TOWARDS A GLOBAL POLITICAL-ECONOMIC ARCHITECTURE OF ENVIRONMENTAL SPACE
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Abstract

The concept of environmental space (ES) has been put forward as a means of operationalising sustainability. Based on three tenets, the recognition of environmental limits, a strong equity principle, and a focus on resource consumption, the ES approach offers a cognitive framework for a comprehensive and integrated approach to environmental/resource policy and management. With growing concerns about mounting environmental pressures and looming ecological and resource scarcity, it offers also a more appealing normative basis for dealing with these issues than the 'environmental security' discourse increasingly appropriated by governments.

In the 1990s, adoption of the environmental space approach was promoted foremost at the national level by a non-governmental organization and a handful of academics. Although some governments showed interest in the idea, it failed to make much headway. Reasons for that can be found in methodological issues, a weak political support basis, and the collective action trap. No governments adopted and implemented the ES approach as an overall framework for their sustainable development efforts, in part because accepting limits on resource consumption on a national level seems to make little sense as long as other countries are not willing to do the same (the collective action trap).

A preliminary assessment brings up the existence of many significant obstacles to the adoption of the ES approach at the global level, whilst the agency basis is relatively weak and fragmented. Consequently, the chances of significantly changing the global political-institutional architecture to support an ES approach also seem dim. This leads to the conclusion that 'What must be done, cannot be done', at least at this stage. The best prospects for advancing the approach lie in the adoption of a global climate change regime based on the recognition of environmental limits and the acceptance of a strong equity principle, in line with the ES approach. This could set a precedent for the development of similar global regimes to address other areas of growing ecological and resource scarcity. In the mean time, a focus on limiting resource consumption associated with specific environmental issues offers the best basis for mobilising support for the adoption of ES principles.

Introduction

The aim of this paper is to discuss, in a political-economic context, the prospects for the adoption of the notion of 'environmental space' at the global level. The rationale for doing so lies, on the one hand, in the intensification of environmental pressures arising from the continuously growing global demand for resources and, on the other, in the normative appeal of the ideas associated with the environmental space concept.

Continued economic growth, in high income countries as well as countries inappropriately referred to as 'developing', notably China and India, is responsible for a continuously growing demand for resources. At the same time, world population also continues to grow and may reach 9 or 10 billion people by the middle of the century, many of whom will be aspiring to the standard of living achieved by the most privileged on earth. In recent years, this has revived the debate about a looming scarcity of resources, such as oil and other minerals, water, and fertile land (Brown, 2006; Cohen, 2007; Conca, 2005; Kerr, 2007). Moreover, there is a growing concern that humans are transforming the earth's ecosystems to the extent that this erodes and undermines its capacity to deliver the many 'services' on which human well-being depends, including liveable climatic conditions, creating a 'new' scarcity (Pirages and Cousins, 2005; Simpson, et al., 2005). These developments, all the more so when combined, are often regarded as sources of increased environmental insecurity and conflict (Conley and Phillips, 2005; Kaplan, 1994; O'Reilly, 2005; Renner, 2005). Governments, especially in the west, are studying and preparing themselves for perceived threats to their national security arising from these developments (Adam, 2007; Schwartz and Randall, 2003). However, their responses may turn concerns about security into self-fulfilling prophecies, as efforts to protect (environmental) security on a national basis are likely to result in increased inequality and conflict. Almost inevitably, the adoption of the growing environmental national insecurity scenario by governments will produce a bleak world indeed.

The notion of environmental space offers a more attractive perspective on the challenge to come to terms with the global environmental challenge depicted above. Potentially, the concept of environmental space provides a cognitive framework that helps legitimate global environmental (including resource) governance without detracting from the right of peoples to make their own decisions regarding the use of resources and the kind of societies they want to live in (Bührs, 2007). However, the

adoption of the concept as a basis for global governance faces formidable obstacles. This paper focuses on, in particular, political-economic obstacles and explores whether and how these may be overcome.

First, I will explain the notion of environmental space and elaborate a bit further on the main tenets and principles. This is followed by a discussion of some of the limitations of analyses and applications based on the concept, which may explain why it has failed to gain much traction at the political level. Then, I present a framework for analysing the political-economic aspects with the concept and present some tentative propositions regarding the issues and obstacles to the adoption of the environmental space approach. Finally, conclusions are drawn about whether and how these obstacles might be overcome.

Environmental space: the concept, principles and rationales

The notion of environmental utilisation space was first introduced in the 1980s by Horst Siebert, but was elaborated by Opschoor and others as a means of operationalising the notion of sustainability (Buitenkamp, et al., 1993; Carley and Spapens, 1998; De Jonge, et al., 2001; Hille, 1997; Opschoor and Weterings, 1994: 17-18). It has been defined by Carley & Spapens as "the total amount of energy, non-renewable resources, land, water, wood and other resources which can be used globally or regionally:

• without environmental damage

• without impinging on the rights of future generations; and

• within the context of equal rights to resource consumption and concern for the quality of life all peoples (sic) in the world." (Carley and Spapens, 1998: 9).

This definition draws attention to three main tenets that lie at the core of the environmental space approach: a focus on resource consumption, a recognition of environmental limits, and a concern with equity.

The focus on resources and resource consumption arguably is the most characteristic feature of the environmental approach. Resource consumption is taken

by environmental space analysts as the principal measure and basis for the development of environmental policy. The underlying rationale for doing so is that this provides for a more practical and meaningful way of addressing the proximate causes of environmental problems than formulating policies (and solutions) for each environmental problem separately. As the use of resources (which implies their exploitation, transport, and consumption) brings about multiple environmental effects (including energy use, emissions, the generation of waste and pollution), collectively referred to as the 'ecological rucksack', reducing resource use provides a more integrated approach to addressing numerous environmental problems. It is based on the assumption that the links between environmental problems (effects) and their resource use can be identified and adequately quantified to be able to specify by how much a reduction of resource consumption (for the various categories of resources) is required to bring about a decline in environmental pressures to the extent that the capacity of ecosystems to provide environmental services, on which also human well-being and survival relies, is safeguarded.

This last point implies the second main tenet of the environmental space approach, namely the recognition of the existence of environmental limits and the possibility of identifying and quantifying those limits. Although environmental space analysts recognise that it is not possible to determine these limits with absolute precision, they argue that enough is known about them to be able to set indicative (and adaptable) targets. Environmental space advocates also concur with the precautionary principle: uncertainty is no excuse for not accepting and setting limits. It should be noted that this argument about limits does not so much refer to the idea that the world is running out of resources, which Carley and Spapens characterise as a 'red herring' (Carley and Spapens, 1998: 85). In most cases, limits are imposed by the 'new scarcity' (ecological limits), not by available reserves, although Hille and others note that, for a range of non-renewable materials, depletion may indeed pose a problem, providing a case for restrictions on consumption on the basis of absolute scarcity (Cohen, 2007; Hille, 1997: 15).

The third main tenet of the environmental space approach is the adoption of a strong equity principle. In principle, all people (those living now and future generations) have equal rights to resource consumption. Proponents of the concept commonly take the view that the amount of environmental space available should be distributed on an equal per capita basis (Buitenkamp, et al., 1993: 18; Carley and Spapens, 1998: 66-74; Sachs, et al., 1998: 14-16). Equity is considered "both a moral and a political necessity" (Carley and Spapens, 1998: 69). If there are limits to resource

consumption, they should apply equally to all people. Gross inequalities in resource consumption are likely to provoke or contribute to political conflict, and should therefore be reduced and ultimately eliminated. As resources are exploited primarily for the benefit of consumption, end-users (collectively, on a national basis) carry foremost responsibility for the "full damaging effect of the ecological backpack" (and thus for reductions if required), not the residents of the exporting countries (Carley and Spapens, 1998: 61, 75-76).[1]

Based on these tenets (the focus on resource consumption, the existence of ecological limits, and the strong equity principle), the amount of available environmental space can be calculated for any group or geographical unit (region, country or group of countries).

This amount is then divided by the number of people living in the relevant geographical unit to determine a per capita entitlement to the resource. As, in most cases, nation-states are seen as the most relevant unit to take political responsibility for the level of resource consumption, the total allowable level of resource consumption for nations (based on population size) is calculated. These national entitlements can then be compared to existing levels of consumption. The difference between these figures indicates the amount of over- or under-consumption or use. In the case of over-use/consumption, this can be labelled the 'sustainability gap' (the gap between what a country presently uses/consumes and what it should use to remain within the assigned quota). For resources which are considered to be too environmentally damaging or risky (such as chlorine and nuclear power), environmental space is set at zero, implying a phase-out.

Environmental space analyses, covering about 90 per cent of all material flows, have been undertaken and applied to a range of countries, notably in Europe. According to these calculations, most high income countries use and consume resources way above the environmental space that they are entitled to (Carley and Spapens, 1998: 30-47, 75-106). In many cases, the reductions required amount to more than 80 per cent. For instance, for the EU it has been calculated that it would need to reduce its consumption of aluminium by some 90%, of pig iron by 87%, and of cement by 85%,

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[1] It should be noted that environmental space analysts do use CO2 emissions as a basis for determining the amount of environmental space associated with energy resources (rather than the resources themselves), because of the "critical nature" of global warming, and because it is "currently the best environmental indicator for fossil-fuel consumption" (Carley and Spapens, 1998: 61)

to bring EU consumption of these resources within sustainable levels.[2] By contrast, many poor countries still have considerable space to expand their consumption of resources. Therefore, the adoption of the environmental space approach poses, in first instance, a most formidable challenge to the high income countries. However, to the extent that the economies of China, India and other countries are rapidly growing, these countries, too, will need to accept limits if the world as a whole is to bring to resource consumption to sustainable levels.[3]

The notion of environmental space is similar to and overlaps in some respects with other concepts that aim to operationalise limits within which human impact should stay to maintain ecological sustainability, notably carrying capacity and ecological footprint. Traditionally, carrying capacity was defined in terms of the size of a population that could be sustained within a particular ecosystem or region. Thus, applied to humans, the concept implies that people should live mostly or even exclusively from the resources available in the region in which they live. This raises some tricky questions (regarding trade, differences in resource endowment between regions, movements of people between regions or even within a country, and other), and can give rise to quite unpalatable arguments, for instance, against providing food aid to starving people in a region (Aitken, 1980). Also, in an increasingly interdependent world, a totally 'bio-regionalist' position seems increasingly unrealistic and untenable, as few people or societies would still aspire, or even be able, to live solely from a regional resource base. More recently, proponents of the concept use it in a global context, applying it to humanity as a whole, which is more realistic (Arrow, et al., 1996) and provides a better link with the environmental space approach. Assessing the ecological limits to resource use is, in large part, a local or regional task that feeds into a global assessment of resource capacity, but does and should not necessarily determine how many people live in a particular place (such as a city).

The notion of 'ecological footprint' has enjoyed growing popularity ever since it was put forward by Wackernagel and Rees (Wackernagel and Rees, 1996). In some

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[2] (Wuppertal Institute for Climate Environment and Energy. and Friends of the Earth Europe., 1995: 42)

[3] As Brown notes, assuming that China's economy continues to expand at 8 percent per year, that its population increases to 1.45 billion by 2031, and that it will copy consumption levels in the US, this country alone would demand two thirds of the current world grain harvest, consume double the amount of current world paper production, and use more oil than current world production (Brown, 2006: x).

ways, the notions of environmental space and ecological footprint are very similar. Both take a global perspective to sustainability and aim to quantify it. Both provide a means for calculating the environmental impact of any particular group (including countries), and the significant differences in that respect. Users of both concepts raise questions regarding (in-) equity and (re-) distribution. In other respects, however, the concepts are significantly different. First, they rely on different methodologies. The concept of ecological footprint, by aggregating resource use with the help of a single denominator (productive land) is particularly helpful for educational purposes directed at calculating and comparing a population's overall environmental demands. To determine whether a country meets the sustainability criterion (or is 'in deficit' or runs a 'surplus' with regard to its claims on the environment), its total ecological footprint is compared with the total amount of (productive) land within its borders. By contrast, the notion of environmental space uses a range of indicators for different resources, and is not normally expressed in a single or composite indicator (with some exceptions) because doing so is considered methodologically problematic and inappropriate (Hille, 1997).

The methodological differences between the two concepts are important in several respects. First, the different assessments of performance on the sustainability criterion (may) have implications for views on whether existing levels of consumption of a country are justified and remedial and/or compensatory measures are required. Second, the concepts vary in terms of the nature and usefulness with regard to providing policy guidance aimed at advancing sustainability (or reducing unsustainability). Inasmuch as ecological footprint analyses are accompanied by policy recommendations, they tend towards a national ('bio-regionalist') bias: the general aim is to bring a country's resource use in line with its natural capacity and the size of its population. Obviously, this favours large countries with a relatively low population density over small countries with a high population density (even if the ecological footprint per capita in the former may be higher than in the latter), and has implications for arguments about distributional justice. Moreover, general ecological footprint analyses appear less fruitful in terms of providing specific policy guidance: whereas environmental space indicators can be used as a basis for formulating specific objectives and targets (which are commonly seen as the very rationale for such analyses), ecological footprint indicators do not and cannot provide specific clues about what can or should be done to advance sustainability (as footprints are a composite measure of a range of different forms of resource use and environmental

impacts, each of which is likely to differ with regard to environmental capacity and to require different policies to advance sustainability).[4]

Given these considerations, from a policy perspective, the notion of environmental space offers a more suitable and appropriate basis for 'making sustainability concrete' than the other two concepts referred to above. However, that does not mean that the operationalisation, adoption and implementation of the concept are unproblematic (Bührs, 2004). Arguably, the adoption of an environmental space approach at all levels of governance is imperative if humanity is to maintain its life support system at an adequate level. However, as I will explain in the following section, thus far the approach has failed to gain much political traction, in part because of the limitations associated with the existing analyses and applications.

The environmental space approach: limitations of analyses and applications

Although considerable efforts have been put into the development of the environmental space approach, its practical application has been very limited. In this section, I will discuss some of the reasons for this, associated mostly with the limitations of these efforts themselves. These limitations are related to: methodological issues, the weak political support and agency basis for adoption of the approach, and the existence of a collective action trap. These limitations have received some, but insufficient, recognition from environmental space advocates.

Linking environmental problems with resource consumption is a plausible proposition but fraught with considerable methodological difficulties. It assumes not only that there is sufficient knowledge and information about the connections between resource consumption (from exploitation, transport, their use in a wide range of production processes, ultimate consumption and residuals management) and environmental effects, but also that these connections can be quantified. Given the interconnections between resources and the effects of their exploitation, use and consumption, analysis of these matters is far from straightforward and subject to

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[4] It should be noted, however, that recent work disaggregating national ecological footprints with the help of input-output analysis can provide a basis for the development of policies aimed at limiting or reducing categories of consumption by households and other groups, especially of those goods and services that have a high ecological footprint. This could complement an ES approach which aims to quantify the total amounts to/by which resource consumption should be limited or reduced (Wiedman, et al., 2006).

considerable uncertainty. Moreover, environmental data bases and monitoring and reporting systems in many parts of the world are weak, creating information gaps. Furthermore, identifying quantitative sustainable limits to resource consumption involves not just scientific questions but also value judgements. Both kinds of assessments inevitably imply making assumptions that are open to challenge. Getting a sufficient degree of agreement on environmental risks and limits, to the extent that they become politically 'saleable', is far from straightforward, as the issue of climate change has clearly demonstrated.

Thus far, assessments of environmental space have relied heavily on the analyses and methodologies developed and undertaken by one organisation, the Wuppertal Institute.[5] Whilst scientists working for or with the Institute have impeccable scientific credentials, this does not imply that their analyses and findings are beyond critique. Moffat (Moffatt, 1996) points out some of the weaknesses in the methodology used in environmental space analyses, including a lack of consistency in the scales (global, national, regional) used for assessing environmental space, the obfuscation of inequality of resource consumption within nations by relying on per capita data and, most importantly, the failure to substantiate the precise grounds on which targets for a reduction of material inputs has been based. That operatonalising the concept of environmental space is not a simple and straightforward matter is also made clear by several other authors (De Jonge, et al., 2001; Hille, 1997; Weterings and Opschoor, 1994), although none of these considers the difficulties fatal or insurmountable. Yet, it seems that ES analysts underestimate the scope for disagreement (or alternative interpretations fed by conflicting political ideologies and interests) on these matters, or think that these can be overcome or ignored by strictly separating the analysis of environmental space (by scientists) from politics (De Jonge, et al., 2001: 55). As the climate change debate has amply demonstrated, this is rather hopeful if not naïve thinking.

A related issue is the small size of the epistemic community associated with the notion of environmental space. Only a handful of academics and environmental advocates have embraced the concept as a focus for study and writing, although a larger number of people have been involved in discussions related to the production, under the aegis of Friends of the Earth, of the country reports for more close to thirty European countries. However, thus far, the notion of environmental space has failed

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[5] The heavy reliance on the work of the Institute in environmental space assessments is most apparent in Towards Sustainable Europe report (Friends of the Earth Europe, 1995), and in Greening the North (Sachs, et al., 1998).

to capture the attention and imagination of the media, with the result that most of the public is unfamiliar with the idea. Similarly, support for the adoption and implementation of the concept within government circles has been very limited, confined mostly to some officials in the Netherlands, Denmark and Norway. "So far, the voices calling for environmental space to be instituted as a guiding principle have been few and far in between, and rather muted" (Bührs, 2004: 443).

The weak and ineffective agency basis for the adoption of environmental space is not just a question of size and a lack of persuasiveness on the part of its epistemic community, but also, and mainly, of political economy. To put it simply, very few people and businesses, especially in high income countries, stand to gain from the introduction of limits to resource consumption, whereas many stand to lose. Consequently, governments, also, will find imposing limits politically unattractive and unfeasible, not in the least as it reduces their scope for meeting rising and conflicting demands. Rather, they prefer to support a notion of sustainable development which sees continued growth and environmental protection as compatible.

Furthermore, the acceptance of limits on resource consumption by national governments is made unlikely because of a 'collective action trap'. Why would any government accept limits to resource consumption (especially of imported resources) if other governments are not doing the same? From a 'rational' point of view, it makes no sense to accept such constraints if other countries continue to expand their consumption. In other words, the erosion of the global resource base is subject to the 'tragedy of the commons' phenomenon: as all countries have no 'rational' incentive to individually restrict their use of resources, inevitably, the collective resource base will be run down and destroyed. That is, unless governments are able and willing to come to a collective agreement to institute rules by which they bind themselves.

Thus far, environmental space analyses and advocates have focused mostly on assessing and adopting space at the national level. This focus has been deliberate given the differences between countries in resource consumption, and because national governments hold the key to national policies regarding resource use and consumption.[6]

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[6] The Towards Sustainable Europe report is the obvious exception, but this reflects the growing importance of the EU as a state-like actor affecting resource consumption within EU countries rather than a concern with how agreement on limiting resource consumption can be achieved internationally or globally.

Although some environmental space analysts do offer ideas on how sustainable production and consumption can be promoted globally (Carley and Spapens, 1998: 168-191; Sachs, et al., 1998: 202-221), they pay little if any attention to the collective action problem and the political-economic obstacles to the adoption of the approach at the international and global level. Consequently, these ideas are more in the nature of wishful thinking than of a hard-nosed political strategy aimed at the strengthening of agency.

Although ideas are crucially important, they need to be combined with an analysis and assessment of their (potential) support basis, and/or of how a support basis can be built and strengthened. In the following section, I present a framework for undertaking such an analysis.

The political-economic analysis of environmental space: towards a framework

Political economic analysis involves the study of phenomena from a combined political-economic perspective. Whereas mainstream political science focuses primarily on the relative power and influence of actors (in particular on government decision making), and mainstream economics studies and prescribes decisions on the basis of 'rational' models of economic behaviour, political-economy is based on the idea that the study of politics and economics should and cannot be separated but must be combined because of the interwovenness of these spheres (Palan, 2000).

Political economy does not encompass a cohesive or even coherent body of knowledge, framework for analysis, or methodology. As Palan notes, at least three different streams can be identified under the political economy label, including one rooted in neo-classical economics, one based on Marxian political economy, and a 'post-rationalist' stream that pulls in also history and culture (Palan, 2000). As the disciplinary boundaries between the social sciences have weakened, and the traditional strands within International Relations theory, often referred to as Realism, Institutionalism and Structuralism (or World System approaches) are also getting blurred, new lines of division, reflecting those evolving within the social sciences, are also penetrating the field of Political Economy, creating considerable confusion. Different views on globalisation contribute to the diversity of the field, which is also sometimes referred to as International Political Economy (IPE) or Global Political Economy (Buzan, 2005; Gill, 2002; Ravenhill, 2005). The diversity of views and

approaches has also affected political-economic analyses of environmental developments and policy (Levy and Newell, 2005b; O'Connor, 1994b; Oates and Portney, 2003; Williams, 1996).

Here, I will take an eclectic approach to building a framework for analysing the issues and obstacles associated with the (possible) adoption of the environmental space approach at the global level. The rationale for doing so is that none of the frameworks advanced by the various authors referred to above capture all the factors that seem important from tentative reflection on the kind of issues and obstacles that are encountered. The aim here is not to present a 'complete' range of factors (as if that were possible), or a model, or to 'prove' the relative importance of the various factors mentioned. The purpose is to try to make sense of the wide range of potentially important factors by identifying some main categories, and to put forward some preliminary and tentative thoughts that could provide a basis for more detailed study, analysis and discussion. The importance of the linkages between these factors (and categories), which provide for a dynamic framework (which may help explain changes of factors within the categories) needs to be emphasised. The four categories of factors, encompassing elements derived from mainly structuralist and neo-Gramscian approaches are: structural or systemic, material, ideological, and agency.

Structural (systemic) factors affecting resource politics and policy

Structural or systemic political-economic factors affecting (decisions regarding) resource consumption relate to the dominant economic system (capitalism), the political (state) system, and the connections between the two. By their (systemic) nature, such factors condition and affect all actors operating within these systems, be it differently, depending on the role, position, and power of actors within these systems. Here, we are interested in exploring the general influences on resource consumption emanating from the prevailing political and economic systems, and to assess to what extent these systems may hinder or be conducive to the adoption of the environmental space approach.

Although there are significant differences between political systems, and these differences can have significant consequences for the environmental performance of countries (Jahn, 2005; Scruggs, 2003), they all operate within a global system of states based formally on the notion of sovereignty. Theorists (notably Realists and

Institutionalists) may disagree on the degree to which competition or cooperation is the dominant feature or tendency of the state system, but both recognise that states are fundamentally concerned about the protection and promotion of their own interests. Foremost among these is the protection of the state's territorial integrity and security. States differ in size, capacity and the amount of money spent on this function, but altogether the resources expended on 'security' are enormous. In 2006, global military expenditure reached more than one trillion US dollars (US$ 1204 billion), 46% of which was spent by the US alone (SIPRI, 2007: 11). Armed forces are a major user and consumer of resources (including energy and metals), and a significant source of pollution in their own right (Karbuz, 2007; Shriner, 2007; Turse, 2007). The competitive state system, and the associated 'security imperative', is a significant driving force behind the demand for resources and this is likely to remain so until such time that an effective collective security system has been established.

Capitalism, the dominant global economic system, is also a major driving force behind the consumption of resources. Marx identified the accumulation of capital as an inherent imperative of capitalism (the expansion of capital driven by competition), accompanied by a continuous process of commodification (turning labour, nature and more and more aspects of life into commodities) and the expansion of markets (all over the world). Although capitalism is subject to periods of crises, over time, production and consumption, and the demand for resources and markets, continue to expand. If anything, the importance assigned to the accumulation imperative has grown with economic globalisation, pushed by western governments and international agencies (including the WTO, IMF and the World Bank).

States, not despite but because of globalisation, continue to play a significant role in the competitive struggle between the conglomerates of capital, and in making and maintaining their economies competitive. Arguably, states have become even more 'competition states' (Cerny, 1997) than they already were under the state system referred to above, blending economic, geo-political and military functions. With the 'return of scarcity' and the growing perception of 'environmental threats', we already see a sharpening of competition and conflict over resources across the three arenas.[7]

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[7] As exemplified in the jostling over the Arctic and its resources, the reassertion of territorial and sea-bed claims, the collapse of WTO free-trade talks, and the war in Iraq which, even according to the non-radical ex-governor of the US Reserve Bank, Alan Greenspan, was 'all about oil" (Adams, 2007).

Given these structural political-economic factors and forces, the question arises whether capitalism and the state system can be made compatible with the requirement of reducing resource consumption predicated on the environmental space approach. As yet, no equivocal answer to this question can be given. Some seem to think that, subject to a few changes, capitalism can be made sustainable. Buttel, for instance, argues that "A few major policy changes that might obtain wide consensus could have a major impact in inducing a shift in the direction of sustainability".[8] Others take a more cautious or pessimistic view. O'Connor's short answer to the question whether capitalism is sustainable is "No', and the long answer "Probably not",[9] whereas Kovel's view on the matter can probably be summarised as 'definitely not'.[10]

When addressing this question we should remind ourselves that more is required than mitigating or reducing environmental effects (pollution etc.). If the assumptions underlying the ES approach hold true, actual resource consumption in rich countries must be reduced by a significant factor and, after having increased to an allowable level, be contained in lower income countries. If economic growth is an inherent imperative of capitalism, this implies that growth has to be channelled into areas of production and consumption that require very low quantities of resources, and/or a continuous increase in resource efficiency to the extent that 'absolute decoupling' (an absolute reduction of resource use and environmental effects) is achieved. This is likely to require the creation of 'circular economies' and the transformation of production and consumption into 'closed loop' systems. As yet, such a transformation is well out of sight, and unlikely to occur without strong planning, guidance and investment by governments.

Whether governments will be able and willing to move into this direction depends on whether they, and the wider state system of which they are an active component, can be 'greened'. Again, the jury is still out on this question, even though most governments now proclaim their commitment to environmental protection. It has been argued that some states are considerably 'greener' than others, but, as yet, no state can be called 'green' (Dryzek, et al., 2003). Although some authors have sketched out what a green state could or should look like, and are relatively optimistic about the prospects of this happening (Barry and Eckersley, 2005; Eckersley, 2004; Meadowcroft, 2005), this outcome is not a foregone conclusion. Again, we need to

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[8] (Buttel, 1998: 282)
[9] (O'Connor, 1994a: 154)
[10] (Kovel, 2002)

remind ourselves that more is required than environmental mitigation or a weak form of Ecological Modernisation. Also, the more governments entrap their countries into patterns and institutions of economic interdependence, the more difficult it becomes to achieve the kind of economic transformation described above.

Notwithstanding these rather pessimistic observations, the possibility of rapid political-economic transformation, forced by an extreme deterioration of environmental and resource conditions, cannot be discarded. Almost by nature, systems change tends to occur through a process of 'punctuated equilibrium', during short bursts of rapid change rather than through a gradual process. The question whether the political-economic systems can and will change in response to the erosion of environmental space is more likely to be answered in practice than by further study and debate.

The material bases of resource politics and policy

Whilst systemic political-economic factors create the general conditions driving resource decisions and practices regarding resource consumption, the specific nature of those decisions are shaped by political-economic actors. Which resources get exploited, where, how and by how much depends on the decisions made by those who have access to and control over resources. Countries vary greatly in resource endowment, the structure of their economies, economic and technological capacity, political stability and effectiveness, and level of income, to name just a few factors that influence their resource consumption. Equally important differences exist within countries between citizens, social classes, and economic and political actors with regard to access to, ownership of, and control over resources.

Whether the limits to environmental space will be respected, depends in large part on the decisions and practices of those who have (a degree of) control over specific resources and resource use and consumption, such as land, forests, water, and minerals. This includes farmers, corporations, financial institutions, governments (at various levels) and non-governmental organisations. The retail sector, media, and consumers also play a significant role, notably on the demand side.

Assessing the scope for reducing resource consumption, therefore, requires analysis of the interests and networks of actors or 'stakeholders' associated with a particular

resource, and of their relative power and influence over decisions affecting resource use and consumption. Here, we are interested foremost in the 'material' interests of the various parties in the resource, and in the degree to which they control or influence decisions, not so much in their stated views. Although it has become commonplace to regard 'interests' as 'constructed' rather than 'real' phenomena, the approach advocated here is based on the assumption that financial-economic and political-economic stakes in resources (including ownership and shares in material benefits) are important influences on people's views and actions (even if they do not determine them), especially in the case of organisations (in which interests have been institutionalised). This does not imply dismissing the importance of ideas, discourse and ideology, discussed in the following section. However, we need to be sceptical about views and analyses which imply that decisions (on resource consumption or for that matter any other issue) depend solely or even mostly on rational discussion and persuasion. We need to be aware of how 'rational' arguments and the ability to persuade are influenced by material interests and power structures.

It is beyond the scope of this paper to discuss and analyse the interests and networks associated with particular resources. However, some general tentative propositions can be made based on previous studies and observations. They relate to differences in dependence on imports and exports, the role of TNCs and international organisations, and the importance of diversity within sectors.

Low income countries that depend heavily on resource exports (oil, minerals, particular crops), it would appear, have little or no incentive to advocate a reduction of resource use or consumption. Reducing the demand for resources is likely to lower their price and thus even reduce the already low income level of many of these countries. Thus, ironically, reducing resource consumption in high income countries with the aim to give more 'environmental space' to people in lower income countries may have the perverse effect of further diminishing the ability of the latter to increase their consumption. Governments of countries largely dependent of resource exports, unsurprisingly, are unlikely to be strong advocates of the adoption of the environmental space approach, despite its stated aim to reduce inequity in resource consumption.

However, this may change if and when countries dependent on resource exports are able to secure a degree of collective control over supply and price, for instance, through producer cartels such as the Oil Producing and Exporting Countries (OPEC).

By collectively limiting supply, producer countries can keep prices high and increase their income. Inasmuch as high prices reduce the demand for resources, and substitutes are not readily available, this also has the effect of extending the life of the resource basis in the producer countries. However, the establishment of effective resource producers cartels contravenes dominant free market ideology and is likely to be opposed and undermined (if they can) by importing countries, as the failure of 'commodity agreements' in the 1970s, aimed at the stabilisation of income of low income countries, has demonstrated (Raffaelli, 1995; Ricupero, 2004).

By contrast, countries that depend heavily on resource imports (such as Japan and EU states), have an apparent interest in reducing their dependence on such materials, for instance, by increasing resource efficiency and recycling. This seems to concur, at least in some cases, with the relative popularity of the notion of 'Ecological Modernisation' (EM) in such countries (notably in Germany, Japan, Sweden and the Netherlands), and with the relatively greater interest in, and support for (research on), increasing resource efficiency (by a Factor 4 or even 10), recycling, industrial ecology and transformation, and the notion of environmental space. Not all governments, industries, and groups share this interest, however, and the extent to which EM is translated into effective policy and institutional change depends largely on the relative economic weight, power and influence, of the various parties involved (with importers and the transport industry being examples of sectors that are likely to have no interest in reducing imports).

A second proposition regarding the material bases of resource politics and policies relates to the growing role and importance of TNCs and International Organisations in the development of international regimes affecting resources. Increasingly, resources, from oil, metals, water, forests, fibres and agricultural land, are owned, controlled and managed by big corporations, directly or indirectly (Ridgeway, 2004). TNCs play a significant, though understudied, role in the development of international regimes for resources, including formal agreements regarding their conservation and protection (Levy and Newell, 2005a; Strange, 1994; 1996). Combined with international organisations like the WTO, IMF and the World Bank, which are often regarded as serving the interests of TNCs by promotion the opening of markets for goods, services and investments, they may have more clout in resource decisions than governments.

The third point to be made here is that material interests, within countries and even within sectors and industries, are not necessarily homogeneous. Obviously, countries

differ greatly in their access to, and control over, resources, related to their (geo-) political, financial-economic, and military power. To understand and address the factors affecting global resource consumption, it makes more sense to study the interests and role of specific players (such as the US, the EU, China, India, Brazil), than to try to develop general theories of 'state behaviour'. If the erosion of environmental space is to be addressed, effectively and within the foreseeable future, study and action focusing on the main players is imperative.

Similarly, the material interests within the business sector, and even within the same industries, are not necessarily homogeneous, but are likely to vary with their relative position (size, capacity, competitive position). As studies of a variety of industries, including the oil, chemical and biotech industries demonstrate (Levy and Newell, 2005a), such differences are important when it comes to the relative power of companies to influence politics and policies, including international regimes, and their ability and willingness to take on board environmental concerns. However, as noted before, the question is not just about the extent to which companies are willing and able to mitigate their environmental impacts, but about their place and role in the demand for resources and whether/how they can be restructured, in the context of a broader transformation led by governments, towards a sustainable and equitable economy.

The role of material interests and the relative power and control over resources need to be understood and addressed if a significant reduction of resource consumption is to be achieved. However, the role and importance of these factors is often hidden or camouflaged by dominant ideologies and discourses that prevent or obstruct concerted and effective action aimed at addressing them.

Ideology and resource consumption

The role of ideas and ideology has been a subject in the study of politics and society from Plato to Hegel, and Marx and Engels to Gramsci, to more recent studies and debate about the importance of ideas, knowledge, reason, and discourses in politics and policy (Campbell, 2002; Stone, 1988; White, 1994). It has also become a major topic in the study of environmental politics and policy (Dryzek, 1997; Gibson, 2002; Sandbach, 1980). The way environmental issues are interpreted obviously is a crucial factor in the formation of decisions and policies affecting resource consumption.

However, whilst many authors and studies recognise the importance of ideas in shaping (environmental) interpretations, politics and policies, they often do so without linking them to specific actors and their material interests, as discussed above (Campbell, 2002). Often, the assumption seems to be made that decisions and policies are shaped primarily by discourse and debate, and that the power of 'good ideas', rational argument and persuasion are the most important factors. Even if this may not be always the case, solutions for changing or improving policies are often sought in enhancing the role of these values and in promoting 'deliberative democracy'. What many authors seem to underestimate is the degree to which powerful actors, based on their privileged material and political positions, are able to influence or even manipulate the formation and adoption of dominant or hegemonic ideas. The popularity of the term discourse vis-à-vis the term ideology appears to be associated with growing preference for a less 'ideological' interpretation of politics, reflected most explicitly in the argument that the role of ideologies has come to and end with the 'victory' of capitalism over socialism (Fukuyama, 1992).

The idea that a reduction of resource consumption is required to effectively address the environmental problematique is definitely not a dominant idea. On the contrary, dominant environmental discourse, embodied foremost in the idea of sustainable development, advances the view that continued economic growth is not only compatible with, but necessary for, achieving sustainability. Similarly, the notion of 'weak' Ecological Modernisation, popular with some governments, is based on the view that environmental problems can be resolved primarily by economically advantageous technological innovation. Both 'discourses' are largely a-political in the sense that they hold up normative ('good') ideas that should be embraced by 'everyone'. If some people, groups, businesses or governments fail to do so, this is seen foremost as a failure on their part to see the merits and importance of these ideas. Education and persuasion are usually held up as the best remedies for converting them to these ideas.

Although Ecological Modernisation, where adopted, may lead to resource efficiency gains, these mostly represent 'relative decoupling' (growth in emissions and resource consumption less than the rate of economic growth), and are insufficient to bring about the radical reductions in resource consumption predicated on the ES approach. The effects of the adoption of 'sustainable development', broadly and vaguely defined by governments and businesses, on resource consumption are even less impressive (Fanelli, 2007). Given their compatibility with continued economic

growth, their broad scope for interpretation, and their emphasis on shared responsibility, it is not surprising that these ideas have proven to be acceptable or even attractive to (most) governments and many businesses.

Continued growth in resource consumption is also supported by other dominant (non-environmental) ideas and discourses, firmly rooted in material interests. Arguably the most pernicious among these is the idea that the improving the quality of life of people involves and requires a growth in income and consumption, especially of material and 'positional' goods (goods that improve someone's social status vis-à-vis others). Although the idea can be challenged on normative and empirical grounds (Hamilton, 2003), it continues to hold many if not most people in its grip, all around the world. It is probably the most damaging ideology, socially and environmentally, driving more and more people to ever higher levels of consumption (among other in the form of holiday travel to 'exotic' destinations, sometimes under the label of 'eco-tourism'). Consumerist ideology is, of course, firmly rooted in material interests, including those of producers, the multi-billion dollar advertising industry, and the media (most of which depend on income from advertising). In this context, it seems unrealistic to ask consumers to change their values and lifestyles and to move towards a greater emphasis on non-material aspects, as advocated by some ES advocates (Carley and Spapens, 1998: 134-167).

Challenging this modern dogma of faith is arguably the biggest challenge facing environmental (including ES) advocates, not only because of its addictive nature and the formidable power of the vested interests on which it is based, but also because real poverty and sharp inequalities in the material standard of living still exist and, if anything, continue to increase (Stewart and Berry, 1999; Wade, 2003). Economic growth, rather than a redistribution of income, is still seen as the main means for lifting people out of 'extreme poverty' (income less than US$ 1 per day according to the World Bank), and also as the 'great equaliser' in rich countries. Putting limits on resource consumption easily could be construed as preventing the poor to 'catch up' with the rich. But it could also re-ignite demands for the adoption of a just income policy and for income redistribution, ideas that definitely will find strong resistance among the better off.

Thus far, the discussion has focused foremost on factors that constitute political-economic obstacles to the adoption of the environmental space approach, at the systemic, material and ideological levels. There are, it seems, few if any grounds for being optimistic that the approach will be adopted, at the national and/or international

level. This preliminary conclusion raises the question whether there is a possibility that, through agency, in first instance, on the part of those who advocate the approach, these factors could be addressed and changed to improve the chances the approach.

Agency and environmental space

As noted earlier in this paper, the advocates of the ES approach are far and in between. Support for its adoption has been confined mostly to a handful of academics, environmentalists (notably Friends of the Earth), and a few government officials in some countries. Given such a weak support basis, and the formidable political-economic obstacles sketched above, further advancing the idea with some chance of success may seem a hopeless task.

Yet, the support and agency basis for the recognition of environmental limits is considerably broader than the size of the environmental space discourse community suggests. In fact, many people and groups work towards the same or at least similar goals and objectives as those advocated by the environmental space community but not under their label or umbrella. Probably the most important organisation in this respect is the Intergovernmental Panel on Climate Change (IPCC), which has played a key role in getting climate change on the global agenda. By making clear the limits to greenhouse gas emissions that need to be respected if global warming is to be contained within a 'safe' range, implicitly, the IPCC supports the first tenet of the ES approach. However, the organisation's recommendations do not, explicitly or implicitly, endorse the second (strong equity) principle, the right of all people to an equal share of environmental space, which could be translated into equal per capita emissions entitlements. Nonetheless, equity issues do play a significant role in the debate and negotiations about the follow up regime to the Kyoto Protocol, which expires in 2012.

The United Nations Environment Programme (UNEP), in its latest Global Environmental Outlook report, also notes that humanity already consumes more resources than is sustainable, and identifies rising resource consumption, together with population and economic growth, globalization and social values, as one of the drivers behind the build up of environmental pressures (United Nations Environment Programme (UNEP), 2007: 458). Addressing the more persistent environmental problems, the report argues, will require "transformative structural changes" that

"challenge existing societal structures, consumption and production patterns, economies, power relationships, and the distribution" (United Nations Environment Programme (UNEP), 2007: 470). Few governments have even started to develop policies addressing these drivers, and doing so at the global level is also hampered by the "many veto points that allow interest groups to stop ambitious policies" (United Nations Environment Programme (UNEP), 2007: 472). Among other things, the UNEP advocates more effective environmental policy integration and the use of "mandatory limits", although these are not explicitly linked to resource consumption (United Nations Environment Programme (UNEP), 2007: 464)

Many other groups and organisations around the world effectively advocate the recognition of environmental limits, for instance, by working for the conservation of natural areas, for the protection of rivers, opposing mining and other environmentally damaging 'development' proposals, and by demanding strict limits on pollution. Often, they combine these actions with a concern about inequity and injustice, and for protecting and enhancing the livelihood and interests of indigenous and other communities. Many environmental groups concentrate their efforts on the protection of particular resources (such as tropical rainforests, water), or on promoting the use of alternative resources and technologies (notably to generate energy), to reduce the environmental impacts on humans. Putting a halt to, or even reducing, human populations, even though this is a political 'hot potato', advocated stubbornly by some groups, is another way of bringing resource consumption to within environmental limits, enabling people to retain more environmental space.

The main differences between these efforts and the ES approach is that the latter focuses (in most cases) on the reduction of resource consumption (rather than on mitigating effects), provides for a more comprehensive and integrated approach to combating environmental problems (by linking most of these to resource use), and puts forward specific, and quite radical, targets for reducing and containing resource consumption, making the size of the challenge quite explicit. Moreover, the strong equity principle on which the ES approach is based is not necessarily shared by all groups referred to above.

Thus, in many cases, the manifold actions of environmental advocates can be seen as compatible but fragmented steps in the implementation of the ES approach. Given the low public profile of the notion of ES, and present weak support for a more integrated and forceful approach to our global environmental predicament, the best prospects for advancing the approach seem to lie in a continued strengthening of

support and action, from the local to the global level, for addressing specific environmental issues, especially those that 'feed back' into a broad range of resource use (like climate change). As people are more easily aroused by demonstrable environmental problems and threats, it will always be easier to boost support for environmental measures by highlighting those rather than by advocating a drastic reduction in resource consumption, the idea of which is more likely to put many people off.

This means that a more comprehensive and integrated approach to the environmental problematique, focusing more on underlying driving forces than on (containing) effects, as advocated by ES advocates, is unlikely to be adopted in the near future. However, that does not mean that action aimed at realising such an approach needs or is to be postponed. Increasingly, the linkages between environmental problems (such as climate and the problems associated with land, forests, biodiversity, water, to name just a few) are becoming apparent, and slowly but steadily the underlying policies and actions that are responsible for these pressures are being questioned (Najam, et al., 2007; United Nations Environment Programme, 2007). This is likely to improve the scope for forging more concerted action and strategic coalition formation between environmental groups and sympathetic individuals and organisation within government and businesses, at and between different levels, from local to global. As noted above, the material interests between and within governments and businesses, even within the same industry, are not necessarily homogeneous, which opens up possibilities for the formation of coalitions that contest the dominant paradigm. Analysis and effective use of these opportunities may, eventually, lead to the emergence of a new hegemony (Levy and Newell, 2005b), one that is more in line with the need to respect limits and equity in resource consumption.

Given the formidable constraints to the adoption of ES as a cognitive framework at the global level, it seems premature to design a global architecture for the approach. However, given the opportunities referred to above, there is merit in reflecting on how institutional change at the global level may help to support the move towards a more comprehensive and integrated approach to the environmental problematique.

Towards a global political-economic architecture of environmental space
The adoption of the ES approach at the global level, if this is going to happen, is unlikely to be based on some kind of blueprint drawn by academics. Although ideas on how the approach can or should be institutionally supported may well play an

important role in debates and negotiations on this matter, the framework will most certainly come about as a result of the interplay between the most powerful political-economic forces, based on different and often conflicting interests, and constitute a compromise rather than a product of rational design.

In the light of this observation, and the discussion of obstacles to the adoption of the approach, it seems clear that, at this stage, there is no chance of an official 'World Environmental Space' agency being created, even if it were to be proposed. Although the case for establishing a World Environment Organisation (WEO) has been put forward (Biermann and Bauer, 2005; Charnovitz, 2005; Simonis, 2002), and has received some political backing, this has not been sufficient to persuade governments (Charnovitz, 2005). Even in academic circles, the need for creating such an agency has been contested and deemed undesirable as well as unrealistic (DeSombre, 2006; Najam, 2003). Yet, the idea should not be dismissed, as at some stage the need for a 'central' environmental agency, as in national contexts, may find greater recognition.

As the erosion of environmental space progresses, and the capacity of environmental systems and resources to meet rising demands (for food/fertile land; fresh water; a range of minerals) approaches or crosses multiple 'tipping points' or 'peaks' (like 'peak oil'), this is likely to generate stronger demand and support for global regulatory frameworks. With 'crises of supply' looming in several interconnected areas, a strong case can be made for strengthening or establishing institutions that can work towards creating a common cognitive basis for the development of such frameworks. Analogous to the IPCC, other international panels (for instance, on renewable and/or non-renewable resources) could be established to play a crucial role in advancing, in a less overt political way than by direct talks between governments, a shared understanding of the nature of the problems and of possible solutions for addressing them.

In the mean time, however, it seems that strengthening the capacity of existing international agencies, including the UNEP, the Commission on Sustainable Development, and the global architecture (institutional framework) to address climate change, offer the most promising prospects for promoting the integration of environmental concerns within and across different areas of policy (regime) development at the global level. At the same time, there is plenty of scope for improving the effectiveness of existing environmental regimes for particular issues or

areas, by providing better mechanisms for co-ordination between them and/or by 'bundling' them, given the overlap between them and common underlying causes.

Though unsatisfactory, and arguably 'too little and too late', a more fundamental restructuring of global institutions aimed at requiring or even promoting a high degree of constraint in resource consumption, and for sharing environmental space more equitably, appears unrealistic at this stage.

Conclusion

The notion of environmental space has been advanced as a means for providing specific policy guidance to governments on how to implement sustainability. Rather than prescribing objectives and targets for mitigating environmental effects, it focuses on resource consumption as the underlying cause of environmental problems. Based on an integrated analysis of linkages between resource consumption and environmental effects, and on a strong equity principle (equal per capita resource entitlements), the approach assesses, on a country-by-country level, the extent to which consumption needs to be reduced or can be allowed to grow.

Thus far, it has proven to be difficult to get governments to adopt the approach, for several reasons, including the international collective action problem. In an increasingly interdependent world, it makes little sense for individual governments to limit or reduce their use of resources if other countries also do not do so. This suggests that the environmental space approach will need to be adopted at the international (or even global) level, to be implemented effectively also at the national level. The aim of this paper has been to explore, in a political-economic context, the prospects for this to occur.

Based on a framework consisting of four main categories of factors (structural/systemic, material, ideological, and agency), and a tentative discussion of some of these factors, it can be concluded that the political-economic obstacles to the adoption of the environmental space approach at the international/global level are formidable. This preliminary assessment appears to lead to the conclusion that 'What must be done, cannot be done'. The factors and forces opposing resource consumption simply seem overwhelming whilst those advocating and acting on behalf of such an approach constitute a weak agency basis at best.

Notwithstanding the small group of advocates associated with the environmental space approach, the efforts of many individuals, groups and organisations aimed at mitigating or resolving environmental problems, although not undertaken under the Environmental Space label or umbrella, also often result in, or are conducive to, limiting or reducing the consumption of resources. Many people also advocate greater equity in access to resources, or to the benefits derived from their use. Thus, the agency and support basis for the environmental space approach can be deemed much broader than the small epistemic community associated with the concept. As political mobilisation on the basis of specific environmental problems is (relatively) much easier than on a platform of advocating limits to, or a reduction of, resource consumption, it seems wise, also for advocates of the ES approach, to support and strengthen these other efforts, even if these are likely to fall short of what is required.

Strategically, the most promising prospects for advancing the environmental space approach lie in a strengthening of the climate change regime, given the linkages between the factors driving climate change, within and across range of 'key' policy areas, and resource consumption. Given the growing global concern about the serious threats from climate change, and the associated imperative of reducing greenhouse gas emissions (rather than just mitigating them), and the limitations to achieving adequate reductions only by increasing resource efficiency, the need for putting limits on resource consumption is likely to become apparent. However, this does not imply necessarily that, politically, all governments will be able and willing to reduce or limit resource consumption: they may well become pre-occupied with securing their own access to and control over resources, de facto shifting or imposing limits on others, a process which seems well underway under the flag of protecting 'environmental security'. Arguably, the creation of a new collective security system that recognises humanity as one 'community of fate' is a precondition for any progress on ensuring protection of the common global resource basis.

Sharing environmental space globally and equitably is arguably the most daunting, unprecedented, and increasingly urgent challenge confronting mankind. Although many societies have faced and undergone collapse as a result of their eroding resource basis, people often had the option of going 'somewhere else'. With the rapid erosion of the human life support basis in many if not all parts of the world, and increased global interdependence in the supply of resources and processed goods, any decline or collapse of a significant resource basis, wherever in the world, will have repercussions elsewhere. If humans are to maintain a decent standard of living, and to avoid a global meltdown of law and order, the adoption of the

environmental space approach at all levels of governance is a political and moral imperative.

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