectors, from consumer goods to utilities regulation, passing through environmental regulation, where market solutions and regulations compete with other approaches to the problem.

A reflection of the intent to fix market failures in environmental regulation was the creation of the Polluter-Pays Principle (PPP). This principle mandates that those who produce pollution have to bear the costs of managing it. It is based on the economic concept of externalities

and in the understanding that if costs are adequately considered in economic activities, then the consequences of those activities should be tolerable for third parties, including society as a whole. Thus, environmental regulation systems that implement the PPP expect that application of the principle will lead to an internalisation of the externalities of activities that have an impact on the environment. This is an important point and this research is based on this expectation.

Chile's *Sistema de Evaluación de Impacto Ambiental* (Environmental Impact Assessment System or SEIA) is one of the most important tools in the country's environmental regulation. It was created after the Rio Conference (1992) and its basis includes the PPP. In this system, the principle works by setting an obligation for project owners to mitigate, repair or provide compensation for the impacts produced by their activities. In other words, to internalise the environmental costs of their projects.

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This research will evaluate whether the PPP is being applied in Chile's SEIA in a way that complies with its declared objective of solving the externalities, especially with regard to the human environment. To do so, this research will be conducted with a qualitative methodology that mixes case studies with semi-structured interviews of relevant actors.

It will show that even when a regulatory arrangement is created to fulfil the public interest, its application may deviate from and fail to fully comply with its declared and intended purpose. Analysing the causes of the failure, this research will suggest how the lack of resources and the discrepancy between the world-views of the design and the application of a regulatory arrangement can lead to a "bipolar" regulatory failure – *i.e.*, one that projects two very different and inconsistent views of itself.

In the first part, this research conducts a literature review on the PPP and public interest regulation, in order to establish a connection between them. In the second part, the Chilean SEIA is briefly explained, stressing the role that the PPP plays in it. The third section is devoted to the case studies, explaining how they were selected and the main information that can be extracted from them, ending with the findings of those cases. The last part will present the results and conclusions of the research.

The Polluter-pays Principle and its Position in Public Interest Regulation Principles in Environmental Regulation

Especially in environmental regulation, principles have played a crucial role. A good part of environmental regulation – both national and transnational – is based on principles found in two international instruments: the 1972 Declaration of the United Nations Conference on the Human Environment and the 1992 Rio Declaration on Environment and Development, both of which are built on the recognition of some general principles that must be observed by all States.

Principles, especially those expressed in the Rio Declaration, are recognised as a source of international environmental law. According to Birnie *et al.* (2009), the fact that these principles are endorsed by the signatory States is authoritative enough to give them legal force. The authors explain that "[s]uch principles have legal significance in much the same way that Dworkin uses the idea of constitutional principles. They lay down parameters which affect the way courts decide cases or how an international institution exercises its discretionary power" (Birnie *et al.*, at 28).

An important feature of principles in environmental law and regulation is the fact that they hold a double function: to inform decision making and to be an unspecific prescription for the regulated persons and entities. This duality serves Braithwaite's (2002) vision of effectiveness in the use of principles or detailed rules. As he says, principles are better suited to solving issues of greater complexity and with larger economic interests involved, such as environmental matters; on the other

hand, in complex matters, a mixture of principles and rules would be an optimal solution. Such is the case with the PPP, which has some degree of autonomy as a general principle, while at the same time being mediated by more detailed rules.

The Polluter-pays Principle

The basic formulation of the PPP is that those who produce pollution have to bear the costs of it. It has been part of numerous international treaties and has also been accepted, recognised and materialised in detailed rules in national and transnational legislations. "The principle basically demands for the person who is in charge of polluting activities to be responsible for the damages it causes" (Louka, 2006, at 51).

The OECD "Recommendation of the Council on Guiding Principles Concerning the International Economic Aspects of Environmental Policies" of 1972 was the first instrument that made reference to the PPP, with the specification that the measures to protect the environment should be financed by those who cause pollution (OECD Council, 1972). Its scope was extended to environmental damage with the 1989 OECD "Recommendation of the Council concerning the Application of the Polluter-Pays Principle to Accidental Pollution" (Sands, 2003, at 282). The fact that the principle was accepted by the international community may be explained by the OECD and the European Community actively promoting it (de Sadeleer, 2002).

A more specific explanation is given by de Sadeleer for whom the principle derives from the theory of externalities. Given that the use of environmental goods produces externalities, they must be internalised by the one that produces them. "The polluter-pays principle is an economic rule of costs allocation whose source lies precisely in the theory of externalities. It requires the polluter to take responsibility for the external costs arising from his pollution" (de Sadeleer, at 21).

The Rio Declaration adopts the PPP as its Principle 16: *National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.*

The duality of the concept is given by the fact that it allocates the costs of preventing pollution to the producers, while on the other hand it gives them the financial responsibility to deal with the environmental damage that the pollution could cause. De Sadeleer sees in this duality that the PPP makes it possible to obtain resources for preventive policy and modify the behaviour of the regulated person or entity (de Sadeleer, at 59).

Despite the broad recognition of the principle, there are some controversies around its functions. It has been said that those functions are: (i) to assure competition by preventing distortions and environmental subsidies, (ii) to be an instrument of redistribution and prevention, and (iii) to guarantee the reparation of environmental

damage. Another controversy surrounds the identification of the polluter, particularly in determining if the polluter is deemed to be the one that emits over a threshold given by law, or be anyone that causes an impact or damages; in any case, it is also disputed who is responsible in the chain of production. A third controversy is how much should the polluter pay. Some might argue that polluters should completely internalise all costs; however, most of the interpretations of the principle and the original formulation point towards a partial internalisation, especially in light of the difficulties of valuing environmental damage (de Sadeleer).

These controversies, and what Woerdmann *et al.* (2008) call the ambiguity of the principle, lead to two fundamental versions of it – one that points toward the internalisation of costs to reach efficiency; and another that addresses redistribution and equity concerns. Under the efficiency interpretation, they distinguish between a weak version, that entails no subsidies, and a strong version that points towards internalisation of costs (Woerdman *et al.*). Internationally, the latter is more broadly used, and it has been used in this research.

The ambiguity of the PPP is solved in national legislation that implements the principle. In fact, even when the PPP has faced controversies over its application in the international arena, there is agreement about its use at the domestic level (Sands, at 281). According to de Sadeleer (at 32), the PPP has been recognised in many national laws as a guiding norm of environmental policy. Typical actions to incorporate the principle are taxation and regulatory standards limiting or banning some damaging economic activities (de Sadeleer, at 21). Yet, as it will be observed, the PPP may be implemented through the Environmental Impact Assessment (EIA) process, in the form of specific conditions imposed on projects.

What is relevant for this research is the fact that the PPP's objective is to resolve the environmental externalities of activities with environmental impacts in such a way that they are internalised by those who produce them. Following Sands, one practical use of the PPP is the allocation of economic obligations and the creation of economic tools regarding environmental impacts.

Public Interest Regulation and the PPP

Various theories address the question of why regulation exists in a given way in a given situation. The basic distinction that authors make is between public interest theories, public choice theories (sometimes called "private interest theories"), ideational theories and institutional theories (Baldwin *et al.*, 2012; Lodge and Wegrich, 2012). This research focuses on public interest theory (PIT), in light of the clear correlation between the objectives of PIT and the content of the PPP.

Morgan and Yeung (2007) explain that PIT "attributes to legislators (and others responsible for the design and implementation of regulation) a desire to pursue collective goals with the aim of promoting general welfare of the community". The authors categorise PIT regulations into two groups: (i) those applying a political

approach such as redistribution and social justice (substantive political approach) or value participation (procedural political approach), and (ii) those applying a welfare economic approach – a category that mostly refers to market failures as the public interest explanation of regulation (Morgan and Yeung, at 26–27). This research examines this second category.

Among these economic approaches, Ogus (2004) believes that PIT is rooted in the identification of regulation with the collectivist system of economic organisation. This would work in such a way that markets and their proper performance appear as the ultimate economic public interest and therefore regulation has the role of solving those issues that obstruct their performance. "The Public Interest theory attributes to legislators and others responsible for the future design of regulation a desire to pursue collective goals" (Ogus, at 3). In the same way, Peltzman refers to PIT when explaining that new (public choice) theories of regulation are a reaction against "that traditional role of regulation in economic analysis as a *deus ex machina* which eliminated one or another unfortunate locative consequence of market failure" (Peltzman, 1976, at 211). The idea that regulation is created to solve market failures is both a common justification for regulation and a common explanation for its existence.

This set of theories may explain the existence of the PPP. While PIT perceives regulation as a tool to solve market failures, the PPP is narrower. It focuses on solving one particular market failure: environmental externalities. The basic formulation of the PPP shows that this principle seeks a public interest goal.

However, PIT is commonly seen as a naive explanation for regulation. Baldwin *et al.* explain that PIT sees regulation as a result of a process where public interest is honoured and regulation pursues this interest. Under this explanation, "proponents of regulation are thus seen as acting as benevolent agents for the public interest" (Baldwin *et al.*, at 41). They note "the technical justification for regulating that may be given by a government that is assumed to be acting in pursuit of the public interest" (Baldwin *et al.*, at 15). In a more critical view, Lodge and Wegrich (at 29) do not even take public interest as a theory of regulation on its own, but as a "normative justification for regulatory intervention that also assumes that politicians and regulators are benevolent". For these authors, PIT is unable to explain the different dimensions of regulation. Furthermore, as PIT links the public interest to the solution of market failures, the authors implied that the theory also is unable to explain regulation in a number of areas where it exists despite the lack of such failures (Lodge and Wegrich).

In the light of regulation, however, there is no alternative explanation for the PPP. The idea that the principle is there to solve externalities is pervasive and unchallenged in literature. The only common critique of the principle is that it entails neoliberal ideals. Even if this were accurate, this criticism does not challenge the position that the principle plays in environmental regulation. It is directed to the legitimacy of the economic

system and the function of competition in those markets (de Sadeleer).

Pollution is always used as the most common example of externalities. Ogus even refers to the PPP as the basis of all regulation against externalities: those who produce them need to internalise their costs (Ogus, at 35). Despite the fact that the PPP could be seen as conceived with public interest ideals, this does not necessarily mean that it is being applied in such a way. Determining whether the PPP is in practice solving externalities requires evaluating its performance within national environmental regulation. This research evaluates whether, in practice, the PPP complies with its public interest ideal in Chilean environmental regulation, focusing on impacts on the human environment.

The PPP and Chile's Environmental Regulation

Chile's Environmental Impact Assessment System

The SEIA was created by Law 19.300 in 1993 and it has been implemented in detail by the DTO 30/1997 MINSEGPRES replaced in 2013 by DTO 40/2013 MMA. The system resembles the one applied in the US and it was in part created to satisfy the international pressures for minimal environmental standards, both by the World Bank and the North American Free Trade Agreement (Silva, 1994). Moreover, the SEIA has been labelled as a neoliberal environmental regulation since its attention is focused more on the impact on private profits than environmental protection (Tecklin *et al.*, 2011).

The agency in charge of the SEIA is the *Servicio de Evaluación Ambiental* (Environmental Assessment Service or SEA)¹ and its role is to assess the impacts of projects and coordinate the assessment made by other public agencies as well as the public participation process. In addition, the SEA is authorised to grant the *Resolución de Calificación Ambiental* (Environmental Qualification Resolution or RCA) through a special Committee, the *Comisión de Evaluación Ambiental* (Environmental Evaluation Committee or COEVA).² SEA is a technical agency, while COEVA is a collective body formed by regional heads of technical agencies and regional secretaries of the ministers.³

The SEIA includes two alternative procedures, one that is simplified and can be used for small projects (a Declaration of Environmental Impact) and another that is more complex and must be used by projects having one of the characteristics specified by law (EIA). This second procedure is the one that is used for big projects and that is important for this research because it is mandatory for the proponent to include measures of mitigation, compensation and reparation. The process in these cases includes a phase of public participation and evaluation by the SEA and other relevant agencies (Project SEA Chile, flowchart).

The SEIA has been seen as the most relevant environmental regulation tool in Chile. Its importance could be attributed to the fact that it is the densest regulatory space relating to environmental issues. This

importance is reflected in the fact that most of the socio-environmental conflicts in Chile are related to this system (Boettiger, 2010; Costa, 2012).

The PPP and Measures of Mitigation, Compensation and Reparation

The PPP has played an important role in environmental regulation in Chile. For instance, it is mentioned as one of the justifications for Law 19.300, General Bases of the Environment. The preamble of that law states,

The second principle that inspires this law is the Polluter Pays Principle. This is rooted in the idea that a company that is currently polluting or will pollute in the future has to internalize to its costs of production all the needed investments to avoid pollution.

(BCN, 1993, at 17). Thus, the law not only recognises the PPP, but reinforces the idea that the purpose of the principle is to apportion responsibility for the environmental externalities engendered by projects.

Despite the broad recognition that the PPP is part of Chilean environmental regulation, ambiguity exists in current literature regarding the tools that incorporate the principle. For some authors, the main manifestation of the PPP is the responsibility system in cases of environmental damage (Muñoz, 2004). This idea is contested by Valenzuela (1994), who believes that this responsibility system is no more than an application of the ordinary rules of tort to environmental damages. As such, he does not recognise an influence of the PPP in its configuration.

Alternatively, it is possible to assert that the PPP is present in other rules of environmental law. In this line of reasoning, Calisto and Martin recognise not only that the PPP is a principle that affects the determination of responsibility, but also that it is intended to be used in preventive measures, such as environmental taxes, tradable permissions and other cooperative solutions (Martin and Calisto, 2013). This would be in line with the idea that "from the legal perspective, the polluter-pays principle should be consistent with the principle of prevention, which it complements" (de Sadeleer, at 36). But Calisto and Martin believe the recognition in Chile is still unclear, as it is not possible to specify which measures derive from the PPP, given the fact that there are no green taxes yet.

In a more detailed list of what the principle could mean in practice, Guzmán believes that the PPP is incorporated into Chilean environmental law through the quality and emission norms, the prevention and decontamination plans, the rules of responsibility, and the measures that have to be implemented by the owners of projects assessed in the SEIA (Guzmán, 2012, at 92).

This view of the incorporation of the PPP is more in line with the concept itself. As Valenzuela has explained, the real role of the PPP is that those who produce pollution contribute financially to the measures that have to be taken in order to deal with that pollution, not leaving the problem to the State by itself or to the State and society. However, if the concept includes only a

responsibility system for polluters, it would not comply with the objectives of the principle and moreover it would directly conflict with the preventive principle.

In sum, the manifestations of the PPP in Chilean environmental law vary. However, in terms of EIA, the most clear manifestation is found in the implementation of its provision for the “measures of mitigation, compensation and reparation” (MMCRs) (Guzman; Muñoz). DTO 40/2013 MMA defines each type of measure separately. It states that a measure of mitigation is one with “the objective to diminish the adverse effects of a project or activity” (DTO 40/2013 MMA, Article 98); a measure of reparation “has the objective to replace one or more components or elements of the environment, in a similar quality to the one they have before the impact of the given component or element, or if that is impossible, to re-establish its basic properties” (DTO 40/2013 MMA Article 99); and measures of compensation are those with “the objective to produce or generate a positive effect alternative and equivalent to the identified negative effect in those cases where is impossible to mitigate or repair” (DTO 40/2013 MMA, Article 100).

Generally, these measures play an aggregated role in environmental regulation, which is why both Law 19.300 and the DTO 40/2013 MMA generally speak of them together. Among the listed conditions applied to “Environmental Statements” in the DTO 40/2013 MMA, there is the mandate to have a Plan of MMCRs that has to “describe and justify the measures that will be taken to eliminate, minimise, repair, restore and compensate the adverse environmental impacts of the project or activity” (DTO 40/2013 MMA, Article 48(i)). Each measure that is proposed must be individualised. The proponent has to name the measure, the environmental component that is affected, the environmental impact that is related with the measure, the kind, objective, description and justification of the given measure and the place, way and opportunity of implementation (DTO 40/2013 MMA, Article 97). Projects that are assessed with EIA must specifically identify these measures, which must be “appropriate” in order for the project to be approved (Law 19.300, Article 16). COEVA is entitled to prescribe particular types of MMCRs in the RCA (Law 19.300, Article 25).

Interestingly, there is no other formal or informal regulation of MMCRs. Despite the fact that SEA has a number of guidelines that address some of the most important topics in the environmental assessment, none of them address MMCRs. A second interesting point for this research is that regulation often refers to MMCRs in relation to the impacts that they are to solve. This connection is precisely the one that exists between the externalities (impacts) and the internalisation of those externalities (measures), proof of the presence of the PPP.

The Human Environment and MMCRs

MMCRs, as well as the impacts of the projects, are classified according to the element of the environment that they affect. This classification is consistent with

Law 19.300 and the DTO 40/2013 MMA: (a) air, (b) water, (c) soil, (d) other natural resources, (e) the human environment, (f) landscapes and protected areas, or (g) archaeological and traditional values. This classification is the result of the observation of Law 19.300 Article 11 in combination with DTO 40/2013 Articles 4-11 and DTO 30/1997 Articles 4-11. Even when the names and categories of the classification are not the same in all the assessments, it is common to find a classification in this sense, with categories according to the given project, but broadly following the ones stated above.

This research focuses on impacts and MMCRs regarding the “human environment”. This choice is justified in three ways:

- (1) While most of the other elements of the environment are under the vigilance of specialised agencies, the human environment is not and therefore it is undertaken by SEA as a residual activity.
- (2) Impacts on the human environment are more likely to cause conflicts, both because people understand them more easily and because their solution is less scientifically accurate, making it harder for the State and the companies to rely on science to justify their decisions.
- (3) Impacts on the human environment as produced by different types of projects are more likely to be similar to one another than are impacts on other elements of the environment.

Case Studies and Findings

Selection of Cases

MMCRs are the practical way in which the PPP works in the SEIA. The main idea is that the environmental externalities of the project can be balanced by these measures and therefore make the polluters pay for them. This presumes that the concept of MMCRs and the PPP matched the public interest proposed by PIT. To assess this statement, MMCRs of three projects that have been submitted and approved by the SEIA will be studied in this section. The projects were selected using the following criteria:

- (1) Each selected project had to be facing relevant opposition. To assess this, the Map of Socio-environmental Conflicts of the *Instituto Nacional de Derechos Humanos* (National Institute of Human Rights or INDH) has been used (INDH, n.d.).
- (2) The project also must have already been approved and have an RCA.
- (3) In addition, the selected cases must have been initiated via EIA in order to have the obligation to propose MMCRs.

The presence of indigenous rights led to a project being discarded, because these factors could change the logic of the MMCRs and are therefore outside the scope of this research.

With those filters and using the tools of the INDH, particularly its map, 30 conflicts (projects) were identified.

In order to make a smaller group, the filters offered by the online tool were used. Firstly, “conflict causes” offers the options: (i) residues and emissions, (ii) place of the exploration or exploitation, (iii) use or pollution of natural resources, and (iv) others. Options (i) and (iii) were selected because they are more related to the PPP, while number (ii) represents problems of zoning. The filter *derechos en juego* (rights at stake), which refers to those rights claimed to be affected by the conflict, was left blank, as well as “productive sector”, “levels of human development” and “level of poverty”, as they are not relevant to this research (INDH).

After applying these filters, there were 22 possible projects. They are classified geographically, according to the jurisdictional territories of the Environmental Courts (Law 20600, Article 5) – see Table I.

Table I

1 st Environmental Court	2 nd Environmental Court	3 rd Environmental Court
15 (Central Termoeléctrica Pacífico, Central Termoeléctrica Patache, Infraestructura energética Mejillones, Central Termoeléctrica Cochrane, Central Térmica Andino, Central Térmica Angamos, Central Térmica Hornitos, Central Térmica Guacolda, Proyecto Minero La Candelaria, Planta de Cerdos Agrosuper, Central Termoeléctrica Castilla, Mina Carmen de Andacollo, Proyecto Minero Tres Valles Tranque de Relaves El Mauro, Contaminación río Choapa por Mina los Pelambres)	4 (Central Termoeléctrica Campiche, Central Termoeléctrica Energía Minera, Manejo y disposición de RISES del Complejo Termoeléctrico Ventanas, Central Termoeléctrica Los Robles)	3 (Planta de Celulosa Nueva Aldea ex Itata, Central Termoeléctrica Santa María, Relleno Sanitario Chiloé)

Table II

Kind of project	1 st Environmental Court	2 nd Environmental Court	3 rd Environmental Court	Total
Fossil-fuel power plant	8 (Central Termoeléctrica Pacífico, Central Termoeléctrica Patache, Central Termoeléctrica Cochrane, Central Térmica Andino, Central Térmica Angamos, Central Térmica Hornitos, Central Térmica Guacolda, Central Termoeléctrica Castilla)	3 (Central Termoeléctrica Campiche, Central Termoeléctrica Energía Minera, Central Termoeléctrica Los Robles)	1 (Central Termoeléctrica Santa María)	12
Mining	3 (Proyecto Minero La Candelaria, Mina Carmen de Andacollo, Minero Tres Valles)			3
Waste	1 (Tranque de Relaves El Mauro)	1 (Manejo y disposición de RISES del Complejo Termoeléctrico Ventanas)	1 (Relleno Sanitario Chiloé)	3
Others	3 (Infraestructura energética Mejillones, Planta de Cerdos Agrosuper, Contaminación río Choapa por mina Los Pelambres)		1 (Planta de Celulosa Nueva Aldea ex Itata)	4

From this selection, the idea was to study the most representative possible group of cases. In order to do so, the projects were classified by type, with the results shown in Table II. From Table II, it is possible to extract some conclusions. Of the 22 conflicts, three kinds of projects predominate: fossil-fuel power plants (12), mining projects (3) and waste projects (3). Those classified as “others” were discarded as unrepresentative.

The next step was to select one kind of project for each Court territory. Since mining projects were only found in one zone, a mining project was selected for the 1st Environmental Court. Fossil-fuel power plants were more present in the 2nd Environmental Court territory with three different projects, which is why this type of project was selected for this territory. For the 3rd Environmental Court territory, a waste project was selected, as it was the only one remaining.

The final stage was to select a single case within each type of project. Table III shows the options for this final selection.

From this group and in order to reach a single case in every combination of territory and kind of project, the variable used was the year that the conflict started, selecting the oldest one in every case, as showed in Table IV (INDH) This choice is justified by the fact that one is more likely to find more information about the oldest projects.

In the case of the 1st Environmental Court, there were two mining projects that started in 1995. However, according to the SEIA tracking system, the “Candelaria” project has three different RCAs, which means they are, strictly speaking, three different projects, whereas for Andacollo, there is only one RCA, from 1995. For this reason, “Proyecto Minero Andacollo” was selected as the case study.

Regarding the 2nd Environmental Court Territory, “Central Termoeléctrica Los Robles” was the oldest conflict and therefore the one chosen. For the 3rd Environmental Court Territory, there were not many options so “Relleno Sanitario Chiloé” was chosen.

Table III

Territory	Kind of project	Options
1 st Environmental Court	Mining	3 (Proyecto Minero La Candelaria, Mina Carmen de Andacollo, Proyecto Minero Tres Valles)
2 nd Environmental Court	Fossil-fuel power plant	3 (Central Termoeléctrica Campiche, Central Termoeléctrica Energía Minera, Central Termoeléctrica Los Robles)
3 rd Environmental Court	Waste	1 (Relleno Sanitario Chiloé)

Table IV

Territory	Name of project	Start-up year
1 st Environmental Court	Proyecto Minero La Candelaria	1995
1 st Environmental Court	Mina Carmen de Andacollo	1995
1 st Environmental Court	Proyecto Minero Tres Valles	2008
2 nd Environmental Court	Central Termoeléctrica Campiche	2008
2 nd Environmental Court	Central Termoeléctrica Energía Minera	2008
2 nd Environmental Court	Central Termoeléctrica Los Robles	2007
3 rd Environmental Court	Relleno Sanitario Chiloé	2010

Human Environment Impacts and MMCRs in the Selected Cases

This section will summarise the main impacts and MMCRs related to the human environment that were offered by the proponent in their statements in the selected cases (Project SEA Chile). This information will be valuable in showing whether there is actually a relation between the impacts (externalities) and the MMCRs, as well as the extent to which the impacts were properly evaluated and the MMCRs properly calculated to solve these externalities. It will also show the differences, if they exist, between the proposed measures and those approved in the RCA. This information will be useful, in case there are differences, if those differences are explained by the influences of the community, politicians or other actors. Finally, it will summarise the causes of the conflict stated by INDH, to assess their connection with the human environment impacts and the MMCRs.

Proyecto Minero Andacollo

The Andacollo Mining Project is an open-pit copper-mining project located near the city of Andacollo, in the Coquimbo Region of Chile. Its statement from 1995 includes an appendix called "Environmental Impacts" detailing the impacts this project was expected to have, including those affecting "socio-economic and cultural

values". It states as impacts only the fact that there will be more available jobs in the area and that new people will come to Andacollo. It mentions that most of the people in the community already work in mining projects and that the most common health issues are related with mining and alcoholism. Moreover, it mentions that people are very religious and that the urban infrastructure is weak. Finally, it states that educational services are good at elementary level but not in higher levels of education.

The Statement qualifies the impact of the project in economic and social terms as positive, on the average, emphasising the economic impact and mentioning as a good social impact the Community Relations Plans that are part of the *Estrategia de Manejo Ambiental* (Environmental Management Strategy), which is where the MMCRs are included. In a separate section, the Strategy also includes a "Community Relations Plan" that states that the company will "keep fluid communication with the local authorities and the community" and specifies in very "soft" terms, the following measures:

- During the hiring process, where candidates are equally qualified, those living in Andacollo will have priority.
- The project will contribute to enhance education and capacity building for workers and workers' descendants.
- The project will support enhancing the healthcare infrastructure that could also help the project.
- The project will contribute to religious services organisation.
- The project will support the municipality with equipment in cases of emergency.

Regarding the RCA, the licence almost repeats the same measures, changing the way that they are presented and adding calls to:

- implement, in collaboration with the local environmental authority, an employee capacity-building programme focused on environmental protection issues;
- elaborate a handbook of environmental emergencies;
- inform the Andacollo community, during the construction process, of job offers that will be made during the operation phase;
- look for ways to cooperate with the development of Andacollo. This must be done with the participation of the local community, and the local environmental authority should be kept informed via annual reports.

The INDH notes a continuing conflict between the community and the mining company on a variety of issues that are also classified in terms of the environmental element that they affect – water, air and soil pollution. Concerning the human environment, it notes that the mayor of Andacollo is one of the causes of some of these conflicts. INDH mentions that the local government supports the mining company and calls on the municipality to create dialogue between local actors, the regional environmental authority and the mining company.

Termoeléctrica Los Robles

Termoeléctrica Los Robles is a coal-powered plant project located in the Region of Maule, in the central area of Chile. It presented a Statement in 2007 and was approved in 2008. However, it has not been constructed yet. The Statement presented a special section devoted to MMCRs with a subsection of socio-cultural aspects. The main impact that the proponent defined was "negative perception of the project". It lists the following MMCRs:

- Developing a communications plan to give information about the project to the community;
- Where workers are coming from outside the region, prioritising their settlement in Constitución (the largest town in the area);
- Creation of special transportation controls during the construction phase, to avoid road accidents;
- Inclusion of the Borough of Constitución in the social programmes that AES Gener (owners of the project) have developed to help the towns where their power plants are constructed;
- Including a preferential hiring process (where two or more candidates are equally qualified for a position, those living in the area of the project will be preferred).

The RCA repeats these measures in the exact same way that they were presented by the proponent, even using the same table as in the Statement. However, it adds "voluntary commitments", which include some details about the measures, specifically adding the areas in which the educational programmes should be done; strengthening the voluntary commitment regarding the hiring process (during the construction period the company should hire at least 200 people from the towns that surround the project); and the creation of a local council to develop local infrastructure projects as well as projects that promote artisanal fishing and micro-tourism. It also adds a discussion of the "climate change problem" and calls for addressing it in environmental education programmes, and it adds a specific measure requiring the building of capacity among the local workers in order to give them the same opportunities as foreign workers to work in the project.

According to INDH, the conflict arose over the emissions of the project and the pollution caused by the coal ash, given that both kinds of pollution could affect health and environment. Concerns also focused on water pollution and how it could affect the main economic activities in the area, namely, fishing and tourism. Finally, the community stressed the value of the Faro Carranza area (where the plant will be built) as a socio-cultural area.

Centro de Manejo y Disposición Final de Residuos de Chiloé

This project is a waste management project for Chiloé Island in the Los Lagos Region, in southern Chile. The project's Statement discusses MMCRs, dividing the impacts among (a) physical environment

(air, soil and water); (b) biotic environment (flora and fauna); (c) perceptual environment (landscape); and (d) human environment. However, it does not state cultural or social impacts, not even in the human environment, where the only impact is the proliferation of sanitary vectors (rats). The RCA did not add any new MMCRs to the project.

INDH states that the local community near the project is against it specifically because the land involved has been used traditionally by the people in the area for raising cattle and for agriculture. It links this to the fact that some of the people in the area are now operating agro-tourism start-ups.

Interviews

To complete the information about MMCRs in the SEIA, semi-structured interviews were conducted with a number of experts and others who are stakeholders under the SEIA. Details of the interviewees' backgrounds are given in Table V.

Table V

Alias	Date	Interviewee details
Interviewee 1	17.07.14	Management position in Chilean environmental NGO
Interviewee 2	06.08.14	Private consultant/Environmental law academic
Interviewee 3	08.08.14	SEIA academic in Geography Department
Interviewee 4	12.08.14	Management position in international NGO/private consultant
Interviewee 5	07.08.14	Former management position in SEA
Interviewee 6	20.08.14	Executive Director in Chilean environmental NGO/consultant
Interviewee 7	22.08.14	Private consultant

Findings

Ignoring Impacts on the Human Environment

This study's first finding is that impacts on the human environment are mainly neglected in all three cases. Two of them (Andacollo and Los Robles) just describe these impacts as "bad perception of the project", without further analysis of the reasons for this perception and the way it could effectively impact the human environment. Meanwhile the third project does not recognise that there is any impact on the human environment, only recognising health issues. The mere fact that there are on-going conflicts regarding these projects already proves that human environmental impacts exist that were not mentioned. The conflict is an impact itself as it disrupts social relations and institutions (Homer-Dixon, 1991). Most of the interviewees agreed on this observation, and one interviewee even argued that "the main problem for the measures are the impacts; they are not characterised as real problems" (Interviewee 1). Another one stressed that "in what I have studied, the impacts are described in a very general way that only deals with the perception

of the people about the company, and the MMCR are orientated in that way” (Interviewee 3).

The fact that impacts are not adequately described results in inadequate description of the MMCRs and makes it impossible to assess the relationship between them. In this connection, another interviewee said that “the sociological reality and the impact that a project has is something measurable...but if you just state that there is a bad perception, it is very hard to think that a MMCR for that impact will work” (Interviewee 2). From the point of view of the public interest, a better description of the impacts and the MMCRs could be expected, especially how these measures will internalise the externalities of the projects. None of these elements were present in the case studies, leading to the first main answer in this research: MMCRs relating to the human environment in the SEIA are not complying with its declared public interest objective, as they are not solving the projects’ externalities.

Relying on the Developer’s Proposal

A second finding is that MMCRs that are proposed in the statement tend to be the ones that the environmental authority finally accepts, without making any substantial changes to them. In this regard it is especially important to consider that in Andacollo there was no public participation, because the DTO 40/1997 was not working yet. By contrast, in Los Robles and Relleno Sanitario Chiloé, there was plenty of participation. Despite public participation, the outcome in both cases is almost the same. One of the interviewees believes that “the lack of good measures is because the impacts over human environment are better known by the people, but nobody listens to them seriously and in the correct time” (Interviewee 4).

Conflict Orientation

A third finding is that impacts on the human environment are actually relevant for the emergence of conflict. This can be concluded from analysis of the causes of the conflicts stated by the INDH (all three cases have human environment impact among those causes), as well as from the interviews. One interviewee stressed that “in the last ten years, the communities are demonstrating against projects because of some physical environment issues, but it is the social element that is really on the spotlight. It embodies the concerns that have been expressly considered by the communities” (Interviewee 2). Another said “the conflicts arise from the fact that nobody is worried about the impacts over the human environment, as we know the physical environment has at least more information and professionalism, but the people quickly notice that nobody is worried about impacts over the human environment” (Interviewee 4). Another explains that “the big difficulties that the projects are facing nowadays are coming from human aspects, how to compensate communities, repair the damages to the local economy, mitigate the relocalisation” (Interviewee 3).

Explaining the Gap: The Bipolar Regulatory Failure

Regulatory Failure

MMCRs relative to the human environment are not complying with their intended function, given that the externalities are not being characterised or mitigated nor are any compensations or repairs being made. Thus, there is a gap between the purpose of the regulation and its application. What explains this gap?

Regulatory failures “usually involve poor performance in discharging the core task of regulation” (Baldwin *et al.*, at 69). As Baldwin *et al.* point out, the explanations for regulatory failures can be made from an analytical level connecting them with a given theory of regulation. From a public interest point of view, the failure of the application of the PPP in the SEIA is that the measures addressing the human environment are not fulfilling the public interest, in the sense that they are not internalising the externalities of the evaluated projects. Thus, the core task of this regulation is not being fulfilled. As one of the interviewees said “there is a disconnect between the impacts and the MMCR regarding the human environment” (Interviewee 3).

This regulatory failure, following the classifications in Baldwin *et al.* (*i.e.*, under-regulation, over-regulation, enforcement failures and process failures), can be seen as “under-regulation”. Despite the fact that there are legal rules that deal with the issue, inadequate implementation of the regulation is easy to observe, given that there are no guidelines and no specialised agency to deal with it. In Hood’s description of administrative failures, this would be a case of “pure and simple inefficiency”. There is a command regarding the internalisation of human environment externalities but nothing happens (Hood, 1974).

Looking for the causes of the failure, many interviewees recognise that the neglect of impacts and MMCRs related to the human environment is partly due to the lack of capacity and resources of the State. One of them explains the cause of such failure as “the lack of capacity, expertise and people of the SEA”, and adds that “my experience in all the cases is the same, the MMCR that is proposed (by the applicant) stays, there are no changes by the authority” (Interviewee 2). Another interviewee stressed that “there is a difference between what happens with the physical environment and what happens with the human environment, because there is no specialised agency for human environment... there is a gap in the system” (Interviewee 3). An ex-manager in SEA explains that the number of people working at SEA is not enough given the demands on its services, and that even when they have a special unit in charge of human environmental impacts, it is the same that is in charge of public participation (Interviewee 4).

Therefore, the under-regulation could be caused by what in Grabosky’s (1995) typology is named “resource inadequacy”, especially because of the lack of professionals and expertise in SEA, which would be

combined with “oversight failure” observable in the lack of a specialised agency and the fact that the MMCRs tend to be accepted by COEVA without major changes. In this sense, the fact that SEA does not give enough importance to the issue is also mentioned as a cause of the failure (Interviewee 6).

In this scenario, it is impossible not to consider the possibility that this situation embodies the concept of “regulatory capture”⁴ that has been developed especially to explain regulatory failures (Ogus). However, neither the literature nor the interviews disclose any trace of the characteristics of regulatory capture. Actually, the interviewees mostly dismiss the ideas that there has been any interference of local politicians in the process of creation of MMCRs and that the SEIA process has been affected by pressures exerted by companies on SEA. Although the case studies do not indicate any cooperation from companies desiring to successfully promote the public interest, there are no hints of any of Carpenter’s (2014) symptoms of regulatory capture; no reported action by regulated persons or entities to shift the policy away from the public interest.

But it is rather simplistic to put the blame on the lack of resources. If there is not enough regulation or the regulation is not adequately funded, the logical consequence is that it will not work properly. Yet, this is not the only explanation for the failure, as will be suggested in the following section.

Incoherence of World-views, Bipolar Disorder and Regulatory Failure

There are two additional facts reported by the interviewees that could contribute to the explanation of the failure. The first is that the negligence seems to be shared between companies, technical bodies (e.g., SEA) and political committees (e.g., COEVA), given the fact that all of them contribute to the failure. The second one is that all the interviewees reported an on-going change of paradigm leading to human environment impacts. However, they reported that this change is mostly occurring outside the SEIA. Companies and consultants are creating special units for human environment and enhancing their RSE projects, knowing that the conflicts arising are connected with human environment impacts. Meanwhile the SEA is reinforcing its public participation unity and trying to develop new strategies.

In order to explain these factors, this research relied on cultural theory, especially in the work of Hood (1998), regarding regulation and world-views. Hood argues that the way in which public institutions are set and work can be explained from the different world-views which they espouse, classifying them in relation to their ideas regarding the pre-eminence of collective over individual interests or *vice versa* (group) and the degree of autonomy in decision making, from more fixed to more flexible rules (grid). With these variables, Lodge *et al.* (2010) have created four world-view typologies, as shown in Table VI.

Table VI. Cultural world-views

	Low group	High group
High grid	Fatalism Control through unpredictable process/ inherent fallibility	Hierarchy Anticipative solutions, forecasting and management, response to enhance authority and hierarchical ordering
Low grid	Individualism Control through rivalry and choice, incentives to underpin market and individual choice process	Egalitarianism Control through group process, network style, participation

Source: Lodge *et al.*, 2010

World-views can be used to explain regulatory arrangements, as well as failures. What is interesting in Hood’s explanation is that he implies that the mere idea of a failure in regulation will also depend on the world-view from which one is observing that regulation. Thus, the same regulation and its outcome can be perceived as successful from one world-view and as a failure from another (Hood, 1998). In the same sense, Lodge *et al.* believe that one of the claims of cultural theory is that the diagnoses of failures and the advocacy for solutions will be made representing all four world-views.

Regulatory arrangements will have their own weaknesses depending on the world-view in which they are embedded or the world-view that was dominant in their creation. Hood calls this “the Achilles heel of regulation”. In each world-view, the fact that some ideas are considered as central will also create some blind spots that would be the weaknesses of those arrangements (Hood, 1998). From a similar perspective, it has been said that on the basis of cultural theory, failures can be explained when one particular world-view is excessively emphasised in a regulatory arrangement (Lodge and Wegrich).

In a first attempt to classify the world-view behind the SEIA MMCRs related to the human environment, it appears to be an egalitarian world-view regulation. It shares some of the basic egalitarian ideas by including public participation, a collective body that makes the decision and a bottom-up approach for the creation of the measures (Hood, 1998). The public interest of solving externalities should be met by a process in which actors bargain during the implementation processes under the SEIA. But this appearance is deceptive, the so-called egalitarian design needs the central authority of the State in order to work.

The SEIA forbids direct agreements to substitute MMCRs (Article 13 bis, Law 19.300) and gives all the regulatory power to impose MMCRs to the COEVA. Even though the actors can bargain during the process, in the end the decision is centralised. On the other hand, the observations of the community are canalised – running from the State to the company – as are the answers; there is almost no direct relation between

communities and companies (Law 19.300). These arrangements clearly include a hierarchical element in the design, and corrupt the egalitarian ideal completely. In a real egalitarian regulation, there should be an agreement between the actors, whereas in this case, the will of the authority prevails.

This is important not only because it shows that regulation is embedded in a hierarchical world-view, but also because this incongruent design produces more frustration for those approaching it from an egalitarian world-view. Public participation is a mere ritualistic compliance (Ashworth *et al.*, 2002; Costa). Moreover, in this hierarchical world-view, the lack of resources is a death blow. If the system is based mostly on trust of the central authority, the lack of resources will automatically indicate the impossibility of the regulation's working properly. This explanation plus the regulatory failure reported in the previous section could close the circle.

There is yet another problem in this analysis. As shown in the case studies, even when the system has a hierarchical design, the will of the authority has been mostly *laissez-faire*, where the MMCRs proposed by the project owners stand with little or no alteration, matching some of the logic of the individualistic perspective, at least in what regards the tendency to put individual before collective benefit, which is precisely the Achilles heel of the individualistic world-view of public management (Hood, 1998, at 29).

Therefore, the weaknesses of this regulation are mixed; it shares the Achilles heels of both world-views, one in its design and another in the way it has been applied. Most of the interviewees claimed that the way that human environmental impact had been neglected in the SEIA obeys an historical and ideological logic (roots of individualism). For instance, one emphasised that the lack of preoccupation of the State over these issues responds to "this model where the only important thing is to show economic growth, furthermore, there is a political-socio-economic elite that has made all the efforts possible to not lose control over the decision-making" (Interviewee 4).

And the failure is impacted by these incongruences; it is not just the lack of resources that makes the regulation fail. The lack of resources in a hierarchical regulation could be managed. But when the regulation is applied using a different world-view from the one that created it, a different, new and more powerful failure is created, a "bipolar" regulatory failure, that is, the regulation is trapped between the design in one world-view (collapsing because of the weaknesses of that world-view) and its application in another world-view (collapsing because of the weaknesses of this other world-view) which also lacks the appropriate tools for it.

Furthermore, the world-views and their failures are demonstrated in the way that the actors deal with the failure and in how the experts believe that the failure can be overcome. Most of the interviewees agree that, in recent years, even when the situation shown in this research is accurate, companies and consultancies have been creating new departments to measure impacts on

the human environment and to deal with those impacts in order to prevent conflicts (interviewees 3, 4, 5 and 6). The lack of resources of the central authority has impacted the interests of project owners and in this sense, there is a coincidence in that the change in companies' behaviour is due to "the role of the communities, the local authorities and the NGOs" (Interviewee 3) and that "the breakthrough was produced not because of legal reform or the work of SEA, but because of social movements and their success" (Interviewee 5). In this scenario, companies need other ways to achieve legitimacy and this is why they have been creating their own ways outside the SEIA. Even where there is some willingness to comply with the object of the studied regulation, there is no willingness to do so inside the SEIA and under the designed scheme. Further research is needed to understand more reasons for this trend, but it clearly shows an opposition to the hierarchical design of the SEIA and a search for solutions in the low-grid side of the spectrum. One interviewee also criticised the limited inclusion of public participation, an egalitarian tool (Interviewee 6).

On the second issue, the propositions of the experts are clearly located on the egalitarian side. In fact, most of the interviewees suggest that changes have to be related to enhancing public participation (Interviewees 1, 3, 4, 5 and 6). This coincidence is not causal, but the result of a failure that is explained by the incoherence in the world-views of the system. Being a hierarchically designed system with an individualistic application, it is logical that experts looking for a solution return to an opposite world-view – egalitarianism, as the rival of hierarchical and individualistic. The consensus around it is also shown in the programmes of the two presidential candidates that went through to the second round in the last presidential election in 2013; both expressed the need to enhance participation, especially in environmental issues (Bachelet, 2013; Matthei, 2013).

Table VII shows a summary of the analysed regulation, the current attitude of companies and the SEA (on-going solution) and what the experts believe should be done (proposed solution). As the table shows, the bipolar disorder of the regulation – between the hierarchical and individual world-views – and its failure have moved the critics toward the egalitarian view.

Table VII. Cultural world-views and MMCR in SEIA

	Low group	High group
High grid	Fatalism	Hierarchy: DESIGN OF MMCR IN SEIA
Low grid	Individualism: APPLICATION OF MMCR IN SEIA <i>ON-GOING SOLUTION</i>	Egalitarianism: <i>ON-GOING SOLUTION</i> PROPOSED SOLUTIONS

The effect of a regulatory arrangement designed with one world-view and applied with another appears catastrophic. Meanwhile a consistent regulation will have the strengths and weaknesses of its world-view. The MMCRs implemented under the SEIA constitute a regulatory system with Achilles heels on both feet – all the weaknesses and none of the strengths of either approach. Continuing the classical allusions, the central authority's lack of adequate funding causes it to become a Leviathan, strangling the efforts of private participants to bargain and reach their own agreements. The result is a regulatory failure that achieves a level of inconsistency and urgency one can only describe as “bipolar”.

Conclusions

This research began with a question about the PPP and whether it is being applied in Chile's SEIA in a manner that complies with the standard of public interest. It explored the PPP, PIT and the SEIA in order to find how the principle works in Chile – through the MMCRs.

In considering the MMCRs, it looks at those focused on the human environment, analysing three cases and interviewing a number of people associated with the SEIA, with the goal of reaching a conclusion about how the PPP is working under the SEIA and whether the MMCRs applicable to the human environment are actually serving their public interest purpose.

Among other findings, it does not appear that appropriate efforts are being made to identify the impacts of the projects on the human environment. The MMCRs are thus not accurately individualised in ways necessary to address the externalities caused by each particular project. The SEIA actually exacerbates socio-environmental conflicts. This regulatory failure can be explained in at least two ways. Firstly, the regulation is not working properly due to a lack of resources. The lack of a specialised agency focused on the human environment and the fact that the SEA does not have enough personnel would explain in part why companies do not create the sort of MMCRs that they should. This problem becomes especially acute in the context of the hierarchical world-view that prevailed in the creation of the SEIA, in which the State is the key actor to make regulation work properly. Without the resources needed for the central authority to comply with its objective, a hierarchical regulatory arrangement cannot work.

Yet, there is still an additional finding regarding the regulatory failure: even when the design of the SEIA regarding MMCRs is hierarchical, its application has become incoherently individualistic, constantly relying on (and making no change in) the MMCRs proposed by the project's owners, and failing to enable them to make direct arrangements with the communities concerned. This incoherence has enhanced the failure, and a change is needed – one that embodies the strengths of the egalitarian world-view.

In answer to the primary question of this research: its design, the SEIA includes the PPP and apparently points towards public interest. However, the regulatory arrangement created to internalise the environmental

externalities of the projects is not working. This regulatory failure is caused by both a lack of resources and a disconnect between the design world-view and the application world-view.

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- Law N° 20.600 Create Environmental Courts, published 28 June 2012.
- Decree N° 40 Approves Environmental Impact Assessment System, published 12 August 2013.

Notes

- 1 The SEA is a functionally decentralised public body with legal personality and its own patrimony. Its main function is to manage the environmental

management tool called SEIA, management of which is based on the environmental assessment of projects according to the law, encouraging and facilitating citizen participation in the evaluation of projects. This service serves to standardise the criteria, requirements, conditions, elements, licences, procedures, technical requirements and environmental procedures established by the ministries and other competent State agencies by establishing procedural guidelines. Making more technical the system aims to establish common criteria for evaluating each type of project, ensuring the protection of the environment efficiently and effectively.

2 COEVA, according to Article 26 of Law 19.300, consists of: the Regional Governor, as President; the Regional Secretaries to the Minister of Environment, the Minister of Health, the Minister of Economy, the Minister of Energy, the Minister of Public Infrastructure, the Minister of Agriculture, the Minister of Housing and Urbanism, the Minister of Transport, the Minister of Mining and the Minister of Planning; and the Regional Director of SEA, as Secretary.

3 The technical agencies are the General Direction of Water, Sanitary Services Superintendence, Agro and Cattle Raising Service, Hydraulic Infrastructure Direction, Regional Health Service, National Service of Geology and Mining, National Corporation of Forestry, National Service of Fishing, National Direction of Maritime Territory, National Corporation for Indigenous Development, and National Tourism Service.

4 [Interception of a regulatory process by corporate interests exerting their influence on governmental actors, preventing that process from achieving its intended objective. Ed.]



India

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Overview and Critical Analysis of National Law on Electronic Waste Management

by Karishma Chaudharyⁱ and Prem Vratⁱⁱ

India ranks fifth in the world in the generation of electronic waste (e-waste).¹ Despite many rules and regulations for e-waste management, most of it is treated by an informal sector that uses rudimentary disposal methods, such as acid leaching and open-air burning, posing a serious threat to the environment and severe health hazards for the workers.² This sector employs around 0.5 million children who work without any safety equipment.³ This paper provides an overview of the international conventions related to e-waste management, highlights various policies and rules related to e-waste

1 India and critically analyses the reasons for poor implementation of e-waste rules. The aims of this study were as follows:

1. To analyse the e-waste rules in India and find the loopholes in the current rules;
2. To make recommendations to improve e-waste management in India; and

3. To suggest key elements that India can adopt from Switzerland's e-waste management system.

It follows an exploratory methodology based on a qualitative review of the legal aspects of the e-waste sector. Data from various sources, mainly from various government and NGO reports, e-waste rules, news articles, websites *etc.* were collected and comprehensively analysed.

International Conventions Related to E-waste Management

There have been a number of legal frameworks proposed internationally to deal with issues of e-waste management since 1989. All are addressed in more detail in the country's proposed "roadmap" for such issues.⁴

The Basel Convention

The Basel Convention (Switzerland, 1989) aims to control the transboundary movement of hazardous wastes and their disposal. It prohibits the dumping of e-waste by developed nations in developing countries. To date, 180 countries have signed the Convention. This Convention aims to reduce waste generation. It

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encourages nations to keep waste close to its source of generation and within their boundaries, and also to provide incentives for reducing waste and preventing pollution.

The Rotterdam Convention

The Rotterdam Convention (Netherlands 1988) promotes shared responsibility between exporting and importing nations to protect health and the environment. It also promotes exchange of information about potentially hazardous chemicals that are being exported and imported.

The Stockholm Convention

The Stockholm Convention (Sweden, 2001) aims to protect human health and the environment from chemicals that persist in the environment for long periods and are distributed globally which accumulate in the fatty tissue of humans and animals.

Minamata Convention on Mercury

The Minamata Convention on Mercury (Japan, 2013) is a global treaty to protect human health and the environment from the adverse effects of mercury.

The Strategic Approach to International Chemicals Management

The Strategic Approach to International Chemicals Management ("SAICM", adopted Switzerland, 2009) aims to improve the methods of chemical production and usage to minimise the negative impacts on health and the environment by 2020. It is based on five themes: reduction of risk, enhancing knowledge and information, good governance, building capacity, and addressing the illegal international traffic.

Inter-Convention Synergies

Synergies were established among the Basel, Rotterdam and Stockholm Conventions in Switzerland, in joint sessions held from 28 April to 10 May 2013. The synergies process focused on promoting three primary objectives: the continued commitment of all Parties to ensuring the implementation of the three conventions; enhanced cooperation and coordination between the

technical departments of the three conventions; and due consideration of the specific requirements and conditions of developing countries.

Legal Regulations Related to E-waste Management in India

The Hazardous Substances Management Division (HSMD) within the Ministry of Environment, Forest and Climate Change (MoEF) acts as a nodal point for the management of hazardous substances and chemical emergencies. Its main objective is to promote safe and environmentally friendly management of hazardous substances including hazardous chemicals and hazardous wastes. It is also the nodal point for the relevant international conventions *i.e.*, Basel Convention, Rotterdam Convention, Stockholm Convention, Minamata Convention and SAICM.⁵ The MoEF has issued the following notifications related to hazardous waste:

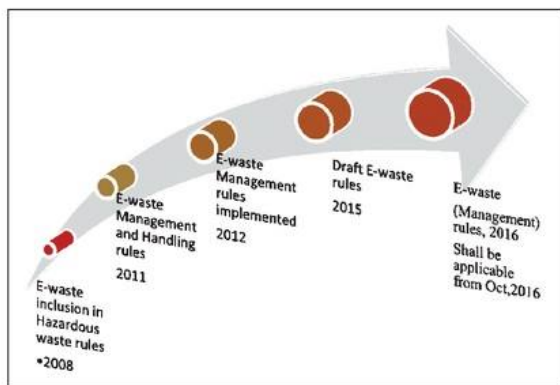
1. Hazardous Wastes (Management and Handling) Rules, 1989/2000/2002;
2. Batteries (Management and Handling) Rules, 2001;
3. Guidelines for Environmentally Sound Management of E-waste, issued by the Central Pollution Control Board (CPCB) in 2008;
4. Hazardous Waste (Management, Handling and Transboundary Movements) Rules, 2008;⁶
5. E-waste (Management and Handling) Rules, 2011 (operational from May 2012);
6. National Policy on Electronics, 2012;
7. Foreign Trade Policy (2009–2014);⁷
8. Draft E-waste Management and Handling Rules, 2015;⁸ and
9. E-waste (Management) Rules, 2016.⁹

Figure 1 shows the timelines of the various e-waste management regulations in India. The following is a brief analysis.

The Hazardous Wastes (Management and Handling) Rules, 1989

The 1989 Hazardous Waste Rules were introduced under the Environment Protection Act (EPA) of 1986. The list of wastes covered by these rules is given in the schedule annexed to the rules. The rules are implemented through the Pollution Control Boards (PCBs) and Pollution Control Committees (PCCs) in the respective states/Union territories. Various amendments were incorporated in 2000, 2002 and 2008, widening the definition of hazardous waste by including e-waste. MoEF also issued guidelines for management and handling of hazardous wastes in 1991 for waste generators, waste transporters, and operators of waste storage, treatment and disposal facilities. These rules established mechanisms for developing a reporting system for the movement of hazardous waste (the manifest system) and established procedures for closure/post-closure requirements for landfills. In addition, the Government also enacted legislation to provide incentives

Figure 1. Timeline of legal provisions for e-waste in India



to industries complying with environmental provisions. To achieve this, the Public Liability Act 1991 was passed which put the onus of dealing with accidents or damages caused by the release of pollutants on the industries dealing with hazardous waste.¹⁰

Batteries (Management and Handling) Rules, 2001

All manufacturers, importers, re-conditioners, assemblers, dealers, recyclers, auctioneers, consumers and bulk consumers involved in manufacturing,

processing, selling, purchasing and using batteries or components thereof come under the purview of these rules.¹¹

Hazardous Waste (Management, Handling and Transboundary Movements) Rules, 2008

The 2008 Hazardous Waste Rules also regulate the imports and exports of e-waste. E-waste imports are not permitted. However, permission has been granted for export of e-waste to various countries (Belgium,

Table 1. Comparison between the E-waste Rules, 2011 and E-waste Rules, 2016

	E-waste (Management and Handling) Rules, 2011	E-waste (Management) Rules, 2016
Inclusion of more stakeholders	The 2011 rules cover every producer, consumer or bulk consumer involved in the manufacture, purchase, sale, processing of electrical and electronic equipment (EEE), collection centre, recycler and dismantler of E-waste. The motive was to channelise e-waste from the informal sector to the formal sector. However, the rules left out three key stakeholders in the e-waste value chain – manufacturers, dealers and refurbishers of EEE. ⁱ	The new draft rules have expanded to include manufacturers, dealers and refurbishers. The inclusion of manufacturers is important since it clearly identifies manufacturers as separate from producers. The 2011 rules, as well as the 2015 rules, define producers as those who manufacture or sell EEE under their own brand; offer to sell assembled EEE produced by other manufacturers under their own brand; or offer to sell imported EEE. This definition does not cover manufacturers who do not sell products under their own brand. EEEs are made up of several electrical and electronic components and there could be several manufacturers involved in the manufacture of those components. While such manufacturers were not included in 2011 rules, they are under the ambit of the new rules, 2016. Dealers are also defined under the new e-waste rules and would include retail shops selling EEE, both in the formal and informal retail sector. The refurbishers are also defined as all types of shops involved in EEE repairs either for the purpose of extending the life of the product or for selling it. In India it is a common practice to get EEE repaired first and many shops, particularly in the informal sector, are involved in repairing EEE such as mobile phones, televisions etc. Some of the e-waste collected by the informal sector also goes to repair shops. So the inclusion of refurbishers as stakeholders is significant. ⁱⁱ
Responsibilities of producers	The framework of extended producer responsibility (EPR) for management of e-waste in India was introduced in 2011. EPR was first introduced in India for any kind of waste management. However, apart from mentioning EPR, the rules did not comment on methods for implementation of EPR in India.	The 2015 draft rules have suggested two possible instruments by which EPR could be implemented by producers, namely Producer Responsibility Organization (PRO) and Deposit Refund System (DRS). In the case of PRO, producer firms can set up collection centres in collaboration with each other. For firms, this is beneficial to reduce the cost involved in setting up an infrastructure for e-waste collection. In DRS, a firm charges an initial amount from the consumer as deposit which shall be refundable to the consumer upon proper disposal (as suggested by the firm) of the product purchased. ⁱⁱⁱ
Authorisation and registration are simplified	Under these rules it was mandatory for the producers, dismantlers, recyclers and collection centres to seek authorisation from PCBs/ PCCs. However, obtaining authorisation was a cumbersome process especially for the new entrants.	Authorisation and registration have been simplified in the new rules. It now directs producers to obtain authorisation to carry out EPR from their SPCB (if it is to be implemented in a particular state) or from the CPCB for pan-Indian implementation. The rules have exempted collection centres from authorisation and registration. It is a good initiative and will encourage more organisations and individuals to enter the waste management sector. Refurbishers and dealers are now required to obtain one-time registration from SPCBs. They have to file annual returns and maintain records of e-waste handled by them. It will ease the task of PCBs and encourage more dealers and refurbishers to be a part of the formal sector which will make the assessment of e-waste easier.
Applicability	Applicable to EEE listed in Schedule 1.	Applicable to EEE listed in Schedule 1 and extended to components, spares and parts. Compact Fluorescent Lamps (CFLs) and other mercury-containing lamps are also covered by the new rules. ^{iv}
Exemption	Micro and small industries defined in the Micro, Small and Medium Development Act	Exemption only for micro enterprises but small enterprises have been included as they are among the major source of e-waste generation and they have been categorised as manufacturers. ^v
Target-based approach for collection under EPR	There is no such provision.	Targets for e-waste collection have been specified in Schedule III of the rules: 30 percent of the quantity (either in number or weight) during the first two years followed by 40 percent during the third and fourth years, 50 percent during the fifth and sixth years, and 70 percent from the seventh year onwards.
Transportation of e-waste	There is no such provision.	During e-waste transportation, the transporter shall be required to carry three copies of a document prepared by the sender, giving the details as per Form-6 to prevent leakage of e-waste to the informal sector during the transportation process.

Liability provision	There is no such provision.	Provision for financial penalties for damages caused to a third party or the environment due to improper e-waste management has been introduced.
Hazardous substances in EEE	The producers of EEE had to comply with RoHS mandated under the 2011 rules within a period of two years after the rules were effective <i>i.e.</i> , from May 2012, but, to date, most EEE does not comply with the rules. The 2011 rules predetermined the concentration of hazardous substances to be reduced in EEE but provision regarding its implementation and monitoring was missing. ^{vi}	The new draft rules have overcome the loopholes by assigning responsibilities to the CPCB to monitor and verify the compliance of EEE in the marketplace with RoHS by conducting random sampling. The EEE products in the marketplace prior to 1 May 2014 are exempted from the provisions of RoHS guidelines. ^{vi}
E-retailers	Not defined	"E-retailer" means an individual, company or business entity that uses an electronic network such as internet or other telecommunication, to sell its goods. ^{vi}
Orphaned products	They have not been mentioned in E-waste rules, 2011.	Orphaned products are non-branded assembled pieces of electrical and electronic equipment or those produced by a company which has closed its operations. Urban local bodies have been assigned the duty to collect and channelise such products.
Responsibilities more defined	Roles and responsibilities of state government are not defined clearly.	The responsibilities of state government have been clearly defined. The Department of Industry in any government agency authorised in this regard by the State Government has to ensure the earmarking of industrial space/shed for e-waste dismantling and recycling in industrial parks, estates and industrial clusters. Also the Department of Labour in the state or any other government agency authorised in this regard by the State Government shall ensure recognition and registration of workers involved in dismantling and recycling, and assist in making groups of such workers to facilitate setting up dismantling facilities. The Department shall also undertake industrial skill-building programmes for such workers and shall monitor the health and safety of such workers. Each State Government has to prepare an integrated plan for effectively implementing the provisions, and submit an annual report to the MoEF.

Sources:

- (i) MoEF. 2010. "Report of the Committee to Evolve Road Map on Management of Wastes in India". New Delhi: Ministry of Environment and Forests.
- (ii) MoEF. E-waste(Management) Rules, 2016, at <http://www.moef.gov.in/sites/default/files/EWM%20Rules%202016%20english%2023.03.2016.pdf>.
- (iii) *Ibid.*
- (iv) Sohail, S. 2015. "New e-waste draft rules promise a broader scope". *Down to Earth*, 30 November, at <http://www.downtoearth.org.in/blog/new-e-waste-draft-rules-promise-a-broader-scope-49513>.
- (v) Bhaskar, K. 2015. "Changes in Electronic Waste Management". *Economic and Political Weekly* 50(10).
- (vi) See endnote 9.

Germany, Japan, Singapore, Hong Kong, Sweden, UK and Switzerland).¹²

A Brief Glimpse of India's Legal Provisions Related to E-waste Management

Until 2008 there were no regulations for e-waste. In 2008, e-waste was included in Schedule IV of the Hazardous Waste Rules, 2008 which made it mandatory for e-waste recyclers to register with the CPCB.¹³

E-waste Rules, 2011

The E-waste (Management and Handling) Rules, proposed 2010, were notified in May 2011 (E-waste Rules, 2011) and became effective from 1 May 2012 to address issues related to e-waste management and to promote environmentally sound management of e-waste and also to reduce the use of hazardous materials in the manufacture of electrical and electronic equipment (EEE). In India, these are the first-ever exclusive rules on e-waste. These guidelines also suggest treatment options/technologies to be adopted. All state PCBs/PCCs were requested to grant consent to establish and to authorise units for recycling waste EEE.¹⁴ The E-waste Rules, 2011

also introduces the concept of Extended Producer Responsibility (EPR), wherein the EEE producer is held responsible for managing such equipment after the end of its life. These rules cover every producer, consumer/bulk consumer, collection centre, recycler and dismantler of e-waste involved in the manufacturing, selling, purchasing and processing of EEE or components. Under EPR, producers are also responsible for making consumers aware of the hazardous components present in the product and instructing them on how to handle the equipment after its use by providing information in the booklets indicating the practices to prevent e-waste from being discarded along with domestic rubbish. The producers are also required to set up e-waste collection centres and establish take-back systems to assist consumers. According to the rules, bulk users have to make certain that the e-waste generated by them is channelled to authorised collection centres or is taken back by the producers.

Restriction of Hazardous Substances (RoHS)

The E-waste Rules, 2011 aimed to restrict the use of hazardous substances such as lead, cadmium, mercury and brominate flame retardants in EEE. The RoHS (in

force since May 2014) restricts the six substances at the same maximum concentrations as in the European Union¹⁵ but the scope of products is different. Producers of EEE shall make sure that new EEE does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated diphenyls or ethers beyond a maximum concentration value of 0.1 percent by weight in homogeneous materials for lead, mercury, hexavalent chromium, and 0.01 percent weight in homogenous materials for cadmium. The components of EEE manufactured or existing in the market six years before the date of commencement of these rules are exempted. In the event of a reduction in the hazardous materials used in the EEE, revised details of the constituents in the product should be provided in the product information. Imports or placement in the market of new EEE shall only be permitted if it complies with the rules. Manufacture and supply of EEE for defence and other similar strategic applications are excluded. The reduction of hazardous substances in manufactured or imported EEE shall be achieved within a period of two years from the date of commencement of these rules *i.e.*, from 1 May 2014. The guidelines for the reduction in the use of hazardous substances in the manufacture of EEEs are covered in Chapter V of the rules.¹⁶

E-waste Rules, 2016

The new E-waste rules, 2016 were rapidly notified by MoEF and became effective on 1 October 2016.¹⁷

Comparing the 2011 and 2016 Rules

The changes to the electronic waste management rules address the issue of multiple stakeholders and responsibility of producers. But they do not address issues of implementation as well as regulatory frameworks. Table 1 shows the comparison between the previous e-waste rules and the new ones.

E-Waste (Management and Handling) Rules 2011

The E-waste Rules, 2011 failed to achieve better management of e-waste for the following reasons:

- a. *Informal sector integration*: As per the study by the Department of Electronics and Information Technology¹⁸ in India, there are more than 3,000 scrap dealers who are in stiff competition with the official waste disposal agents. The rules fail to integrate the informal sector into the collection, segregation and dismantling of e-waste, and there is no action plan aimed at achieving this. This needs to be addressed since it would help in the scientific disposal of e-waste and sustain the livelihoods of workers in the informal sector.
- b. *Imports of e-waste*: The rules do not address imported e-waste. The largest share of such waste comes from US and China (around 42 percent and 30 percent respectively) followed by Europe at around 18 percent and the remaining 10 percent coming from countries like Japan, South Korea, Taiwan *etc.*¹⁹ This issue needs urgent attention since India is also a signatory to the Basel Convention and is required

to enforce strict controls to stop imports of e-waste from other countries.

- c. *Historical e-waste disposal*: The rules only discuss the e-waste that would be generated post-2012, and do not shine a light on the issue of historical e-waste and disposal mechanisms required to deal with it.²⁰
- d. *Absence of a business model*: The rules do not elaborate a business model for the collection of e-waste from consumers. Although they mention generation, storage, transportation and disposal of e-waste, they are open-ended in terms of establishing streamlined collection mechanisms.
- e. *Lax penalty clauses*: Section 15 under the Environment Protection Act describes the punishments which the monitoring and regulatory authorities can impose on violators, namely 5–7 years imprisonment and a fine of up to Rs 1 lakh (100,000 rupees). According to Toxics Link,²¹ out of 50 top electrical producers, only seven have systems in place regarding sustainable e-waste management whereas 17 have completely ignored e-waste rules. This is due to lax regulatory and monitoring systems.
- f. *Lack of technology*: The producers/manufacturers have to make certain that their e-waste is disposed of properly but specific technologies or processes to be used for e-waste recycling are not clearly spelt out in the rules.

Hence, there was a need to revise the rules for effective handling and management of e-waste.²²

Discussions Leading to the New E-Waste Rules, 2016

Though the new rules clearly lay down the responsibilities of various stakeholders, there are still a few major areas which require the immediate attention of regulators and stakeholders.²³ Some new additions like inclusion of more stakeholders and Producer Responsibility Organisations (PROs) are surely a welcome step. The PROs are set up and funded by producers to take responsibility “for the collection and channelisation of e-waste generated from the ‘end-of-life’ of their products to ensure environmentally sound management of such e-waste”. Due to the wide geographical spread of India, for an individual producer to set up a collection mechanism across the nation would not be economically viable, hence this is a good move. There is clear demarcation of the roles and responsibilities of producers and manufacturers, for ease of understanding. Additional features like the Deposit Fund Scheme (DRS – an economic instrument), simplification of authorisation and registration processes, and exemption of collection centres from the authorisation and registration processes will encourage more organisations and individuals to enter the e-waste management field. There is a shift from collection centres to a collection mechanism approach. A target-based approach for EPR implementation which is being used in many countries, such as Japan, UK, Korea *etc.*, has also been adopted. There are no changes in penal provisions hence there is need for stringent provisions

to prevent erring parties from violating the rules. Overall, the new e-waste rules are more comprehensive and will help in improving e-waste management in India. The rules put more responsibility on PCBs hence there is a need to enhance their capacity, both manpower and technical support for monitoring compliance with the rules.

Issues That Still Need to be Addressed

Several aspects still need to be addressed for efficient and effective e-waste management in India.

The first of these is the dominance of the informal sector in e-waste management. Any long-term policy should put more focus on integrating this sector into the mainstream.

Second, although the new rules mention the stakeholders involved and assign them their roles, implementation will remain a huge challenge with inadequate human, monetary and technical capacity, especially with regard to PCBs. In particular, the rules have not addressed the inadequate monitoring and regulatory capacity, which affects stakeholders' ability to effectively carry out their major responsibilities like controlling and regulating pollution from various sources and managing waste. Assigning more responsibilities to PCBs without strengthening their capacity will put pressure on these already overstretched officials, and limit the efficacy of regulatory efforts.

Third, the rules' inclusion of three key stakeholders, manufacturers, dealers and refurbishers, is a welcome step but raises questions on outcomes. The majority of refurbishers and some manufacturers and dealers operate in the informal sector. Identifying, monitoring and regulating all these stakeholders will be a herculean task for governments and regulators.

Fourth, the regulatory costs involved in identifying and monitoring large numbers of refurbishers, manufacturers and dealers may emerge as a major challenge for the PCBs.

Fifth, the effective implementation of the rules largely depends on producers. While some of them have take-back systems in place, others do not seem to have taken any steps to collect e-waste from consumers. If producers follow the same approach towards the DRS, the policy will fail to address the issue. Moreover, many individual firms might be reluctant to make the purchase price too high for customers, fearing a loss of sales and loss of market share.²⁴

The sixth issue is that of consumer awareness. Consumers remain a vital cog in the wheel. Unless there is a greater awareness among consumers or motivation for them to recycle e-waste through the formal sector, initiatives like PRO and DRS might face several challenges.²⁵

Finally, there appears to be a need to include end-of-life (EOL) solar panels as e-waste. As India intends to install 20 gigawatts of solar-power capacity by 2022,²⁶ it will also need an accountable EOL solar panel management regime to deal with the resulting waste problem.

Conclusions and Recommendations

This paper has attempted to highlight the loopholes in the legal framework in the past, and the possible gaps in the legal framework in the regulatory framework that has been implemented since October 2016 for effective and efficient e-waste management in India. Unless informal units are involved in an integrated and coordinated effort, and unless there is more focus on raising awareness, there may be sub-optimal outcomes from the implementation of the legal and regulatory framework.

The following suggestions and recommendations are proposed to make e-waste management more efficient and effective in India:

- Road-shows, seminars and education programmes should be set up to raise awareness about e-waste. Workshops should be organised among the various stakeholders and public at large. E-waste management should be strongly linked to the Swachh Bharat Mission (or Clean India Mission).²⁷
- Producers are responsible for safe collection of their e-waste²⁸ under the E-waste Rules, 2016 but MoEF has ignored the informal workers who are the backbone of the existing e-waste management system. The PROs are also performing in their small niches but it is basically scrap dealers, waste pickers *etc.*, from the informal sector, who are directly linked to consumers but are not mentioned anywhere in the rules. Some of these informal players are spreading awareness in their circles about the environmental and health concerns of open-air incineration and other rudimentary practices. They can also spread awareness to those who cannot afford costly computers and equipment, and thus democratise and enlarge the domain of digital knowledge. Hence the rules should focus on leveraging the strengths of the informal sector. The Rajya Sabha paper "E-waste in India"²⁹ clearly recommends the inclusion of informal sector players in e-waste management by enhancing their skills. This could be linked with the "Skill India" programme.³⁰ A UNEP report also recognises that the collection rate of the informal sector is much more efficient in countries like India because these people can reach and collect waste from every household and are flexible with regard to location and number of working hours; they also give a rational value to the consumers and perform all logistics as well. Any formal collection mechanism must benefit from these "distributed informal collectors".³¹ Hence, it is strongly recommended that recognising such workers must be the first step towards enforcement of environmental and safety norms in the informal e-waste economy. It is anticipated that channelisation of e-waste is done through the informal sector. Moreover, there is need to provide training to rag pickers as they are directly collecting e-waste from consumers.
- The MoEF should clearly define the terms "waste generator", "institutional generator" and "bulk

- consumer” because the use of different terminologies may be perplexing. It is also suggested that multi-storey apartments, malls *etc.*, are added to the “bulk consumer” category.
- There should be a provision of capacity enhancement and incentive mechanisms to bring the informal waste economy under the wing of the official one. Such platforms can be created by PROs.
 - Although the new rules recognise the existence of the refurbishing industry, most refurbishment is carried out by entities such as small vendors, service centre dealers *etc.* The disclosure norms could be cumbersome for such entities.
 - There should be some bare minimum criteria for approval for e-recyclers/dismantlers/collection centres based on the amount of investment or available technology.
 - The rules should also make some mention of health and safety standards for workers in the e-waste sector.³²
 - Taking note of members raising concerns over a report by a Delhi-based organisation, Toxic Links, the minister acknowledged that 18 producers fall into the red category, indicating unsatisfactory performance, with respect to their responsibility under EPR under E-waste Rules, 2011.^{33,34} Hence, strict action is needed in this regard.
 - An efficient collection mechanism is the first step towards e-waste management. To attain this, producers should be mandated to have a centralised facility along with a wider network for e-waste collection of their brand. There is a need to build up the infrastructure at CPCB and state PCB level for effective e-waste management. Some strategic locations for e-waste collection bins in the National Capital Region of Delhi could be “Mother Dairy”³⁵ booths run by ex-servicemen, tied up with online sellers to use their existing network (which is widespread and can deliver products to villages as well) for collection and advertisement.
 - The changes are required at three levels, namely administrative, legislative and technological. There is a need to strengthen the legislative framework and ensure implementation of laws. A comprehensive national e-waste inventory should be maintained on a priority basis. Upgrading human, monetary and technological resources is necessary. Research and development (R&D) should be done to set up indigenous plants for recovery of precious metals from e-waste in an environmentally friendly manner.^{36,37}
 - In India, no separate landfill policy and taxes exist to disincentivise the practice, although the solid waste policy does discourage it. India should follow Japan’s example in levying huge taxes on landfill. In Switzerland too, land filling is very expensive. Hence, current landfill provisions in India must be amended to promote resource recovery.³⁸
 - To prevent freeloaders, large retail chains must insist vendors to be a part of the recycling system before carrying their products. Thus, there would be a multi-point control mechanism built in to prevent freeloading.
 - India should also adopt an aggressive strategy to develop infrastructure for e-waste management for its collection, processing and recycling. The recycling rate must be achieved by reuse of components or material recycling. India should also follow suggestions regarding the “Design for Environment” movement, which focuses on designing products that are easy to dismantle for recycling, that use easy-to-recycle materials, and that rely on environmentally friendly design and production that considers each product’s lifecycle with the aim of recovering as much useful material from waste as possible, thereby lowering the cost of their final disposal.
 - In Switzerland, to tackle the issues of low rates of collection caused by consumer unwillingness to dispose of the old product due to distance from retail stores, more collection points were established at strategic locations like railway stations and community collection centres. In India too, more collection points should be set up in shopping malls, metro stations *etc.*
 - This paper recommends including solar panels as e-waste, as disposing of solar panels may become a huge challenge in future. A Solar Research Unit proposed under the Solar Mission³⁹ could work towards this problem by collaborating with international organisations that are pioneers in the solar recycling field.
 - For efficient handling of mounting e-waste and to ease pressure on the already stretched PCBs, there is a need to set up a dedicated authority for e-waste. This paper strongly recommends the formation of a Central Regulatory Authority for E-waste Management in India with five zonal authorities: northern, southern, western, north-eastern and central.

Notes

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- 6 MoEF, 2008, *ibid.*
- 7 These rules restrict the import of second-hand computers and do not permit import of e-waste.
- 8 MoEF, 2015, *supra*, note 5.
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- 10 Chatterjee, S. 2012. “India’s Readiness on ROHS Directives: A Strategic Analysis”. *Global Journal of Science Frontier Research* 10(1): 14–26.
- 11 *Ibid.*
- 12 *Ibid.*
- 13 Agarwal, R. and Nath Mullick, A. 2014. *E-waste Management in India - The Corporate Imperative*. Mumbai and New Delhi: YES BANK Ltd/TERI-Business Council for Sustainable Development.
- 14 *Supra*, note 4.

- 15 See Directive 2002/95/EC on the Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) and Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).
- 16 *Supra*, note 10.
- 17 *Supra*, note 9.
- 18 See website of Ministry of Electronics and Information Technology at <http://meity.gov.in/esdm/policies>.
- 19 *Supra*, note 3.
- 20 *Supra*, note 13.
- 21 Toxics Link. 2015. "Time to Reboot II". New Delhi: Toxics Link.
- 22 *Supra*, note 10; and *supra*, note 9.
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- 26 "JNN Solar Mission: Scheme/Documents". *Ministry of New Renewable Energy*, at <http://www.mnre.gov.in/solar-mission/jnsm/introduction-2/>.
- 27 A government-led campaign in India aimed at cleaning up the streets, roads and infrastructure of India's cities, smaller towns and rural areas.
- 28 Central Pollution Control Board. 2015. "Brief Note on Draft E-Waste Rules, 2015".
- 29 Rajya Sabha Secretariat. 2011. "E-waste in India". New Delhi: Research Unit (LARRDIS).
- 30 A campaign launched by Indian Prime Minister Narendra Modi on 15 July 2015 ¹ train over 400 million people in different skills by 2022.
- ¹ UNEP and UNU. 2009. *Recycling – From E-waste to Resources. Sustainable Innovation and Technology Transfer Industrial Sector Studies*. Nairobi and Tokyo: United Nations Environment Programme and United Nations University.
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- 33 PTL. 2015. "E-waste management draft rules puts liability on producer: Govt". *India Today*, 7 December, at <http://indiatoday.intoday.in/story/e-waste-management-draft-rules-puts-liability-on-producergovt/1/540564.html>.
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Indonesia

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Forest Fires and Climate Change as They Affect Tourism

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On 23 January 2017, President Joko Widodo (Jokowi) called for the development of early plans to tackle land and forest fires, as hotspots had begun to emerge in several regions over the previous two weeks. Jokowi warned all stakeholders interested in the issue of land and forest fire prevention to address hotspots before they turned into fires, fearing that the trauma of 2015 might repeat itself this year. The fires that ravaged the country in 2015 resulted in US\$16.5 billion in material losses. Jokowi stressed the importance of anticipating all possibilities in order not to see a repeat of 2015, although according to Wiranto, Indonesia's Coordinating Minister for Political, Legal and Security Affairs, the government had made some progress in the field of forest-fire containment in 2016. Data collected by US National Oceanic and Atmospheric Administration satellites indicated that, in 2016, the number of hotspots decreased by 82.14 percent. In 2015, a total of 2.6 million hectares of land and forest burned, but this figure decreased in

2016 to just 438,360 hectares. In 2015, the country declared a state of emergency that lasted for 151 days. There was no such declaration in 2016 (Haeril Halim, 2017). ²

The impact of global warming, already evident in Indonesia, will likely worsen due to further human-induced climate change. Annual rainfall in Indonesia is already down by 2–3 percent, and the seasons are changing. The combination of high pollution density and high levels of biodiversity, together with the country's extensive 80,000 kilometres of coastline and 17,500 islands, make Indonesia one of the most climate-vulnerable countries in the world. Shifting weather patterns have made it increasingly difficult for Indonesia's farmers to decide when to plant crops, and erratic droughts and rainfall have led to crop failures. Millions of Indonesian fishermen face harsher weather conditions while dwindling fish stocks affect their income (Djajaputra *et al.*, 2017).

"In addition, global climate change has impacted the tourism industry taking into consideration that tourism growth can affect global climate change and contributes to the Green House Gas (GHG) pollutant in terms of carbon emission" (*ibid.*, emphasis added). Air pollution resulting from Indonesian forest fires has affected other Southeast Asian countries such as Brunei Darussalam, Cambodia, Malaysia, Indonesia, Thailand and the Philippines. The resulting haze is thus an international problem. In the latest occurrence, these countries noted that the forest-fire haze, caused by illegal slash-and-burn

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practices in Indonesia, is a long-term issue that varies in intensity. On 4 September 2015, the Board of the Indonesian National Disaster Management Agency reported that at least six Indonesian provinces had declared a state of emergency due to the haze. The government estimated that the haze would cost it up to US\$35 billion. Clearly, the problem is how to mitigate or prevent the forest fires physically, and to develop the legal tools necessary for their prevention and/or suppression (*ibid.*, at 41).

This article is based on both normative and qualitative research, beginning from positive laws (conventions, laws and regulations) applicable in Indonesia, then turning to legal literature and other sources of clarification.

Indonesian Law Relevant to the Environment

The 1945 Constitution Law of the Republic of Indonesia

The Indonesian Constitution Law of 1945 declares that every citizen of Indonesia has a fundamental right to a good and healthy environment, adding the requirement that national economic development shall be organised based on the principles of sustainable and environmentally friendly development. In fact, however, the quality of the country's environment is currently declining and has threatened the survival of human life and other living things. There is a need for all stakeholders to undertake efforts for nature protection and environmental management on a serious and consistent basis. Globally, climate change is exacerbating environmental degradation, enhancing the need for protection and management of the environment. Further legislation seems to be needed, in order to protect, with legal certainty, the right of every person to a good and healthy living environment and to enhance public welfare and achieve happiness (based on the Pancasila philosophy).¹ Such legislation should focus on implementing environmentally sustainable development, guided by an integrated and comprehensive national policy that will take into consideration the needs of both present and future generations.

Acts Related to Climate Change

In Indonesia, climate change has been addressed through Act Number 6 Year 1994, Act Number 23 Year 1997, Act No.17 Year 2004, Act No.25 Year 2004, Act No.1 Year 2009, Act No.32 Year 2009, and Presidential Regulation No.46 Year 2008.

Forest Fires in Indonesia

Relevant Legislation

Act No.32 Year 2009 amended Act No.23 Year 1997 and provides, among others, general provisions; principles, objectives and scope; planning; utilisation; control; maintenance; management of hazardous and toxic substances and waste; information systems; duties and authorities of the government and local government; rights, responsibilities and prohibition; role of people;

monitoring and administrative sanctions; settlement of environmental disputes; investigation and evidence; criminal indictment; transition and closing provisions.

Crime Against Humanity

Indonesia is the world's largest producer of palm oil and intentional fires are frequently lit in connection with its production, to clear the land. The resulting haze is an annual headache. A prolonged dry season, at least partly a result of the current *El Niño* phenomenon, have made the situation far worse. The forest fires have caused the air to turn a toxic sepia colour in the worst-hit areas of Sumatra and Kalimantan. Levels of the international pollutant standards index (PSI) are pushing 2,000 (PSI above 300 is considered hazardous). This high PSI endangers local fauna – animals have been forced to flee the forests (Lamb, 2015).

Haze has caused the schools in neighbouring countries such as Singapore and Malaysia to shut down, flights to be grounded and events to be cancelled. In addition, Indonesia's forest fires also threaten at least a third of the world's wild orangutans. In the worst affected areas – on the resource- and forest-rich islands of Sumatra and Kalimantan – ten people died from haze-related illnesses in 2015 and more than 500,000 cases of acute respiratory tract infections were reported (*ibid.*). The fire situation appears to be a crime against humanity of extraordinary proportions.

Impacts of Indonesia's Forest Fires

Forest fires and the resulting haze have caused Indonesia and neighbouring countries significant economic, social and environmental costs. The information on the 2015 fires is used below as an example.

Economic Costs

Indonesia's forest fires and the ensuing haze crisis have imposed huge costs on the economies of the countries involved, and impacted the health, education and livelihoods of millions of Indonesians living in the areas with the worst burning. The lack of fire-suppression systems in the forests and plantations, and the sheer size of the areas compound the problem. Poor accessibility is another factor.

Estimates of the total economic costs of the forest fires of 2015 alone exceeded US\$16 billion. This estimate includes losses to agriculture, forestry, transport, trade, industry, tourism and other sectors; direct damage/losses to crops, forests, houses and infrastructure; and the cost of responding to the forest fires. Many of the economic losses resulted from the disruption of air, land and sea transportation due to the haze. From the outset it was expected that these damages would have a serious impact on the economic growth rate of affected provinces and the government's efforts to reduce poverty in the hardest-hit regions, such as Central Kalimantan.

Social Costs and Human Suffering

The Jambi Health Agency distributed 22,400 face masks to local residents who live nearby affected regions.

Meanwhile, at least seven areas in Peninsular Malaysia were plagued by air pollution, listed as unhealthy according to the Pollutant Standards Index. The areas affected were Nilai, Bukit Rambai, Port Dickson, Seremban, Batu Muda, Malacca and Banting.

Air quality in villages near the forest fires regularly exceeded the maximum tolerable level of 100 on the international PSI. The toxic smoke caused widespread respiratory, eye and skin ailments and was especially hazardous for the very young and the elderly. The toxic air included not only carbon dioxide, but also cyanide and ammonium. The statistics regarding long-term health impacts of the 2015 fires are still not compiled but are expected to be highly significant. In addition, businesses and schools closed due to the haze, crippling many low-income families and prompting them to fall back into poverty. In 2015, approximately five million students were impacted by school closures.

Environmental Costs of the 2015 Fires

More than 2.6 million hectares of forest, peat and other land burned in 2015. Fires occur throughout Indonesia and on all type of soils, but fires on peatlands are of particular concern as they cause up to 90 percent of the haze, releasing three to six times more particulate matter than is released by fires on other types of soil. Peatlands are concentrated in the lowland areas of Sumatra, Kalimantan and Papua, where the worst impacts of the fires and haze have been felt. Although burned peat areas can be restored, the short-term impact of their loss includes the destruction of timber, non-timber forest products and grazing lands, as well as the loss of habitat for pollinators and wildlife. While not yet fully analysed, the costs related to biodiversity are estimated to have exceeded US \$295 million. The long-term impact on wildlife and biodiversity is also not fully known, but thousands of hectares of habitat for orangutans and other endangered species were destroyed. Forest and peat fires are a major source of GHG emissions. In October 2015, daily emissions from Indonesia's forest fires reportedly exceeded the emissions from the entire US economy – more than 15.95 million tons of CO₂ emissions per day. If Indonesia could find a way to prevent and promptly suppress its frequent fires, it would meet its stated target of reducing its GHG emissions by 29 percent by the year 2030.

Flight Cancellations and State of Emergency

Thousands of forest fires caused by slash-and-burn farming suffocated vast expanses of Southeast Asia, disrupting commercial flights at local airports, including Juanda Airport in Surabaya and Lombok International Airport.

Forest fires in Sumatra and Kalimantan generated thick clouds of smog across the Straits of Malacca to Malaysia. Thirteen out of 16 of the airports in the area were closed. Ten of the closed airports were in Kalimantan, the other three in Sumatra, Aceh and Riau provinces. Flights were delayed for several hours or cancelled at Medan's Kuala Namu International Airport,

Hang Nadim International Airport in Batam and Pekanbaru's Sultan Syarif Kasim II International Airport, when smog reduced visibility to 50–100 metres at the airports.

In Malaysia, delay or cancellation of flights at Kuala Lumpur International Airport, Penang Airport, Senai Airport in Johor Baru and Kuching Airport were reported, due to poor visibility. At Kuching Airport, visibility fell to 400 metres forcing the cancellation of 26 flights. Changi International Airport in Singapore did not escape the effect either, as the Civil Aviation Authority of Singapore increased the allocated space between departing and landing aircraft. The visibility on both runways fell to less than 1,500 metres, but although the airport delayed many flights, it did not cancel any.

The haze sent air quality in Singapore and Malaysia into hazardous territory with the three-hour PSI reading in Singapore reaching 121 (in earlier years, it went even higher – in June 2013 it reached 401).

Indonesia's haze crisis caused schools in neighbouring countries to shut down, events to be cancelled and Indonesian products to be boycotted, as millions tried to avoid the intense smoke.

Efforts to Fight the Fires

The government of Indonesia deployed as many as 30 aircraft and 22,000 troops to fight the fires on the ground, and stationed several warships from Kalimantan on standby to evacuate victims if required. On land, firefighting operations were carried out in Jambi. However, the teams had difficulty finding water sources, and only limited access to equipment.

In addition, countries such as Australia, Canada, Malaysia and Singapore also sent aircraft, for water bombing and other means of firefighting, although at times water-bombing operations had to be cancelled due to limited visibility.

Australia

On 12 October 2015, Australia's L-100 Hercules aircraft arrived at Sumatra. It operated for five days in South Sumatra then returned to fight fires in New South Wales (see Djajaputra *et al.*, at 11). In addition, the Australian government sent a Lockheed L 100-30 Hercules aircraft to Sultan Mahmud Badaruddin II Airport in Palembang, from which it was deployed to extinguish forest fires (*ibid.*).

Canada

Canada sent Canadian-made CL-215 bombers, which Indonesia viewed as "game-changing" in the fight against the Kalimantan and Sumatra forest fires. These amphibious aircraft have a solid track record in firefighting operations across Europe and North America (*ibid.*). They can land on a river, lake or sea to scoop up a very large amount of water and then take off again. They were each able to douse fires over an area of 1–1.6 hectares at a time. With just one strike, fires were gone (Wahyudi Soeriaatmadja, 2015; Sutopo Purwo Nugroho, 2015).

Malaysia

Malaysian Prime Minister Najib Razak made a formal statement that he considered the haze a serious issue and a burden on Malaysians as well as Indonesians. As a result, Malaysia's Maritime Enforcement Agency dispatched one Bombardier CL 415 amphibious aircraft, one Hercules C-130 aircraft and a survey helicopter to assist in dousing the fires. The Bombardier amphibious aircraft uses a water-bombing technique capable of putting out a fire the size of a football pitch. It operated seven hours a day to put out the fires consuming large swathes of forest in South Sumatra, whilst the Dauphin helicopter was used as a fire spotter.

Another C-130 from Malaysia's Air Force ferried logistics to South Sumatra where a 25-member team was stationed for a week-long operation that was estimated to cost the Malaysian government up to 1.7 million ringgit (more than US\$ 400,000) (Hishammuddin Hussein, 2015).

Singapore

Singapore's Ministry of Foreign Affairs provided an assistance package including a Singapore Civil Defence Force, a firefighting assistance team, a C-130 aircraft for cloud-seeding and a Chinook helicopter equipped with a water bucket for aerial firefighting. This assistance enhanced the 25,000-person force that Indonesia had deployed to little effect up to that point. In Palangka Raya and Sumatra, the continued very high SO₂ inhibited aircraft operation. Firefighting helicopters were unable to water-bomb certain areas due to very low visibility.

Russia

Russia sent two amphibious aircraft water-bombing planes. These Russian-made aircraft, the Beriev Be-200s, can scoop 12,000 litres of water from rivers, lakes or the sea and dump it over the fire. Russia took over from Malaysia and Australia, when they both ended their five-day missions. The Beriev Be-200s can carry up to 37,200 kg of water and fly up to 3,850 km without refuelling.

Tourism and Climate Change

Tourism has long been a major contributor to Indonesia's economy. In 2013, a total of 9.73 million international visitors entered Indonesia, staying in hotels for an average of 7.5 nights each and spending an average of US\$ 1,142 per person during their visit, or US\$152.22 per person per day (Indonesia-Investments, 2014).

The *Travel and Tourism Competitiveness Report 2015* (World Economic Forum, 2015) ranked Indonesia 50th of 141 countries studied. It ranked the price competitiveness of Indonesia's tourism sector as 3rd, noting that Indonesia had quite good travel and tourism policies and enabling conditions. The country also scored quite high on ratings of natural and cultural resources. However, the country scored rather low in the infrastructure sub-index (ranked 75th), as some aspects of the tourist service infrastructure are underdeveloped.

At that point, the government was reported to be investing in tourism development by attracting more foreign investors. Priority investment areas were reported to be Java, Sumatra, Bali, Sulawesi, North Maluku, West and East Nusa Tenggara, Tanjung Kelayang and Belitung. As quoted in the *Jakarta Post*, the government was aiming for 275 million visits by domestic tourists by the end of 2019, and had secured commitments from potential investors, totalling US\$ 70 million towards the construction of accommodation, marinas and ecotourism facilities in three of those areas (Desy Nurhayati, 2016).

Impact of Climate Change on Tourism

About 20–30 percent of flora and fauna species will become extinct if the global average temperature rises by 1.5°C; this toll will increase to 40–70 percent of species, were the temperature increase to reach 3°C. GHG emissions, which are primarily attributable to forestry and energy, are widely described as the main contributors to global temperature increases. The forestry sector accounts for as much as 75 percent of the total GHG emissions produced in Indonesia, whilst energy and transportation contribute less than 23 percent. The rise of sea level in Indonesia has also caused changes of water current, damages to mangrove forests, and enhanced the intrusion of sea water onto land. It has also caused the loss of small islands.

Initiative in Response to Climate Change

Indonesia's ministries have joined forces to respond to these challenges through the climate change reduction initiative. The country hosted the 13th UN Framework Convention on Climate Change Conference of the Parties in Bali in 2007. By 2020 Indonesia intends to reduce GHG emissions by 26 percent. To that end, it developed the Indonesia Climate Change Sector Roadmap which provides set national goals, sector targets, milestones and priorities for actions with regard to adaptation and mitigation of climate change for all affected sectors such as water, agriculture, marine and fisheries, health, energy, forestry and peatland, waste, industry and transportation. The Roadmap will serve as detailed policy guidance and a mainstreaming tool for the sectors and cross-sector development programmes to take up climate change issues in all aspects of development planning.

Programmes, Projects and Other Initiatives

At least six programmes in Aceh and Bali address these concerns, including the Pangandaran programme, the Environmentally-friendly Hotel programme, the Indonesia Eco Tour Alliance (IETA) and the Forest Rehabilitation Programme. Several are developed under the UN-originated Programme to Reduce Emissions from Deforestation and Forest Degradation in Developing Countries (REDD+), as well as its Coral Triangle Initiative, and coral reef rehabilitation and management programme (COREMAP). The Ministry of Forestry implements REDD+ and a reforestation programme known as the One Billion Tree Programme. Action plans with regard to the Coral Triangle Initiative include

identification of country and priority seascapes, the development of a marine protected areas network, an alternative livelihood programme, and the establishment of a rapid alert system for marine biodiversity in the coral triangle. Based on COREMAP, Indonesia initiated a long-term project to protect, rehabilitate and achieve sustainable use of the Indonesian coral reefs and their associated ecosystems which will enhance the welfare of the coastal communities.

The Ministry of Culture and Tourism (MOCT) supports and encourages all such initiatives in the tourism sector. MOCT has been focusing its contribution in three major initiatives, which have been recognised by policy and regulation, as provided in Law No.10 of 2009 on Tourism, which underlines the importance of sustainable tourism development for Indonesia. In addition, programme and project work includes World Tourism Organization (UNWTO) work on Tourism Development Supporting Biodiversity Conservation and the UNWTO Energy Efficiency for Sustainable Tourism project in Pangandaran.

Aceh and Bali

“Aceh Green” is the progressive vision of the provincial government of Aceh with regard to new development. It highlights the consideration of sustainable use of natural resources and equitable distribution of benefits to local communities. One of its programmes plans and supervises the involvement of the Aceh government in REDD+, particularly in carbon trading. It also focuses on the management of environmental services.

Similarly, the more recent “Bali Green Province” (BGP) initiative reflects the commitment of the provincial government of Bali, in conjunction with its district and city governments, private sector, NGOs, academics and local community groups. It aims to enable Bali to be recognised as a clean, healthy, comfortable, beautiful and sustainable destination for tourists. BGP has developed three core programmes known as “Green Economy”, “Green Culture” and “Bali Clean and Green”.

Pangandaran

As a major tourism destination in West Java, Pangandaran faces both opportunities and threats from tourism. Continuous degradation of natural resources and cultural values are perceived to be the cost it has to pay for its tourism prominence. Supported by UNWTO and MOCT, the local community of Pangandaran and the local government of Ciamis have initiated tourism planning which combines environmental concerns and biodiversity conservation in its activities for tourism development. Local community groups have started adaptation initiatives by developing “coral reef adoption” tours for tourists. UNWTO and MOCT provided support for these efforts until 2012, developing mitigation measures through an energy-efficiency programme, as well as working with local hotels, tour operators and business activities.

The project “Sustainable Tourism through Energy Efficiency with Adaptation and Mitigation Measures” in

Pangandaran (STREAM) began following the 2006 tsunami – a collaboration between UNWTO and the Indonesian Ministry of Tourism and Creative Economy (IMTCE), which have been working together in Pangandaran to revitalise tourism to the area (World Tourism Organization, 2014). With an investment of US\$ 1.7 million, the project aims to significantly increase the climate change resilience of Pangandaran and the competitiveness of its tourism sector, thereby serving as a model to be adopted and replicated in other destinations in Indonesia. It is part of the International Climate Initiative, supported by what was the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. This initiative supports climate protection projects worldwide in developing, newly industrialising and transition countries in order to contribute effectively to emission reductions, and mitigation and adaptation to climate change. STREAM is one of the central elements of “project Pangandaran”. According to Márcio Favilla Lucca de Paula, UNWTO Executive Director for Competitiveness, External Relations and Partnerships, STREAM is a practical example of how the tourism sector can engage local communities to be part of a sustainable solution in adapting to climate change. In addition, the STREAM project also provides seminars and workshops to increase the knowledge of local tourism stakeholders on climate change response, capacity building on energy efficiency, renewable energy technologies and energy management systems for hoteliers, as well the rehabilitation of mangroves and coral reefs by locals and tourists as a means to naturally capture and store carbon emissions.

On 5–7 May 2014, the STREAM project supported the efforts of those in the tourism sector in West Java to reduce the area’s energy footprint and promote climate adaptation. STREAM is thus a practical example of how the tourism sector can engage local communities to be part of the solutions to fight climate change.

The project’s achievements include the implementation of energy-efficiency and renewable-energy measures in several hotels and restaurants, and the development of a Low Carbon Planning Software Tool that helps to visualise and develop low-carbon tourism in the area. In addition, the project has also launched comprehensive rehabilitation programmes to restore and protect Pangandaran’s mangrove forests and coral reefs – over 1,400 coral segments and 38,000 mangroves were planted with high rates of success (*ibid.*).

The Mangrove Ambassadors Programme (MAP) in Pangandaran is another key project. It is part of a joint project of UNWTO and the IMTCE, supported by the government of Germany, and aims to promote climate change mitigation and adaptation measures. Through this programme, at least 451 school-age participants have urged global tourism leaders to take climate change seriously, taking into account that climate change is affecting their daily lives at Pangandaran tourism destinations (World Tourism Organization, 2013). Their handwritten letters were delivered by Sapta Nirwandar, the Indonesian Vice-Minister of

Tourism and Creative Economy during the presentation of the STREAM project at ITB Berlin, explaining how the school children are impacted by climate change. In her letter, Tiara Citra Dewi, a 14-year-old student, expressed her hope that the global leaders can do something against climate change.

In addition to promoting their letter-writing campaign, the MAP involved school children in planting and monitoring mangroves as an innovative way to promote a local and long-term sustainable solution to climate change adaptation. Through such programmes, Indonesia's future generations become not only an active part of the fight against climate change in their communities but also the voice of this movement amongst the older generations.

These projects epitomise the engagement of local communities. More than 2,000 people from various organisations and community groups are currently involved in mangrove conservation, including 450 school children. As of April 2014, most project initiatives were fully or partially run and monitored by local partners.

According to Favilla Lucca de Paula, climate change is not a remote event for tourism, rather it is a recognised phenomenon that already affects the sector. He cited the results achieved by STREAM, as an exceptional example of how tourism can be an effective tool in the fight against climate change, protecting natural resources while leading to inclusive development of local communities and fruitful cross-sector cooperation. In particular, STREAM has promoted several green tourism activities, seeking to engage tourists visiting Pangandaran in the fight against climate change. By experiencing Pangandaran in solar-powered boats or on locally produced bamboo bikes and actively participating in mangrove planting, tourists get a deeper understanding of their impact and how sustainable tourism can benefit host communities.

The STREAM project has also launched an initiative intended to stimulate behaviour change by rewarding hotel guests who adopt climate-friendly actions during their stay. For example, those who reuse towels (rather than requiring them to be laundered every day) receive a complimentary mangrove planting voucher. Since 2011, STREAM has been developing a global approach to low-carbon tourism in Pangandaran. The project will function as a lighthouse example in the fight against climate change which can be replicated in other destinations.

The "Environmentally Friendly Hotel" Programme

There are quite a number of environmentally friendly hotels operating in Indonesia. These range from international chain hotels that have received international awards to local chains and even small independent lodges. For example, the Gran Melia Jakarta received the Green Globe 21 Benchmark Certificate (2004) under the new Green Globe 21 certification programme. It has implemented a series of mitigation measures, covering its energy and water consumption, and its waste

production and disposal. It is also implementing an integrated environmental and social policy.

Ecolodge – a local chain – is deeply committed to the conservation of this rich biodiversity area. All five of its lodges try to implement modest mitigation measures, whilst also contributing to adaptation initiatives by putting a percentage of revenue towards developing and supporting a range of conservation projects in the surrounding areas. Similar initiatives have also begun in other lodges.

Indonesia Eco Tour Alliance

The IETA initiatives arise from the concern of tour operators regarding the degradation of the quality of natural resources and its impact on nature-based tours in Indonesia. This alliance is a network of Indonesian tour operators, who are selling environmentally and community friendly tours. Both mitigation efforts and contribution to adaptation initiatives are applied in their tours. The tours follow the standard for ecotourism. IETA members include Sumatra Ecoventure (North Sumatra), PT Indonesia Ecoventure (Jakarta), Indonesia Ecotravel.com, Pancebo Tours (South Sulawesi), Likes Tour (Moluccas), Tngkoko Eco Guide (North Sulawesi) and many others.

Forest Rehabilitation Programme

The Borneo Orangutan Survival Foundation (BOS) is an Indonesian non-profit environmental organisation established in 1991 in Balikpapan, East Kalimantan. The Forest Rehabilitation Programme is located in Kutai Kartanegara, particularly in four villages (Margomulyo, Sei Merdeka, Amburawang Darat and Tani Bakti). The programme covers 1,852.63 hectares of which 983.24 hectares are covered by a Right to Use Certificate issued by the National Land Agency Board. This latter programme was initiated by the BOS Foundation, in conjunction with local government.

International Events Related to Tourism and Climate Change

The UNWTO has partnered with UNCTAD, the United Nations Conference on Development and Trade, to present the Annual Report on Economic Development in Africa at UNWTO's Headquarters in Madrid. The 2017 edition focuses on tourism as a catalyst for transformative and inclusive growth on the continent, and underlines the immense potential of the sector. Recently, from 9 June 2017 to 4 July 2017, there have been several notable events related to tourism and climate change (World Tourism Organization, 2014).

One of these is particularly relevant to Indonesia. From 21–23 June, the UNWTO's Manila Conference set a roadmap to measure sustainable tourism. Nearly 1,000 experts from over 80 countries convened to lay the groundwork for an expanded statistical framework to measure sustainable tourism in its economic, social and environmental dimensions. The outcome, "Call for Action on Measuring Sustainable Tourism", represents a global commitment to sustainable tourism and the need

to measure it through a consistent statistical approach recognising that effective sustainable tourism policies require an integrated, coherent and robust information base.

Conclusion

Almost ten million international visitors entered Indonesia in 2015. The country not only gains income from these visitors, but is well rated with regard to its travel and tourism policies, and its natural and cultural resources, thereby attracting foreign investors. Clearly, tourism is expected to develop in Indonesia as a source of foreign income. It remains keen to increase domestic tourism, and still aims to log 275 million trips by domestic tourists by end of 2019. Global climate change has a significant potential impact on the tourism industry. On the one hand, tourism growth can increase GHG emissions, while on the other, the serious climate impacts resulting from the country's forest-fire problems may affect its desirability as a tourism destination. Thus, Indonesia's need to mitigate, suppress or prevent the forest fires, physically as well as legally, is one part of a larger programme on climate mitigation, including measures to protect, rehabilitate and achieve sustainable use of the Indonesian coral reefs and their associated ecosystems which will enhance the welfare of the coastal communities in the long term.

Indonesia is on the right track. The government should continue and strengthen its efforts to facilitate the development of its tourism industry to achieve sustainable tourism, in a manner which will enhance the social and environmental welfare of its citizens.

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Notes

- 1 [According to Wikipedia, "Pancasila" is the official, foundational philosophical theory of the Indonesian State. The word is comprised of two Old Javanese words originally derived from Sanskrit: "pañca" (five) and "sīla" (principles). Ed.]

Morocco

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Environmental Communication in Moroccan Enterprises: Progress, Transition and Practice

by Nadia Haouari,ⁱ Abdelhadi Makanⁱⁱ and Abderrahmene El Ghmariⁱⁱⁱ

Public awareness of environmental problems was initially a consequence of environmental disasters caused

by companies. From the Torrey Canyon oil accident in 1967 (Bellamy *et al.*, 1967) to Schweizerhalle in November 1986 (Giger, 2009), Seveso in 1976 (Consonni *et al.*, 2008) and Chernobyl in April 1986 (Berger, 2010), it is obvious that the environment has paid a heavy price for industrial growth.

This growth was accompanied by other threats, which are less spectacular, because they are diffused and less

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visual, but which are certainly also serious. These threats are brought about in the course of daily actions that may occur legally, but which, in the long term, represent critical challenges for those charged with protecting the environment. Among them are threats to the air, connected with scientific issues about the greenhouse effect (Rodhe, 1990) or the ozone hole (Son *et al.*, 2009); threats to water including pollutant releases (Hassoune *et al.*, 2006); and threats to land, such as massive deforestation (Pandit *et al.*, 2007). In essence then, they affect all aspects of our environment. As such, it is very difficult, if not impossible, to prioritise them, other than by public perception of the seriousness of the problems.

In June 1992, Rio de Janeiro hosted the United Nations Conference on Environment and Development (UNCED). This conference focused on the state of the global environment and the relationship between economics, science and the environment in a political framework (Meakin, 1992). At UNCED, more than 173 nations signed the UN Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity. The delegates also reached agreement on Agenda 21, an action plan for developing the planet sustainably through the 21st century, and on a broad statement of principles for protecting forests (Hileman, 1992). Accordingly, sustainable development has become a strategic issue for much of the business world, and has been integrated into most companies' growth models.

This general sensitivity to ecology has a second consequence, which is the increasing attention paid to environmental problems by both the written (Boykoff, 2008) and visual media (Hansen and Machin, 2013). Although its preferred territory remains disaster, it nevertheless affects all sectors. The media has become one of the strongest supporters of actions of the Ministry of Environment and its projects. A series of symposiums, magazines and specialised fairs is also being developed. The latest event hosted by Morocco was the 22nd UN Climate Change Conference (UNFCCC COP-22), held in Marrakech from 7–18 November 2016 (Saincy and Lambert-Lalitte, 2016).

From this media field, business is not absent. Long seen in a negative light, it is gradually beginning to be able to present its environmental actions with credibility in a favourable aspect. This has led to the development of marketing activities for biodegradable packaging (Yazdanifard and Mercy, 2011), products without phosphates or without chlorofluorocarbons (CFCs) (Kontny *et al.*, 1991), in short, a whole range of products or industrial attitudes seeking to be designated as ecological.

This new behaviour on the part of companies was initially carried out under a double constraint. Firstly, increasingly stringent international trade rules make environmental quality seem an obstacle to market entry for foreign products; and secondly, environmental legislation is becoming increasingly severe, particularly in European markets which impose the most stringent environmental standards (*e.g.*, "polluter pays" tax,

environmental auditing, environmental credentials of products). As a result, the environment will inevitably become a major focus of any company's strategy (Aragón-Correa *et al.*, 2008; Wagner and Schaltegger, 2004). All sectors of a company's existence are affected, and its environmental image has repercussions for all its functions: customer satisfaction at being able to consume cleanly, the mobilisation of employees around a common set of objectives, the attention given to the company by the political and economic authorities, and its public image and conservation associations.

A trend is taking shape towards company management that is genuinely oriented to address ecological concerns. The associated environmental communication strategy will be one of the major industrial challenges of tomorrow. In this study, we shine a light on progress, transition towards a green economy and the environmental communication practices of Moroccan companies in order to identify weaknesses, define needs and map the way ahead.

Environmental Communication Progress

Despite its efforts to anchor the principles of sustainable development, Morocco still faces difficulties in meeting its challenges: the continuing rise in energy or food prices, the adverse effects of climate change, the loss of biodiversity, the depletion of natural resources and the widening of social inequalities.

These challenges could have hampered Morocco's development, but by capitalising on the major reforms undertaken over the past decades, the Kingdom has accelerated the cadence of its achievements, giving the country a visible and recognised boost thanks to the concerted and controlled management of several projects via its Structural Funds (Département de l'Environnement, 2016a).

In addition, there has been considerable development in the regulation of environmental protection or restoration. The measures taken have covered all economic sectors and all stages of the life of an enterprise. It was on the occasion of the "Integrals of Investment", organised by the Direction of Foreign Investment in October 2005, that the Moroccan authorities clearly expressed their adherence to Corporate Social Responsibility (CSR) values (Hammach, 2014). Afterwards, this commitment finds its concrete extension in a legal framework as the Moroccan standardisation and labelling scheme.

Regulatory Texts

The legal framework has gradually been modified taking adherence to CSR values into account (M'Hamdi and Trid, 2009).

Labour Code

The Labour Code states a commitment to basic human rights. Its updating made it possible to comply with the international conventions ratified by Morocco.

Human Rights

Human rights were, firstly, recognised on an institutional level with the creation of a Human Rights Advisory Council, followed by the Equity and Reconciliation Commission. These entities are the guarantors of respect for the universal values of the human person.

Environmental Law

Environmental law aims to ensure the coherence of the environmental framework at both national and international levels. Moroccan environmental law developed on an *ad hoc* basis until 2003, with scattered texts on subjects such as the conservation of monuments and sites, use of hydrocarbons and investment in small and medium-sized enterprises (SMEs), containing a few perfunctory provisions on the environment. The change came in 2003, when the environment became a concern for Moroccan legislators, who from then on took it into account in its economic activities, to ensure its preservation. In that year, for example, three important laws were adopted in the environmental sector, several existing laws were updated and others were introduced (Département de l'Environnement, 2016b).

National Charter for the Environment and Sustainable Development

The National Charter for the Environment and Sustainable Development integrates Morocco's commitments to international conventions relating to the protection of the environment with sustainable development perspectives. It aims at determining the objectives of the State in terms of environment and sustainable development, with particular attention to five areas: legislative standardisation; environmental protection and conservation in the broad sense; control of pollution, nuisances and desertification; definition of the commitments of all stakeholders; and the enunciation of public policies and sustainable development strategies.

Normalisation

The Interministerial Council for Quality and Productivity, the Technical Standardization Committee and the Moroccan Industrial Standardization Services are the three Moroccan standardisation bodies.

In addition to international and European standards, Morocco has already published more than 3,700 standards covering various aspects in different sectors (Labaronne and Gana-Oueslati, 2011). It has developed technical references for national certification and quality-control systems.

National standards for the main management systems have also been established in the field of CSR. These include Standard NM 00.5.600 (Management system of the social aspects within a company), and the Moroccan standard on the generalities of social auditing (NM 00.5.610).

CGEM Label

Moroccan companies awarded the CGEM Label (*Confédération Générale des Entreprises Marocaines*) are

distinguished for their commitment to CSR. They recognise observing, defending and promoting the universal principles of social responsibility and sustainable development in their economic activities, social relations and, more generally, their contribution to value creation. The CGEM Label is awarded for a period of three years to companies based in Morocco, members of the Confederation, without discrimination of size, sectors, products or services. In May 2016, 75 Moroccan companies were current recipients of such labels (CGEM, 2016).

The CGEM Label offers several advantages, including special treatment by administrative partners (customs, tax, social insurance) or banks (Crédit Agricole du Maroc, Banques Populaires Group, Moroccan Bank for Trade and Industry). CGEM recipients are allowed to apply simplified procedures, relaxed controls, personalised management and expeditious handling of files. However, in order to benefit from all these advantages, SMEs must communicate and submit environmental reports.

Environmental Reports and Sustainable Development Reports

Today, no Moroccan law obliges a company to publish an environmental report or a sustainable development report (a report that provides a wider view of the company's environmental situation). Yet, more and more large companies are setting them up to show an improvement in the environmental consequences of their business. To the extent that these reports are published, they are totally independent of the annual accounts submitted to the shareholders.

In addition to the regulations and public requirements that drive the company to communicate its environmental accomplishments, the Moroccan system adds other incentives:

1. Such reports help the company develop a competitive advantage (companies communicate their environmental performance to the market);
2. They improve the image of the company (this motivation is found in industries that have a notoriously bad reputation in the field of environment. Recipients of the information published are mainly the public, the neighbours of the factory involved and its employees); and
3. They provide support for internal reporting (the reporting objective seeks to improve the company's environmental management and its performance in terms of environmental protection and rehabilitation. Reports are not systematically published because they are intended primarily for employees who are directly involved in environmental management or for all employees as a tool for motivating and developing a corporate culture).

From Improved Environmental Communication to a Green Economy

Environmental communication (environmental reports and sustainable development reports) increases

awareness of the current state of the environment in a company in particular and in the country in general. It allows each Moroccan legislator to procure global views on the current practices of Moroccan companies, the applicability of current laws and/or legislative reinforcement envisaged. At present, however, communication alone is no longer seen as a sufficient means to promote the sustainable development approach around the world – not even by the original proponents of the environmental communication mechanism (Meakin). To address perceived deficiencies, the Earth Summit 2012 (Rio de Janeiro, 13–22 June 2012) – the third international conference on sustainable development – once again aimed at reconciling the economic and environmental goals of the global community. Top of the agenda was the concept that has become known as the “green economy”, followed closely by the issue of international governance structures, looking at how any of this can actually be implemented (Neil and Wearing, 2012). Given that the sustainable development approach combines increasing the economic impact with reducing the environmental impact, it has rendered the transition towards a green economy both vital and unavoidable (Ocampo, 2011).

In the transition, a “green economy” is characterised as one that respects ecological balances and is likely to open up new opportunities for the creation of wealth and sustainable jobs. This archetype is now a major objective of the new strategic approaches to sustainable development (Fay, 2012) that are being adopted by some countries of North Africa, and Morocco in particular.

Today, Morocco faces many environmental constraints such as severe shortage of water (Sraïri *et al.*, 2009), soil degradation (d’Oleire-Oltmanns *et al.*, 2012), very high energy dependence (Odhiambo, 2014), vulnerability to climate change (Schilling *et al.*, 2012) and various kinds of pollution. These environmental constraints combine with the limited impact of economic growth and social development policies in terms of jobs and reduction of social and spatial disparities to require reorientation of the economic model in favour of the transition to a green and inclusive economy (Arib, 2014). Such an economy must be carried by the private sector and create jobs, help reduce poverty and reduce imbalances in territorial development.

These are the main challenges for Morocco, which has definitely made the green economy a strategic axis of its sustainable development policy (Département de l’Environnement, 2016a). The country seeks to mobilise all actors and build innovative public-private partnerships in order to increase investments that are environmentally friendly and capable of creating added value and sustainable jobs, especially for young people whose unemployment rate reached 9.4 percent in 2016 (Haut-Commissariat au Plan, 2016). Efforts are under way to set up a Green Investment Fund to encourage companies to launch innovative projects.

Institutional, regulatory and financial reforms and incentives are already being implemented to improve the integration of an environmental dimension and to

promote the development of strategic sectors such as renewable energies, energy efficiency, water conservation, sustainable management of solid and liquid wastes, inclusive agriculture, aquaculture and ecotourism (Département de l’Environnement, 2016b). Further efforts are expected in the areas of adaptation/enforcement of regulations, environmental taxation, pricing of environmental goods and services, sustainable and appropriate financing mechanisms, mobilisation of knowledge and innovation, and monitoring.

As planned, the green economy will not happen without the establishment of innovative partnerships with the private sector, local authorities and civil society (Fay). These partnerships should make it possible to mobilise the necessary investment and technological solutions, promote local skills and strengthen the commitment of all as well as solidarity. Eco-innovative SMEs will be the real drivers of the green economy (Triguero *et al.*, 2013). To this end, their capacities should be improved and they should benefit from the new green financing tools and adapted accompanying measures. Particular attention should be paid to integrating the informal sector, given its importance. Although the level of commitment of Moroccan companies to CSR is still low, it is one of the most advanced in Africa, the Maghreb and the Arab world (Ararat, 2006). The role of the banking sector in financing the green economy will need to be strengthened; banks are called upon to develop financial products oriented towards the green economy.

The transition can happen only in conjunction with improvement of the competitiveness of enterprises that participate in the green economy, adding significant value. This requires innovation and technological development. Thus, the strengthening and adaptation of the national innovation system is a major challenge for a country that was ranked 84th out of 143 countries in the Global Innovation Index 2014, but is still facing limited performance, particularly in terms of innovation in the business environment and market sophistication (Dutta *et al.*, 2014). Finally, this process should be accompanied by continuous and inclusive communication and dialogue around the green economy.

Environmental Communication Practices

Sustainable development embodies a new conception of each company’s role, using the CSR concept to promote companies’ compliance with their obligations to society. Available literature offers more numerous explanations for the behaviour of large enterprises in terms of sustainable development, than those related to SMEs. Although there are many different theories, the majority were inspired by a single perspective (Spence *et al.*, 2007). According to institutional theories, organisations do not depend solely on material and informational resources to survive, but should also ensure their legitimacy through their strategic environment (Powell and DiMaggio, 1991). In addition, Wood (1991) incorporated legitimacy as a major principle of CSR. While admitting that CSR is a

necessary condition for gaining market share and adding to the value chain in the global economic space, exports too depend on the ability of managers to engage in CSR (Jamali and Mirshak, 2007). This commitment is reflected in the certification of their company, with an attentive approach to fundamental human values and respect for the environment, to ethical behaviour and citizen investments; environmental communication is an essential part of this.

In spite of the increasing discourses on the issues of sustainable development and the advantages of CSR, and despite many institutional tools proposed to the Moroccan SMEs for their implementation, it is clear that environmental communication is poorly integrated into the strategy of these companies. Moreover, the SMEs' predominance in the industrial world in Morocco highlights a financial, structural and human fragility that hampers the implementation of a formal, controlled or even certified CSR, because this implies setting up management modes that substitute formal, textual procedures and planning for informal verbal processes and intuition (Torrès, 1997). Neither employees nor senior executives have thus far demonstrated the level of enthusiasm shown towards CSR by the Moroccan authorities. Academic or professional training remains largely dominated by those disciplines that primarily promote competitiveness and put social integration in second place.

In an empirical study of about 40 companies in the Fès-Boulemane region, M'Hamdi and Trid showed that 62.9 percent of the surveyed company managers stated that they understood the CSR concept. However, even these managers are confronted by lack of information. Many (70.4 percent) of them admitted that they ignored the institutions that offer help in implementing CSR; and 77 percent, that they ignored the benchmarks for implementing CSR. Overall, however, M'hamdi and Trid claim that Moroccan SMEs are increasingly aware that social responsibility can have a direct economic value. Although their primary responsibility is to generate profits, they can also contribute to social objectives and environmental protection, integrating social responsibility as a strategic investment at the heart of their business strategy, into their management instruments and their activities.

Using Carroll's (1991) and Hofstede's (1991) analytical frameworks and observations of CSR in the Middle East and North Africa, Ararat reported that the drivers for CSR might be exogenous, claiming that macro-economic stability induces ethical behaviour, establishes the moral authority of the governments and improves their law-enforcement capability. On the other hand, economic development and opening up to international competition accelerate the convergence of business cultures and may partially neutralise the local societal cultural characteristics. Free-trade activities can, at times, be a source of organisational learning for environmental communication practices. Thus, multinationals can be a real precursor of environmental communication and CSR in Morocco.

Conclusion


Environmental communication may appear a cynical ploy in the eyes of some ecologists. It certainly implies a moralisation of economic life, at least at the stage of discourse, and the attention given to the environment by the company is one of the areas where this ethic can concretely be exercised. We do not, however, believe in the sudden conversions of industrial leaders to the virtues of ecology, and the few known cases seem to be more akin to mysticism than to reasoned approaches. What we strongly believe is that in order to allow real environmental awareness by companies, it must be possible to demonstrate that they, and not just future generations, will benefit directly.

We also know that the green wave is not a temporary phenomenon. It may cease to be fashionable, but the elements that stimulated it will not go away. The problems of overpopulation, industrial development and pollution in third-world countries as well as in the developed States, will be felt for a long time. Pollution is no longer geographically delimited. It is the whole Earth that bears its effects and these are amplified by the globalisation of exchanges and the media.

To make real progress, we must first acknowledge that industry is not responsible for all pollution and it will not be able to eliminate it. It should not be the scapegoat – everyone will need to take responsibility, especially public administrations and local authorities. Environmental communication does not claim to solve environmental problems; it simply makes a contribution, and that contribution is not negligible – it has the force of prediction, mobilisation and it is at the very heart of management actions.

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Cover photo: The Florida Everglades. *Deutsche Welle* reported recently that Hurricane Irma has had a major impact on this World Heritage area, which is both a unique wetland wilderness and an ecologically crucial shield for a large and important ecosystem.

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