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In search of lost time: the rise and fall of limits to growth in international sustainability policy

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Abstract International environmental policy has failed to reverse climate change, resource depletion and the generalized decline of biodiversity and ecological life support systems. This paper traces economic roots of current environmental problems and examines the evolution of sustainability policy since the publication of Club of Rome's report *Limits to growth* and the celebration of the first Earth summit in Stockholm in 1972 to the publication of UNEP's *Green economy* report and the celebration of the last Earth summit in Rio 2012. Our emphasis is on the evolving framing of the relations between growth and the environment and the role of markets and states in the sustainability policy agenda. We review influential policy documents and Earth summit declarations since the early 1970s. Three major changes are identified in international sustainability discourse: (1) an analytical shift from a notion of growth versus the environment to a notion of growth *for* the environment, (2) a shift in focus from direct public regulation to market-based instruments, and (3) a shift from a political to a technocratic discourse. We note that attempts in sustainability policy to address the conflict between growth and the environment have pulled back severely since the 1970s and discuss the observed patterns of change in

relation to changes in the balance of political and ideological forces. We conclude summarizing main insights from the review and discussing perspectives of the sustainability debate on growth and the environment.

Keywords Earth summits · Ecodevelopment · Economic growth · Green economy · Market-based instruments · Sustainable development · Planetary boundaries

Introduction

After four decades of international environmental policy and governance more than 60 % of ecological life support systems are declining worldwide (MA 2005), biodiversity loss remains unabated (Butchard et al. 2010), global consumption of energy and materials keeps rising (Krausmann et al. 2009), CO₂ concentrations have surpassed 400 ppm (IPCC 2013), and rising costs of inaction are expected from climate change (Stern 2006) and biodiversity loss (TEEB 2010). Rockström et al. (2009) research on planetary boundaries concludes that human pressure on the biosphere has reached a stage where large-scale environmental disruption can no longer be excluded and Ehrlich et al. (2012) note that humanity has never been moving faster nor further from sustainability than now.

It may seem paradoxical that environmental decline keeps accelerating after four decades of international environmental governance at a time where the 'green', the 'ecological', and the 'sustainable' have become ubiquitous notions of our daily life.¹ However, from the perspective of ecological economics the failure to reverse ecological

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¹ According to Ehrlich et al. (2012), more than 100 million websites worldwide feature the word 'Sustainability'.

decline should not come at surprise. A core premise of ecological economics is that finite resources and ecological sinks make continued growth of the economy unsustainable (Georgescu-Roegen 1971; Martínez-Alier 1987; Pelletier 2010). Our expanding global economy consumes a growing throughput of material and energy resources that in turn leads to growing pollution and CO₂ emissions (Haberl et al. 2009). Although some environmental indicators, particularly at the local and urban levels, have improved over the last decades, mounting empirical data show that at the global level, increases in GDP have run in parallel with mounting pressure on ecological life support systems. If some countries are dematerializing in relative terms (per unit of GDP) as of today, no symptoms of absolute dematerialization of the global economy are apparent (Krausmann et al. 2009; Jackson 2009; Naredo 2010; Lorek 2014). At planetary scale, GDP remains highly coupled to total energy and material consumption as well as to CO₂ emissions. Kuznets Kurve-inspired hypothesis of dematerialization with GDP growth has come true only in developed countries that outsourced industrial activity to developing countries with cheaper labor force and softer environmental regulation standards (Jackson 2014).

Departing from the premise that continued increase in the physical size of the economy cannot be ecologically sustainable, this paper contributes to the debate on growth and the environment that has been revitalized in recent years by the literature on planetary boundaries (Steffen et al. 2015a) and degrowth (D'Alisa et al. 2014). We first set the historical background by examining the evolution of ideas in economic thinking with regard to the conflict between economic growth and the environment. Next, we analyze the shifting discourse around the relation between growth and the environment in international policy documents and sustainability forums. Specifically, we review Earth summit declarations and key policy documents defining official sustainability positions in the period that extends from the publication of Club of Rome report *Limits to growth* (Meadows et al. 1972) and the first Earth summit held in Stockholm in 1972, to the publication of UNEP's report on the *Green economy* (UNEP 2011a) and the celebration of the last Earth summit held in Rio in 2012. We analyze the key concepts that have guided the design and articulation of environmental policies over this period (e.g., ecodesign, sustainable development, green economy) and we examine the decisive question of how each of these concepts has framed the relation between economic growth and planetary boundaries. Changes in sustainability discourse are identified and interpreted in the context of major institutional and political transformations within the studied period.

Background: divorce between economy and the environment

International environmental governance emerged in the second half of the 20th century with the aim of addressing the tensions between policies of economic growth, poverty alleviation and environmental protection. If many manifestations of the conflict between growth and the environment did not become apparent until the mid-20th century (Steffen et al. 2015b), their economic roots are to be searched long before (Naredo 2010). In this section we set the stage for the analysis by tracing the roots of sustainability problems back in the origins of modern economic science and particularly in the path along which it has developed over the last two centuries.

In the 18th century, the French authors known today as the physiocrats founded a system of political economy based on the supremacy of natural order. They believed that land was the source of all wealth and that monetary policy should be guided in coherence with the laws of the underlying biophysical environment. For the physiocrats, the notion of production had an inherent material meaning and necessarily involved processes of physical production (e.g., agriculture) (Naredo 2003). Differently from today, the mere extraction or transformation of previously existing materials (e.g., mining) was not considered production (Quesnay 1757/1958). The physiocrats believed that agriculture (in general, all extraction from renewable resources) was the only economic activity capable of producing a surplus (*produit net*) or net profit over and above the expenses of production, including the cultivators' profit (Meek 1963). They claimed that economics should aim to expand the production of renewable flows (*richesse renaissante*) without undermining the underlying resource base (*biens au-fond*) (Quesnay 1757/1958).

The idea that the physical size of the economy could not expand indefinitely in a finite planet remained present in the classical economic period (1770–1870s). Notions of physical limits were present in Thomas Malthus' concerns about long-term capacity to feed a population in exponential growth (Malthus 1853), David Ricardo's decreasing returns on land (Ricardo 1817/2001), and the more explicit forecasts by John Stuart Mill regarding what he deemed an unavoidable—but also desirable—long-term transition towards a stationary economy (Mill 1848/1909). Land (today's natural capital), which according to Malthus included “the soil, mines, and fisheries of the habitable globe” (Malthus 1853: 9) retained a central position in economic analysis and most classical economists acknowledged the contribution of the “services” rendered by “natural agents” (today's ecosystem

services) to the creation of wealth (e.g., Say 1829: 250; Ricardo 1817/2001: 208; Marx 1867/1887: 13—revised in Gómez-Baggethun et al. 2010).

During the 19th century, unprecedented industrial development and technological innovation triggered changes in economic thinking that eventually weakened drastically the position of land and natural resources in economic thinking. Three major changes operated in the focus of economic analysis: (1) from the production factor land to the factors labor and capital (Daly and Cobb 1989), (2) from physical to monetary analysis (Hubacek and van den Bergh 2006), and (3) from use values to exchange values (Gómez-Baggethun et al. 2010). This set of changes has been referred to as the post-physiocratic epistemological break and identified as a major paradigm shift in the history of economic theory and practice (Naredo 2003: 148). The post-physiocratic epistemological break was gestated in the classical economic period and completed with the so-called marginalist revolution of the 1880s that set the foundations of neoclassical economics.

By the fall of the classical economic period some authors kept paying attention to natural resources and physical limits. For example, Stanley Jevons raised concerns about the depletion of coal stocks noting that gains in energy efficiency per unit of production increased total energy consumption (a phenomenon known as the “Jevons paradox”). Likewise, authors like Gray, Ramsey, Ise and Hotelling raised concerns on the effects of resource depletion on future generations (Martínez-Alier 1987). However, concerns over the exhaustion of natural resources languished from the 1930s as economists theorized that capital and technology would allow for the substitution of natural resources, thereby advancing the notion of the feasibility of a continued economic growth unconstrained by physical limits (Crocker 1999).

By the mid 20th century, land and natural resources had been entirely removed from production functions in economic analysis (Hubacek and van den Bergh 2006) and economic concerns on physical scarcity had virtually disappeared (Georgescu-Roegen 1975). In Solow's theory of economic growth (Solow 1956), land had been removed from the production function. He argued that as a particular resource becomes scarce, rising prices would encourage consumers to move to other substitutes (Solow 1973) concluding that “If it is very easy to substitute other factors for natural resources [...] the world can, in effect, get along without natural resources” (Solow 1974: 11).

In the political arena Keynesianism had become a doctrine of long-term economic growth, oblivious of energy and material flows (Martínez-Alier 2014). With few

exceptions,² consensus around the pursuit of growth and development was embraced by political leaders across the left and right political spectrum, from capitalist western economies to socialist and non-aligned countries (Escobar 1995; Kallis et al. 2014).

The critique of growth in the 1970s

The early 1970s marked a turning point in the above mentioned trends motivated by rising concerns about rapid population growth, increasing pollution, and—after 1973—upwardly spiraling oil prices. In addition, a radical critique of mainstream economic approaches flourished at this time. Authors like Georgescu-Roegen (1971), Odum (1971), Commoner (1971), Daly (1973) and Harich (1975) pointed to the impossibility of growing perpetually in a finite planet. Others pushed the critique of growth even further to put into question the very notions of ‘development’ and ‘progress’ as underpinnings of growth ideology and the expansionary vision of modern industrial civilizations (e.g., Ellul 1964; Ilich 1973; Castoriadis 1974/1985; Gorz 1975/1980).³

Club of Rome report and its political resonance

In 1972, the Club of Rome report *Limits to growth* (Meadows et al. 1972) challenged widespread assumptions in mainstream economic thinking regarding the viability of perpetual economic growth. The report alerted of the impossibility of endless growth in population and production in a finite planet. Cumulative growth in population and economic size, the report stated, would only be feasible during a transitory period. In its basic tenets, *Limits to growth* re-edits the concerns raised by Malthus in the 19th century—even if references to this author are surprisingly

² According to Moolakkattu (2010: 154) when asked by a journalist after the independence of India if the new country would try to reach the British standards of living, Gandhi replied “It took Britain half the resources of the planet to achieve this prosperity. How many planets will a country like India require!”. In his remarks at the University of Kansas, March 18, 1968 R. F. Kennedy pointed to the non-sense of using growth as a measure of progress: “if we judge the USA by that—that Gross National Product counts air pollution and cigarette advertising [...] It counts the destruction of the redwood and the loss of our natural wonder in chaotic sprawl [...] it measures everything in short, except that which makes life worthwhile”. Full speech available at: <http://www.jfklibrary.org/Research/Research-Aids/Ready-Reference/RFK-Speeches/Remarks-of-Robert-F-Kennedy-at-the-University-of-Kansas-March-18-1968.aspx>.

³ The pursuit of perpetual growth as societal goal has no historical precedents in pre-modern thinking. Until the notion of ‘production’ became a central element of economic analysis, the idea of a society in continuous expansion was absent in all major political writings. For example, the utopias described by Plato and Aristotle proposed ideal societies as being stable in population and supplies (see Naredo 2010).

omitted in the report (see Galtung 1973). Malthusian concerns on population growth also revived in this time. Paul Ehrlich noted that “if population growth would continue [at the prevailing rate] for the next 900 years, there would be some 120 people per km² throughout the entire planetary surface, including seas and oceans” (Ehrlich 1968). If population growth increased at the rate of the energy and materials consumption, ecological limits would be reached much earlier (Meadows et al. 1972—see also Cipolla 1962).

Concerns on the unfeasibility of perpetual growth resonated beyond environmental and academic circles to higher levels of decision making. In 1972 European commissioner for Agriculture Sicco Mansholt wrote a letter to European Commission President Franco Malfatti proposing a change in objectives and policy. Europe should not aim at maximizing economic growth, measured by the gross national product, but it should aim to increase “Gross National Happiness”. In a seminar organized in France by ‘Le Nouvel Observateur’, Mansholt stated: ‘the central question is how we can reach a zero growth economy in this society [...] I am worried on whether we will be able to keep under control vested powers that struggle to maintain perpetual growth. Our system as a whole keeps insisting on growth’ (quoted in Martínez-Alier 2014). As an irony of history, this would become a letter to himself, when only one month later Mansholt became the 4th president of the European Commission after the former president resigned from his post. In addition, the oil crises of 1973 had a wide repercussion in the public opinion on environmental issues, fostering a societal debate around existing patterns of resource use and consumption in developed countries.

Launch of international environmental governance

In 1971, UNESCO launched the program Man and Biosphere (MaB) in an attempt to explore ways to conciliate poverty reduction and nature conservation. The United Nations Conference on the Human Environment, held in Stockholm in 1972, stressed the need to reverse global ecological decline and promoted the creation of the United Nations Environmental Program (UNEP). Besides making a strong case for immediate action to avoid irreversible damage upon ecosystems, the summit Declaration endorsed a politically committed tone proclaiming a “fundamental right to freedom, equality [...] dignity and well-being” and stating that the “apartheid, racial segregation, discrimination, colonial and other forms of oppression and foreign domination stand condemned and must be eliminated” (UNCHE 1972, Principle 1). Public planning and regulation are set at the forefront to take

action to halt environmental decline. The preamble states that “governments will bear the greatest burden for large-scale environmental policy and action”; “natural resources of the earth [...] must be safeguarded for the benefit of present and future generations through careful planning” (ibid: Principle 2); “States shall take all possible steps to prevent pollution” (ibid: Principle 7); “appropriate steps should be taken by States” (ibid: Principle 11, see also Principle 25).

Mounting questioning of the viability of growth as global economic objective begged a new concept capable of incorporating environmental concerns into economic goals. Ignacy Sachs, United Nations consultant on environmental issues, suggested the term ecodevelopment as a compromise of the right to development in poor countries within the biocapacity of ecological life support systems. UNEP defined ecodevelopment as “Development at regional and local levels [...] consistent with the potentials of the area involved with attention given to [...] natural resources, and to application of technological styles” (UNEP 1975). Farvar and Glaeser (1979) underline the political essence of this approach and its emphasis on practical measures to effectively deal with the power variable. According to Sachs (1984) international structures, as well as moral commitment, needed to be radically changed (see also Redclift 1987).

For some years the term ecodevelopment gained popularity in policy spheres dealing with environment and development. Its influence peaked in 1974 when the term was subscribed at the so-called Cocoyoc Declaration. Organized by UNEP and the United Nations Commission on Trade and Development (UNCTAD), the Cocoyoc symposium examined the economic and social roots of environmental deterioration and its final declaration openly challenged mainstream theories of growth and development: “We believe that thirty years of experience with the hope that rapid economic growth benefiting the few will “trickle down” to the mass of the people has proved to be illusory. We therefore reject the idea of “growth first, justice in the distribution of benefits later”” (UNEP/UNCTAD 1974, Article 1) [...] “We reject the unilinear view which sees development essentially and inevitably as the effort to initiate the historical model of the countries that for various reasons happen to be rich today” (ibid, Article 2). In line with the spirit of Stockholm 1972, the Cocoyoc Declaration emphasized physical limits, social justice and public planning: “The task of statesmanship is to guide the nations towards a new system more capable of meeting the inner limits of basic human needs for all the world’s people and of doing so without violating the outer limits of the planet’s resources and environment” (ibid, Article 2). The documents make a political case for decentralization, autonomy, equity,

freedom and cooperation, and against exploitation, repression and torture (ibid, Article 3).⁴

Growth restored as sustainable development

Despite its initial success, the term ecodevelopment was short-lived. In an interview held in 1994, Sachs recalls that only a few days after the release of the Cocoyoc declaration, Henry Kissinger, as chief of US diplomacy, rejected the declaration entirely in a three-foot long cable sent to UNEP and UNCTAD directors (Weber 1994), de facto vetoing the term ecodevelopment in official international forums (see also Naredo 1996; Galtung 2010).

The case for growth in the Brundtland report

The term sustainable development followed as a new guiding notion for global environmental governance. In 1983, United Nations Secretary General asked the Prime Minister of Norway, Gro Harlem Brundtland, to create an organization independent of the United Nations to focus on environmental and developmental problems and solutions, materialized in the creation of the World Commission on Environment and Development (WCED). In 1987, the WCED presented the report *Our common future* (more widely known as the *Brundtland report*), which defines sustainable development as “a development model able to meet the needs of present generations without compromising the capacity of future generations to meet their own needs” (WCED 1987). The *Brundtland report* reframes environmental problems and solutions in a way that turns upside-down the understanding of the relation between growth and the environment that had guided sustainability reports over the 1970s. Growth is no longer presented as the culprit of ecological decline but as the solution to social and environmental problems.

The root of the problem was no longer to be found in opulence but in poverty. Martínez-Alier (2002) notes a parallelism with Inglehart's (1990) thesis on “post-materialist” values: the poor act under the influence of pressing material needs linked with survival that result in predatory behavior and hinder the emergence of an environmental consciousness. In the foreword, Brundtland subscribes the thesis of the

“downward spiral of poverty and environmental degradation” noting that “poverty place unprecedented pressures on the planet's lands, waters, forests, and other natural resources” and stressing that the “links between poverty and environmental degradation formed a major theme in our analysis and recommendations” (WCED 1987: 7).

The report claims that there is no necessarily a trade-off between growth, equity and the environment. “What is needed now is a new era of economic growth—growth that is forceful and at the same time socially and environmentally sustainable” (WCED 1987: 7). It advocates growth also for industrial countries: “If large parts of the developing world are to avert economic, social, and environmental catastrophes, it is essential that global economic growth be revitalized. In practical terms, this means more rapid economic growth in both industrial and developing countries” (ibid, par. 72). “The Commission's overall assessment is that the international economy must speed up world growth” (ibid, par. 74). The report recommends growth rates of 5–6 % for developing countries (par. 30) and states that growth rates of 3–4 % in rich countries “could be environmentally sustainable if industrialized nations can continue the recent shifts in the content of their growth towards less material- and energy-intensive activities and the improvement of their efficiency in using materials and energy” (ibid, par 32). Article 24 states: “to bring about socially and environmentally sustainable development it is indispensable, among other elements, for industrial countries to resume internationally expansionary policies of growth, trade, and investment”.

In summary, by shifting the focus of the problem from growth to poverty and by presenting the former as the solution to the latter, sustainable development liberates growth from the stigma that had plagued it over the 1970s to be reframed as a necessary step towards the solutions to environmental problems. After the publication of the Brundtland report and the celebration of Rio 1992, the general proposition in official sustainability forums is that economic growth is good for the environment (Arrow et al. 1995). This is justified by the claim that there exists an empirical relation between per capita income and environmental quality (Grossman and Krueger 1993, 1995). When income grows environmental degradation increases up to a point, after which environmental quality improves (the relation has an “inverted-U” shape) (Selden and Song 1994). People in poor countries—the argument goes—cannot afford to emphasize conservation over material well-being but when a country has become rich enough, people give greater attention to the environment. This leads to environmental legislation and new institutions for the protection of the environment (cf. Martínez-Alier 2002).

In addition to the changes in content, tone and spirit of the environmental policy discourse, the fall in the prices of oil and other raw materials further contributed to dissipate

⁴ The political commitment becomes most explicit in the final passage of the Declaration: “There is an international power structure that will resist moves in this direction. Its methods are well known: the purposive maintenance of the built-in bias of the existing international market mechanisms, other forms of economic manipulations, withdrawing or withholding credits, embargoes, economic sanctions, subversive use of intelligence agencies, repression including torture, counter-insurgency operations, even full-scale intervention. To those contemplating the use of such methods we say: “hands-off. Leave countries to find their own road to a fuller life of their citizens””.

concerns on resource exhaustion—now labeled as ‘catastrophist’—and to restore the faith in economic growth. For example, the second Meadows report, *Beyond the Limits* (Meadows et al. 1992) commissioned by the Club of Rome to evaluate progress since the first report, tones down significantly the environmental implications for economic growth even if statistical data in the report showed that the state of the environment was significantly worse than two decades earlier (see Naredo 2010). Furthermore, to convey an image of ‘economic seriousness’, the authors ordered the writing of the preface to Jan Tinbergen, Nobel laureate in economics for his work on economic growth, to underline that “the great merit of *Beyond the Limits* is that it [...] clarifies the conditions under which sustainable development, a clean environment, and equitable incomes can be organized” (Meadows et al. 1992: xi). As Nordhaus (1992: 3) puts it “Criticisms of the *Limits I* view made by economists and engineers have convinced many that two major factors—technological change and the market mechanism—can prevent the scarcity of appropriable natural resources from constituting a significant drag on long-term economic growth”.

Rio 1992 and Johannesburg 2002

The case for growth and trade liberalization advanced in the Brundtland report was backed in the United Nations Conference on Environment and Development in 1992 in Rio de Janeiro. Principle 12 of the final declaration makes the case for an “open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation” at the time it warns that policy measures for environmental purposes should not constitute unjustifiable “restrictions on international trade” (UNCED 1992, Principle 12). Principle 16 recalls that the polluter pay principle should be enforced “without distorting international trade”. Since the Rio 1992 Conference, the United Nations collaborated with the General Agreement on Tariffs and Trade (GATT, today World Trade Organization) to harmonize sustainable development with free trade (Michel 1996).

The push towards growth and trade liberalization is further ratified in the Johannesburg Declaration on Sustainable Development in 2002, which Principle 18 states: “we will work together to [...] benefit from the opening of markets” (UN 2002: 3). More explicit than the declaration itself is the Annex titled “Plan of Implementation”, which makes repeated references to the mandates of the World Trade Organization (WTO). Paragraph 16. b states that incentives for green investments should be provided “avoiding trade distorting measures inconsistent with the rules of the WTO” (ibid: 14); paragraph 19.c recalls that

the polluter pays principle should be promoted “without distorting international trade”; paragraph 20. p refers to the promotion of “sustainable development through the use of improved market signals and by removing market distortions” (ibid: 17); paragraph 40. k encourages “market-based incentives” (ibid: 31). This list goes on.

A concomitant change in tone and discourse is observed when comparing the United Nations Conferences on Human Settlements Habitat I held in Vancouver in 1976 and Habitat II held in Istanbul in 1996 (Naredo 2010). While the former enounced the objective of ‘improving people’s quality of life’, the latter merely suggested a need for ‘proper housing, more secure, healthy, habitable, sustainable and productive human settlements’; while the former made reiterated reference to ‘equity’ and ‘equality’, explicit calls to these principles are absent in the latter; whereas the former pointed to the State as the main subject of change in environmental and territorial issues, the latter downgraded such responsibility to municipalities, private companies, and NGOs. In sum, while in 1976, public planning was seen at the key driver of sustainability, in 1996 planning had been downplayed, and the hope was put on market forces. In the meantime, as the faith on the possibility of reconverting the metabolism of industrial societies faded, sustainability summits acquired an increasingly symbolic and ceremonial character (Naredo 2010).

Green economy and Rio +20: more growth and trade liberalization

The above-described trends in sustainability policy in relation to growth, trade and the environment are reaffirmed and strengthened in UNEP’s *Green economy* report and the Rio +20 declaration. Most relevant passages in this regard are revised below.

UNEP’s *Green economy* report

In June 2012, the international community gathered at the United Nations Conference for Sustainable Development, more widely known as Rio +20. The notion of green economy was supposed to play a central role as a guiding framework of the multilateral discussions of the summit. With this purpose, prior to the summit UNEP prepared a document of more than 600 pages entitled “Towards a green economy: Pathways for sustainable development and eradication of poverty” (UNEP 2011a, b), where the green economy is defined “as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities” (UNEP 2011a: 16).

As in sustainable development, the logic of growth remains unchallenged and no conflict between growth,

the environment, and social justice is expected. The report states that “The key aim for a transition to a green economy is to enable economic growth and investment while increasing environmental quality and social inclusiveness” (ibid: 16) and that “Perhaps the most prevalent myth is that there is an inescapable trade-off between environmental sustainability and economic progress” (ibid: 16).

Leaving behind the political dimensions of sustainability identified in the Stockholm and Cocoyoc declarations (see “[Launch of international environmental governance](#)”), the Synthesis for Policy Makers states that “a green economy does not favor any political perspective over another” (UNEP 2011b: vi). Instead, the green economy report presents sustainability as an economic problem which amendment lies in the technical domain: “Achieving sustainability rest almost entirely on getting the economy right” (UNEP 2011a: 17). Environmental problems emerge—from our incapacity to manage correctly the information on environmental externalities (ibid: 14).

Emphasis is put on technical fixes through market-based instruments and removal of distortions to trade, with measures that include “eliminating environmentally harmful or perverse subsidies, addressing market failures created by externalities or imperfect information, creating market-based incentives” (ibid: 16). This line of argumentation is strengthened later in the report, by highlighting that “the use of market-based instruments, the creation of markets, and when necessary, the implementation of regulatory measures, should play a role in the internalization of this information” (ibid: 19), and that “Market-based instruments, such as tradable permits, are powerful tools for managing the “economic invisibility of nature”” (ibid: 31). “As opposed to taxes—the report goes—[tradable permit schemes] let the open market determine the price” (ibid: 31). The report further emphasizes the role of governments in the set up of payments for ecosystem services (PES) schemes and carbon markets (e.g., p. 189). In summary, the green economy seems to synthesize the macroeconomic perspectives of sustainable development and the developing toolset of market-based mechanisms for environmental governance (Naredo and Gómez-Baggethun 2012).

United Nations Conference on Sustainable Development 2012 (Rio +20)

In the preparations for the United Nations Conference on Sustainable Development of 2012, more widely known as Rio +20, limits to growth were widely discussed in relation to the concept of planetary boundaries (Rockström et al. 2009), which received explicit support from United

Nations Secretary General Ban Ki-moon.⁵ Finally, however, all references to planetary boundaries were omitted from the declaration, which reaffirms the case for economic growth. Article 4 states ‘We also reaffirm the need to achieve sustainable development by promoting sustained, inclusive and equitable economic growth’ (UN 2012, resolution 66/288: 2). The case for economic growth is then recalled in 22 other articles of the declaration (e.g., articles 6, 10, 11, 19, 52, 56, 58, 61, 62, 94, 106, 149, 156, 158, 252).

Equally explicit is the Rio +20 declaration in its case for trade liberalization. Article 281 states “We reaffirm that international trade is an engine for development and sustained economic growth, and also reaffirm the critical role that [...] meaningful trade liberalization, can play in stimulating economic growth and development worldwide [...] we remain focused on achieving progress in addressing [...] trade distorting subsidies and trade in environmental goods and services” (ibid: 53).

In summary, the last Earth summit reaffirms the departure from the spirit of Stockholm and Cocoyoc and a continuity with the growth and free trade ideology brought about by the sustainable development consensus. In this light, it does not seem to be by chance that it came to be labeled Rio +20 instead of Stockholm +40.

Discussion

From our review, we identify major changes in the period that extends between the publication of Club of Rome report *Limits to growth* (Meadows et al. 1972) and the first Earth summit held in Stockholm in 1972 to the publication of UNEP’s report on the *Green economy* (UNEP 2011a, b) and the celebration of the last Earth summit held in Rio in 2012: (1) from growth versus sustainability to growth for sustainability, (2) from a focus on states and public regulation to market-based instruments and trade liberalization, and (3) from a political to a technocratic sustainability discourse.

From growth versus sustainability to growth for sustainability

The shift in sustainability policy discourse in regard to growth reflects an adaptation of international environmental governance to prevailing expansionary economic

⁵ “For most of the last century, economic growth was fuelled by what seemed to be a certain truth: the abundance of natural resources. We mined our way to growth. We burned our way to prosperity. We believed in consumption without consequences. Those days are gone... Over time, that model is a recipe for national disaster. It is a global suicide pact” United Nations (UN) Secretary General Ban Ki-Moon addressing the World Economic Forum, 29 January 2011.

policies. In 1972 Club of Rome report *Limits to growth* challenged widespread assumptions in economic thinking regarding the feasibility of achieving perpetual growth in a finite planet, calling for structural changes in the mode of production of industrial societies, an approach that was backed by the declarations of Stockholm 1972 and Cocoyoc 1974. In the 1980s, however, United Nations report *Our common future* totally reframed the diagnosis presenting growth no longer as an obstacle but as prerequisite for environmental sustainability, an approach ratified by the Rio declaration in 1992. The *Green economy* (UNEP 2011a, b) reinforces the idea that no trade-offs exist between growth and the environment and the Rio+20 declaration reaffirms growth at the core of the sustainability agenda. The presumption in national and international economic policy is still that economic growth and trade liberalization are, in some sense, good for the environment.

Sustainable development claims regarding an alleged synergy between economic growth, equity and the environment clash with empirical data. Aggregated physical indicators show a generalized environmental decline (MA 2005; Rockström et al. 2009). Indicative data shows that between 1980 and 2008, the global use of biomass increased by 35 %, mineral extraction grew by 133 %, fossil fuels went up 60 %, metals 89 % and GHGs rose by 42 % (Dittrich et al. 2012). In regard to equity, the Gini coefficient (the most widely used measure of income inequality) has increased in recent decades in China, India, the European Union, the USA and in most other OECD nations, often to record levels (OECD 2011). Within countries, rising inequality is the norm (UNDP 2011: 72). In addition, Picketty's (2014) recent findings are transforming the debate about wealth and inequality. Not only does he show that inequality has increased over the last decades but also that growing inequality is a structural tendency of the accumulation process and that growing economic disparities threaten to generate extreme discontent and undermine basic democratic values.

From states and regulation to markets and liberalization

Sustainability discourse in the 1970s presented action to halt global ecological problems as a *raison d'Etat*, where governments were to lead economic transitions to sustainability using all means for territorial and resource planning. Since the 1990s, the focus is shifted from public planning to the private initiative (corporations and NGOs) and to the promotion of market-based instruments. The role of the state is downscaled to the least powerful of the administration levels—the municipalities—through the Agenda 21.

This shift in focus from public regulation to market-based instruments is to be understood in the context of the economic crises of the 1970s that paved the way for the rise of neoliberalism (Harvey 2005) and what some authors have called 'market environmentalism' (Smith 1995; Gómez-Baggethun and Ruiz-Pérez 2011). By the time that Reagan and Thatcher proclaimed that markets rather than governments held the key to human prosperity and freedom in the late 1980s, many economists started to emphasize the alleged advantages of market-based instruments over state-driven environmental regulation (Ackerman and Stewart 1985; Stewart 1992). Favored by their compatibility with dominant economic ideology, policy instruments based on market forces became privileged governance tools (Gómez-Baggethun and Muradian 2015).

From politics to technocracy

Our review documents a shift from the politically committed tone in the early days of sustainability policy (see "Launch of international environmental governance") to the technocratic approach where sustainability is presented as an apolitical problem amenable of technical fixes. The technocratic discourse of sustainable development and the green economy reflects a broader process of depoliticization of public debate in liberal democracies, whereby politics are downgraded to the search for technical solutions to pre-framed problems (Kallis et al. 2014).

Swyngedouw (2011) discerns between the "political" (the antagonistic struggle between alternative visions of sustainability and the tactics to achieve it) and "policies" as public management (the search for technocratic and managerial governance solutions to pre-framed problems), noting that there is a tendency for the latter to foreclose the former. Sustainability discourse is articulated around a naturalization of the need for economic growth and free trade as the only reasonable and possible forms of organization. It is well known, however, that like visible part of icebergs, positivistic technocratic approaches rest on vast bodies of submerged ideology (Bromley 1990; Naredo 2003). Our review unveils growth and free trade ideology underlying international sustainability policy. The case for economic growth in sustainable development has replaced the case for "intellectual, moral, social and spiritual growth" advanced in the first paragraph of the Stockholm Declaration of 1972; the case for technical fixes in the green economy has replaced the political case for autonomy, decentralization, freedom and equality, and against segregation, discrimination, and oppression stated in Principle 1 of the Stockholm Declaration of 1972 (UNCHE 1972) and Principles 2 and 3 the Cocoyoc Declaration (UNEP/UNCTAD 1974).

Conclusion

This paper traces economic roots of current environmental degradation. We documented major shifts in international sustainability policy since its inception in the early 1970s to the present as it became permeated by the ideological premises of growth and free trade. We illustrated that ambition to address the conflict between growth, equity and the environment have pulled back severely since the 1970s paralleling the adaptation of sustainability policy to the premises of dominant economic ideas. Major shifts identified from our review include: (1) the rehabilitation of economic growth with the establishment of the sustainable development consensus and the denial of the conflicts between growth, equity and ecological resilience, and (2) the commodification of environmental policy through the expansion of market values, instruments, and language in global environmental governance.

In its quest to address the ecological-economic contradictions of the industrial civilization, international sustainability policy was since its inception faced with a dilemma, either reshaping the global economy through the enforcement of caps to fit ecological imperatives of biocapacity, or reshaping sustainability principles to fit economic imperatives of growth. Our review illustrates that the former approach gained momentum in the 1970s with widespread recognition of limits to growth and social injustice in official sustainability forums. It also shows that the latter approach took over with the establishment of the sustainable development consensus now ratified in the green economy. By denying the conflict between economic growth, social equity and ecological limits, current conceptualizations of sustainability obscure planetary boundaries and the positional—not generalizable—(Hirsch 1976) character of developed-nation lifestyles.

In a context of growing societal inequalities (OECD 2011; Picketty 2014) and accelerating environmental decline (Ehrlich et al. 2012), a radical turn in international sustainability policy is required to address the economic roots of ecological and social degradation. Four valuable decades are gone. Borrowing the words of Marcel Proust's famous work, we contend that sustainability policy needs to move on "in search of lost time". Differently from Proust, however, sustainability must turn its glance to the future. For the sake of the discussion in this special feature, a critical question concerns whether the social and intellectual movement of growth objectors can, in convergence with other political forces, push a new turn in international sustainability policy, bringing ecological limits and redistributive policies back to the official sustainability agenda. Such a project may only be accomplished following an epistemological break in economic thinking that

recouples the economy with planetary boundaries by acknowledging limits to the substitution of natural resources and the unaccounted social and ecological costs of growth. This involves breaking down the worldview underpinning the sustainable development consensus, including the technological dream of dematerialization and the case for an expansionary economy premised on the axiomatic necessity of unconstrained growth. It also involves turning the critique of growth into a positive transformation program to redistribute wealth and restructure the scale of economic activities relative to global biocapacity. Recent progress in political propositions to enforce resource caps, environmental and consumption taxes, controls on advertising, maximum and minimum wages, and reduction of working time (Kallis et al. 2014) is an important move in this direction that opens up new perspectives for the debate on growth and the environment.

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References

- Ackerman BA, Stewart RB (1985) Reforming environmental law: the democratic case for market incentives. *Column J Entl* 13:171–172
- Arrow K, Bolin B, Costanza R, Dasgupta P, Folke C, Holling CS, Jansson B-O, Levin S, Maler K-G, Perrings C, Pimentel D (1995) Economic growth, carrying capacity, and the environment. *Science* 268:520–521
- Bromley D (1990) The ideology of efficiency: searching for a theory of policy analysis. *J Env Econ Man* 19:86–107
- Butchard SH, Walpole M, Collen MB, Van Strien A, Almond REA et al (2010) Global biodiversity: indicators of recent declines. *Science* 328:1164–1168
- Castoriadis C (1985) The crises of development. Reflections on 'Rationality' and 'Development'. Thesis, 10/11, 18–35 **First published in 1974**
- Cipolla C (1962) The economic history of world population. Penguin Books, London
- Commoner B (1971) The closing circle: nature, man, and technology. Knopf, New York
- Crocker TD (1999) A short history of environmental and resource economics. In: van den Bergh J (ed) Handbook of environmental and resource economics. Edward Elgar, Northampton, Massachusetts
- D'Alisa G, Demaria F, Kallis G (eds) (2014) Degrowth: a vocabulary for a new era. Routledge, Taylor and Francis, New York
- Daly HE (1973) Toward a steady-state economy. W. H. Freeman, San Francisco
- Daly HE, Cobb JB (1989) For the common good: redirecting the economy toward community, the environment, and a sustainable future. Beacon Press, Boston

- Dittrich M, Giljum S, Lutter S, Polzin C (2012) Green economies around the world?—implications for resource use for development and the environment. SERI, Vienna
- Ehrlich PR (1968) The population bomb. Ballantine Books, New York
- Ehrlich PR, Kareiva PM, Daily GC (2012) Securing natural capital and expanding equity to rescale civilization. *Nature* 486:68–73
- Ellul J (1964) The technological society. Knopf, New York
- Escobar A (1995) Encountering development: the making and unmaking of the third world. Princeton University Press, Princeton
- Farvar MT, Glaeser B (1979) Politics of ecodevelopment. International Institute for Environment and Society, Berlin
- Galtung J (1973) The limits to growth and class politics. *J Peace Res* 10:101–114
- Galtung J (2010) The Cocoyoc Declaration. TRANSCEND Media Service. Published on 29 Mar 2010. Downloadable at <https://www.transcend.org/tms/?p=3902>
- Georgescu-Roegen N (1971) The entropy law and the economic process. Harvard University Press, London
- Georgescu-Roegen N (1975) Energy and economic myths. *South Econ J* 41:347–381
- Gómez-Baggethun E, Muradian R (2015) In markets we trust? Setting the boundaries of market-based instruments in ecosystem services governance. *Ecol Econ* (in press). doi:10.1016/j.ecolecon.2015.03.016
- Gómez-Baggethun E, Ruiz-Pérez M (2011) Economic valuation and the commodification of ecosystem services. *Prog Phys Geogr* 35:613–628
- Gómez-Baggethun E, de Groot R, Lomas P, Montes C (2010) The history of ecosystem services in economic theory and practice: from early notions to markets and payment schemes. *Ecol Econ* 69:1209–1218
- Gorz A (1980) Ecology as Politics. Black Rosa Books, Montréal. **First published in 1975 as *Écologie et liberté*, Paris: Galilée**
- Grossman GM, Krueger AB (1993) Environmental impacts of a North American free trade agreement. In: Garber P (ed) The US-Mexico Free Trade Agreement. MIT Press, Cambridge
- Grossman GM, Krueger AB (1995) Economic growth and the environment. *Q J Econ* 110:353–377
- Haberl H, Fischer-Kowalski M, Krausmann F, Martinez-Alier J, Winiwarter V (2009) A sociometabolic transition towards sustainability? Challenges for another great transformation. *Sustain Dev*. doi:10.1002/sd.410
- Harich W (1975) Kommunismus ohne Wachstum? Babeuf und der 'Club of Rome'. Sechs Interviews mit Freimut Duve und Briefe an ihn. Rowohlt, Reinbek bei Hamburg
- Harvey D (2005) A brief history of neoliberalism. Oxford University Press, New York
- Hirsch F (1976) The social limits to growth. Harvard University Press, Cambridge
- Hubacek K, van den Bergh J (2006) Changing concepts of land in economic theory: from single to multi-disciplinary approaches. *Ecol Econ* 56:5–27
- Ilich I (1973) La convivialité. Observatoire du Management Alternative
- Inglehart R (1990) Culture Shift in Advanced Industrial Societies. Princeton University Press, Princeton
- Intergovernmental Panel on Climate Change (2013) Climate change 2013: the physical science basis. In: Alexander L, Allen S, Bindoff NL (eds) Summary for policymakers. IPCC Secretariat, Geneva
- Jackson T (2009) Prosperity without growth. Earthscan, London
- Jackson T (2014) New economy. In: D'Alisa G, Demaria F, Kallis G (eds) Degrowth: a vocabulary for a new era. Routledge, Taylor and Francis, New York, pp 178–181
- Kallis G, Demaria F, D'Alisa G (2014) Introduction: degrowth. In: D'Alisa G, Demaria F, Kallis G (eds) Degrowth: a vocabulary for a new era. Routledge, Taylor and Francis, New York, pp 1–18
- Krausmann F, Gingrich S, Eisenmenger N, Erb K-H, Haberl H, Fischer-Kowalski M (2009) Growth in global materials use, GDP and population during the 20th century. *Ecol Econ* 68:2696–2705
- Lorek S (2014) Dematerialization. In: D'Alisa G, Demaria F, Kallis G (eds) Degrowth: a vocabulary for a new era. Routledge, Taylor and Francis, New York, pp 83–85
- Malthus TR (1853) Definitions in political economy. Simpkin and Marshall, London
- Martínez-Alier J (1987) Ecological economics. Basil Blackwell, Oxford
- Martínez-Alier J (2002) The environmentalism of the poor. Edward Elgar, Cheltenham
- Martínez-Alier J (2014) "Growth below zero": in memory of Siccó Mansholt. <http://www.ejolt.org/2014/03/growth-below-zero-in-memory-of-siccó-mansholt/>. Accessed 5 May 2015
- Marx K (1887) Capital, volume one. The process of production of capital. In: Tucker RC (ed) The Marx-Engels Reader. W.W. Norton & Company, London. **First published in 1867 as *Das Kapital*, Verlag, Hamburg**
- Meadows DH, Meadows DL, Randers J (1972) Limits to growth. Universe books, New York
- Meadows DH, Meadows DL, Randers J (1992) Beyond the limits: global collapse or a sustainable future. Earthscan Publications, London
- Meek RL (1963) The economics of physiocracy. Harvard University Press, Cambridge
- Michel D (1996) La promotion du développement durable par le commerce. Pour une discussion de la thèse conférence de Río-GATT-OMC, Institut D'économie et de politique de L'énergie, U. de Grenoble
- Mill JS (1909) Principles of political economy: with some of their applications to social philosophy. Longmans, Green and Co, London. **First published in 1848**
- Millennium Ecosystem Assessment (MA) (2005) Ecosystems and human well-being: synthesis. Island Press, Washington, DC
- Moolakkattu JS (2010) Gandhi as a human ecologist. *J Human Ecol* 29:151–158
- Naredo JM (1996) Sobre el origen, el uso y el contenido del término "sostenible". *Documentación Soc* 102:129–147
- Naredo JM (2003) La economía en evolución: Historia y perspectivas de las características básicas del pensamiento económico. Siglo XXI, Madrid
- Naredo JM (2010) Raíces económicas del deterioro ecológico y social. Siglo XXI, Madrid
- Naredo JM, Gómez-Baggethun E (2012) Río +20 en perspectiva: Economía verde: nueva reconciliación virtual entre ecología y economía. Annex to the Spanish edition of the World Watch report, pp 347–370
- Nordhaus WD (1992) Lethal model 2: the limits to growth revisited. *Brook Pap Econ Act* 2:1–43
- Odum HT (1971) Environment, power and society. Wiley, New York
- OECD (2011) Divided we stand: why inequality keeps rising. OEDC Publishing, Paris
- Pelletier N (2010) Of laws and limits: an ecological economic perspective on redressing the failure of contemporary global environmental governance. *Glob Environ Change* 20:220–228
- Picketty T (2014) Capital in the 21st century. Harvard University Press, Cambridge
- Quesnay F (1958) Quesnay et la physiocratie. Institute National d'Etudes Démographiques, Paris. **First published in 1757**
- Redclift M (1987) Sustainable development: exploring the contradictions. Routledge, London and New York

- Ricardo D (2001) On the principles of political economy and taxation. Batoche Books, Ontario **First published in 1817**
- Rockström J, Steffen W, Noone K, Persson AA, Chapin FS III et al (2009) A safe operating space for humanity. *Nature* 461:472–475
- Sachs I (1984) The strategies of ecodesign. *Ceres* 17:17–21
- Say JB (1829) Cours complet d'économie politique pratique. Chez Rapylli, Paris
- Selden TM, Song D (1994) Environmental quality and development: is there a Kuznets curve for air pollution emissions? *J Environ Econ Manag* 27:147–162
- Smith FL (1995) Markets and the environment—a critical reappraisal. *Contemp Econ Policy* 13:62–73
- Solow RM (1956) A contribution to the theory of economic growth. *Q J Econ* 70:65–94
- Solow RM (1973) Is the end of the world at hand? *Challenge* 2:39–50
- Solow RM (1974) The economics of resources or the resources of economics. *Am Econ Rev* 64:1–14
- Steffen W, Richardson K, Rockström J, Cornell SE, Fetzer I, Bennett EM, Biggs R, Carpenter SR, de Vries W, de Wit CA, Folke C, Gerten D, Heinke J, Mace GM, Persson LM, Ramanathan V, Reyers B, Sörlin S (2015a) Planetary boundaries: guiding human development on a changing planet. *Science* 347:6223
- Steffen W, Broadgate W, Deutsch L, Gaffney O, Ludwig C (2015b) The trajectory of the Anthropocene: the great acceleration. *Anthropocene Rev* 2:1–18
- Stern N (2006) Stern review of the economics of climate change. Cambridge University Press, Cambridge
- Stewart RB (1992) Models for environmental regulation: central planning versus market-based approaches. *Boston College Env Aff Law Rev* 19:547–562
- Swyngedouw E (2011) Interrogating post-democracy: reclaiming egalitarian political spaces. *Political Geogr* 30:370–380
- TEEB (The Economics of Ecosystems and Biodiversity) (2010) The economics of ecosystems and biodiversity: ecological and economic foundations. Earthscan, London
- UN (United Nations) (2002) Report of the World Summit on Sustainable Development. United Nations, A/CONF.199/20, New York
- UN (United Nations) (2012) Outcome of the United Nations Conference on Sustainable Development A/CONF.216/L.1
- UNCED (United Nations Conference on Environment and Development) (1992) Rio declaration, United Nations General Assembly, A/CONF.151/26
- UNCHE (United Nations Conference on the Human Environment) (1972). Stockholm
- UNDP (2011) The real wealth of nations: pathways to human development, 2010. UNDP, New York
- UNEP (2011a) Towards a green economy: pathways to sustainable development and poverty eradication. UNEP, Nairobi
- UNEP (2011b) Towards a green economy: pathways to sustainable development and poverty eradication—a synthesis for policy makers. <http://www.unep.org/greeneconomy>. Accessed 4 May 2015
- UNEP (United Nations Development Programme) (1975) The proposed programme. Nairobi
- UNEP/UNCTAD (United Nations Development Programme/United Nations Commission on Trade and Development) (1974) Patterns of resource use, environment and development strategies. Cocoyoc, Mexico, October 8–12, 1974
- WCED (World Commission on Environment and Development) (1987) Our Common Future. Oxford University Press, Oxford
- Weber J (1994) Environnement, développement, marché: pour une économie anthropologique. Entretien avec Ignacy Sachs. *Natures Sciences Sociétés* 2:258–265