

THE CHALLENGES OF THE ANTHROPOCENE: FROM INTERNATIONAL ENVIRONMENTAL POLITICS TO GLOBAL GOVERNANCE

MATÍAS FRANCHINI¹
EDUARDO VIOLA²
ANA FLÁVIA BARROS-PLATIAU³

Introduction

Until the late 1960s, environmental problems were mainly conceived as peripheral matters of exclusive domestic competence of states, thus governed by a strict notion of sovereignty (MCCORMICK, 1991). From the early 1970s onwards, however, that perception changed, fueled by the accumulation of scientific evidence on the impact of human activities on the environment and by the emergence and aggravation of problems such as air and water pollution, heat islands and acid rain.

As a result, the international community began a progressive - albeit limited - effort to cooperate on environmental issues, gradually incorporating universalist elements that mitigated the initial sovereign rigidity, that is, the notion that there is a common good of humanity - spatial transcendence - and a demand for intergenerational solidarity - temporal transcendence.

The initial milestone for this “entry” of the environment into the international relations agenda was the “United Nations Conference on the Human Environment”, held in Stockholm in June 1972 (MCCORMICK, 1991; LE PRESTRE, 2011).

Since then, humanity has been able to cooperate in environmental matters through three main tracks. First, the consolidation of scientific organizations that provide detailed information on environmental issues - such as the United Nations Environment Programme (UNEP), created in 1972, and the Intergovernmental Panel on Climate Change (IPCC), created in 1989.

Secondly, the creation of bodies of political dialogue and coordination - such as the “Vienna Convention for the Protection of the Ozone Layer” in 1985; the Climate Change (UNFCCC) and Biodiversity Convention (CBD) signed in 1992 and the United Nations

1. Post-doctoral fellow at the International Relations Institute. University of Brasilia. CAPES-PNPD grant holder. Member of the CLIM/CNPq research group. matifranchi@yahoo.com.ar

2. Full Professor at the International Relations Institute. University of Brasilia. Leader of the CLIM/CNPq research group. eduviola@gmail.com

3. Professor at the International Relations Institute. University of Brasilia. Member of the CLIM/CNPq research group. anaflaviaplataiu@gmail.com

Convention to Combat Desertification (UNCCD) in 1994. And finally, the establishment of universal legally binding regulatory mechanisms - such as the Montreal Protocol on Substances that Deplete the Ozone Layer of 1987, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal of 1989 and the Kyoto Protocol to mitigate Climate Change of 1997.

Of similar importance, throughout these more than four decades, humanity was able to consolidate a civilizational consensus on the need to maintain a certain balance in relation to the environment, in order to avoid deleterious or catastrophic consequences for present and future generations.

However, these cooperative efforts - not only multilateral but also regional - have proven inadequate to guarantee the equilibrium of the Earth System. Indeed, the acceleration of human pressure on the planet has opened the possibility of a profound disruption of the system: the risk of overcoming a series of planetary boundaries that are central for its stability and capacity to sustain life (ROCKSTRÖM et al., 2009; STEFFEN et al., 2015).

As a result, Earth has progressively abandoned the stable dominion of the Holocene - which demarcated the flowering of civilization in the last 12 millennia - to enter the frontiers of the Anthropocene. In this new geological epoch, human action has become fundamental to creating a new kind of equilibrium that avoids catastrophe, i. e., to build and maintain a “safe operating space for humanity” (ROCKSTRÖM et al. 2009).

This new point of equilibrium demands levels of cooperation never before achieved by international society in global governance. According to Klijn *et al.* (2012:206-9) the main characteristics of governance are: the focus on policy making (inter-organizational) and service delivery; mainly horizontal interaction among several actors, which makes governance more legitimate; and the conviction that knowledge has a positive influence on policies (innovation capacity). The equation of climate change, reducing the rate of biodiversity loss, or mitigating the ocean acidification process requires concerted efforts by all actors: public and private, local and global. But, especially, it demands cooperation among the major actors of the international system, which we call here great powers - the United States, the European Union, China, and India - and middle powers - Russia, Brazil, Japan, Indonesia and South Korea (VIOLA; FRANCHINI, 2018). Thus, this definition of “power” incorporates as one of its fundamental parameters the contribution of countries to global environmental problems and their capacity to solve them, taking into account that they interact increasingly with giant private actors such as in the health and technology sectors.

The problem identified in this paper is that, while the demands for global governance have deepened significantly, the cooperative capacities developed by international society over the past four decades have increased only marginally (BIERMANN, 2014; LE PRESTRE, 2017; COMPAGNON ; RODARY, 2017) . This situation is partly due to the “social dilemma” feature (OSTROM, 2009) of the Anthropocene problems, which offer negative incentives for cooperation among actors, fueling the attractiveness of “free riding” behaviors (NORDHAUS, 2015).

Therefore, most of the actors of the international system operate in a conservative way, pursuing only sovereign and short-term selfish interests, when the logic of the governance of the Anthropocene requires commitments to the universal good and the long term. Moreover, the recent consolidation of neo-nationalist and populist tendencies in several consolidated democracies - Germany, Austria, France, Finland, Italy, Greece, Great Britain, the Netherlands and particularly the United States under the presidency of Donald Trump - has only worsen the situation, raising the levels of international conflict (VIOLA; FRANCHINI, 2018).

In short, this international system of conservative hegemony (Viola et al., 2013) is at the center of the global dynamics that navigate to the dangerous transgressing of the planetary boundaries and is the main obstacle to the definition of the safe operating space for humanity. If the international institutions and cooperative behavior that have developed in recent decades to deal with environmental problems have proved insufficient in the Holocene, they become obsolete in the Anthropocene. A thorough review of environmental governance, its principles, institutions, rules and mechanisms is therefore needed. This is the statement that we seek to defend throughout this work.

In order to achieve the objective, this article is divided into three parts. In the first one, planetary boundaries are discussed as an approach to environmental problems, highlighting the demand for global governance posed by it. In the second, an analysis is made of the institutions created in the more than four decades of global environmental politics. In the third, the limits of this institutional structure of the Holocene are indicated, while at the same time reflecting on the premises of governance in the Anthropocene.

1. Planetary Boundaries: the transition to the Anthropocene

The world is going through a process of significant transformations, characterized by the acceleration and deepening of the various dimensions of globalization, an intense population growth, and a noticeable increase in the consumption of energy, goods, and services at a global level. In another work, we call that process of the acceleration of history (VIOLA et al, 2013:49):

The development is primarily social and cultural and involves a drastic increase in the speed of social processes. But it is also a physical phenomenon, insofar as human activities change the very face of the planet at an unprecedented rate: consumption of resources, biodiversity, water masses, etc.

The Earth has become a socio-ecological system, where the co-evolution of the eco-sphere and the anthroposphere becomes fundamental for the future of humanity (BIERMANN et al., 2009). In the last decade, the corollary of this process of increasing the impact of human activity on the evolution of the planet has consolidated the argument that a new geological epoch has arisen: the Anthropocene (CRUTZEN, 2009).

In this sense, it is important to point out that there are two major definitions of Anthropocene, a broad one, which emphasizes the acceleration of the degradation of the biosphere in recent decades and concludes that humanity has already abandoned the previous period of stability. And another narrower definition - generalized among the community of geologists and paleontologists - that considers the evidence of Anthropocene as potential but insufficient, so humanity would still be officially in the Holocene (DA VEIGA, 2017). In this work, we use the first notion - broad - of Anthropocene.

In 2009, Rockström et al. (2009) published a work that lucidly illustrates how anthropogenic pressure on the Earth System reached a level in which abrupt global environmental change is becoming increasingly close. The article became a seminal piece, with profound impact and acceptance in the communities of natural scientists, and which progressively penetrated the social sciences (STEFFEN et al., 2015).

The authors propose a new approach to global environmental problems, in which planetary boundaries define a space in which humanity can operate safely. Thus, this literature highlights how during the last 10,000 to 12,000 years the Earth remained in the stable domain of the Holocene, that is, certain biogeochemical and atmospheric parameters oscillating within a relatively small range. This stability, particularly of the climate system, made it possible for civilization to develop after the last ice age. However, progressively our actions are effectively pushing that set of core processes out of the parameters of stable oscillation, with eventual deleterious or even catastrophic consequences for the entire system.

In this sense, there are three historical milestones to define the inauguration of the Anthropocene: the industrial revolution at the beginning of the 19th century; the great acceleration initiated in 1945 - marked by the construction of the atomic bomb, the exponential growth of the population, the economy, the use of natural resources and energy, and the erosion of biodiversity and; the beginning of the 21st century with the consolidation of the scientific consensus on the anthropogenic character of global warming. From the point of view of the dynamics of the international system, the latter is the most appropriate date to define the beginning of the Anthropocene.

The transition from the Holocene to the Anthropocene is marked by three elements (VIOLA; FRANCHINI; RIBEIRO, 2013). Firstly, humanity as the main driver of systemic change; secondly, a dangerous deviation from the stable patterns of the Holocene and, thirdly, the evidence that the definition of a new point of equilibrium in the Earth System must necessarily be the work of humanity:

We witness a sort of graduation of humanity, we become masters of the future of Earth and all its species. To prevent that graduation from becoming a tragedy, we must abandon the current inertial and unconscious civilizational trajectory and evolve towards a matrix of behavior fully aware that only our capabilities and technology can maintain the equilibrium in the foundations of the Earth System. (Viola et al., 2013:60).

To ensure that humanity operates within this safe space, Rockström et al. (2009) identified nine planetary boundaries, or “the non-negotiable planetary preconditions that

humanity needs to respect in order to avoid the risk of deleterious or even catastrophic environmental change at continental to global scales” (ROCKSTRÖM et al., 2009:1). These are: climate change; ocean acidification; stratospheric ozone depletion; interference with the global phosphorus and nitrogen cycles; global freshwater use; land-system change; loss of biodiversity; chemical pollution; and aerosol loading in the atmosphere.

According to the authors (ROCKSTRÖM et al., 2009), science has been able to quantify the first seven frontiers - with greater certainty for climate change and the ozone layer - whereas for three of them the stability threshold has already been exceeded: climate change, biodiversity loss, and nitrogen cycle. The risk to the Earth System derives not only from the impacts of transgression of each boundary - such as rising sea levels in the case of climate change - but also from the interaction among boundaries, as exceeding the value of one can accelerate the rate of degradation of the others - e.g. increasing ocean acidity levels will create more impacts on marine biodiversity.

In 2015, the original research group published an update on the status of the Planetary Boundaries framework (STEFFEN et al., 2015) and highlighted that two core boundaries had been identified - climate change and changes in biosphere's integrity (loss of biodiversity and genetic diversity) - “each of which has the potential on its own to drive the Earth System into a new state should they be substantially and persistently transgressed” (STEFFEN et al., 2015:1).

It is true that relevant work relating to the human impact on life on Earth can be traced back to at least the early 1970s, with the publication of “Limits of Growth” in 1972 (MEADOWS et al., 1972). However, what distinguishes the planetary boundaries framework is, on the one hand, the precision with which it defines the parameters of anthropogenic impact on the Earth System, and, on the other hand, the conception of environmental problems as global commons. In this way, even those issues traditionally considered as local - as chemical pollution - become potentially deleterious at the systemic level, due to the accumulation on a continental level and the interaction with other boundaries.

This last point is particularly relevant for International Relations, insofar as this transition from geographically circumscribed problems to global problems changes the very nature of its administration. Thus, the global common character of the Anthropocene agenda demands cooperative responses and dilutes the efficiency of almost any kind of individual effort, even on the part of the major actors in the international system.

In fact, the only possible way out of generating and sustaining a safe operating space for humanity is to build instances of global governance, in which actors of different kinds - public and private, local and global - define their identities and preferences based on the common good of humanity, moving away from selfish considerations in the short term. Within this framework, we call “Reformist” those actors who agree on definitions and actions that converge with the universal long-term demands of the Anthropocene. On the contrary, “Conservative” forces resist the changes necessary to build a new point of equilibrium in the Earth System (VIOLA; FRANCHINI; RIBEIRO, 2013).

The main problem is that most actors in the international system operate with a logic that is not convergent with the construction of universal goods in most relevant

areas of international relations, such as finance, trade, security, human rights or climate change. As detailed in another paper (VIOLA; FRANCHINI; RIBEIRO, 2012), among the system's great and middlepowers, only the European Union, Japan and South Korea operate as relatively reformist forces, while India and Russia are conservative and the United States, China, Brazil and Indonesia behave as moderate conservative agents. An update of the role of these actors in 2017 shows that Japan and South Korea became moderate conservatives while the United States retreated to conservative positions.

This being so, we live under an "International System of Conservative Hegemony" (VIOLA; FRANCHINI; RIBEIRO, 2013), dominated by those actors who define their preferences through sovereign and short-term bases. As a result, the international order is unable to respond to the challenges of interdependence, which increasingly demand global governance.

As detailed in section three, the demands of the Anthropocene can only be effectively, efficiently and equitably addressed when most of the major actors in the international system make the transition to post-sovereign identities. This movement implies abandoning, among other issues, the common discourse and practice in global environmental forums of dividing the world into two single categories: developed and developing countries.

2. Environmental politics and international regimes: managing sustainability in the Holocene

The United Nations Conference on the Human Environment, held in Stockholm in 1972, is recurrently considered by literature as the event that marks the entry of environmental issues on the international agenda. From that moment on, the international society began a process of building institutions - formal and informal - to administer this "new" area. In the following pages, we address this process in two ways: the contribution of the major conferences in building an environmental civilizational consensus and the creation of formal international regimes for the management of specific environmental problems.

1.1 From Stockholm to Rio: building a civilizational consensus on environmental issues

The 1972 Stockholm Conference, held under the auspices of the United Nations (UN), was convened in the late 1960s, reflecting growing concern about the negative environmental externalities of economic activity, mainly in industrialized countries. Stockholm was particularly relevant because of the articulation of an unprecedented statement on the challenge that humanity faced in its relationship with the surrounding environment and future generations. Accordingly, Principle 1 of the Conference Declaration stated that:

Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of

dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations. (UN-HABITAT, 1972)

A specific instrument to pursue these objectives was created: The United Nations Environment Programme (UNEP).

As a prelude to what would happen over the next four decades, countries expressed differing positions regarding the relevance and responsibility for the management of environmental problems (MCCORMICK, 1991). In general, the developed countries - led by the USA and the countries of Northern Europe - operated as reformist powers, while the rest of the world formed a vast conservative coalition - the entire communist bloc, the so-called Third World and, some developed countries. This heterogeneous grouping assimilated the environmental challenge as a maneuver of the Western democracies' core to maintain its hegemony in the international system and, accordingly, contradictory to the demands of their own industrialization and development.

The next major international environmental summit was the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, better known as the 1992 Rio Summit. The meeting was preceded by the launch in 1987 of the Brundtland Report - officially entitled "Our Common Future" - prepared by the World Commission on Environment and Development. The Report introduced the concept of sustainable development, defined as one that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, 1987) and suggested a series of actions to achieve it. These included the limitation of population growth and energy consumption, the protection of ecosystems, the rational consumption of water and food and the use of clean technologies in the industrialization processes of non-industrialized countries.

In 1989, the United Nations General Assembly convened a conference to assess the environmental situation in the two decades following the Stockholm Summit. The resulting meeting - Rio 92 - was the highest point in terms of cooperative management of global environmental assets in the Holocene. Thus, the Conference generated five relevant normative instruments: the Climate (UNFCCC) and Biodiversity Conventions (CBD), the Rio Declaration on Environment and Development, the Statement of Forest Principles, and Agenda 21. The UN Convention to Combat Desertification (UNCCD) also had a major boost at that meeting.

It should be noted that the positive outcome of Rio 92 was influenced by the increase in cooperative tendencies in the international system following the collapse of the Soviet communist bloc and the consequent deactivation of the Cold War bipolar conflict (LEIS; VIOLA, 2007). However, countries showed strong divisions regarding the centrality and distribution of responsibilities for environmental management. As in the past, the main driver of dissent was associated with the degree of economic development: on the one hand, the United States, Canada, the EU and Japan promoted greater efforts in environmental protection, while almost all low- and middle-income countries rejected this agenda and emphasized the priority of development needs.

Finally, and although it is correct to affirm that the political response generated by the 1992 Conference was below the demands of the scientific communities, the advance of the environmental agenda was undeniable and remarkable (LE PRESTRE, 2004).

The story was different at the following conferences. In both Johannesburg (2002) and Rio de Janeiro (2012), the international community was unable to move forward with legally binding mechanisms to manage environmental problems, even when the scientific community gave clear evidence of the worsening global situation. As a result, the gap between scientific consensus and policy responses widened (VIOLA; FRANCHINI, 2012a, LE PRESTRE, 2011).

What's more, Johannesburg inaugurated a sad tradition among international environmental summits: the celebration of failures disguised as successes. Thus, in the months leading up to this type of meeting (the conclusion is also valid for the annual Climate Convention's Conference of the Parties—COP/UNFCCC) professional negotiators, with the support of part of the press, raise expectations of success, suggesting - often cynically - that a categorical response from the international community is near. However, when the failure (inevitable in many cases because of the lowest common denominator characterizing the UN system)ⁱ becomes present, the negotiating establishment that previously promised a solution goes on to argue - with an excuse - that, although there has been no progress in that specific meeting, the foundations were laid for concrete progress at the next conference.

This circular logic is repeated “ad infinitum”, with the corollary of an almost total inertia of international institutions in relation to the worsening situation of the global environment. As stated in another work:

This industry of conferences is profoundly negative, because it not only does not contribute to the solution of problems, but it creates the fiction that its ineffectiveness is only temporary and not structural, hindering the emergence of other potentially more appropriate governance instances. (Viola & Franchini, 2012b: 476)

In 2012, the latest environmental mega-conference - “Rio+20” (United Nations Conference on Sustainable Development) - honored this tradition of sterile summits camouflaged as success. The UN Secretary General Ban Ki-Moon said the following in relation to the final document of the meeting, entitled “The Future We Want”:

I believe that (the text) was a great success for the international community. It is an excellent document that can put everyone on viable sustainability (O GLOBO, 2012).

However, it is possible to make a different - and profoundly negative - assessment of the outcome of the Summit. Firstly, the 2012 Conference had a less ambitious agenda than its 1992 reference, as there was no intention to negotiate legally binding instruments. Secondly, the Rio + 20 failed to make progress even on issues on its own limited agenda. Thus, the discussion on a concrete definition of the concept of green economy - as a

necessary evolution of the vague concept of sustainable development - was sterilized by the resistance of most emerging countries, concentrated in the G-77 + China and largely led by Brazil - exposing again the traditional North-South divide. The group's argument was that the green economy narrative camouflaged an attempt by developed countries to limit the competitiveness of emerging economies, just as they were increasing their participation in global GDP and world affairs.

Another relevant agenda item - the creation of a specific international environmental institution - also failed and even an update of the modest UNEP was not possible.

However, the biggest failure of Rio + 20 was to have "turned its back" on the process of systemic environmental change that science has described as Anthropocene. The international community was remiss in refusing to discuss the critical situation of the planetary boundaries, dangerously omitting the evidence presented by the scientific community. Even climate change, the best-known boundary in terms of causes and potential effects, did not enter the core of discussions. The issue was deliberately excluded at the initiative of the Brazilian government, which perceived in it a risk of obstructing any consensus.

This maneuver was agreed by almost the entire international community (with the clear exception of the European Union led by Germany, France, the United Kingdom and the Nordic countries), which preferred to avoid the inconvenient discussion of the main problem facing humanity, so as not to risk a failed summit. From this particular point of view, the strategy was successful, since there was an agreed final document, but whose content is nothing more than a reproduction of the diffuse consensus on environmental matters that humanity reached 20 years ago when the evidence of systemic disruption of the planet was marginal.

Furthermore, key global issues related to the oceans's governance were not properly tackled in the Rio+20 debates. Among them, oceans' changes, acidification and pollution. But also the biodiversity beyond national jurisdiction (BBNJ agenda). For the latter, a mandate for an ad hoc working group was established.

As stated in another work (VIOLA; FRANCHINI, 2012a: 4):

The Rio + 20 agenda ended up diluting its focus in the discussion on the infinite contours of sustainable development, without any concrete progress worthy of mention, so that its own heritage was insensitivity to the new evidence of global systemic disruption and incapacity in the face of old problems.

2.2 The policy response: creating international environmental regimes

The main way the international community found to cooperate in environmental issues in the last quarter of the 20th century was through the signing of International Treaties. In the field of International Relations, most of the literature that analyzed this type of instrument was under the category of international regimes (ANDONOVA; BETSILL; BULKELEY, 2009; PATERSON, 1996).

According to the classical definition, a regime is a “sets of implicit or explicit principles, norms, rules and decision-making procedures around which actors’ expectations converge in a given area of international relations” (KRASNER, 1995:2). It is possible to speak of two general conceptions of international environmental regimes (IERs): one formal (strict sense) and one substantive (broad sense) (PORTER; BROWN; CHASEK, 2000).

Strictly speaking, regimes are a system of rules set out in an international treaty between governments, which regulate the actions of the various actors on the issue. In the broad sense, environmental regimes are also considered to be a technological and cultural driver that influences the interests and identities of actors for the cooperative protection of a global common. Using here the first (strict) definition, we list and analyze the main IERs, organized according to planetary boundary:

Table 1: Main international environmental regimes (IERs)

Boundary	Instrument	Year	Goal	Outcome
ClimateChange	UN Framework Convention on Climate Change (UNFCCC)	1992	The stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system	Failure: global emissions grew fast enough to transgress the boundary, making dangerous climate change almost unavoidable ¹
	Kyoto Protocol	1997	Annex 1 ² countries have an average emission reduction target of 5.2% by 2012 relative to 1990 levels.	Most countries met the target.
	Kyoto Protocol 2	2012	Average emission reduction target of 18% in 2020 compared to 1990.	Minimum relevance: participating countries account for only about 12% of global emissions.
	Paris Agreement	2015	Reduce global GHG emissions, with the participation of all countries, but without a specific mitigation target.	Each country has committed mitigation targets for 2030, which are insufficient to stabilize the system. There are no enforcement or monitoring mechanisms for national targets.

Ozone Layer	Vienna Convention for the Protection of the Ozone Layer	1985	To protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer (Art. 2)	Success: progressive reduction of CFC (Chloro-fluorocarbons) emissions.
	Montreal Protocol	1987	Control emissions of ozone-depleting substances	Success: progressive reduction of CFC (Chloro-fluorocarbons) emissions.
Biodiversity	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	1973	Trade must be subject to particularly strict regulation in order not to endanger further their survival and must only be authorized in exceptional circumstances (Art. 2).	Heterogeneous impact on various regions of the world and significant increase in the visibility of the problem.
	Convention on Biological Diversity (CBD)	1992	Conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits derived from the utilization of genetic resources.	Failure: The biodiversity boundary has been surpassed to the point where humanity is creating the sixth mass extinction in Earth's history.
	Nagoya Protocol	2010	Regulate access to genetic resources and the sharing of benefits derived from their utilization.	It entered into force in October 2014. The limited information available so far shows no progress in implementation.
Land-system change	UN Convention to Combat Desertification (UNCCD)	1994	Combating desertification and mitigating the effects of drought in countries affected by severe drought and/or desertification, particularly in Africa	Ambivalent effects: The desertification process continued on a large scale, but in some regions there was positive change.
Chemical Pollution	Stockholm Convention on Persistent Organic Pollutants	2001	Eliminate and restrict the production and trade of persistent organic pollutants (POPs).	In force since 2004. The issue is one of extreme complexity and geographical heterogeneity. There is not yet a systematic valuation of effectiveness.
	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1989	Control the movement of hazardous waste under the principles of prior and explicit consent for import, export and transit.	Success: the international trade in toxic waste progressively decreased and became more regulated and transparent.
	UN Convention on the Law of the Sea (UNCLOS)	1982	It establishes the legal regime for seas and oceans, including protection and sanctions against pollution.	Failed: to date there has been no progress in reducing ocean pollution.

Source: Own elaboration

As for the other planetary boundaries, the international community has not yet generated regimes to administer them. On the contrary, responses to the serious problem of ocean acidification are still in a very early stage: the International Ocean Acidification Coordination Centre – announced during the Rio+20 – has been operating in the

laboratories of the International Atomic Energy Agency (IAEA), but as a forum for communication and facilitation, not for governance. In relation to freshwater scarcity, even if recognized as a relevant boundary by the international community, the World Water Forum is far from meeting the minimum requirements for its sustainable management.

Other fundamental problems related to the management of a safe space for humanity - land-use change with dramatic soil losses, nitrogen and phosphorus cycle, other types of chemical pollution and atmospheric aerosol loads - are not yet considered relevant to the international agenda, and their management is therefore limited to actions at regional, national and local levels.

The negligence of the international community in addressing these issues is evidence of the limits of current international environmental management structures, as explored below.

3. Global governance: the cooperative demands of the Anthropocene

The development of international environmental policy in the Holocene had the virtue of bringing the subject to the center of the international agenda, having stimulated a civilizational consensus in relation to environmental protection, and having constructed a variety of institutional instruments to deal with specific problems. However, the final balance has been negative in terms of building cooperation instances and extremely negative cooperative if one considers the distance between these institutions and the requirements of stability of the Earth System defined by science. In the remainder of this segment, we identify the limits of Holocene's international environmental politics and reflect on the premises of the Anthropocene governance.

3.1 The limits of international environmental politics

The fundamental limit of international politics has been to assimilate the environmental agenda as a series of specific problems and not as a complex system, in which everything is connected and must be managed cooperatively in a long-term perspective (LEVI-FAUR, 2012; BOULTON *et al*, 2015; KAVALSKI, 2016; LE PRESTRE, 2017). This general limitation is expressed in three main forms:

3.1.1. Marginalization

The environment is a new issue on the agenda of international relations, with a presence of just four decades in multilateral fora. However, this presence is less prominent than that of other classic topics of international politics such as defense, security, and economics.

For most societies, environmental issues are largely contradictory to developmental trajectories, and their demands may be abandoned or mitigated if economic growth or security threats demand it. Thus, environmental protection measures are not properly defined or implemented when they are supposed to limit economic growth and/or have

negative electoral effects for the political authorities; just as global military expenditures often multiply the expenses dedicated to environmental protection. Conversely, only some societies - such as the Scandinavian countries and Germany - place environmental management as a constituent element of their economic and political development.

As we have already pointed out, this hegemony of conservative forces - at a local and systemic level - is one of the sources of the absence of concrete results in terms of planetary boundaries management (VIOLA; FRANCHINI; RIBEIRO, 2013). The positive fact is that the reformist forces are advancing in most countries and in the international arena - in public opinion, civil society, the market and, governmental and administrative bodies - albeit at an insufficient speed to substantially mitigate the conservative inertia.

This empirical picture is reproduced in a relatively analogous way in the academic field of IR, since most of the departments and specialists consider the environmental issue as marginal, that is, not central to understanding the basic dynamics of cooperation and conflict that characterize the international system. However, there has been a progressive expansion of the number of scientific pieces devoted to international environmental issues, as well as the number of specialists in the subfield.

At the same time, there has been an increase in the proportion of internationalists who consider certain problems of the global environment - particularly climate change - to be fundamental, even though it is not their main area of research. Finally, some of the major references in IR have assimilated the environmental driver as one of the central dimensions of the international system, such as Robert Keohane, Joseph Nye, David Held, David Victor, Andrew Hurrell, Peter Haas and Philippe Le Prestre.

3.1.2. State-centered

International environmental politics has basically been that, a set of agreements and understandings among nation-states. This does not mean that non-state actors have not had an impact on the construction of these instruments; on the contrary, it is possible to argue that the environmental has been one of the areas of IR where there is a higher level of agency among these actors. Accordingly, the scientific community has had a constant presence and influence in the diagnosis of problems and the offer of solutions, while environmental NGOs have had a significant influence in the establishment of agendas and the construction of consensus around environmental protection in all spheres of governance (PORTER,BROWN; CHASEK, 2000;HURRELL, 2008; HAAS, 2015).

However, the negotiation, signature, and implementation of environmental management instruments are almost exclusively the responsibility of the States as they establish the normative, political and bureaucratic frameworks for the respective actions. An example of this conception is found in Principle 2 of the 1992 Rio Declaration (UN, 1992):

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within

their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

Ultimately, the management of environmental commons under this rigid Interstate system becomes extremely limited, due to the intrinsically selfish character of the Westphalian project, based on individual state identities, the satisfaction of the self-interest of states and the propensity to view international relations as a field of conflicting rather than cooperative interaction.

This logic has been partly mitigated in the last two decades, with examples of successful environmental governance by other actors, following a well-known path of power diffusion in the international system (NYE, 2011). Examples include sub-national entities, such as the State of California in relation to the problem of climate change, or private actors, such as Wal-Mart and Microsoft in relation to demanding high environmental standards for their suppliers. However, as already stated, the growth rate of this type of experience is insufficient to guarantee a new equilibrium in the Earth System.

3.1.3. Regimes limited to issue areas

The recurrent *modus operandi* for the establishment of international environmental regimes (IERs) has been the negotiation and signature of an international convention - which operates as the general regulatory framework - which is then complemented by protocols that set out the concrete measures to be implemented by the Member States. Within this design, the instruments tend to focus on a specific issue - such as biodiversity, climate change, desertification or persistent organic pollutants (POPs) - with little reference to other areas of international relations, and even the environmental area itself.

It is not difficult to see the limitations of this type of approach to deal with the problems of the Anthropocene, since the interaction among planetary boundaries demands not only to update and integrate the different international environmental regimes but also to assimilate them as a civilization al driver. In other words, to conceive them as an essential part of society's development.

This conception based on issue areas has also been recurrent in the literature of International Relations. For some authors, the liberal institutionalism - the theoretical approach that dominated the studies on international environmental politics - has conceived the regimes as doubly isolated, both among themselves and in relation to broader developments in international politics and economics (OKEREKE; BULKELEY; SCHROEDER, 2009; PATERSON, 1996).

As for the first point, concentration on specific and separate areas creates artificial boundaries between actors, ideas, and solutions. In relation to the second point, the omission of the links between the global environmental problem and the logic of the global economy and politics - which is its framework - is a serious limitation to the explanatory capacity of the theory (VIOLA; FRANCHINI; RIBEIRO, 2013).

3.2 Premises for the governance of the Anthropocene

As the previous pages suggest, the fundamental premise of this article is that the governance of the Anthropocene will be the main challenge facing societies and the social sciences (particularly International Relations, Political Science, Economics, and Law) in the first half of the 21st century.

In this sense, the central obstacle to the development of effective global governance mechanisms lies in the fact that the institutions - international and domestic - created over the last decades do not reflect the deep level of interdependence among societies. Transcending this limit implies profound changes in behavior, both individually and collectively. In this segment, we analyze these necessary transformations from the perspective of the International Relations.

The first of the changes is epistemological/ontological and involves assimilating the management of the planetary boundaries, not only as an environmental problem but also as a civilizational one; that is, encompassing the spheres of economy, politics, and society. In this way, the concepts - and associated practices - of prosperity, security, growth, equity, justice, freedom, peace and democracy must be reformulated to include the safe operating space for humanity as the ultimate reference.

The concrete examples of these developments will be detailed in the following pages, but mainly involve: an operational definition of a low-carbon green economy; the adoption of the planetary boundaries framework by major international organizations, such as the World Trade Organization (WTO), the International Monetary Fund (IMF) and the World Bank; the progressive abandonment of planned obsolescence in the business cycle (PACKARD, 1960); and the evolution towards political systems in which the debate on the safe operating space for humanity is considered as relevant as economic growth or freedom.

In terms of the international system, the most structural of the transformations is the progressive abandonment of sovereignty as the archetypal pattern of state behaviour. In another paper, we defined the concept as follows (VIOLA; FRANCHINI; RIBEIRO, 2012:475):

Sovereigntist/post-sovereigntist categories operate as extremes of a spectrum and not as a dichotomy. Sovereign forces are those who consider that their national state should not cede powers to supranational structures and do not admit external interference in the internal affairs of countries, particularly in reference to themselves. Post-sovereign forces have already accepted or are willing to accept power transfers to supranational structures and consider that the internal affairs of all countries are susceptible to interference. In general, democracy acts as a necessary condition for post-sovereignty, while large countries (in terms of population, economy, and territory) tend to be sovereignist. Similarly, the perception of strategic-military threats tends to hinder the development of post-sovereign logics.

To the extent that planetary boundaries are defined as global commons, it is only through cooperation between agents that it becomes possible to avoid behaviors that lead to sub-optimal outcomes, such as the “free-riding” effect and the tragedy of commons (NORDHAUS, 2015; OSTROM, 2009). In the first case, a given actor avoids paying for the costs of providing a common good - say, the stability of the atmosphere - by waiting for other actors to pay that cost, resulting in generalized inertia. In the second case, a finite resource of unrestricted access - let’s say, again, the atmosphere - ends up being degraded or eliminated by overexploitation.

Currently, among the major players in the international system, only the EU is openly willing to cede powers to supranational bodies, followed by Japan and South Korea with more ambiguous positions. The other G20 countries are sovereignist in varying degrees, including extreme sovereignist in the United States, China, India, Russia, Turkey and Saudi Arabia. However, there are post-sovereignist forces present in most G20 members: the United States, Canada, Australia, Indonesia, South Africa, Brazil, Mexico, Australia, and Argentina.

The growth of neo-nationalist and populist tendencies in recent times (THE ECONOMIST, 2016) has intensified the conservative character of the international system, particularly since the election of Donald Trump in November 2016. Expressions of this trend have been the Brexit (referendum for the exit of Great Britain from the EU); the collapse of democracy in Turkey; the erosion of democracy in Hungary and to a lesser extent in Poland; the growth of extreme right-wing nationalist parties in consolidated democracies - in order of magnitude of this growth: Austria, Slovakia, France, Finland, The Netherlands, the United Kingdom, Greece, Germany, Sweden and Denmark - and left-wing parties in Italy, France, Spain and, Greece. In any case, because of its key place in the international system and the depth of nationalist impulses, the most relevant expression of this wave has been the Trump Presidency in the United States (VIOLA; FRANCHINI, 2018).

The sovereignist-westphalian logic that dominates the international system has another characteristic that is inconsistent with the governance of the Anthropocene: the separation of the world into the dichotomous categories of developed and developing countries (VIOLA; FRANCHINI; RIBEIRO, 2013). This conceptual simplification - common in the field of IR and the norm in environmental studies - is increasingly becoming an epistemological obstacle, a cognitive barrier to the study of international relations in its various areas of governance.

Indeed, there are clear differences in terms of commitment to the governance of the global commons among, for example, the United States, Canada, Japan and even those countries that are part of the European Union, all of them developed ones. At the same time, there are enormous contrasts in terms of power and environmental commitment of countries often described as developing, such as Brazil, Bangladesh, India or China.

Accordingly, it is inconsistent to argue that a dichotomous category is capable of adequately capturing the extreme and growing complexity of the international system and the sophistication of its agents, who combine in a heterogeneous way political, economic, military and environmental resources.

However, even more harmful than the epistemological obstacle posed by this categorization is the political one. In the traditional conception of international politics, only the developed countries have significant obligations in environmental protection. Thus, some of the big emerging powers, such as China, India and Brazil - which have profound impacts on the planetary boundaries - are delaying the assumption of binding international commitments, using the same “underdevelopment” argument of the poor countries such as Bolivia or Haiti (WONG, 2017).

This maneuver ends up being an expression of profound injustice, since hiding behind the real needs of poorer societies to justify inaction and block cooperation will have no other result than the aggravation of the situation of the most vulnerable populations. In this sense, the highest form of justice in the Anthropocene is precisely the sustainable management of the planetary boundaries. On the contrary, the discourse and practice of the big emerging economies that emphasizes global justice but at the same time blocks cooperation in the name of development becomes essentially unfair (VIOLA; FRANCHINI, 2018).

The scenario is even more schizophrenic if we consider that some of these same countries have passed internal regulations and established domestic policies that are relatively convergent with the definition of a safe space for humanity. An example of this is the acceleration of the Chinese transition for non-conventional renewable energies (IRENA, 2017) or even the Brazilian climate change law passed in early 2010 - although its implementation is currently deeply degraded.

Taking as a premise the need for the abandonment of sovereigntist tendencies in the international system, it is possible to highlight some concrete developments, intended to build and consolidate the governance of the Anthropocene.

Firstly, the definition of an operational concept to guide the design and implementation of policies consistent with the equilibrium of the Earth System. In this regard, it is considered in this paper that the traditional concept of sustainable development - which has inspired conservation strategies at the global level since the 1980s (DA VEIGA, 2017) - is too vague and diffuse, for two main reasons. First, it attempts an extremely ambitious synthesis, balancing at the same time issues of growth, equity and environmental protection in the short and long term. Secondly, this synthesis deliberately evades specific definitions, trying to be politically correct and thus avoiding concrete criticisms of countries or groups of countries.

The category of Green Low Carbon Economy (GLCE) (VIOLA; FRANCHINI, 2012b) is then proposed, based on the known metric of carbon intensity and complemented by references to other planetary boundaries: rational use of natural resources, reduction of water consumption, protection of biodiversity, reduction of fertilizer use, maximization of renewable energy and energy efficiency and, stimulation of collective transport and energy efficiency.

Secondly, the creation of an international environmental organization with a status superior to that of a specialized UN agency and with powers similar to those of the World Trade Organization, capable of defining global normative strategies for the stability of the environment; with powers to monitor the situation in each of the countries, publicly

criticizing those who violate the norms and, finally, with enforcement powers to implement treaties and protocols.

As a necessary step before this, it is essential to abandon the harmful tradition of the industry of international environmental conferences whose only result is consensus based on the lowest common denominator, which ends up having no impact in terms of efficient governance. As stated in another work (VIOLA; FRANCHINI, 2012c: 476):

A serious conference, which would have laid the foundations for future developments, would have begun with a sincere opening of the positions of the various actors, without falling into the temptation of seeking minimum consensus that nothing contributes to the governance of the area. The problem is that even reformist actors, such as the EU, accept the tradition of sterile harmony of multilateral documents.

Thirdly, following the complex regime logics and the theory of complexity (Kavalski, 2016) the internalization of the planetary boundaries framework into the principles and behavior of the main international organizations: the WTO, the IMF, the World Bank and the UN Security Council (CS).

Fourthly, the gradual reform of the UN General Assembly (UNGA) to become a world parliament representative of the global population, abandoning the current representation of nation states.

Fifthly, the creation of a Sustainable Development Council (with special prerogatives equivalent to the Security Council) within the scope of the UNGA, with powers to act in environmental issues. This Council would have a similar relationship with the UNGA as the UNSC and would be composed by of a group of permanent members with no veto power (approximately the G20 countries) and a group of rotating members (BIERMANN et al., 2010).

Finally, it should be noted that the transition to a matrix of individual and collective behavior consistent with the needs of the Anthropocene - although essential - is deeply problematic. This difficulty is based on two main factors that are characteristic of contemporary societies. The first of these, already mentioned, is located at the level of the international structure and refers to the hegemony of conservative forces in its realm. The international system is dominated by agents reluctant to relinquish parcels of power to build universal commons - that is, little committed to global governance.

As a result, the traditional framework of universal institutions anchored in the UN results in sterile efforts while the attempts to use more restricted mechanisms in terms of participation has not been shown to be efficient - such as the G20.

The second of the characteristics that limit the development of an "Anthropocene morale" is located at the agent level and can be defined as immediacy. Human beings are accustomed to reacting only when facing immediate threats or extremes of immorality. The problem is that the destabilization of the Earth System is cumulative - generating conformism on the part of societies - and its most catastrophic effects will only be felt in the long term.

Generally speaking, individuals have difficulty attributing the same level of reality to the future than to the present, so they will be willing to exchange immediate limited benefits for substantive benefits in the future (GIDDENS, 2009). This individual behavioral characteristic is transferred almost automatically to the main social structures. The market, as the key form of economic organization, and democracy, as the central form of socio-political organization, operates on the basis of the egotistical and short-term impulses of economic agents and electors, respectively.

Authoritarian regimes have even greater difficulty dealing with problems of global collective action, albeit for other reasons: lack of transparency, restrictions on the flow of information, excessive focus on security and economic growth, and the overall existence of a relatively small elite that interferes with the provision of public goods for their own benefit (HELD; HERVEY, 2009; VIOLA; FRANCHINI; RIBEIRO, 2013).

Conclusions

In this article, an attempt was made to highlight the inconsistency between the international political structures created in recent decades and the evolution of global environmental problems, understood as planetary boundaries. As stated, the Earth is at risk of systemic disruption due to overcoming the boundaries of climate change, biodiversity loss, and the nitrogen cycle. At the same time, the cooperative efforts on environmental matters made by humanity since the early 1970s - the proliferation of uncoordinated multilateral meetings, initiatives and treaties, and the out comes expressing minimum consensus - have led to the fragmentation of legal obligations and, as a consequence, have been insufficient to guarantee the stability of the Earth System.

This failure resulted in the need to consciously construct a new safe operating space for humanity. To achieve this objective, it is necessary to think in terms of global governance, going beyond the focus on States and international regimes. In other words, it is necessary to radically modify the institutional structure of cooperation, because insufficient in the Holocene, becomes obsolete in the Anthropocene. This transformation implies the transition from international environmental politics to effective global governance.

The fundamental milestone of this transition is the overcoming of the international system of conservative hegemony, that is, the abandonment of the sovereign tendencies -egotists and short-term- on the part, particularly, of the great powers of the system. This development requires thinking of environmental issues as part of the civilization process, and not as a marginal category that can be sacrificed in favour of economic or security interests. In the Anthropocene, there is no environmental governance yet, only governance.

As a result of this much needed post-sovereignist transition, it will be possible to meet the demands of Anthropocene governance, i. e., the overcoming of the dichotomy between developed and developing countries; the concrete definition of the low-carbon green economy as a category that surpasses sustainable development as a guide for action; the creation of an efficient global environmental organization with the prior deactivation of the industry of environmental conferences; the internalization of the planetary boundaries in the main international organizations; the transformation of the UN General Assembly

into a representative of the world's population and not of Nation States; and the creation of a Council for Sustainable Development within the framework of the United Nations, as Biermann (2014) suggested.

However, the post-sovereignty transition is confronted with two main obstacles: the conservative nature of the international system and the immediacy of individual behavior. In the first case, the difficulty is that only a few societies in the world are willing to surrender sovereignty to secure the global commons over the long term. In the second case, the difficulty lies in the nature of human responses to problems, which tend to be significant only in the face of immediate threats in time and space. As we have seen, the Anthropocene demands immediate responses to deal with cumulative, universal and long-term problems.

In this context, the election of Donald Trump in the United States - and the control of the American federal government by the Republican Party - have increased sovereignist tendencies and conflict both within the country and in the international system. It is an open and fundamental question today whether this represents just a temporary deviation from the main trend of American politics - which is more likely - or a long-term countertrend.

As a positive element, reformist forces are growing in most societies and at the global scale, being the extraordinary increase in the efficiency and competitiveness of renewable energies - solar and wind combined with smart grids and batteries - over the last five years one of the main structural drivers. However, this development does not have the speed or depth to force a change of hegemony.

As a corollary to the supremacy of conservative forces, a worsening of Earth's habitability conditions is expected, with consequent impacts in terms of human suffering - acceleration of extreme weather events, crises in food prices and availability, forced migration of people - before appropriate responses begin to be assessed. This is, before humanity decides to abandon the selfish, short-term impulses that shape its institutions and begin to cooperate to provide an effective solution to global problems.

Note

i In the UN voting system, in which each country has one vote, decisions are taken on a minimum consensus, in order to frame the extreme heterogeneity of interests and visions on the international system of each of the more than 190 member states. As a result, the system efficiency is minimal.

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THE CHALLENGES OF THE ANTHROPOCENE: FROM INTERNATIONAL ENVIRONMENTAL POLITICS TO GLOBAL GOVERNANCE

MATÍAS FRANCHINI
EDUARDO VIOLA
ANA FLÁVIA BARROS-PLATIAU

Abstract: This article proposes a reflection on the challenges of global environmental policy in the Anthropocene. Firstly, the inconsistency between the institutions of international environmental policy and the progressive degradation of the planetary boundaries is highlighted.

Secondly, it is stated that, since the transition to Anthropocene requires the conscious construction of a new space of safe operation for humanity, it is necessary to radically modify the institutional structure of cooperation, based on international regimes: the transition from environmental politics to global governance. The fundamental milestone of this path is the overcoming of the international system of conservative hegemony, that is, the abandonment of the sovereignist tendencies - egotistical and short-term - on the part of its actors, particularly the great powers.

Finally, a series of premises for the governance of the Anthropocene is proposed from the point of view of International Relations, with the post-sovereign transition as the main pillar.

Key words: Global Environmental Governance – Anthropocene – International Environmental Politics – Planetary Boundaries – International Relations.

Resumen: Este artículo propone una reflexión sobre los desafíos de la política ambiental global en el Antropoceno. Primeramente, se destaca la inconsistencia entre las instituciones de la política ambiental internacional y la degradación progresiva de las fronteras planetarias. En segundo lugar, se afirma que, dado que la transición hacia el Antropoceno demanda la construcción consciente un nuevo espacio de operación segura para la humanidad, es necesario modificar radicalmente la estructura institucional de la cooperación, basada en regímenes internacionales: la transición de la política ambiental hacia la gobernanza global. El hito fundamental de este camino es la superación del sistema internacional de hegemonía conservadora, es decir, el abandono de las tendencias soberanistas - egoístas y de corto plazo – por parte de sus actores, particularmente las grandes potencias.

Finalmente, se proponen una serie de premisas para la gobernanza del Antropoceno desde la óptica de las Relaciones Internacionales, teniendo como substrato la transición post-soberana.

Palabras clave: Gobernanza Ambiental Global – Antropoceno – Política Ambiental Internacional – Fronteras Planetárias – Relaciones Internacionales

Resumo: Esse artigo propõe uma reflexão sobre os desafios da política ambiental global no Antropoceno. Primeiro, destaca-se a inconsistência entre as instituições da política ambiental internacional e a progressiva degradação das fronteiras planetárias.

Em segundo lugar, argumenta-se que, uma vez que a transição para o Antropoceno exige a construção consciente de um novo espaço de operação segura para a humanidade, é necessário mudar radicalmente a estrutura institucional da cooperação, baseada em regimes internacionais: a transição da política ambiental para a governança global. O marco fundamental deste caminho é a superação do sistema internacional de hegemonia conservadora, isto é, o abandono de tendências soberanistas - egoístas e de curto prazo - por parte de seus atores, particularmente as grandes potências.

Finalmente, é proposta uma série de premissas para a governança do Antropoceno da perspectiva das Relações Internacionais, tendo como substrato a transição pós-soberana.

Palavras chave: Governança Ambiental Global – Antropoceno – Política Ambiental Internacional – Relações Internacionais
