**Amsterdam Center for International Law**
University of Amsterdam

SHARES
RESEARCH PROJECT ON
SHARED RESPONSIBILITY IN INTERNATIONAL LAW

# RESEARCH PAPER SERIES

SHARES Research Paper 69 (2015)

## The Practice of Shared Responsibility for Transboundary Air Pollution

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Cite as: SHARES Research Paper 69 (2015)
available at www.sharesproject.nl

Forthcoming in: André Nollkaemper and Ilias Plakokefalos (eds.), *The Practice of Shared Responsibility in International Law* (Cambridge University Press, 2016)

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The Research Project on Shared Responsibility in International Law (SHARES) is hosted by the Amsterdam Center for International Law (ACIL) of the University of Amsterdam.

The research leading to this paper has received funding from the European Research Council under the European Union's Seventh Framework Programme (FP7/2007-2013)/ERC grant agreement n° 249499.

# The Practice of Shared Responsibility for Transboundary Air Pollution

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## 1. Introduction

The legal regime of trans-frontier atmospheric pollution is traditionally – and often rather hyperbolically – associated with an icon from the 'archaeology of international environmental law', as René-Jean Dupuy once called it.[1] Starting out from little more than an *obiter dictum* in the 1941 *Trail Smelter* case,[2] later beatified and expanded by the 'soft' Stockholm and Rio Declarations in 1972/1992[3] and a few treaty preambles, the primary responsibility of states to avoid transboundary environmental harm has since been hardened into a customary maxim by the International Court of Justice (ICJ), in its 1996 advisory opinion on the legality of nuclear weapons.[4] The question is whether the *sic utere tuo* principle, thus invoked by the ICJ as part of the 'corpus of international law relating to the environment',[5] can also contribute to the concept of *shared* responsibility[6] in general international law.

The short answer is that the specific factual circumstances of the *Trail Smelter* arbitration do not lend themselves to simple extrapolation to the multiple-source scenarios typical of most contemporary transboundary pollution. Whereas in the 1930s and 1940s, the lead and zinc smelter at Trail/Canada was readily identifiable as the only major 'point source' of sulphur

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[1] 'Introduction', R.J. Dupuy (ed.), *L'avenir du droit international de l'environnement/The Future of the International Law of the Environment* (Dordrecht: Nijhoff, 1985), 18.

[2] *Trail Smelter Arbitration (United States of America/Canada)* (1938 and 1941), (1949) 3 RIAA 1905.

[3] Principle 21, Declaration of the United Nations Conference on the Human Environment, Stockholm, 16 June 1972, (1972) 11 ILM 1416 (Stockholm Declaration); Principle 2, Rio Declaration on Environment and Development, Rio de Janeiro, 14 June 1992, (1992) 31 ILM 874 (Rio Declaration); e.g. LRTAP Preamble, n. 10; Vienna Convention for the Protection of the Ozone Layer Preamble, n. 14.

[4] *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, ICJ Reports 1996, 226.

[5] Ibid., 242, para. 29.

[6] P.A. Nollkaemper and D. Jacobs, 'Shared Responsibility in International Law: A Conceptual Framework' (2013) 34 MIJIL 359.

dioxide emissions in the neighbourhood, transboundary air pollution today involves a multitude of industrial and other sources on both sides of frontiers, with the 'victim state' invariably contributing to the aggregate damage and hence potentially incurring joint responsibility (as illustrated by a successor case over water pollution at the very same location on the US-Canadian border).[7] That complex new situation inspired several modern bilateral treaties on transboundary air pollution, from the 1974 Czech-Polish Treaty (followed by related treaties with East Germany, covering the notorious 'black triangle' shared by all three countries) to the 1987/1989 US-Mexican Border Agreements; the 1989 Finnish-Russian Agreement; and the 1991 US-Canadian Air Quality Agreement.[8] It also prompted the Council of Europe's 1971 resolution on 'Air Pollution in Frontier Areas', leading on to an Outline Convention on Transfrontier Co-operation, which promotes a set of model inter-state instruments, including provisions to deal with air pollution at sub-regional levels.[9]

Moreover, some of the most serious environmental damage caused by air pollution is now recognised to occur over long distances, irrespective of geographical propinquity, through a cumulative process of emission, combination, trans-border diffusion and deposition of pollutants, the sources of which are often remote, uncertain, and wholly unrelated to each other. The focus of international law-making in this field, exemplified by the evolution of the United Nations (UN)/Economic Commission for Europe (ECE) Convention on Long-range Transboundary Air Pollution (LRTAP or LRTAP Convention),[10] has consequently shifted from the protection of foreign territorial (state or private) interests to multilateral protection of the atmosphere itself, as the ultimate international commons.

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[7] *Pakootas* v. *Teck COMINCO Metals Ltd.*, settled in a US federal court; 452 F.3d 1066 (9th Cir. 2006, cert. denied 2008). See M. van de Kerkhof, 'The Trail Smelter Case Re-examined: Examining the Development of National Procedural Mechanisms to Resolve a Trail Smelter Type Dispute' (2011) 27 *Merkourios: Utrecht J. Int'l & Eur. L.* 68.

[8] Agreement between the governments of the Czechoslovak Socialist Republic (CSSR) and Poland on air pollution control, 24 September 1974, 971 UNTS 408; Agreement of Cooperation Between the United States of America and the United Mexican States Regarding Transboundary Air Pollution Caused by Copper Smelters Along Their Common Border, 29 January 1987, in force 29 January 1987, (1987) 26 ILM 33/Agreement of Cooperation Between the Government of the United States of America and the Government of the United Mexican States Regarding International Transport of Urban Air Pollution, 3 October 1989, in force 3 October 1989, (1990) 29 ILM 30; Finnish-Russian Action Programme for the Purpose of Limiting and Reducing the Deposition and Harmful Effects of Air Pollutants Emanating from Areas Near the Common Border of Finland and Russia, Helsinki, 26 October 1989; Agreement on Air Quality (Canada-US), Ottawa, 13 March 1991, in force 13 March 1991, 1852 UNTS 79.

[9] Council of Europe, Committee of Ministers, Resolution 71, adopted 26 March 1971, 'Air Pollution in Frontier Areas'; European Outline Convention on Transfrontier Co-operation between Territorial Communities or Authorities, Madrid, 21 May 1980, in force 22 December 1981, 1272 UNTS 61.

[10] Convention on Long-Range Transboundary Air Pollution, Geneva, 13 November 1979, in force 16 March 1983, 1302 UNTS 217 (LRTAP).

The atmosphere is the Earth's largest single natural resource, so listed – along with mineral, energy and water resources – by the UN Committee on Natural Resources, as well as in the 1972 Stockholm Declaration and in the 1982 World Charter for Nature.[11] It provides renewable 'flow resources' essential for human, plant and animal survival on the planet; and in addition to contributing basic economic production supplies (e.g., oxygen and precipitation) as well as waste absorption services (e.g., as sink resource or dilution medium for combustion exhausts), it serves as a medium for transportation and communication ('spatial-extension resource').[12]

In scientific terms, the global atmosphere is vertically divided into four layers: troposphere (up to about 20 km); stratosphere (c. 20-50 km); mesosphere (c. 50-80 km); and thermosphere (c. 80-600 km).[13] Although the vertical scope of traditional international air law is usually restricted to navigable airspace (up to about 100 km), space exploration programmes are known to result in cumulative pollution effects at higher altitudes as well. Anthropogenic emissions also have multiple-source deleterious impacts on the Earth's protective ozone layer in the stratosphere, now regulated under the Vienna Convention for the Protection of the Ozone Layer (1985 Vienna Convention) and its 1987 Montreal Protocol,[14] which consequently need to be taken into account in this context. Conversely, the present chapter will not deal with issues of shared responsibility for the overall functioning (or dysfunction) of a comprehensive global climate regime, which are addressed in chapter 38 of this volume.[15]

## 2. Factual scenarios

Article 1(a) of the LRTAP Convention defines air pollution as 'the introduction by man, directly or indirectly, of substances or energy into the air resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and

[11] UNGA, World Charter for Nature, UN Doc. A/RES/37/7 (28 October 1982).
[12] M.S. McDougal et al., *Law and Public Order in Space* (New Haven, CT: Yale University Press, 1963), at 779 suggested adding this new subcategory to the standard dichotomy of 'flow and stock resources', coined by S. v. Ciriacy-Wantrup, *Resource Conservation: Economics and Policies*, 3rd edn (Berkeley, CA: University of California Press, 1968).
[13] See J.M. Wallace and P.V. Hobbs, *Atmospheric Science: An Introductory Survey*, 2nd edn (London: Academic Press/Elsevier, 2006), 10-11 (figure 1.9).
[14] Vienna Convention for the Protection of the Ozone Layer, Vienna, 22 March 1985, in force 22 September 1988, 1513 UNTS 293 (1985 Vienna Convention); Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 16 September 1987, in force 1 January 1989, 1522 UNTS 3.
[15] Chapter 38, J. Peel, 'Climate Change', this volume, ___.

material property and impair or interfere with amenities and other legitimate uses of the environment'; and long-range transboundary air pollution as 'air pollution whose physical origin is situated wholly or in part within the area under the national jurisdiction of one State and which has adverse effects in the area under the jurisdiction of another State at such a distance that it is not generally possible to distinguish the contribution of individual emission sources or groups of sources' (Article 1(b)).

This formulation – like the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) and Organisation for Economic Cooperation and Development (OECD) definitions of pollution from which it was derived (though unlike the narrower language of the subsequent US-Canadian Air Quality Agreement, which purposely deleted the words 'or energy') – explicitly includes all anthropogenic emissions not only of pollutant substances but also of energy. It thus broadens the factual scenario in at least two dimensions: viz., acoustic (noise) pollution; and radionuclide (nuclear) pollution.

To be sure, *noise pollution* never was a contentious issue under the LRTAP Convention, for the simple reason that its deleterious effects are typically local rather than long-range; and while *radioactive air pollution* briefly became an issue in the wake of the Chernobyl disaster of 1986, the contentious question whether or not it is covered by the LRTAP has no practical bearing on the problem of *shared* responsibility. This is because Chernobyl was a case of 'instantaneous' pollution readily traceable to a single point source, and because the Convention does not regulate liability for damage. In a global context, however, perspectives may change. The UN Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) regularly monitors the levels and effects of ionising radiation irrespective of its origin; and although variations in measurement results can usually be pinpointed to nuclear accidents or nuclear tests in individual countries, the overall outcome reflects the cumulative impact of transnational radioactive air pollution from an aggregate of sources worldwide.

*Natural* causes of transboundary air pollution, though excluded by the LRTAP definition, are covered by some other regional and sub-regional regimes. The 2002 South East Asian Agreement on Transboundary Haze Pollution (section 3.2 below) defines haze pollution as 'smoke resulting from land and/or forest fire which causes deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment'. The ongoing intergovernmental programmes to combat long-range transboundary pollution by 'yellow

sand' in Northeast Asia (NEASPEC, 1993); by the 'atmospheric brown cloud' in South Asia (Malé Declaration, 1998); and by savannah and forest fires in Southern, Central and Western Africa (2008-2009)[16] also deal with pollutants generated by natural events. Given that these regional policy frameworks are not legally binding, however, they have no bearing on responsibility.

In the end, of course, all types of air pollution – national, regional, or emitted outside territorial jurisdiction (e.g., from ships or aircraft on or above the high seas) – impact the Earth's entire atmosphere. The need for an integrated approach is highlighted by mounting scientific evidence of major intercontinental flows of air pollutants, with each pollutant-emitting state contributing its share to effects that are felt in all countries as well as in the global commons (e.g., in the form of airborne marine pollution from multiple land-based sources).[17]

## 3. Primary rules

Existing international case law on transboundary air pollution mostly relates to bilateral disputes between no more than two parties. There is very few *multilateral* treaty law expressly dealing with the rules to be applied in those more widespread and more typical scenarios where transboundary harm caused to, or through, the atmosphere is attributable to the conduct of a plurality of states.[18] The brief overview which follows will take stock of the available legal arsenal.

### *3.1 The LRTAP regime*

First alerted by Scandinavian reports of 'acid rain' damage due to air pollution from multiple foreign sources in the 1970s, an initial joint modelling project carried out under the auspices of the OECD soon demonstrated that efforts at a bilateral or sub-regional (West European)

[16] Mitigating Dust and Sandstorms through Combating Desertification, North-East Asian Subregional Programme for Environmental Cooperation (NEASPEC), 1993; Declaration on Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia, Malé, 22 April 1998, Report of 7th SACEP Governing Council Meeting (Malé Declaration).
[17] See Chapter 12, Y. Tanaka, 'Land-based Marine Pollution', this volume, ___.
[18] P.N. Okowa, *State Responsibility for Transboundary Air Pollution in International Law* (Oxford University Press, 2000), 195.

level could not cope with the problem, and that cooperation on a wider (East-West) scale was needed. The apposite intergovernmental forum for that purpose turned out to be the Geneva-based UN/ECE, whose membership covers a major portion of the Northern hemisphere. After intensive diplomatic negotiations, the UN/ECE adopted a multilateral convention on 13 November 1979, the LRTAP Convention, which laid down general rules and an institutional framework, later followed by a sequence of specific implementing protocols (1984-1999, revised/consolidated in 2012).[19]

In terms of substantive international law, the LRTAP Convention hardly moved beyond Principle 21 of the Stockholm Declaration. The language of Articles 2 and 6 of the Convention is so fraught with diplomatic qualifications ('Contracting Parties … shall endeavour to limit and, as far as possible, gradually reduce and prevent air pollution', through 'control measures compatible with balanced development') as to be more reminiscent of 'soft law' than of hard treaty commitments. Yet, the very generality and flexibility of the cooperation regime so established enabled the Executive Body – through successive incremental rule-making in the form of protocols and technical annexes – to specify and quantify the initial treaty goals, and to adjust them to new developments and new scientific information.[20] The LRTAP protocols gradually extended the regulatory scope of the regime from its priority focus on monitoring (Cooperative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe, EMEP 1984) and emission reductions for sulphur dioxide ($SO_2$, 1985/1994), to a wide range of other substances – including nitrogen oxides ($NO_x$, 1988); volatile organic compounds (VOCs, 1991); persistent organic pollutants (POPs, 1998); and heavy metals (cadmium, lead, mercury, 1998/2012) – and ultimately to an integrated multi-pollutant and multi-effects approach that also covers climate-related substances ('black carbon', under the 1999/2012 Gothenburg Protocol).[21] At

[19] The current membership of the LRTAP, n. 10, comprises 50 countries and the European Union. Five of the protocols in force are to be superseded by the 2012 revision of the 1999 Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone, consolidated text available at www.unece.org/fileadmin/DAM/env/documents/2013/air/eb/ECE.EB.AIR.114_ENG.pdf. The amendments are not yet in force, however, and in March 2015 the United States opted out of the 2012 amendments to Annexes II-VI of the Heavy Metals Protocol.

[20] See M.A. Levy, 'European Acid Rain: The Power of Tote-Board Diplomacy', in P.M. Haas et al. (eds.), *Institutions for the Earth: Sources of Effective International Environmental Protection* (Cambridge, MA: MIT Press, 1993), 75.

[21] See J. Sliggers and W. Kakebeeke (eds.), *Clearing the Air: 25 Years of the Convention on Long-Range Transboundary Air Pollution* (Geneva: UN/ECE, 2004); R. Lidskog and G. Sundqvist (eds.), *Governing the Air: The Dynamics of Science, Policy, and Citizen Interaction* (Cambridge, MA: MIT Press, 2011); S. Reis et al., 'From Acid Rain to Climate Change' (2012) 338(6111) *Science* 1153-54; D. Zaelke (ed.), *Primer on Short-Lived Climate Pollutants* (Washington, DC: Institute for Governance and Sustainable Development, 2013); and P. Pearson et al. (eds.), *On Thin Ice: How Cutting Pollution Can Slow Warming and Save Lives* (Washington, DC:

the same time, the LRTAP regime was progressively retrofitted with procedural mechanisms for compliance control, also adapting its original joint meteorological/chemical monitoring and modelling network to the additional task of verifying conformity with treaty obligations.

While other multilateral treaties concluded under UN/ECE auspices also have potential implications for trans-border air pollution in this region,[22] the most important sub-region concerned is the European Union (EU), which in turn cooperates closely with the LRTAP regime as a party to the LRTAP Convention,[23] and which has an elaborate set of internal regulations and directives relating to air pollution and ambient air quality, albeit *sui generis* and beyond the scope of the present survey.

### *3.2 Other regional regimes*

Articles 212(3) and 222 of the 1982 UN Convention on the Law of the Sea calls on states to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution 'from or through the atmosphere'.[24] There now is a series of regional/sub-regional conventions and protocols which specifically provide for protection of the marine environment against airborne pollution from land-based sources and activities, starting with the 1980 Athens Protocol for the Mediterranean Sea (since superseded by the 1996 Syracuse Protocol), and currently covering a total of twelve marine regions, from the Baltic Sea to the Western Indian Ocean.[25] Whilst some of these agreements expressly

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World Bank & International Cryosphere Climate Initiative, 2013). 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone to the Convention on Long-range Transboundary Air Pollution, as amended on 4 May 2012, Gothenburg, 30 November 1999, in force 17 May 2005, 2319 UNTS 81.

[22] Including the Convention on Environmental Impact Assessment in a Transboundary Context, Espoo, 25 February 1991, in force 10 September 1997, 1989 UNTS 309 (1991 Espoo Convention); the Convention on the Transboundary Effects of Industrial Accidents, Helsinki, 17 March 1992, in force 19 April 2000, 2105 UNTS 457; the Agreement Concerning the Establishing of Global Technical Regulations for Wheeled Vehicles, Equipment and Parts Which Can Be Fitted and/or Used on Wheeled Vehicles, Geneva, 25 June 1998, in force 25 August 2000, 2119 UNTS 129; and the Protocol on Pollutant Release and Transfer Registers (PRTRs), Kiev, 21 May 2003, in force 8 October 2009, UN Doc. MP.PP/2003/1, to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Aarhus, 25 June 1998, in force 30 October 2001, 2161 UNTS 447.

[23] See the *European Union Emission Inventory Report 1990-2010 under the UNECE Convention on Long-range Transboundary Air Pollution*, EEA Technical Report No. 8/2012 (Copenhagen: European Environment Agency, 2012).

[24] United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982, in force 16 November 1994, 1833 UNTS 3, see also Articles 207 and 213; and the reference to 'atmospheric deposition' in the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, Washington/DC, 3 November 1995, UN Doc. UNEP(OCA)/LBA/IG.2/7 (1995).

[25] Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources, Athens, 17 May 1980, in force 17 June 1983, 1328 UNTS 105; Protocol for the Protection of the Mediterranean Sea against

refer to the issue of transboundary pollution,[26] their declared primary object of protection is not the atmosphere, but the subjacent marine and coastal environment.

Also in 1982, United Nations Environment Programme (UNEP)'s 'Montevideo Programme for the Development and Periodic Review of Environmental Law' had called for the preparation of a global 'code of conduct with respect to transboundary air pollution, drawing upon existing regional and bilateral experience'.[27] Yet, that recommendation was never followed up, and the 1992 Rio Conference decided instead, in Chapter 9 of its Agenda 21, '[t]o encourage the establishment of new and the implementation of existing *regional* agreements for limiting transboundary air pollution',[28] with a focus on developing countries in particular. As a result, the revised Montevideo Programme since 1993 reoriented UNEP's work in this field towards replicating the LRTAP model in other regions and sub-regions, in cooperation with other UN bodies, intergovernmental or non-governmental organisations, and bilateral aid agencies.

In North-East Asia, a Sub-regional Programme for Environmental Cooperation (NEASPEC) developed technical assistance projects for the mitigation of transboundary air pollution from coal-fired power plants, and for the prevention and control of dust sandstorms. In South Asia, the Governing Council of the UNEP-sponsored South Asia Cooperative Environment Programme adopted a 'Declaration on Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia' (Malé Declaration); the Association of South East Asian States (ASEAN) concluded an Agreement on Transboundary Haze Pollution;[29] and preparatory work for an Acid Deposition Monitoring Network in East Asia (EANET) materialised in an intergovernmental agreement for the coordination of national monitoring and research activities on transboundary air pollution.[30] In Africa, four sub-regional inter-governmental 'framework policy agreements on air pollution' have been adopted under

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Pollution from Land-Based Sources and Activities, Syracuse, 7 March 1996, in force 11 May 2008, OJ L 322 (14/12/1999), 20 (1996 Syracuse Protocol). For the Arctic region, see Y. Tanaka, 'Reflections on Trans-Boundary Air Pollution in the Arctic: Limits of Shared Responsibility' (2014) 83 *Nordic J. Int'l L.* 213.

[26] E.g., Article 8 of the Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land-Based Sources and Activities, Nairobi, 31 March 2010.

[27] See II E 2 (d), at 14, text available at www.unep.org/delc/Portals/119/publications/Montevideo_ProgrammeI.pdf.

[28] Agenda 21 – Chapter 9, Protection of the Atmosphere; 4. Terrestrial and marine resource development and land use; D. Transboundary atmospheric pollution; Objectives 9.27(e) (emphasis added), available at www.unep.org/.

[29] See n. 16; ASEAN Agreement on Transboundary Haze Pollution, Kuala Lumpur, 10 June 2002, in force 25 November 2003, see http://haze.asean.org/.

[30] Instrument for Strengthening the Acid Deposition Monitoring Network in East Asia (EANET), Niigata, 23-24 November 2010, Decision 1/IG.12.

UNEP auspices: for Southern Africa (2008), Eastern Africa (2008), Central and Western Africa (2009), and North Africa (2011).[31]

*3.3 Global sectoral regimes*

On a global scale, international legal rules for air pollution likely to have transboundary impacts exist in several sectors, including regulatory regimes for:

(a) specific activities emitting atmospheric pollutants;

(b) specific pollutant substances released into the atmosphere; and

(c) ambient air quality in specific environments.

(a) Nuclear weapons tests in the atmosphere are prohibited by the 1963 Partial Test Ban Treaty,[32] followed by the 1996 Comprehensive Test Ban Treaty.[33] Basic safety standards for protection against atmospheric radiation from peaceful uses of nuclear energy have been issued since 1961 by the International Atomic Energy Agency (IAEA), consolidated in the 1994 Vienna Convention on Nuclear Safety,[34] and complemented by the IAEA conventions and protocols on liability for nuclear damage and on notification of nuclear accidents. In the transport sector, pollutant emissions from *aircraft* engines (hydrocarbons, carbon monoxide, and nitrogen oxides) have been the subject of technical regulations by the International Civil Aviation Organization (ICAO) since 1981, under Annex 16/II of the 1944 Chicago Convention.[35] Air pollution from *ships* is regulated since 2005 by the International Maritime Organization (IMO) under Annex VI of the MARPOL Convention, which in addition to emission limits for sulphur and nitrogen oxides regulates ozone-depleting substances, sets fuel oil standards and establishes special emission control areas; maritime waste incineration is generally prohibited, under the revised 1972/1996 London Dumping Convention.[36] Air

[31] All texts are available on the website of the Stockholm Environment Institute's 'Global Atmospheric Pollution Forum', see www.sei-international.org/gapforum/regions.php.
[32] Treaty Banning Nuclear Tests in the Atmosphere, in Outer Space and Under Water, Moscow, 5 August 1963, in force 10 October 1963, 480 UNTS 43 (1963 Partial Test Ban Treaty).
[33] Comprehensive Nuclear-Test-Ban Treaty, New York, 10 September 1996, not in force, UN Doc. A/50/1027 (1996) (CTBT).
[34] Convention on Nuclear Safety, Vienna, 20 September 1994, in force 24 October 1996, 1963 UNTS 293.
[35] Convention on International Civil Aviation, Chicago, 7 December 1944, in force 4 April 1947, 15 UNTS 295 (1944 Chicago Convention).
[36] International Convention for the Prevention of Pollution from Ships, London, 2 November 1973, in force 2 October 1983 (MARPOL); Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other

pollutant emissions from *motor vehicles* have been regulated since 1958 by uniform technical standards, initially adopted under a regional UN/ECE Convention and since 1998 by global technical regulations.[37]

(b) *Substance-specific* global regulation of air pollutants began in the context of the Red Cross Conventions, with the 1925 Geneva Protocol prohibiting poison gas and bacteriological warfare, later followed by bans on the military use of other airborne substances such as chemical defoliants (pursuant to the 1976 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, ENMOD), and chemical weapons outlawed under the 1992 Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction.[38] Under the 1985 Vienna Convention for the Protection of the Ozone Layer, the 1987 Montreal Protocol prohibits or controls a range of ozone-depleting substances; the 2001 Stockholm Convention on Persistent Organic Pollutants (POPs)[39] regulates the production and use of a 'dirty dozen' of potentially harmful chemicals, including their release into the atmosphere; and Article 10 of the 2013 Minamata Convention on Mercury also address unintentional toxic atmospheric emissions.[40]

(c) A further set of international regulations approaches the problem of air pollution from the perspective of *recipient environment* sectors. Ambient air quality criteria and guidelines have been issued since 1977 under the auspices of the World Health Organization (WHO) (e.g., for suspended particulate matter, tropospheric ozone, nitrogen dioxide and sulphur dioxide). The WHO standards in turn interface with other intergovernmental and para-governmental regimes for regulatory harmonisation in this field: protection of the 'work environment' against occupational air pollution hazards, addressed since 1960 by a number of conventions and standards under the aegis of the International Labour Organization (ILO); protection of air quality as a legitimate basis for trade restrictions related to 'conservation of exhaustible

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Matter, London, 13 November 1972, in force 30 August 1975 (London Dumping Convention), 1996 Protocol, London, 7 November 1996, in force 24 March 2006, see www.imo.org.

[37] See n. 22.

[38] Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare, Geneva, 17 June 1925, in force 9 May 1926, 94 LNTS 65; Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, New York, 10 December 1976, in force 5 October 1987, 1108 UNTS 151 (ENMOD); Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, Geneva, 3 September 1992, in force 29 April 1997, 1974 UNTS 45.

[39] Stockholm Convention on Persistent Organic Pollutants, Stockholm, 22 May 2001, in force 17 May 2004, 2256 UNTS 119 (2001 Stockholm Convention).

[40] Minamata Convention on Mercury, Kumamoto, 10 October 2013, not in force; see www.mercuryconvention.org.

natural resources' under Article XX(g) of the General Agreement on Tariffs and Trade;[41] scientific parameters for atmospheric monitoring, including definition of the 'international standard atmosphere', under the aegis of the World Meteorological Organization (WMO); and technical parameters for the measurement of pollutant emissions and air quality, under the aegis of the International Organization for Standardization (ISO).[42]

*3.4 Normative foundations and key obligations*

There have been numerous attempts at identifying and codifying legal rules for transboundary air pollution – from the reports on 'Protection of the Atmosphere in International Law' at the 1966 Uppsala Congress of Comparative Law; the 1974 OECD 'Principles Concerning Transfrontier Pollution'; and the 1978 UNEP 'Principles for Shared Natural Resources'; to the 1982 'Montreal Rules of International Law Applicable to Transfrontier Pollution' by the International Law Association (ILA); the 1987 Cairo Resolution on 'Air Pollution Across National Frontiers' by the Institut de Droit International; and the statement on 'Protection of the Atmosphere' by a pre-Rio Meeting of Legal and Policy Experts in 1989.[43] A further initiative by the ILA International Committee on 'Legal Aspects of Long-Distance Air Pollution' (1982-1994) ended inconclusively.[44] In August 2013, the UN International Law Commission (ILC) agreed to include 'protection of the atmosphere' in its programme of future work, albeit on the understanding that the draft guidelines to be developed by the special rapporteur on the topic (Professor Shinya Murase of Japan) would 'not seek to impose on current treaty regimes legal rules or legal principles not already contained therein', and

[41] See the report of the Appellate Body of the World Trade Organization, in *US Standards for Reformulated and Conventional Gasoline* (20 April 1996), WT/DS2/AB/R, (1996) 35 ILM 274, at paragraph 6.37; General Agreement on Tariffs and Trade, Geneva, 30 October 1947, in force 1 January 1948, 55 UNTS 187.

[42] E.g., ISO Technical Committee 146 (Air Quality) Standards TC/146/SC1 (stationary source emissions) and TC/146/SC3 (ambient atmosphere).

[43] International Meeting of Legal and Policy Experts on Protection of the Atmosphere, Meeting Statement (Ottawa, 20-22 February 1989); text in (1990) 5 Am U JIL & Pol'y 528; 1974 OECD Principles Concerning Transfrontier Pollution, available at http://acts.oecd.org/; 1978 UNEP Principles for Shared Natural Resources, available at www.unep.org/; 1982 ILA Montreal Rules of International Law Applicable to Transfrontier Pollution, Report of the 60th Conference (1982); 1987 IDI Cairo Resolution on Air Pollution Across National Frontiers, available at www.idi-iil.org/.

[44] Following several preliminary/interim reports (Paris, 1984; Seoul, 1986; Warsaw, 1988; Queensland, 1990; and Cairo, 1992), the Committee was dissolved as 'inactive' in 1996.

that 'the topic will not deal with, but is also without prejudice to, questions such as the liability of States and their nationals'.[45]

As underlined in the first and second ILC reports,[46] a distinction needs to be drawn between the legal status of airspace and the regime of the atmosphere as such. Whilst the airspace above a state's territory is customarily subject to exclusive national sovereignty – as codified in Article 1 of the 1944 Chicago Convention on International Civil Aviation, as well as in Article 2 of the 1982 UN Convention on the Law of the Sea – the gaseous content of that space (*aër* in Greek and Latin; i.e., the atmosphere) ranks since Roman times among the legal commons, as proclaimed in a famous passage in the Institutes of Emperor Justinian: 'By the law of nature, these things surely are common to all: *the air*, watercourses, the sea and hence the seashores.'[47]

Regardless of whether it is defined as a 'public good', 'common property', 'common heritage', 'common pool resource', 'exhaustible natural resource', or 'environmental common good', the object (asset/interest) to be protected by law is the global atmosphere as a whole, a 'single global unit'.[48] Hence its protection is a matter of 'common concern', 'in the community interest'; and the corresponding general duty of all states to protect it is primarily owed to the international community, rather than to individual other states.[49] The responsibility so incurred is multi-directional, *erga omnes*, or at least *erga omnes partes* (vis-à-vis all other parties to a treaty, as in the case of sub-global regimes such as LRTAP). By the same token, the atmosphere may be viewed as a natural resource shared by all states, regardless of territorial propinquity.

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[45] Understanding on the work of the topic 'Protection of the Atmosphere', Report of the International Law Commission on its Sixty-Fifth Session, UN Doc. A/68/10 (2013), paragraph 168; and n. 62 below. See also the blog post by I. Plakokefalos, 'International Law Commission and the Topic "Protection of the Atmosphere": Anything New on the Table?', SHARES blog, 1 November 2013, available at www.sharesproject.nl/international-law-commission-and-the-topic-protection-of-the-atmosphere-anything-new-on-the-table/.

[46] S. Murase, 'First Report on the Protection of the Atmosphere', International Law Commission, Sixty-Sixth Session, UN Doc. A/CN.4/667 (14 February 2014), at para. 80; and 'Second Report', Sixty-Seventh Session, UN Doc. A/CN.4/681 (2 March 2015).

[47] Institutes of Emperor Justinian (533 A.D.) (II.1.1: *de rerum divisione*) (emphasis added).

[48] See the preliminary report by S. Murase, 'Protection of the Atmosphere', Report of the International Law Commission on iths Sixty-Thrid Session, UN Doc. A/66/10 (2011), Annex B, 315-329, at 321.

[49] That is without prejudice to specific (reciprocal) duties that may be owed between neighbouring states or a geographically limited community of states sharing an 'airshed'; or to states 'specially affected' by harm caused to the atmosphere. E.g., on the Southeast Asian transboundary haze pollution (section 3.2 above) as a 'common problem' of the ASEAN community of states, see the blog post by J. Schechinger, 'The 2013 Southeast Asia Haze: A Shared Responsibility?', SHARES blog, 30 October 2013, available at www.sharesproject.nl/the-2013-southeast-asia-haze-a-shared-responsibility/.

Fair and equitable sharing of the resource – including its productive, absorptive and communicative capacities – will also require a *differentiation* of responsibilities between states, in light of their level of development and in proportion to their respective contributions to pollution of the global atmosphere, as postulated by Principle 7 of the Rio Declaration. Yet, although the historical responsibility of the industrialised countries in this regard has frequently been noted, attempts at quantifying their accumulated inter-temporal shares remain controversial. Instead, the focus of contemporary multilateral regimes has been on pragmatic arrangements to accommodate 'the circumstances and particular requirements of developing countries' (preamble to the Vienna Convention for the Protection of the Ozone Layer), mainly by way of exoneration from certain treaty obligations; e.g., a ten-year delay for compliance with control measures under Article 5 of the Montreal Protocol. Differentiated responsibilities of developing countries are also recognised under Annex 16/II of the 1944 Chicago Convention, with regard to 'policies and practices relating to environmental protection'.[50] Along the same lines, the different economic conditions of 'economies in transition' in the UN/ECE region have been acknowledged, e.g., in the preamble to the LRTAP Heavy Metals Protocol and a five-year delay for compliance with product control measures under Annex VI.[51]

Each of the above-listed regimes, be they regional or global, has its catalogue of primary duties of due diligence incurred by participating states, as part of their overall *ex ante* responsibility to 'reduce and prevent transboundary air pollution' (LRTAP 1979), 'prevent and control air pollution' (MARPOL Annex VI, 1997), or 'protect human health and the environment' (1985 Vienna Convention; 1987 Montreal Protocol; 2001 Stockholm Convention). Most of these specific obligations are phrased as *substantive* rules, either as obligations of conduct, defined in terms of the means to be applied (e.g., using 'the best available technology/techniques', under Article 6 of LRTAP and Article 5 of the Stockholm Convention); or as obligations of result, defined in terms of agreed percentage reductions of emissions (e.g., under the LRTAP Protocols and the Kyoto Protocol),[52] or of 'safe minimum standards' not to be exceeded (e.g., 'critical loads', 'critical levels', 'limit values' under the LRTAP Protocols; and 'release limit values' under the Stockholm Convention).

[50] ICAO Assembly Resolution 35-5 (Montreal, 8 October 2004), Appendix E, paragraph 3(e).
[51] Protocol on Heavy Metals to the 1979 Convention on Long-range Transboundary Air Pollution, Aarhus, 24 June 1998, in force 29 December 2003, 2237 UNTS 4.
[52] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 10 December 1997, in force 16 February 2005, 2303 UNTS 148 (Kyoto Protocol).

Other due-diligence obligations – sometimes categorised as 'procedural'[53] – require states to notify other states of transboundary air pollution risks in emergencies (e.g., under the 1986 IAEA Notification Convention);[54] to undertake assessments of transboundary environmental impacts of industrial air pollution (e.g., under the 1991 UN/ECE Espoo Convention);[55] and to exchange information on the release, transfer and/or deposition of air pollutants (e.g., in Europe under Articles 9-10 LRTAP and the EMEP Protocol for emission data, and under the PRTR Protocol to the Aarhus Convention for pollutant release data; in East Asia under the EANET Agreement for acid deposition data; or globally under the Montreal Protocol for data on the production and consumption of ozone-depleting substances). Duties of information disclosure in this context are now considered to be owed not only to other parties but also to civil society, as part of the 'shared accountability' discussed in the conclusions below.

The extent to which deviations and exemptions from these rules can be tolerated without jeopardising the viability and credibility of the entire regime then becomes a matter of treaty design and negotiation, by balancing environmental concerns against the need to ensure the widest possible participation (e.g., via cost-softener clauses such as 'the best available technology which is economically feasible' in Article 6 of the LRTAP Convention; or via special financial incentives such as the multilateral fund set up to assist compliance under Article 10 of the Montreal Protocol). At the same time, the long-term effectiveness of these regulatory regimes crucially depends on procedures and institutions to secure compliance – and to sanction non-compliance – with the due-diligence standards so established.

## 4. Secondary rules

Lawyers tend to have a professional bias for liability regimes; i.e., for those so-called 'secondary' rules which only come to the rescue when other, 'primary' obligations have been flouted, and which thereby restore and enforce the majestic supremacy of the law. Traditionally, the ultimate 'secondary' mechanism in this category – next to criminal

[53] Okowa, *State Responsibility for Transboundary Air Pollution in International Law*, n. 18, 130-70; and M. Koyano, 'The Significance of Procedural Obligations in International Environmental Law: Sovereignty and International Cooperation' (2011) 54 Jap YIL 97. See, however, *Pulp Mills on the River Uruguay (Argentina* v. *Uruguay*), Judgment, ICJ Reports 2010, 14, joint dissenting opinion of Judges Al-Khasawne and Simma, at 110, emphasising respect for 'procedural' obligations as an indicator of compliance with substantive obligations.
[54] Convention on Early Notification of a Nuclear Accident, Vienna, 26 September 1986, in force 27 October 1986, 1439 UNTS 275.
[55] See n. 22.

sanctions – is civil liability for damage, including rules for retribution and allocation of reparation and compensation.

Yet, paradoxically perhaps, one of the reasons for the broad acceptance and exemplary role of the 1979 LRTAP Convention was the fact that it 'does *not* contain a rule on State liability as to damage',[56] as formally stated in an inconspicuous footnote to Article 8(f), inserted at the request of the United Kingdom. Although other countries (Canada and Yugoslavia) had unsuccessfully proposed to include separate provisions on responsibility, the prevailing view – already expressed by Norway during the early stages of negotiation in 1977 – was 'that there was less need for a convention with regard to liability for environmental damage than for a convention establishing such preventive principles as prior notification, exchange of information, procedures for assessment of environmental impacts and legally binding consultations in cases of significant transboundary pollution'.[57]

Interpretations of the LRTAP 'disclaimer' of state liability vary. While the Belgian Government, in a 1982 explanatory memorandum to its Parliament, took the footnote to mean that 'there will be no compensation for victim countries',[58] prompting some commentators to conclude that the Convention also excludes liability claims based on general (i.e., customary) international law,[59] most of the literature concurs that the sole intent of the footnote was 'that any question of international responsibility or liability was to remain unaffected by the LRTAP Convention'.[60]

Be that as it may, the net result is that, to this date, there has never been any adjudicated claim for trans-frontier air pollution damage from multiple sources *ex post facto*. As a matter of fact, the only reported instance of compensation for long-distance air pollution are the First Gulf War claims against Iraq awarded in 2001-2005 by the UN Security Council's Compensation Commission. However, this involved a *single* tortfeasor state whose liability for

[56] Emphasis added.
[57] See E.M. Chossudovsky, *"East-West" Diplomacy for Environment in the United Nations* (Geneva: United Nations Institute for Training and Research, 1988), 41. The Government of the Netherlands, in its explanatory report to Parliament in 1981, pointed out bluntly that some countries would have refused to sign the Convention 'if it had contained any provisions on liability'; see M. Pallemaerts, 'International Legal Aspects of Long-Range Transboundary Air Pollution' (1988) 1 Hague YIL 189, at 215.
[58] Pallemaerts, ibid.
[59] A.C. Kiss, 'La Convention sur la pollution atmosphérique à longue distance' (1981) 5 *Revue Juridique de l'Environnement* 30, at 35; and R. Quentin-Baxter, in the Report of the International Law Commission on the Work of its 34th Session, UN Doc. A/37/10 (1982), paragraph 119.
[60] J.G. Lammers, 'The European Approach to Acid Rain', in D.B. Magraw (ed.), *International Law and Pollution* (University of Pennsylvania Press, 1991), 265, at 304; see also Pallemaerts, 'International Legal Aspects of Long-Range Transboundary Air Pollution', n. 26, 217.

environmental damage had been pre-determined by Security Council Resolution 681/1991. In that process, neighbouring states affected by a 'black cloud' from the oil fires ignited by Iraqi forces in Kuwait were awarded compensation, mainly for the costs of monitoring and assessing air pollution damage caused to agriculture, cultural heritage, and public health (a total of over USD 37.7 million was awarded to Saudi Arabia, Iran and Syria), and in one instance for reduced crop yields attributed to 'black rain' (USD 24 million was awarded to Iran).[61]

By contrast, contemporary schemes for the *multilateral* sharing of retrospective responsibility for transboundary air pollution still are academic and hypothetical at best; and as the *travaux préparatoires* on 'protection of the atmosphere' in the UN International Law Commission illustrate, some key governments continue to resist even the formulation of non-binding soft law in this field.[62] Consequently, important conceptual questions (such as joint and several liability vs. apportionment between contributors), as well as alternative regulatory options *ex ante* such as the equitable allocation of 'permissible' or 'tolerable' pollution shares, and the optimal cost-benefit allocation of pollution reduction shares by way of compensatory payments, remain unresolved 'on the shelf'. In the LRTAP context in particular, the only major methodological progress in recent years has been a move towards integrated assessment of composite pollution damage, and consensual country-by-country targets of air pollution abatement. That approach is not dissimilar from the Kyoto Protocol under the climate change regime, though based on more solid scientific data than the Kyoto (Annex B) targets. It reflects a new kind of geographical differentiation applying common cost-effectiveness criteria rather than sheer political equity. Starting with the second (1994) Sulphur Protocol, and consolidated by the 1999 Gothenburg Protocol as amended in 2012, the tangible innovations thus were country-specific, legally binding emission ceilings and emission reduction commitments up to 2020 and beyond.

[61] See C.R. Payne and P.H. Sand (eds.), *Gulf War Reparations and the UN Compensation Commission: Environmental Liability* (New York: Oxford University Press, 2011), 90, 157-59, 177-80.

[62] See Murase, n. 46, First Report, para. 3, Second Report, para. 5; and Okowa, *State Responsibility for Transboundary Air Pollution in International Law*, n. 18, at 317 ('extreme reticence of States to commit to detailed rules governing issues of responsibility'). While a number of countries strongly supported the proposal in the Sixth Committee of the UN General Assembly in 2011-2012, others preferred 'not to codify rules in that area a present (comments by the United States at the 66th UNGA session in December 2011, UN Doc. A/C.6/66/SR.20) or considered the topic 'too technical' for the ILC (comments by France at the 67th session in November 2012, Doc. A/AC.10/30). See also S. Murase, 'Protection of the Atmosphere and International Law: Rationale for Codification and Progressive Development' (2012) 55 Sophia LR 1.

## 5. Processes

Before even considering international remedies for transboundary air pollution claims, an important preliminary question for claimants is whether there are alternative remedies available under applicable domestic laws, either at the place of origin of the pollution or at the place of impact. Indeed, disputes involving identifiable 'point sources' of industrial pollution in boundary regions (such as power stations) are usually *not* settled by intergovernmental arrangements under *public* international law, but by recourse to national courts under domestic civil or administrative procedures, albeit via applicable conflict-of-law rules (private international law), and/or reciprocal recognition of extraterritorial jurisdiction with appropriate foreign participation – a process more akin to so-called international administrative law,[63] or *transnational* environmental law.[64]

In this regard, the *Trail Smelter* arbitration appears almost as an atypical historical accident.[65] What prevented that dispute from being resolved in a domestic law court on either side of the border was an unfortunate deadlock between Canadian and American conflict-of-law rules at the time.[66] As a result, the case eventually wound up before an international arbitral tribunal, at far higher transaction costs and delays than any domestic alternative. By contrast, several transboundary air pollution cases with rather similar fact situations on the French-German frontier have since been decided by national courts, under well-established rules of *private* international law. Pertinent examples are the 1957 *Poro* case (air pollution damage to farmland caused by a power station across the Saar river);[67] and the 1977 *Lindane* case (damage to farmland caused by blow-off from an insecticide factory across the Rhine river).[68]

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[63] See W. Durner, 'Internationales Umweltverwaltungsrecht', in C. Möllers et al. (eds.), *Internationales Verwaltungsrecht: Eine Analyse anhand von Referenzgebieten* (Tübingen: Mohr Siebeck, 2007), 121.

[64] See G. Handl et al. (eds), *Beyond Territoriality: Transnational Legal Authority in an Age of Globalization* (Leiden: Nijhoff Brill, 2012); and P.H. Sand, 'The Evolution of Transnational Environmental Law: Four Cases in Historical Perspective' (2012) 1 Transnational Env'l L 183.

[65] See J.J. Knox, 'The Flawed *Trail Smelter* Procedure: The Wrong Tribunal, the Wrong Parties, and the Wrong Law', in R.M. Bratspies and R.A. Miller (eds.), *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration* (Cambridge University Press, 2006), 66; and J.D. Wirth, *Smelter Smoke in North America: The Politics of Transborder Pollution* (Lawrence, KS: University Press of Kansas, 2000).

[66] The Canadian courts, under an ancient ruling by the House of Lords (*British South Africa Co.* v. *Companhia de Mocambique* [1893] AC 602), would have refused to take jurisdiction over a case involving land situated abroad; whereas the US courts, under Washington state legislation of 1921, would have refused to permit smoke easements by a foreign corporation. See J.E. Read, 'The Trail Smelter Dispute' (1963) 1 Can YIL 213, at 223.

[67] *Poro* v. *Houillères du Bassin de Lorraine (HBL)*, Appeals Court (OLG) Saarbrücken 1957, (1958) 11 *Neue Juristische Wochenschrift*, 753 (*Poro*); English summary in P.H. Sand, *Transnational Environmental Law: Lessons in Global Change* (The Hague: Kluwer Law International, 1999), 89-90.

[68] *Lindane*, Appeals Court (OLG) Karlsruhe 1977, (1977) 23 *Recht der Internationalen Wirtschaft*, 356, 718; English summary in A. Rest, 'International Environmental Law in German Courts' (1997) 27 Env'l Pol'y & L 409, at 413.

It is important to remember, however, that – like *Trail Smelter* – those were typical mono-causal 'point source' cases of pollution originating from a readily identified single foreign source. They did *not* raise questions of shared responsibility involving other polluters, let alone third countries of origin.

Similarly, in the case of the 2002 Southeast Asian Agreement on Transboundary Haze Pollution (which, like LRTAP, does not contain a provision on inter-state responsibility), the singular principal cause of pollution damage in Malaysia and Singapore are land-clearance fires for oil-palm plantations in Indonesia. However, two-thirds of Indonesia's palm oil industry in that region are controlled by Malaysian and Singaporean investors, rendering any national or territorial identification of the dispute largely fictitious.[69] The same was true in two earlier cases of transboundary air pollution in the Swiss-German boundary region near Basel, settled by non-governmental arbitration agreements in 1959 and 1965, mainly because the factories in Germany which caused agricultural damage across the border in Switzerland were wholly Swiss-owned (*Lonza AG* and *Alusuisse S.A.*), *de facto* de-territorialising the dispute.[70]

A second alternative approach to be considered here are non-judicial 'compliance procedures' developed under some of the international atmospheric regimes listed in section 3 above, albeit in uneasy normative co-existence with traditional remedies for breach of treaty obligations.[71] The Montreal Protocol's 'Non-Compliance Procedure' (initially adopted in 1992) served as a role model for the Implementation Committee established under LRTAP in 1997 to review compliance with the Convention and all its protocols.[72] Yet, even though the mandates of these new mechanisms may be interpreted as encompassing non-compliance by one *or more* parties, all review cases so far have been limited in practice to single-state infringements – with the sole exception of a 2011 decision involving non-compliance by the

[69] See Schechinger, 'The 2013 Southeast Asia Haze: A Shared Responsibility?', n. 49; and H.M. Varkkey, 'Regional Cooperation, Patronage and the ASEAN Agreement Politics on Transboundary Haze Pollution' (2014) 14 *International Environmental Agreements: Politics, Law and Economics* 65.

[70] See E. du Pontavice, 'Compensation for Transfrontier Pollution Damage', in H. van Edig (ed.), *Legal Aspects of Transfrontier Pollution* (Paris: OECD, 1977), 409, at 431; and Sand, *Transnational Environmental Law: Lessons in Global Change*, n. 67, 123.

[71] See M. Koskenniemi, 'Breach of Treaty or Non-Compliance? Reflections on the Enforcement of the Montreal Protocol' (1992) 3 Yb IEL 123; and T. Treves et al. (eds.), *Non-Compliance Procedures and Mechanisms, and the Effectiveness of International Environmental Agreements* (The Hague: Asser Press, 2009). See also A. Cardesa-Salzmann, 'Constitutionalising Secondary Rules in Global Environmental Regimes: Non-Compliance Procedures and the Enforcement of Multilatral Environmental Agreements' (2012) 24 *Journal of Environmental Law* 103.

[72] See T. Kuokkanen, 'Practice of the Implementation Committee under the Convention on Long-Range Transboundary Air Pollution', in U. Beyerlin et al. (eds.), *Ensuring Compliance with Multilateral Environmental Agreements* (Leiden: Nijhoff, 2006), 39.

European Union as a collective party to the Montreal Protocol; that case, however, concerned illegal international trade (with Kazakhstan) in ozone-depleting substances and did *not* address the issue of shared responsibility for transboundary pollution.

Predictably, the multitude of applicable global and regional regimes in this field was also bound to lead to novel types of conflicts and gaps in regulation. One example is the ongoing dispute over enforcement of the European Union's regulations for greenhouse gas emissions against foreign aircraft and foreign-flagged vessels. Article 2(2) of the 1997 Kyoto Protocol to the 1992 UN Framework Convention on Climate Change (UNFCCC)[73] obliged and mandated the industrialised countries listed in Annex I of the UNFCCC to 'pursue limitation or reduction' of air pollution from aviation and marine bunker fuels 'through the International Civil Aviation Organization and the International Maritime Organization, respectively'. When it became apparent, from the scientific reports of the Intergovernmental Panel on Climate Change and the IMO Marine Environment Protection Committee, that the existing standards and control measures adopted under these global regimes were insufficient and would be offset or outpaced by the projected growth of atmospheric emissions from international aviation and shipping, the EU in November 2008 amended Directive 2003/87/EC to include aviation activities in its Emissions Trading Scheme (ETS), and currently develops plans for the regional regulation of ship-based emissions to the atmosphere. In December 2011, the European Court of Justice upheld the validity of the Directive.[74] However, in the face of threats of retaliation from other countries – challenging the EU scheme as incompatible with the global 'freedom-of-the-air' regime under ICAO auspices *and* with the global free-trade regime for air transport services under the auspices of the World Trade Organization – the EU Commission in November 2012 suspended the application of the Directive to extra-European flights. On 16 April 2014, the EU further amended Directive 2003/87/EC to restrict application of the ETS to flights within the European Economic Area (EEA) until further review in 2016.[75] Following Resolution A38/17-2 of the ICAO Assembly of 4 October 2013,

[73] United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 1771 UNTS 107 (UNFCC); Kyoto Protocol, n. 52.
[74] Case C-366/10, *Air Transport Association of America and Others* v. *Secretary of State for Energy and Climate Change*, (2012) OJ C49/7, reprinted in (2012) 51 ILM 535. For background see M.W. Gehring and C.A.R. Robb, *Addressing the Aviation and Climate Change Options* (Geneva: International Centre for Trade and Sustainable Development, 2013).
[75] Regulation (EU) No. 421/2014 of the European Parliament and of the Council of 16 April 2014 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in view of the implementation by 2020 of an international agreement applying a single global market-based measure to international aviation emissions, (2014) OJ L 129/1 (30 April 2014), 1.

a global system of market-based measures for international aviation emissions compatible with the UNFCCC is to be developed by 2016, for implementation by 2020[76]

## 6. Conclusion: towards shared accountability for atmospheric resources?

The ETS dispute highlights a more fundamental issue of process that needs to be addressed here. Behind the airlines and shipping companies now contesting the EU regulatory scheme, there are powerful states which seek to secure a special 'free-rider' status for their national economies,[77] in competition with other states ready to restrict harmful economic activities in the interest of environmental community concerns. The question is how to safeguard the long-term (inter-generational) community interest in protecting the atmosphere as a global commons, against short-term (election-span) national interests in its use for economic profit.

One option which has demonstrated its viability in a number of national legal systems, and which might be adapted for international use in this context, is the concept of *public trusteeship*.[78] In very simplified terms, the concept means that (a) certain natural resources are defined as part of an inalienable 'public trust'; (b) governments are designated as 'public trustees', hence are jointly subject to fiduciary duties to guard those resources for the benefit of all (present *and* future) citizens; and (c) citizens, as beneficiaries of the public trust, are empowered to enforce the terms of the trust by appropriate judicial remedies against the trustees in case of non-compliance with their fiduciary responsibility.[79]

Originally developed for the legal protection of common resources such as the seashore and tidal lands, navigable waters, fisheries and wildlife, the application of public trusteeship (the

[76] *Consolidated Statement of Continuing ICAO Policies and Practices Related to Environmental Protection – Climate Change*; see the Report of the ICAO Executive Committee, ICAO Doc. A38-WP/430 (3 October 2013), and R. Abeyratne, *Aviation and Climate Change: In Search of a Global Market Based Measure* (Heidelberg: Springer, 2014).

[77] See the US 'European Union Emissions Trading Scheme Prohibition Act', Public Law 112-200 (27 November 2012), 126 Stat. 1477, which precludes application of the EU Directive to US airlines.

[78] For source references see M.C. Wood, Nature's Trust: Environmental Law for a New Ecological Age (Cambridge University Press, 2013); and P.H. Sand, *The Rise of Public Trusteeship in International Environmental Law*, GlobalTrust Working Paper Series 03/2013, Tel Aviv University, Buchmann Faculty of Law, 2013.

[79] The classic US text remains J.L. Sax, 'The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention' (1970) 68 Mich LR 471. See also the landmark judgment of the Indian Supreme Court in *Mehta* v. *Kamal Nath et al.* (13 December 1996), [1997] 1 S.S.C. 388, reprinted in C.O. Okidi (ed.), *Compendium of Judicial Decisions on Matters Related to the Environment: National Decisions*, vol. 1 (Nairobi: UNEP/UNDP, 1998), 259, at 260 (declaring the public trust doctrine 'a part of the law of the land').

'public trust doctrine') has also been postulated for global environmental governance,[80] including preservation of the atmosphere.[81] States as international public trustees in this context are held to a dual responsibility: vis-à-vis the international community, as creator of the trust (*trustor/settlor* in trust law jargon, and comprising other states as 'co-trustees');[82] and vis-à-vis the beneficiaries of the trust (citizens, or 'peoples' in Rawlsian terms).[83] Admittedly though, that still does not answer two open questions: first, the substantive allocation and differentiation of responsibilities between co-trustees (viz., the liability issue purposely side-stepped by the LRTAP 'disclaimer note'); and second, the procedural representation of the beneficiaries (viz., of present and future civil society).[84]

Through 'atmospheric trust litigation' currently pending in several US state courts, in Uganda and in the Ukraine, environmental non-governmental organisations (NGOs) have indeed sought to challenge governmental action or inaction in this field. E.g., in March 2015, the New Mexico Court of Appeals held that under Article XX(21) of the State Constitution 'a public trust duty exists for the protection of New Mexico's natural resources, including the atmosphere, for the benefit of the people of this state'.[85] In a lawsuit filed in the Kampala High Court in September 2012 (*Nisi Mbabazi et al.* v. *Attorney General*), plaintiffs invoked Article 237 of the 1995 Constitution of Uganda as creating a fiduciary duty to protect the country's atmospheric resources for the benefit of present and future generations.[86] Significantly perhaps, the litigation is not primarily about monetary compensation for damage. What the plaintiffs seek to obtain instead are declaratory judgments establishing the responsibility of governmental trustees for their (mis)management of public trust resources, through an accounting of the trust assets (e.g., in the form of air quality and/or emission

[80] E.g., see C. Redgwell, *Intergenerational Trusts and Environmental Protection* (Manchester University Press, 1999). For a more sceptical view, see H.S. Cho, *The Public Trust Doctrine and Global Commons* (Berkeley, CA: University of California, J.S.D. thesis 1995), 272, 377.

[81] E.g., see N. Myers, *The Sinking Ark* (Oxford: Pergamon Press, 1979), 218; and P. Barnes et al., 'Creating an Earth Atmospheric Trust' (2008) 319(5864) *Science* 724.

[82] E.T. Fox-Decent, 'From Fiduciary States to Joint Trusteeship of the Atmosphere: The Right to a Healthy Environment through a Fiduciary Prism', in K. Coghill et al. (eds.), *Fiduciary Duty and the Atmospheric Trust* (Farnham: Ashgate, 2012), 253, at 268.

[83] J. Rawls, *The Law of Peoples* (Cambridge, MA: Harvard University Press, 1999), 23.

[84] Various proposals put forward in the literature include a 'global commons trusteeship commission', or an independent international 'guardian', 'ombudsman', or 'environmental high commissioner' (*Annuaire de l'Institut de Droit International* 1997-I, at 288, 340-41).

[85] *WildEarth Guardians and Akilah Sanders-Reed* vs. *State Governor Susana Martinez* (file no. 33,110 of 12 March 2015). However, the court referred plaintiffs to available statutory remedies under the New Mexico Air Quality Control Act (N.M. Statutes 1978, § 74-2-1-22).

[86] Texts and further links available at the NGO website of http://ourchildrenstrust.org; see also M.C. Wood, 'Atmospheric Trust Litigation Around the World', in Coghill et al. (eds.), *Fiduciary Duty and the Atmospheric Trust*, n. 82, 99.

inventories); or injunctive relief, such as a denial of permits for activities harming the trust.[87] As distinct from retrospective liability suits, the focus of public trusteeship – national or international – thus typically is on remedies *ex ante*, which may more appropriately be categorised as prospective mechanisms to ensure the trustees' continuous *accountability*.[88]

To add a final linguistic *caveat*, however, it must be kept in mind that the English-language triad of 'responsibility-accountability-liability' has no precise equivalent in a number of other legal tongues. For example, in French, Italian and Spanish all three concepts are rendered by a single polyvalent term (*responsabilité, responsabilità, responsabilidad*).[89] German legal usage does have separate terms for responsibility (*Verantwortung*) and liability (*Haftung*), although the equivalent of 'accountability' is merely approximated by terms like *Rechenschaft* (the duty to render accounts, etymologically close to antiquated English 'reckoning'). The dilemma is illustrated in the pioneering work of Hans Jonas, *Das Prinzip Verantwortung*, which he himself (mis)translated into English as 'the imperative of responsibility'; yet, it is clear from the original text that what he meant was not necessarily responsibility in a legal sense, but something more akin to accountability.[90] So this is where comparative legal analysis – unfortunately, if inevitably – ends up hitting inter-cultural semantic buffers.

[87] See M.C. Wood, 'Advancing the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations (Part II): Instilling a Fiduciary Obligation in Governance' (2009) 39 Env'l L 91, at 102, 114.

[88] See generally P. Allott, *Eunomia: New Order for a New World*, 2nd edn (Oxford University Press, 2001), 336 ('legal accountability for the exercise of social power'); and E. Benvenisti, 'Sovereigns as Trustees of Humanity: On the Accountability of States to Foreign Stakeholders' (2013) 107 AJIL 295.

[89] See V. Richard, 'L'*accountability* comme alternative à la responsabilité? Réflexions en droit international de l'environnement', in E. Vergès (ed.), *Droit, sciences et techniques: quelles responsabilités?* (Paris: LexisNexis, 2011), 523.

[90] H. Jonas, *Das Prinzip Verantwortung*, 4th edn (Frankfurt: Suhrkamp, 1984); and *The Imperative of Responsibility* (Chicago University Press, 1984); e.g., see at 174 of the German version, where *Verantwortung* is defined as the precondition for *Rechenschaft*.