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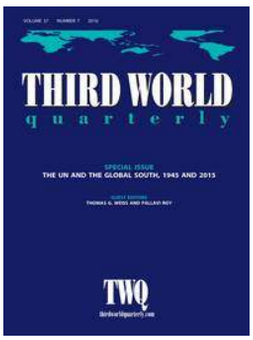

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Managing the global commons: common good or common sink?

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ABSTRACT

The global commons, comprising the areas and resources beyond the sovereignty of any state, build upon the heritage of Grotius's idea of *mare liberum* – an idea that aimed to preserve the freedom of access for the benefit of all. However, the old *mare liberum* idea digressed into 'first come, first served' advantages for industrialised countries. Especially at the initiative of developing countries, it has now been replaced by a new law of international cooperation and protection of natural wealth and resources beyond the limits of national jurisdiction. The global commons have thus served as the laboratory for testing new legal principles and the rights and corollary duties emanating from them. Occasionally path-breaking innovations in regulation have been practised, most notably the imposition of a ban on whaling, penalties for the production and use of ozone-depleting substances and the freezing of claims to sovereignty over Antarctica.

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The state of affairs regarding international areas of our planet and their natural resources is popularly labelled 'the tragedy of the global commons',[1] because of the grave environmental threats facing these areas and the inchoate regimes governing them. This article examines the merits of such a characterisation by first providing some definitions and historical background. Next, it reviews various global resource regimes, which all came into place during the lifetime of the United Nations and with considerable inputs from Third World countries. Although these regimes relate to very different international areas and global resources, and vary considerably, some common characteristics and cross-cutting problems can be identified. The following section discusses how these regimes have at the same time given rise to innovative forms of global governance and standard setting, which so far have not easily come about in the context of national resource regimes. The conclusion answers the question, 'Do the global commons serve as laboratories for proper resource management, and can they hence be viewed as a promise for the future rather than a tragedy?'

Some notes on terminology

The term 'global commons' denotes areas and natural resources that are not subject to the national jurisdiction of a particular state but are shared by other states, if not the international

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community as a whole'.[2] The high seas, the deep seabed, outer space, the Moon and other celestial bodies, as well as the two polar regions, can be viewed as global commons because no national entity can claim sole jurisdiction over these physical areas. As discussed below, however, that is not to say that these areas are 'free for all' or that their resources are open on a 'first come, first served basis'.

Furthermore, it can be argued that certain global natural assets, such as the climate system, the air, water, seeds, winds and sunshine, could also be viewed as global commons in view of the vital ecological functions that they perform for the Earth and its population. Natural resources are spread over the planet, albeit not evenly. From a legal point of view three situations can be distinguished: some natural resources (eg an oil well or a coal mine) are fully under the *national* jurisdiction of a particular state; others are *shared* by two or more states (eg trans-boundary forests or international rivers); and some are beyond the limits of national jurisdiction in *international* areas (eg deep seabed manganese nodules or whales).[3] To some extent such a legal categorisation does not reflect the reality of the environment and nature as a whole, intrinsically connected by air mass, soil, water cycles, geological structures, biological diversity systems and other special ecosystems such as the global climate. From that broad point of view also shared are trans-boundary resources; and even certain 'national' resources such as seeds can be viewed as global commons.

However, this article focuses on the concept of the global commons in the sense of international areas and global resources, which are beyond the limits of national jurisdiction: hence, those areas and resources over which no state can exercise sovereignty or sovereign rights. Some of these resources, such as the living resources of the high seas, can in principle be appropriated by any state or company, although many international fisheries and conservation agreements severely regulate their use. Others belong to 'the common heritage of mankind' and are subjected to an international regime, such as deep-seabed resources and lunar resources. The natural resources of Antarctica form a special category, now that sovereign claims to main parts of the territory of Antarctica have been 'frozen' for the time being, while the exploitation of its resources (on land and in adjacent seas, and living and non-living) are subject to special treaty regimes (regarding seals, fisheries, other marine resources, and mining).

Early ideas about the management of global resources

In old English and Dutch law the term 'commons' (*marken* in Dutch) denoted an arrangement under which property or resources – such as the village square or shared grazing grounds – were held in common and jointly exploited.[4] As a result, no single decision-making unit held exclusive title to these resources;[5] they belonged to everyone and yet were from no one.

Furthermore, global commons in many ways resembles the concept of 'common goods', upon which Hugo Grotius (1583–1645) relied in his seminal *Mare Liberum* (1609) to defend Dutch claims to the free seas and to oppose claims on sovereignty over oceans advanced by Portugal, Spain and other countries.[6] Before systematically refuting the various claims of the Portuguese, who sought to exercise the right to exclude all foreigners from navigating or entering the waters of the Atlantic and the Indian Oceans,[7] Grotius devoted a considerable part of his analysis to questions of principle.

He began his argument by observing that the sea had been variously identified as the property of no one (*res nullius*), a common possession (*res communis*) and public property

(*res publica*). Since each of these terms has different legal connotations, Grotius endeavoured to prove that the sea was common property, which could therefore not belong to the Portuguese or Spanish, or to any other country. The history of this development, according to Grotius, starts in the primitive law of nations, sometimes called natural law, where no particular right of property existed, for 'nature knows no sovereignty'.[8] In that primitive state of affairs, all things were held in common, that is, shared and undivided, and this kind of common possession related to use.[9] With the passing of time, however, the transition towards the distinction of ownership took place.

Grotius then drew two conclusions regarding the nature of property – which essentially defined his understanding of the concept of common property:

> The first is, that that which *cannot be occupied*, or which never has been occupied, cannot be the property of any one, because all property has arisen from occupation. The second is, that all that which has been *so constituted by nature that although serving some one person it still suffices for the common use of all* other persons, is today and ought in perpetuity to remain in the same condition as when it was first created by nature…All things which can be used without loss to anyone else come under this category.[10]

Grotius's concept of common property was therefore defined by a rather novel legal formula, one essentially comprised of a two-tiered (nature/public utility) test, which he then applied to a number of things that ancient writers considered to be common to humankind. The first considered by Grotius to fall into this category of property was the air, which was not susceptible to occupation and whose common use was destined for all humans. For the same reasons Grotius considered the sea to be common to all, 'because it is so limitless that it cannot become a possession of any one, and because it is adapted for the use of all, whether we consider it from the point of view of navigation or of fisheries'.[11]

Grotius concluded that 'neither a nation nor an individual can establish any right of private ownership over the sea itself (except inlets of the sea), inasmuch as its occupation is not permissible either by nature or on grounds of public utility'. Consequently, it followed that 'the Portuguese have not established private ownership over the sea by which people go to the East Indies'.[12]

Grotius's argument that the use of oceans was not prejudicial to their use by others would have to be seriously qualified today. In his time ships left no more than a 'track in the sea', as he put it. This no longer holds true for modern maritime transport, which warrants extensive regulation and anti-pollution control. And even if the sea were still considered inexhaustible for purposes of navigation, the argument certainly does not apply to the case of fisheries or to the exploitation of other marine resources. This was not obvious to Grotius, since in his time the exploitation of the seas was limited to a few users. However, the improvements in fishing techniques and the growing world population have progressively resulted in over-exploitation of marine resources. Over time this has also brought to the fore the limitations of the Grotian concept of common goods, and with it the principle of the freedom of the seas.

Indeed, 300 years later the Argentinean professor José Léon Suarez (1872–1927) critiqued the existing international regulation of the exploitation of the sea. As a member of the League of Nations Committee of Experts for the Codification of International Law, he concluded in 1926 that the current law of the sea was 'mainly to establish police measures and to ensure reciprocity and *commerce*, regardless of biological interests, which in this case are inseparable from *economic* and *general* interests'. As a result, 'marine species of use to man will become extinct unless their exploitation is subject to international regulation' (Emphasis in the

original text). In Suarez's view, international regulation should take account of the fact that 'animals, happier in this than men, are ignorant of jurisdictions and national frontiers and observe not international law but internationalism; the sea for them is a single realm, like Ovid's dream of a world forming a single fatherland for humanity'.[13]

Suarez observed: 'The riches of the sea, and especially the immense wealth of the Antarctic region, are the patrimony of the whole human race'. He proclaimed that he was not considering 'the interests of the moment or of any particular country but the general interest of mankind, which before long will have to draw upon the reserves of the sea to make good the inadequacy of the food production of the land. It is our business to see that this step is not taken too late.' Whereas the League of Nations conference convened in The Hague in 1930 failed to provide a follow-up to his proposals, a number of Suarez's early 20th-century observations and proposals would still hold true today.

In a similar vein the Sri Lankan judge and vice president of the International Court of Justice (ICJ), Christopher Weeramantry, referred on several occasions to traditional systems of resource use and communal forms of property in ancient civilisations as well as religions. Especially in his landmark separate opinion in the *Danube Dam case* (1997) between Hungary and Slovakia, he took the view that the first principle of modern international environmental law is the 'principle of trusteeship of earth resources'. He continued:

> As modern international environmental law develops, it can, with profit to itself, take account of the perspectives and principles of traditional systems, not merely in a general way, but with reference to specific principles, concepts, and aspirational standards…Land is to be respected as having vitality of its own and being integrally linked to the welfare of the community. When it is used by humans, every opportunity should be afforded to it to replenish itself. Since flora and fauna have a niche in the ecological system, they must be expressly protected. There is duty lying on all members of the community to preserve the integrity and purity of the environment. Natural resources are not individually, but collectively, owned, and a principle of their use is that they should be used for the maximum service of the people.[14]

Not only did Weeramantry thus seek to fundamentally reconfigure the role of the state with respect to its own territory and the environment at large, he also advocated alternative views on the role of international law:

> We have entered an era of international law in which international law subserves not only the interests of individual States, but looks beyond them and their parochial concerns to the greater interest of humanity and planetary welfare…International environmental law will need to proceed beyond weighing the rights and obligations of parties within a closed compartment of individual State self-interest, unrelated to the global concerns of humanity as a whole.[15]

During the 20th century, these limitations of both the principle of the freedom of the sea and of state sovereignty were used as arguments in favour of extending the realm of international law over both sovereignty over natural resources on land and in extensive maritime areas and over natural resources beyond the limits of national jurisdiction, such as those of the deep seabed and the polar regions. These tensions have been accommodated and resolved in different ways.

Global resource regimes

Indeed, the 20th century witnessed the emergence of international regimes for areas and natural resources that remained beyond the limits of national jurisdiction. These global commons now comprise the high seas and their living resources, the deep seabed, outer

space (including the Moon and other celestial bodies), the two polar regions, and the atmosphere (in particular the ozone layer and the climate system).[16] Lists of essential treaties and judgments are found in Appendixes 1 and 2, but here the analysis focuses separately on each of these five areas.

The high seas and deep seabed

The high seas and deep seabed have traditionally been viewed as not being subject to national appropriation. For a long time the principle of 'open access' was the starting point, and this principle was incorporated in the traditional freedoms of the high seas for all seas, including the freedom of navigation, the freedom to conduct international trade on the oceans, as well as freedom of fishing. However, after 1945 this *laissez-faire* treatment was soon replaced by fisheries regulation or – in the words of the ICJ in the *Fisheries Jurisdiction* cases (1974) between the UK, Germany and Iceland – 'by a recognition of the duty to have due regard to the rights of other States and the needs of conservation to the benefit for all'. The new perspective on jurisdiction over and uses of the seas and oceans was encapsulated in the ground-breaking new Convention on the Law of the Sea, proudly inaugurated by Tommy TB Koh, president of the nine-year-long Third UN Conference on the Law of the Sea, as 'A Constitution for the Oceans' on 10 December 1982 at Montego Bay, Jamaica.

Indeed, the right to fish is nowadays subject to so many obligations in fishery treaties that access is heavily regulated, and it is a matter of duties rather than of rights.[17] However, this international management regime does not prevent a large number of the living resources of the high seas becoming over-exploited and depleted. Time and again new measures have been called for in order to close the proverbial holes in the net, for example by imposing a moratorium on large-scale pelagic driftnet fishing, a ban on whaling, and by supplementing the Law of the Sea Convention (1982) with a comprehensive Fish Stock Agreement (1995). A pivotal role in global fisheries governance is performed by the UN's Food and Agriculture Organization (FAO), which also adopted the Code of Conduct for Responsible Fisheries in 1995. This comprehensive code for conservation, management and development of all fisheries is intended to be observed by all states, international organisations, fishing companies and fisherfolk. A particular problem remains overfishing through illegal, unreported and unregulated fishing, on which the International Tribunal for the Law of the Sea (ILOS) rendered in 2015 an interesting advisory opinion upon the request of the West African regional fishery organisation.[18]

Whales, as examples of 'charismatic mega-fauna', deserve special attention. As early as 1946 the Whaling Convention recognised 'the interest of the nations of the world in safeguarding for future generations the great natural resources represented by the whales stocks'. Faced with continued overexploitation and a serious risk of extinction, the International Whaling Commission (IWC) imposed a ban on commercial whaling, effective beginning in 1986. Various countries (Canada, Iceland, Norway, Japan) tried to circumvent this moratorium. However, upon application by Australia (joined by New Zealand), the ICJ ordered Japan in 2014 to halt its so-called scientific whaling programme in the Southern Atlantic zone and in the waters near Antarctica immediately.[19]

Ocean floor

As early as 1873 the expedition of *HMS Challenger* discovered that the deep seabed contains valuable mineral resources, in particular the potato-shaped polymetallic or manganese nodules. Nearly a century later exploitation became possible. In order to prevent a 'first come, first served' regime that clearly would have favoured advanced industrialised countries, the Global South advocated the establishment of an international regime under the auspices of the UN. In his capacity as president of the 1958 Conference for the Law of the Sea, Prince Wan Waithayakon of Thailand advocated designating the sea as 'the common heritage of mankind' and promoted 'the preservation of that heritage for the benefit of all'.[20] Furthermore, in a well-known, four-hour speech, Maltese ambassador Arvid Pardo proposed designating the deep seabed and its resources as the 'Common Heritage of Mankind'.[21]

Ultimately this principle and a regime based thereupon were included in the UN Convention on the Law of the Sea. The International Seabed Authority (ISA) was established to administer the resources of this international area and to promote marine scientific research and can certainly be viewed as a pioneering institution.

Outer space, the Moon and other celestial bodies

In 1967 the Outer Space Treaty declared that outer space, including the Moon and other celestial bodies, 'shall be the province of mankind'. Furthermore, it stipulated that these areas are 'not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means'. Subsequently the more specific Moon Agreement of 1979 recast this subject in more modern terminology: 'the moon and its natural resources are the common heritage of mankind'. It also states that 'neither the surface nor the subsurface of the moon, nor any part thereof or natural resources in place, shall become property of any state, intergovernmental or non-governmental organisation, national organisation or non-governmental entity or of any natural person'. Exploration and use of the Moon and other celestial bodies shall be 'carried out for the benefit and in the interest of all countries, irrespective of their degree of economic or scientific development'. Due regard shall be paid to 'the interest of present and future generations as well as to the need to promote higher standards of living and conditions of economic and social progress and development'.

In contrast to the law of the sea regime, the Moon Agreement does not provide for a specific institutional structure to govern the Moon's exploitation. It only outlines the main purpose of such a regime, including orderly and safe development, rational management of lunar resources and equitable sharing of the benefits. The regime itself is to be established 'as such exploitation is about to come feasible'. Despite the limited number of ratifications, the agreement is still important because it clearly delegitimises any unilateral action by interested states – which, once again, would be the wealthier and more developed countries. The recent exploration of Mars and the increased awareness of the fragility of the ozone layer and of major ecological functions in general have also stimulated interest in the proper governance of outer space.

The two polar regions

In recent years both Antarctica and the Arctic have frequently attracted international attention for ecological, economic and political reasons. Ecologically they are of vital interest;

their rich resources are of potential economic interest; access to them and their resources are of strategic importance, which can easily spark rivalry among great powers.[22]

The two areas are very different, however. Antarctica is a continent with a vast landmass, part of which is claimed by bordering states, whereas the Arctic region consists of a huge mass of ice-covered sea surrounded by continents. Moreover, Antarctica has been the object of many specific treaties, of which the 1959 Antarctic Treaty forms the core. In contrast, the Arctic region lacks a specialised international regime, with the exception of the 1973 Agreement on the Conservation of Polar Bears and some soft law instruments such as the 1981 Arctic Environmental Protection Strategy. From 1996 the Arctic Council has been in place as a high-level forum. It is an intergovernmental body with the adjacent eight countries as key players: Canada, Denmark (via Greenland), Finland, Iceland, Norway, Sweden, Russia and the USA. Neither regime is under the aegis of the UN. Proposals to declare one or both and their natural resources as the common heritage of mankind have foundered so far – although the notion that they are of interest to all countries is firmly established – and no member of the Global South is in a position to benefit.

The atmosphere

The atmosphere extends up to 150 km from the area surrounding planet Earth. Beyond it outer space begins, although there exists no specific boundary between the two. The atmosphere above land territory and the territorial sea of a state are subject to state sovereignty. The atmosphere above areas beyond the national jurisdictions of states can be viewed as a common good or *res communis*. Obviously, such a distinction is rather formalistic because the air fluctuates freely in the atmosphere and functions as a true global commons. Rules on combatting trans-boundary air pollution, on protecting the ozone layer and on curbing climate change have increasingly regulated the use of the atmosphere, to such an extent that it may well be viewed as a global commons.

In particular the Climate Change Convention recognised that 'climate change is a common concern of mankind since climate is an essential condition which sustains life on earth'. It sets out as the 'ultimate objective' the stabilisation of greenhouse gases 'at a level that would prevent dangerous anthropogenic interference with the climate system', while providing that such stabilisation 'should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner'.

No areas under national jurisdiction as global commons

Up to now it has not been possible to apply the principle of the 'common heritage of mankind' to areas or resources under national jurisdiction – to areas, for example, such as world natural heritage sites or ecologically vital areas like tropical rain forests.[23] Fear of infringements on national sovereignty caused by related international regimes for the management and sharing of benefits is the main explanation.

Notwithstanding this shortcoming, it is noteworthy that in the progressive evolution of law the protection and preservation of the natural environment, in particular of the fauna and flora of the Earth, biological diversity and the climate system have both been referred to as a 'common concern of humankind'. While the concept of 'the common concern' is vaguer

and has fewer legal connotations in terms of an international regime than common heritage, it still implies a strong international dimension along with a contemplation of the interests of future generations. Here, again, the vast majority of potential beneficiaries live in the Global South.

Different regimes, common problems

Although different regimes exist for the international areas and global resources, five common problems can be identified for analysis here.

Sovereignty, territoriality and national jurisdiction as the prevailing paradigm

With the exception of the international areas discussed above, Planet Earth is divided into some 200 territorial states. There is a clear connection between territoriality and sovereignty. Sovereign statehood presumes territory, and in fact it is commonly called 'state territory'. Furthermore, few if any issues in international relations are as sacrosanct as territorial borders.[24] For centuries it has been common for states to seek to delimit their borders as precisely as possible, nowadays not only on land but at sea and in the air as well. The relativity and permeability of borders in the context of a shared environment and nature, social interdependence and intensive traffic and migration are widely acknowledged, but this does not seem to affect the core of territoriality.[25] Its core is still aptly reflected in the pronouncement by Judge Max Huber in his award of 1928 for the Permanent Court of Arbitration in the *Island of Palmas case* between the Netherlands and the USA: 'Sovereignty in the relations between States signifies independence. Independence in regard to a portion of the globe is the right to exercise therein, to the exclusion of any other State, the functions of a State'.

The notions of territoriality, sovereignty and national jurisdiction even penetrate the legal domains of the international areas discussed above. For the traditional freedoms of the high seas are significantly reduced as a result of the 'sovereign rights' of the coastal state to the marine resources in a 200-mile Exclusive Economic Zone (EEZ), which each state is entitled to proclaim. Furthermore, the area to which the common heritage of mankind applies only starts beyond the limits of national jurisdiction, which is at best at the outer limit of the 200-mile EEZ but which can also stretch even up to 350 nautical miles in the case of an extended continental shelf.[26] Moreover, seven states still maintain their territorial claims to Antarctica. And the eight adjacent states to the Arctic region all seek to extend their zones of maritime jurisdiction as far as they can, as illustrated by the planting of the Russian flag from a Russian submarine on the continental shelf in 2007. Only gradually and hesitantly have alternative approaches emerged, approaches especially advocated by the Global South.[27] They are reflected in such terms as 'global commons', 'common heritage', 'common concern of humankind' and 'planetary resources'. However, at best they set limits to and qualify the exercise of sovereignty and national jurisdiction rather than replace them.[28]

Exploitation: 'first use, first served' versus 'joint management for optimal yield'

Falteringly efforts have been made to replace the traditional open access regimes by regulated ones or even prohibited use. For too long the inexhaustibility and the infinite use of global resources were the underlying operating assumptions, resulting in a serious decline

in global resources and even the extinction of some. Only recently has emphasis been put on the rational and sustainable management of natural resources and ecosystems, including protecting biological diversity and fresh-water sources and combating climate change, overfishing and pollution.[29] Meanwhile, in general, an evolution can be noted from emphasis on resource exploitation rights to proper use and conservation duties.

To begin, reference can and should be made to global multilateral treaties that are applicable to the Earth as a whole. They include most notably the UN Convention on the Law of the Sea, the Convention on Conservation of Biological Diversity, and the Climate Change Convention, which all emphasise the need for a sustainable use of resources and formulate a host of duties incumbent on the state parties to these treaties, as well as regulatory environmental powers. Moreover, for nearly each specific regime for a particular international area or global resource reviewed above, obligations relating to sustainable use or even prohibition of exploitation have been formulated. Hence, both the UN Convention on the Law of the Sea in general and the Fish Stock Agreement in particular regulate the use of high seas fisheries, while the IWC has established a moratorium on whaling. The current state of affairs of environmental obligations in conducting exploration and future of exploitation of future deep seabed mining is properly assessed and spelled out in the advisory opinion of the International Tribunal for the Law of the Sea rendered in 2011 on the liability of sponsoring states for deep-seabed mining. The 1991 Madrid Environmental Protocol to the Antarctic Treaty in essence resulted in putting aside the earlier signed (but not yet entered into force) 1988 Antarctic Mining Treaty, while the various treaties relating to the Antarctic marine living resources seek to protect, conserve and, if applicable, sustainably utilise such resources. The Convention on the Protection of the Ozone Layer clearly forbids the emission of certain helio- and other highly damaging gases into the atmosphere by banning the production, trade and use of such gases.[30] It must be noted that similar treaties or regulations have hardly been adopted yet with respect to the Arctic region, outer space and the celestial bodies.

How to take into account the special needs and interests of developing countries

There can be little doubt that some, if not most, global resource regimes discussed in this article have been initiated by developing countries, which had the most to lose from starting out late in the development process. The regulation of the uses of outer space and the celestial bodies, as well as of the seas and oceans, represented an effort to replace the 'free for all' and 'first come, first served' principles by regulated access by and for the international community of states as a whole. It almost became a standard phrase to add 'taking into account the special needs and interests of developing countries' in all international documents. In practice, it soon appeared that, with the exception of the claim to participate in consultations and decision making, those needs and interests diverged widely. A simple look at the world map reveals their very different geographical situations, with landlocked developing countries and otherwise geographically disadvantaged states on the one extreme and coastal developing countries with long coastlines and extensive maritime areas (EEZs and extended continental shelves) on the other.

Similarly a division of interest is emerging between more advanced developing countries such as China, India and Brazil with capacities to explore space, on the one hand, and equatorial states that seek to benefit through extended claims to airspace and parking fees for

satellites from their geographic position. Furthermore, as regards protecting the ozone layer and combatting climate change, it is no longer possible to speak of developing countries in global fashion, because some claim positive discrimination and preferential treatment while wealthier and newly industrialised countries – often called 'emerging' or 'rising economies' – have joined the group of old industrial countries as major polluters. Such differences among members of the Global South have given rise in, for example, international climate law to the emergence of the new principle of common but differentiated responsibilities, and that of graduation and integration, which have relatively quickly gained currency in various areas of international environmental law, international trade law and international economic law. This reality has diminished the collective bargaining power of the developing countries in seeking a redistribution of wealth and power.

The lack of effective supervisory mechanisms

These international regimes are not only subject to different managing principles but have also put in place different institutional structures, occasionally together with various systems for monitoring compliance. Some regimes provide for institutionalised consultation and cooperation, such as the Meetings of the Consultative Parties under the 1959 Antarctic Treaty, the Conference of the State Parties to the 1982 Law of the Sea Convention, the Conferences/Meetings of Parties under the conventions on the ozone and climate change regimes (such as the December 2015 Conference of Parties, or COP 21, in Paris), the UN Committee on the Peaceful Uses of Outer Space, and the meetings of the Arctic Council (albeit without a treaty basis).

In some situations, standing international organisations were established, such as the IWC, the International Seabed Authority, or the various fishery management entities. Only a few have wide regulatory competences – the IWC and ISA are the best examples. Mostly these organisations lack effective supervisory mechanisms in terms of compliance monitoring, sanctions or incentives. Furthermore, at best some supervisory mechanisms exist for each specific global commons. An overall mechanism overseeing all global commons does not as such exist, demonstrating the fragmented rather than coherent approach to the supervision of the global commons.

No compulsory peaceful dispute settlement system

A number of international regimes have put in place interesting and potentially far-reaching enforcement and dispute-settlement mechanisms. Three should be mentioned here: the Implementation Committee under the 1987 Montreal Protocol to the Ozone Layer Convention; the Compliance Committee under the 1997 Kyoto Protocol to the Climate Change Convention; and, last but not least, the International Tribunal for the Law of the Sea under the 1982 UN Law of the Sea Convention.

While the other regimes do not have specific dispute settlement procedures, resort to such general procedures as the ICJ and arbitration are available. These nearly always require consent to their jurisdiction by the states concerned. Taken together the absence of a coherent and compulsory peaceful dispute-settlement system further demonstrates the fragmented and inchoate structure of global natural resource management.

Conclusion: the global commons as laboratories for innovative forms of global governance and international law making

Occasionally path-breaking innovations in regulation have been practised in the regimes for the global commons. Some specific and significant examples include:

- Moratoria (whaling), penalties (with respect to ozone-depleting substances), quotas (fisheries), freezing claims (Antarctica), certification (tropical timber wood);
- Institutionalised consultations between the most interested parties (Consultative Parties to the Antarctic Treaty), specific international commissions (UN Committee on the Peaceful Uses of Outer Space, Compliance Committee Kyoto Protocol);
- The particular role of developing countries in establishing forms of cooperation in initiating new principles (such as common heritage of mankind) while delegitimising others (traditional freedoms, amounting to 'first come, first served');
- The role of international law in fostering innnovative regulation, taking a variety of forms, such as soft law instruments (declarations, strategies), hard law (treaties, protocols), and international judicial decisions.

The period following the 1992 Earth Summit in Rio de Janeiro was marked by considerable progress in the field of international law making with respect to conservation and the sustainable use of natural wealth and resources – both through treaty making and soft law instruments, for instance the 1995 FAO Code of Conduct for Responsible Fisheries. A central role has been played by developing countries in various UN organs and specialised agencies, in an effort to prevent a *laissez-faire–laissez-passer* system through which the industrialised countries and their technologically advanced enterprises by definition have a head start and secure the largest benefits from new exploitations. As a result, a host of relatively new principles and concepts of contemporary international law apply to the distinct international regimes governing the global commons, albeit still emerging, fragmented and incomplete. Apart from common heritage and common concern of humankind, these principles include the precautionary principle, sustainable use of natural resources, intergenerational equity, common but differentiated responsibilities, graduation and integration, and the principle of interrelatedness and integration.[31] The specific rights and duties derived from these principles and rules have still not fully crystallised, which does not, however, endanger their firm status in modern international law.

The 20th century witnessed the emergence of international regimes for areas and natural resources that remain beyond the limits of national jurisdiction. These global commons now comprise the high seas and their living resources, the deep seabed, outer space (including the Moon and other celestial bodies), the two polar regions and the atmosphere (in particular the ozone layer and the climate system). As regards the high seas the principle of freedom of access – and, with it, Grotius's idea of *mare liberum* – has been maintained in theory, although in practice it has become increasingly qualified by obligations to properly manage fish stocks and prevent their overexploitation. Marine mammals, as examples of 'charismatic mega-fauna', have become additionally protected under various international legal instruments such as the Schedules of the IWC. The deep seabed and its mineral resources, in turn, have been proclaimed the common heritage of mankind, a relatively new and potentially far-reaching application – which, moreover, also applies to the Moon and its natural resources. The international regimes for the two polar regions have remained distinct, reflecting also

the very different geophysical, as well as political conditions of Antarctica and the Arctic regions. But both regions are crucial to the global environment, and are fragile and therefore increasingly the object of specific international regulation aimed at cooperation for nature conservation. As regards the management of atmospheric resources both the ozone layer and the climate system have been declared a 'common concern of humankind'. Obviously this new notion is much vaguer and has fewer legal connotations than 'common heritage of mankind', but it still implies a strong international dimension and the need to take into consideration the interests of future generations.

In addition to the rules that are specific to each of these regimes, global commons are also subject to general principles and rules embodied in important multilateral treaties, such as the 1982 UN Convention on the Law of the Sea, the 1992 Convention on Biological Diversity and the 1992 UN Framework Convention on Climate Change, and in international environmental law in general.

The global commons, comprising the areas and resources beyond the sovereignty of any state, build upon the heritage of Grotius's idea of *mare liberum* – an idea that aimed to preserve the freedom of access for the benefit of all. The old *mare liberum* idea digressed into 'first come, first served' advantages for industrialised nations, but especially at the initiative of developing countries has now been increasingly qualified and supplemented, if not replaced, by a new law of international cooperation and protection of natural wealth and resources beyond the limits of national jurisdiction. The global commons have thus served as a laboratory for the testing of new legal principles and the rights and corollary duties emanating from them. Occasionally path-breaking innovations in regulation have been practised, most notably the imposition of a ban on whaling, the penalties on production and use of ozone-depleting substances and the freezing of claims to sovereignty over Antarctica. In this unfinished journey the Global South has played a major and constructive role.

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No potential conflict of interest was reported by the author.

Notes on Contributor

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Notes

1. Cf. Hardin, "Tragedy of the Commons"; and Gore, *The Inconvenient Truth*.
2. See Buck, *The Global Commons*.

3. Schachter, *Sharing the World's Resources*.
4. In the terminology of property law, 'commons' represent those resource domains in which 'common pool resources' are found – in the sense that access to them, or the exploitation thereof, cannot be efficiently limited to a 'pool' of users.
5. See Wijkman, "Managing the Global Commons," 512.
6. See Grotius, *Mare Liberum*; and Feenstra and Vervliet, *Hugo Grotius Mare Liberum*.
7. See Schrijver and Prislan, *From Mare Liberum to the Global Commons*, 170–176.
8. Grotius, *Mare Liberum*, 23.
9. Grotius, *Mare Liberum*, 23–24. As Grotius explains there, not even the fields were delimited by boundary lines, nor was there commercial intercourse.
10. Grotius, *Mare Liberum*, 27 (emphasis added).
11. Grotius, *Mare Liberum*, 28. However, Grotius's position with regard to fisheries appears to be somewhat inconsistent, as at a later point he claims that 'in a way it can be maintained that fish are exhaustible'. *Mare Liberum*, 43.
12. Grotius, *Mare Liberum*, 36–37.
13. Emphasis in the original text. For a collection of documents on the committee's work, see Rosenne, *Committee of Experts for the Progressive Codification*. See also Schrijver, *Development without Destruction*, 23–25.
14. ICJ, *Danube Dam case*, separate opinion, Weeramantry, 110.
15. ICJ, *Danube Dam case*, separate opinion, Weeramantry 115.
16. See also Wolfrum, *Die Internationalisierung*; and Molenaar and Oude Elferink, *The International Regime*.
17. See Vicuña, *The Changing International Law*; and Schrijver, *Sovereignty over Natural Resources*.
18. See International Tribunal for the Law of the Sea, Request for an advisory opinion submitted by the Sub-Regional Fisheries Commission (SRFC), Advisory Opinion of 2 April 2015, Case No. 21, available at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion/C21_AdvOp_02.04.pdf.
19. See ICJ, *Whaling case*, 2014.
20. Official Records, UN Conference on the Law of the Sea, first plenary meeting, UN doc. A/CONF.13/SR. 1 (1958), 3.
21. Pardo, *The Common Heritage*.
22. Dam-de Jong, *Internatonal Law and Governance*.
23. Redgwell, *Intergenerational Trust*.
24. Kohen, *Possession contestée*.
25. Schrijver, *The Changing Nature*.
26. Churchill and Lowe, *The Law of the Sea*.
27. Weiss, *In Fairness to Future Generations*.
28. Schrijver, *Sovereignty over Natural Resources*.
29. World Commission on Environment and Development, *Our Common Future*, and Schrijver, *Natural Resource Management*.
30. Yoshida, *The International Legal Régime for the Protection of the Stratospheric Ozone Layer*.
31. For an analysis of these principles, see Schrijver, *The Evolution of Sustainable Development*.

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Appendix 1. Essential treaties

1945
Charter of the United Nations, 26 June 1945, entered into force on 24 October 1945; 1 *UNTS* xvi.
1946
International Convention for the Regulation of Whaling, Washington, 2 December 1946, entered into force on 10 November 1948; 161 *UNTS* 72.
1959
Antarctic Treaty, Washington, 1 December 1959, in force in 1961, 402 *UNTS* 71.
1968
African Convention on the Conservation of Nature and Natural Resources, Algiers, 15 September 1968, entered into force on 16 June 1969, 1001 *UNTS* 3 (see Revised Version 2003).
1967
Treaty on the Principles Governing the Activities of States in the Exploration and Use of Outer Space

Including the Moon and Other Celestial Bodies, Washington, 1967, in force 1967, 610 *UNTS* 205.

1973

Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES), Washington, 3 March 1973, in force 1975, 993 *UNTS* 243.

1979

Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, New York, 5 December 1979, entered into force on 11 July 1984; 1363 *UNTS* 3; 18 *ILM* 1434 (1979); *UN Doc.* A/34/664, 12 November 1979.

1981

African Charter on Human and Peoples' Rights, Nairobi, 27 June 1981, entered into force on 21 October 1986; 1520 *UNTS* 217; 21 *ILM* 59 (1982).

1982

United Nations Convention on the Law of the Sea (UNCLOS), Montego Bay, 10 December 1982, entered into force on 16 November 1994; *UN Doc.* A/CONF.62/122 (UNCLOS); 1833 *UNTS* 3; 21 *ILM* 1261 (1982).

1985

Convention on the Protection of the Ozone Layer, Vienna, 22 March 1985, entered into force on 22 September 1988; 1513 *UNTS* 293; 26 *ILM* 1529 (1985).

1986

Protocol on Substances that Deplete the Ozone Layer, Montreal, 16 September 1987, entered into force on 1 January 1989; 1522 *UNTS* 3; 26 *ILM* 154 (1987).

1992

United Nations Framework Convention on Climate Change (Climate Change Convention), New York, 9 May 1992, entered into force on 21 March 1994; 1771 *UNTS* 107; 31 *ILM* 851 (1992).

Convention on Biological Diversity (Biodiversity Convention), Rio de Janeiro, 5 June 1992, entered into force on 29 December 1993; 1760 *UNTS* 79; 31 *ILM* 822 (1992).

1994

International Tropical Timber Agreement, Geneva, 26 January 1994, entered into force on 1 January 1997; 1955 *UNTS* 143; 33 *ILM* 1014 (1994).

United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, Paris, 14 October 1994, entered into force on 26 December 1996; 1954 *UNTS* 3.

Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 (1994 Supplementary Agreement); *UN Doc* A/RES/48/263, 17 August 1994; 33 *ILM* 1309 (1994).

1995

Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, New York, 4 August 1995, entered into force on 11 December 2001; 2167 *UNTS* 3.

1997

Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto, 11 December 1997, entered into force on 16 February 2005; *UN Doc* FCCC/CP/L.7/Add.1, 10 December 1997; 37 *ILM* 32 (1998).

1998

Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Aarhus, Denmark, 25 June 1998, entered into force on 30 October 2001; 2161 *UNTS* 447.

2000

Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Montreal, 29 January 2000, entered into force on 11 September 2003; 39 *ILM* 1027(2000).

2001

Stockholm Convention on Persistent Organic Pollutants, Stockholm, 22 May 2001, entered into force on 17 May 2004; *UN Doc* UNEP/POPS/CONF/4, App. II (2001); 40 *ILM* 532 (2001).

International Treaty on Plant Genetic Resources for Food and Agriculture, Rome, 3 November 2001,

entered into force on 29 June 2004; reprinted in 2001 *IELMT* 28; available also at <ftp://ftp.fao.org/ag/cgrfa/it/ITPGRe.pdf>.

2002

ASEAN Agreement on Transboundary Haze Pollution, Kuala Lumpur, 10 June 2002, entered into force on 25 November 2003; reprinted in 2002 *IELMT* 44.

2003

WHO Framework Convention on Tobacco Control, Geneva, 21 May 2003, entered into force 27 February 2005; 2302 *UNTS* 229; 42 *ILM* 518 (2003).

African Convention on the Conservation of Nature and Natural Resources (Revised Version), Maputo, 11 July 2003, not yet in force; reprinted in 2003 *IELMT* 52; available at <http://www.africa-union.org/root/AU/Documents/Treaties/Text/nature%20and%20natural%20recesource.pdf>.

Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, Rome, 24 November 1993, entered into force on 24 April 2003; 33 *ILM* 968 (1994).

2006

International Tropical Timber Agreement 2006, Geneva, 27 January 2006, 7 December 2011. 2797 UNTS. *UN Doc* TD/TIMBER.3/12; reprinted in 2006 *IELMT* 08.

2015

Paris Agreement under the United Nations Framework Convention on Climate Change ('Paris Agreement'), 12 December 2015, not yet entered into force. *UN Doc* FCCC/CP/2015/L.9/Rev.1.

Appendix 2. Essential cases of international courts and tribunals

International Court of Justice

Fisheries Jurisdiction case (United Kingdom v Iceland), Merits, Judgment, 25 July 1974, *ICJ Reports 1974*, 3.

Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests (New Zealand v. France) *Case, (New Zealand v. France)*, Order, 22 September 1995, *ICJ Reports 1995*, 288.

Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion of 8 July 1996, *ICJ Reports 1996*, 226–267.

Case Concerning the Gabčíkovo-Nagymaros Project (Hungary/Slovakia), Judgment ('Danube Dam case'), 25 September 1997. *ICJ Reports 1997*, 88.

Pulp Mills on the River Uruguay (*Argentina v Uruguay*), International Court of Justice, 20 April 2010, *ICJ Reports 2010*.

Whaling in the Antarctic (Australia v Japan: New Zealand Intervening), Final Judgment of 31 March 2014, *ICJ Reports 2014*.

International Tribunal for the Law of the Sea

Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion of 1 February 2011, *ITLOS Reports 2011*.

Request for an Advisory Opinion submitted by the Sub-Regional Fisheries Commission (SRFC), ITLOS, Case No 21, Advisory Opinion of 2 April 2015, *ITLOS Reports 2015*.

Awards of International Arbitral Tribunals

Bering Fur Seal Arbitration (Great Britain v United States), Award of the Tribunal, 15 August 1893; reproduced in (1999) 1 IELR 67; and (1912) 6 AJIL, 233.

Islands of Palmas Case (The Netherlands/United States), Award of the Permanent Court of Arbitration, 4 April 1928, *UN Reports of International Arbitral Awards*, New York: United Nations, vol. II, 1949, 829–871.