

Institutionalising Environmental Space at the Global Level

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Abstract

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The notion of environmental space has been advanced to make sustainability concrete. In a world where environmental limits are becoming increasingly apparent, the idea, based on recognition of these limits and a strong equity principle, offers a more positive approach to dealing with the growing 'environmental scarcity' than the 'protection of environmental security' scenarios that are presently unfolding themselves. However, although there have been some moves towards the adoption of the notion of environmental space as a basis for policy development, at the national and international level, questions about whether and how the idea can or should be implemented remain largely open. What seems clear is that, to promote feasibility, fairness and effectiveness, the notion of environmental space will need to be institutionalised at the global level.

This paper discusses and assesses three options for globally institutionalising this approach, and assesses these on their strengths, weaknesses and limitations in the light of the principles of ecological effectiveness, equity, economic efficiency and feasibility (practical and political).

The three options are: the commercialisation of environmental space, for instance, in the form of greenhouse gas emissions trading schemes; global 'green planning', weakly exemplified by the adoption of *Agenda 21*, the *Millennium Development Goals* and other global policy agreements; and a global income policy, an idea that, as yet, has not even entered the international agenda, but which, in my view, merits serious consideration.

The paper concludes that all three options have significant weaknesses and limitations, and that none of these, as well as various other options, is likely to provide, on its own, an effective means of implementing the notion of environmental space. Each option appeals to a different rationality (economic, political, ethical), and it is likely that, if the idea of environmental space is to be institutionalised, a combination of these approaches will be required.

Institutionalising Environmental Space at the Global Level

Introduction

The notion of environmental space has much to offer to those who wish to advance sustainability and sustainable development. Based on two main principles, the recognition of environmental limits and a strong equity principle, it provides guidance, and a methodology, for 'making sustainability concrete', and a framework for the development of coherent and integrated policy from the global to the local level. However, important questions remain about whether and how it can and should be institutionalised, especially at the global level.

This paper will discuss three means, or rather approaches, by which the concept of environmental space could be institutionalised at the global level: the commercialisation of environmental space in the form of tradable entitlements, as exemplified by greenhouse gas (GHG) emissions trading schemes; global 'green planning', of which *Agenda 21* and the adoption of the *Millennium Goals* can be seen as (weak) examples; and the adoption of a global income policy. Although the latter has hardly entered the international agenda, there are good reasons for considering this option seriously. All three options will be discussed and assessed on their relative strengths and weaknesses, especially with regard to their ecological effectiveness (the extent to which they prevent a further erosion of the ecological basis), equity (in terms of the relative shares of environmental space used by groups and individuals), feasibility (the

availability and practicability of means of implementation and the political support basis for their adoption and implementation), and efficiency (their relative costs of implementation). But first, I will provide some further clarification of the notion of environmental space.

Environmental space

The notion of environmental space was first introduced by Horst Siebert in 1982. It has been defined as “The total space provided by the earth for our use without diminishing the possibilities for the future” (Davidson 1995), and has been advanced specifically with the aim to “make sustainability concrete” (Buitenkamp, Venner and Wams 1992, 17-18, Opschoor and Weterings 1994). Environmental space analysts set out to determine the total ‘allowable’ resource consumption on a geographical basis (depending on the resource in question), and to provide guidance to governments on the extent to which resource consumption within their territories should be reduced or can be expanded. It is based on two core principles: respect for ecological limits, and equal access to resources. To these, several other principles have been added, depending on the advocate or author (Carley and Spapens 1998, 8-9, Moffatt 1996, 50-52).

The first core principle, the need to respect ecological limits, is based on the idea that there are limits to the capacity of the earth to absorb the pollution and waste associated with resource exploitation and consumption (‘throughput’ of material). Although it is not possible to determine these limits with absolute precision, and they often only become apparent only once they have been transgressed, enough is known to be able to set indicative (and adaptable) targets. Environmental space advocates also concur with the precautionary principle: uncertainty is not an excuse for not accepting and setting limits. It should be noted that the argument about limits does not so much refer to the idea that the world is running out of resources, which has been characterised by some as a ‘red herring’ (Carley and Spapens 1998, 85). In most cases, limits are imposed by the ‘new scarcity’ (ecological limits)(Simpson, Toman and Ayres 2005), 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 second principle associated with the notion of environmental space is that all people (those living now and future generations) have equal rights to resource consumption (strong equity principle). 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, Venner and Wams 1992, 18, Carley and Spapens 1998, 66-74, Sachs, Loske and Linz 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.

Based on these two principles, for each resource, activity or type of emissions, the total amount of available environmental space can be calculated for any group or geographical unit (region, country or group of countries). Depending on the level of ‘throughput’ that is considered ecologically sustainable, the total amount of resource consumption that can be allowed (within the most appropriate geographical/ecological unit: global, continental, or regional) is determined.

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.

For reasons of practice and principle, calculations are based on resource consumption. Rather than setting limits for individual pollutants and waste streams (which are varied and numerous), the combined environmental effects (the ‘ecological backpack’ or ‘rucksack’) associated with the exploitation and consumption of specific resources or categories of resources (energy, non-renewable resources, freshwater, wood, and land use, together covering about 90 per cent of all material flows) are assessed. 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

As nation-states are commonly 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). 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, Giljum 2006, Sachs and Santarius 2007).

The environmental space approach provides a comprehensive and integrated framework for identifying and dealing with environmental problems. The approach, if implemented globally, helps avoid shifting environmental pressures from one area or resource to another as a result of measures that address issues separately. For instance, as limits are determined (and to be respected) for all resources and at all levels (including local ecosystems), using land and water to grow crops for the production of biofuels, one of the more recent examples of the tendency to shift environmental pressures, would only be allowed if this were to have no adverse impacts on the availability of those resources for the production of food and the maintenance of ecosystem functions.

It should be emphasised that environmental space should not be seen as completely fixed or implies an end to ‘development’ or even economic growth. To the extent that technologies and measures are developed and adopted that increase resource efficiency, environmental space is expanded. That there is enormous potential for increasing resource efficiency has been pointed out in various studies (Hawken, Lovins and Lovins 1999, Lovins and Lovins 2000, Weizsäcker, Lovins and Lovins 1997). However, governments and businesses have been slow to take up these opportunities, in part because of the existence of many institutional barriers (Weizsäcker, Lovins and Lovins 1997). But even if this were to change, it is very unlikely resource efficiency gains

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)

will be sufficient to avoid the need to further reduce levels of resource consumption. To achieve an absolute reduction ('decoupling') of resource consumption at the global level, resource efficiency gains would need to increase worldwide at more than at the exponential rate of global economic growth, which stood at an average of three percent over the last decade (European Environment Agency 2007, 12). As efficiency does not increase exponentially (Hille 1997, 17), and as resource consumption in the world as a whole already exceeds what the earth can sustain (Global Footprint Network 2008), putting limits on resource consumption will be unavoidable if a less unsustainable world is to be achieved.²

Although some governments, notably in the Netherlands, Denmark and Norway, have expressed an interest in and commitment towards the adoption of environmental space, in practice, its implementation has been very limited. The most comprehensive application of the environmental space approach has been undertaken outside the sphere of government. In the 1990s, *Friends of the Earth*, in the context of its *Sustainable Europe Campaign*, produced a series of country reports which calculated the environmental space used by each country and compared this with the space that they are entitled to on a population basis (Friends of the Earth International 2008). However, no government has formally accepted such a report, or adopted and implemented environmental space, as an overarching framework for their environmental policies.

The limited uptake of the environmental space approach by governments is not surprising. Apart from the considerable issues associated with the interpretation and application of the principles mentioned, and the opposition to their adoption that is to be expected, there is the broader 'collective action' hurdle. Even if there is considerable sympathy and support for adopting the environmental space approach within a country, it makes little sense to do so if other countries do not do so as well, as reductions in resource consumption achieved by some countries can be easily and quickly negated by other countries that continue to expand their use of resources. Therefore, it seems unlikely that the environmental space approach will make much headway unless it is adopted at the international or even global level.

Institutionalising environmental space at the global level

That many environmental problems only can be addressed effectively if countries and governments work together is increasingly recognised, as reflected in the growing number of multilateral environmental agreements. There is also a growing awareness of environmental and resource limits, especially with regard to issues like the thinning of the ozone layer, climate change, and the limited supply of a range of mineral resources, in particular oil. It can be argued that, in response to some of these issues, the notion of environmental space is gaining acceptance as a basis for global policy development, be it only partially and in a limited way. This is most pronounced with regard to the issue of ozone depleting substances (effectively involving the phasing out of the most damaging substances) and climate change (recognition of the need to limit GHG emissions to prevent a disastrous degree of climate change).

² Although there are significant differences between the concepts of environmental space and ecological footprint which I cannot elaborate upon here, the ecological footprint figure for the whole of humanity is used here as an indication of the extent to which global resource consumption exceeds total supply. For a discussion of the differences between both concepts, see (Bühns 2007).

I will now discuss three options for institutionalising environmental space: the commercialisation of environmental space, global ‘green planning’, and a global income policy.

The commercialisation of environmental space

The commercialisation of environmental space refers to the transformation of resources and other elements of environmental space into tradable economic goods, either by the creation of entitlement schemes or their full privatisation. Both approaches are based on the idea that markets are good mechanisms for allocating resources efficiently. The approaches should not be confused, however. The former, tradable permit approach, accepts that, on its own, the market does not adequately recognise environmental limits, and sees an important role for government in defining limits within which entitlements, also created by governments, can be traded. The privatisation approach, also referred to as the property rights or free market environmentalism school of thought, advocates the privatisation of resources based on the view that the combination of private property rights and the market ensures the optimal allocation and use of resources and effectively eliminates the role government in resource decision-making. In this view, there is no need for setting limits as ‘government intervention’ can only lead to sub-optimal outcomes (Jacobs 1995, 52-53).

Although ‘free market environmentalism’ assumes that the market will integrate environmental concerns if and when they are important to economic actors, the record of market failure provides not a basis for optimism in this respect. As Kinrade notes, ownership (property rights) does not guarantee the protection of non-economic values (for instance, as management practices on private land demonstrate), and what may be an optimal level of pollution from an economic view may not be sustainable from an ecological perspective (Kinrade 1995, 98).

Tradable permits or quota systems imply the allocation of government created tradable rights to a quantity or proportion of a resource (such as fisheries or water) or to a certain level of emissions or discharges (pollution). The overall level of resource use or pollution is determined by the government, based on what is deemed sustainable, desirable or acceptable. Buying and selling of permits or quota arguably promotes the optimal use of the permits or quota. As overall limits can be based on ecological sustainability criteria, tradable permit or quota schemes can integrate resource and environmental limits more effectively than environmental taxes or charges, and therefore are compatible with the view that economic activity should be re-embedded into the ecological context (Daly 1996, 48-52).

The United States has been a forerunner in the introduction of emission trading schemes for lead, water quality, and CFCs in the 1970s and 1980s (Stavins 2000), and, in 1992, for trading SO₂ emissions (Hahn 1995, 132-142). More recently, there has been a growing interest in emissions trading, notably in the context of the requirement to meet emission reduction targets under the Kyoto agreement. Several countries, including Denmark, the Netherlands, United Kingdom, Australia and New Zealand, have adopted schemes for trading greenhouse gas emissions or are considering doing so, and in 2005, a CO₂ emissions trading scheme became operative at the EU level (Dunn and Flavin 2002, Euraktiv 2005). Emissions trading is already allowed under various provisions of the Kyoto Protocol, and is expected to play a major role in any post-Kyoto agreement aimed at achieving more significant emissions.

With regard to tradable quota systems for resources, so far few countries have introduced such schemes. In the area of fisheries, New Zealand led the way with the introduction of a system of Individually Tradable Quota (ITQ) in 1986, followed by several other countries.³ Local trading schemes for water resources have been introduced in wider range of countries, including parts of Brazil, India, Mexico and Australia, but also these are not widespread (Christoff 1995, 178-180, Roodman 1996, 179). By contrast, what has become more common with regard to water is the (semi-) privatisation of the resource in the hands of multinational companies, especially in low income countries, where a few western corporations dominate the market.⁴ As noted above, this approach, although perhaps efficient in terms of providing water at the lowest costs (for the companies involved) to those who can pay the price, does not imply that the ecological and social values of water are given adequate consideration.

Although the experience with tradable permit schemes has been fairly recent and limited, we can make a number of observations about their strengths and limitations as a means for institutionalising environmental space at the global level.

First, thus far, their ecological effectiveness has proved to be limited. Although there have been relatively few evaluations of tradable permit schemes, available evidence points towards a mixed record. The environmental results of the use of tradable permit schemes, mostly in the United States, have been referred to as “not very impressive” (Hahn 1995, 147-148). For Australia, it has been noted that tradable permit schemes “do not significantly enhance environmental outcomes or improve pollution abatement performance”(Christoff 1995, 181). Air pollution schemes appear to have been most successful, but water pollution control schemes generally not, while Individually Tradable Quota systems in fisheries have delivered mixed results (Tietenberg 2002, 216-222). Moreover, where positive results have been achieved, it is difficult to attribute these solely to particular economic instruments, given that such instruments are normally part of a broader policy package, and given the influence of other developments (Matsuno and Ueta 2000).

Moreover, the ecological effectiveness of this approach is constrained by the inherently fragmented nature of the approach. Tradable permit schemes each target only one resource or environmental aspect, based on the assumption that sustainable levels can be determined on for each resource or environmental medium separately. Unless such schemes are adopted for all resources and environmental media in a comprehensive and integrated manner, or fitted within a broader policy framework, they cannot prevent the shifting of environmental pressures and problems to resources and parts of the environment for which no limits have been determined.

With regard to equity, tradable permit schemes raise several concerns. First, most schemes allocate entitlements to existing users or polluters, based on the ‘grandfathering’ principle. In the case of resources, such as fisheries or water, this implies granting access rights to resources that

³ Similar schemes have been implemented also in Australia, Canada, Iceland, the Netherlands, and the USA (Platt McGinn 1998, 72-73).

⁴ Two French companies, Vivendi Générale des eaux and Suez Lyonnaise des eaux, manage water supplies in 100 and 130 countries respectively, together controlling nearly 40 percent of the created world market for water. The expansion of that market has been pushed strongly by the World Trade Organisation in the context of its trade liberalisation agenda (Finger 2005, Poupeau 2002).

were previously collectively owned, and in which all citizens had a stake. With regard to pollution, apart from that it can be rightly questioned why polluters should be rewarded for “having invested in environmentally damaging activities?” (Bertram 1992, 437-438), entitlements to environmental absorption capacity that is essential to the well-being of many or all humans (such as in the case of greenhouse gases), is de facto allocated to some people or companies. In both cases, allocating rights to existing users and polluters can imply showering them with significant ‘windfall profits’, given the considerable market value of entitlements, especially if granted for free (OECD/IEA 2005, 27). Moreover, allocating entitlements to (mostly large) users and emitters, even when auctioned, and allowing these to be traded without restrictions may create (or reinforce) monopoly power, and contributes to increasing existing disparities in wealth and power within countries as well as between countries (Tietenberg 2002, 205, 210). For instance, it has been noted that, within five years after the introduction of the fisheries ITQ system in New Zealand, only three companies held half of all ITQs in the system, forcing many small vessel owners and fishers into a subcontracting role or out of business completely (Platt McGinn 1998, 73). In Chile, where water auctions began in 1981, most tradable water permits also ended up in a few hands (Roodman 1996, 181). In this respect, the distinction between tradable permits and property rights is blurred rather than sharp.

However, there is no intrinsic reason why entitlements must be granted to only some users or polluters. From an economic point of view it does not matter how such entitlements are allocated, as different forms of allocation are cost-effective as long as all receivers are ‘price-takers’, transaction costs are low, and entitlements are fully transferable (Tietenberg, 1992b:129). In the case of GHG emissions, it can be argued that, in line with the environmental space approach, emission rights should be allocated on the basis of the simple moral principle “that every human being has an equal right to use the atmospheric resource” (Grubb 1989, 37). The potential of a GHG emissions trading scheme to redress the imbalance in wealth and income between the rich and poor countries has been emphasised by various proponents (Agarwal and Narain 1991, Bertram 1992, Bertram, Stephens and Wallace 1990, Grubb 1989). By distributing emission rights on a *per capita* basis, the more populous developing countries would reap a majority of (around 75 per cent) of the entitlements (Agarwal and Narain 1991, 14). The ‘Contraction and Convergence’ approach, which assigns an equal *per capita* ‘right’ to GHG emissions to all people, and expects emissions of all countries to converge to that level by a set date, can be seen as an application of the environmental space approach (Meyer 2000, Najam, Huq and Sokona 2003, Pearce 2003). Although initially dismissed as idealistic, there are signs that its political acceptability is growing, in part because there seems to be no other way to bring countries like China and India into the fold of a global climate change regime.

Although it seems inevitable that achieving a post-Kyoto regime will require addressing (in-) equity issues between countries, there is, as yet, much less recognition of the need to address these issues within countries. *Distributing* entitlements on a *per capita* basis does not guarantee that inequity within countries will be reduced, especially if entitlements are passed on to businesses, as discussed above. On the contrary, they are likely to increase inequality and lead to the concentration of wealth and power also in low and middle income countries, unless passed on and *allocated* to *all* citizens, possibly on an ‘individuals-in-community’ basis as I have proposed elsewhere (Bührs 1996). However, such ideas, although potentially benefiting the majority of people, face a big challenge reaching the political agenda.

Practically and politically, the commercialisation of environmental space at the international level is not only feasible, but already happening, as illustrated by the Kyoto mechanisms, the EU emissions trading scheme, the privatisation of water supplies in many countries and, more generally, private ownership of and/or control over many natural resources that are traded in the market, such as land and minerals. Arguably, the question is not whether this approach is feasible: it is the preferred option of most big businesses and increasingly governments. The main reason for the relative ‘popularity’ of this approach with these groups is the claimed economic efficiency of the use of the market mechanism (of both existing and created markets). It enables the holders of property rights or entitlements to seek and implement the most cost-effective means of addressing the environmental effects of their activities and/or of bringing these within specified limits.

The question is not so much whether the commercialisation of environmental space is feasible but whether it can be *regulated* in a way that it operates within the environmentally desirable limits *and* reduces rather than increases inequality. The difficulties in this respect are already apparent in the context of the negotiations about the post-Kyoto climate change regime. Applying these criteria to other resources, notably those that are not in the realm of the ‘global commons’, but that are under the control of individual businesses and governments, will be even more problematic. For instance, institutionalising a global tradable permit system for the use of oil, timber and good quality agricultural land, to ensure that their use remains within specified environmental limits and ensures long-term availability is likely to be much more controversial and politically problematic.

Therefore, the *regulated* commercialisation of environmental space at the global level on the basis of the two main principles discussed above (environmental limits and equity) seems to be a realistic option only with regard *some* environmental values and resources, in particular those of a ‘global commons’ nature (the atmosphere, parts of the oceans, perhaps the Antarctic and Arctic). Neither politically nor practically, this approach is able to deal comprehensively and in an integrated manner with *all* environmental resources and media, based on the principles of environmental limits and equity, as advocated by the environmental space approach. Arguably, there is merit in using the approach where possible, and on certain conditions, but it will need to be complemented by a more comprehensive and integrated approach, such as that offered by ‘green planning’.

Global ‘green planning’

The term green planning is used here to refer to a range of comprehensive policies adopted by governments under a variety of labels, such as Sustainable Development Strategies (SDS), National Environmental Action Plans (NEAP), National Environmental Policy Plans (NEPP), or Green Plans, among other. Early green planning initiatives developed in the 1980s, but they became common practice during the 1990s.

The rationale for green planning has its roots in the fragmented and *ad hoc* nature of environmental policy development. In most countries, environmental policy has developed incrementally, usually in reaction to the emergence of problems that were considered serious enough to require government action. As a result, environmental policies and institutions (rules

and organisations) often became not only fragmented, but also complex, inconsistent and costly, detracting from their effectiveness. From the 1980s, governments started to look for ways of rationalising their environmental systems and policies, and recognised the need for some kind of overarching policy framework to guide the development of all policies that have (potentially) significant impact on the environment. The need for policy integration also became a central tenet of the notion of sustainable development as promulgated by the *Brundtland Commission*, primarily with the aim to ‘marry’ environmental and developmental demands that, until then, were often regarded to be conflicting if not incompatible. Based on the Commission’s report (World Commission on Environment and Development 1987), the United Nations Conference on Development and Environment (UNCED), held in 1992 in Rio de Janeiro, called upon all governments to adopt Sustainable Development Strategies. The conference also adopted *Agenda 21*, a document addressing the broad range of challenges involved in advancing sustainable development, as a comprehensive framework for guiding government efforts.

Low income countries were among the first to adopt sustainable development strategies (Falloux and Talbot 1993), often not because of domestic demands or out of their own will but because of external pressure. Since 1987, the World Bank started to promote the development of National Environmental Action Plans (NEAPs), and required their adoption as a condition for its loans since 1991 (Carew-Reid et al. 1994, 41). Among high income countries, the Netherlands has been a leader in this area, in part because the shortcomings of the fragmented environmental system were recognised, but also because the scale and seriousness of the environmental problems in the country had been made apparent in a first state of the environment report, causing widespread concern and galvanising support for more effective government action (Bennett 1991, Langeweg 1988, Van der Straaten 1992). By the turn of the century, many countries had adopted some form or other of ‘green planning’ (Jörgens 2004, 259-273, Lafferty and Meadowcroft 2000).

Although green planning, thus far, has been undertaken mostly at the national and sub-national level, arguably it is needed as much, if not more, at the global level, for several reasons. First, environmental policy adopted at the international and global level, in the form of treaties and other formal agreements, has developed also in an *ad hoc* and fragmented manner, giving rise to concern about their consistency, effectiveness and costs of implementation. Second, addressing many of the sources of environmental problems requires the integration of environmental concerns or imperatives into international and global non-environmental agreements, such as those related to trade, development, and international finance. Sustainable development, to be effective, needs to include mechanisms for ‘greening’ these other areas, addressing and changing the parameters driving policy development in these areas. Third, with increased globalisation, especially in the financial-economic realm, it is increasingly difficult, if not impossible, for any country to achieve sustainability on its own. ‘Sustainability in one country’ might be possible if a country’s population is willing to live almost exclusively within its own environmental and resource limits; the sustainability of the earth requires all countries to do either this, or to accept the challenge and responsibility to live within collectively defined environmental and resource limits. Arguably, the development of green planning at the regional level (such as represented by the European Union’s *Environmental Action Programmes*) constitutes an intermediate level at which sustainability can be pursued and advanced, although unlikely to be achieved completely.

The adoption of *Agenda 21* can be seen as a first step towards the institutionalisation of green planning at the global level. Although not legally binding ('soft law'), not identifying specific environmental and resource limits, and not containing specific objectives and targets, and dates by which these were expected to be achieved, *Agenda 21* can be regarded as a *meta-policy* that provides a framework for the development of policies with these characteristics at the national and local levels.

Building on this experience, and in part because of frustration about the slow rate of progress in the implementation of *Agenda 21*, the adoption, in 2000, of the *Millennium Development Goals* (MDG) by the General Assembly of the United Nations at the initiative of UN Secretary-General Kofi Annan can be seen as a step further in this direction. The eight goals, which include the eradication of extreme poverty and hunger, universal primary education, gender equality and improving health, as well as ensuring environmental sustainability and the 'development of a global partnership for development', are translated into 18 targets and accompanied by 48 quantitative indicators. The MDG thus are a step towards the development of more specific global green planning, be it mostly concerned with the human or socio-environmental aspects of sustainability rather than with the bio-physical dimension.

However, although the world's leaders restated their commitment to sustainable development and *Agenda 21* at the Johannesburg summit in 2002, they failed to back this up with a strengthening of the institutional framework for global green planning. In subsequent years, governments of the rich countries also fell behind in living up to their pledge to significantly boost the funding needed to advance the MDG, few of which therefore are on track to being achieved (Anderson 2007). This may indicate a waning of interest in the notion of sustainable development following the events of 9/11 and a shifting of the priorities of high income countries towards 'security' issues, including concerns about resource and environmental security (Death 2008), a shift which is making the world neither more secure nor sustainable.

More than ever, there is a need for strengthening the global policy and institutional framework that is capable of dealing effectively with environmental and resource limits and enhancing justice and equity. As discussed above, the creation of a new regime for climate change to succeed the Kyoto Protocol, with or without provisions for trading emissions, however important, will not, on its own, bring about sustainability. A more comprehensive and integrated approach for dealing with the 'return of scarcity', involving all countries, will be required. Almost by definition, this implies boosting or reviving a commitment towards a strengthening of global green planning and the institutional capacity needed for implementing it.

Green planning, based on an assessment of global environmental space along the lines sketched above, can make concrete what is required to advance an ecologically sustainable world by specifying the extent to which, globally, the level of consumption of most (categories of) resources should be limited or reduced. Although assessing these limits inevitably involves uncertain knowledge and value judgements, this is no reason for not undertaking these tasks and for not adopting a precautionary approach to these matters. Scientists and 'epistemic communities' can play a significant role in developing and continuously improving the knowledge in these areas, in raising global awareness, and the development of options for addressing these challenges, as has already been demonstrated with regard to the issues of ozone

depletion and climate change (Benedick 1998, Haas 1992). Various other international knowledge communities are already involved in assessing the earth's resources and environmental space and in formulating new normative cognitive frameworks for environmental management, such as for water, forests and biological diversity (Conca 2005, Hassan, Scholes and Ash 2005, Pulzl and Rametsteiner 2002, United Nations Environment Programme 2007)

Global green planning does not necessarily entail the creation of heavy-handed top-down world government; almost by necessity, it must involve a 'bottom up' process by which local knowledge, expertise and participation feed into international and global policies and institutions. Local and regional knowledge is required to assess and determine the limits of local and regional ecosystems, whilst the views, interests and rights of local (including indigenous) people who are immediately affected by, and dependent on, local resource use must be respected and integrated into national and global green plans. This not only determines the legitimacy of green planning, but also its ecological effectiveness, political feasibility, and the chances of its effective implementation.

Global green planning, then, presumes the development and integration of a 'nested' set of green planning efforts, from the global and regional to the national and local level. Although, from a rational policy perspective, this should be feasible, it does face a range of significant obstacles that compromise its feasibility. First, although many governments, at some stage, have adopted some kind of green plan, these efforts were often weak and symbolic, poorly institutionally supported, and discontinued (Bührs 2000, Bührs forthcoming). A second and related point is that the (political) support basis for green planning is weak: few people apart from some policy advocates and academics actively promote green planning, whilst liberal democracies are built on a political rationality that favours sectional interests and fragmented and *ad hoc* policy development. Third, even when and where green planning has been adopted and seriously pursued, it faces structural obstacles and limits with regard to addressing the underlying forces associated with economic growth and resource consumption. Those who exert power and control over resources, and gain from this within the global capitalist system, are likely to resist collective policies on resource limits and consumption. Fourth, the co-ordination and integration of (ongoing) green planning efforts, especially at the international and global level, straddling all main resource categories, raises serious questions regarding transaction costs, administrative requirements, efficiency and effectiveness (Bührs forthcoming, Volkery et al. 2006).

For all these reasons, global green planning faces enormous challenges as a means for institutionalising environmental space. Although arguably a necessary means for advancing sustainability at all levels of governance, it still has a long way to become an accepted and effective mechanism for co-ordinating and integrating the regulation of resource limits and consumption at the global level. Given the urgency of the challenge to collectively limit and reduce global resource consumption, the question remains whether other means can be found to accomplish this imperative timely and effectively. Next, I will explore one idea that, politically, may seem an unlikely candidate, but that has nonetheless strong logical and normative appeal that warrant it to be given serious consideration.

A global income policy

Income policy refers to the regulation of incomes for particular goals and/or objectives. During the era when Keynesianism was the dominant economic policy paradigm in the western world, income policy was an explicit and important policy plank in many countries. Even before then, social democratic governments can be credited with the adoption of income policies in the form of, for instance, the introduction of minimum wages, progressive income tax rates, capital and/or capital gains taxes, and succession taxes. Income policy can also include equal pay legislation (for men and women), the provision of government pensions and social benefits, subsidies to particular groups (for instance, for housing), and corporate income tax, among other. Thus, income policy potentially encompasses a very broad range of measures related to income, from whatever source, of all individuals and organisations.

Income policy serves mainly social, economic and political goals and objectives. Arguably, the initial and still most important rationale behind income policy is the protection of individuals and families from physical and social harm caused by a lack of, or insufficient, income. The protection of income came to be seen as a responsibility of the state, representing the whole of society, rather than a matter of charity practised by individuals or organisations. Welfare states moved beyond the minimalist approach and expanded measures and provisions aimed at the promotion of individual and collective well-being. However, with the expansion of income policy, its political-economic ramifications also become more important. Consequently, the management of incomes for economic purposes (such as limiting inflation and collective demand, or keeping wages ‘competitive’) became an important plank of economic policy. As income policy affects the interests of all individuals and groups in society, it is also inherently political and almost inevitably controversial.

Although income policy has been a responsibility of, and adopted by, states, it is also a subject of international concern. A range of international agreements can be seen as the starting points of an incipient global income policy. The United Nations Convention on Human Rights (in Article 23, clause 2) that: “Everyone, without any discrimination, has the right to equal pay for equal work” and (in Article 23, clause 3) that “Everyone has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection”. Furthermore, the Convention (in Article 25) states that “Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control” (United Nations 1948). These rights have been confirmed by the legally binding International Covenant on Economic, Social and Cultural Rights adopted in 1966 (United Nations 1966). The International Labour Organisation has added to these with the adoption of such treaties as the Convention on the Right to Organise and Collective Bargaining, the Minimum Wage Fixing Convention, the Holidays With Pay Convention, and the Convention on Equal Remuneration (ILO 2005). Although the implementation of these agreements leaves to be desired, they are forms of international income policy.

Two issues, in particular, drive the expansion and strengthening of these earlier efforts towards global income policy: first, growing concern about the degree of inequality of global income

distribution; second, economic globalisation and the growing need for the development and strengthening of economic policy and regulation at the global level. The global distribution of income only became a topic for study and debate since the early 1980s when more data from around the world started to become available. The findings of these studies are perhaps not unexpected, but nonetheless shocking. Regardless of the methodological differences between studies, they all converge on the conclusion that the distribution of income in the world (measured on a PPP basis), with a Gini coefficient of around the mid-60, is more unequal than in any single country, including Brazil and South Africa, two of the most unequal countries in the world (Milanovic 2005, 108, Milanovic 2006, 14-16). The top 5 percent receive about 30 per cent of all income, and the top 10 percent around half. By contrast, the bottom 10 per cent receives only 0.7 percent of world income. The ratio between the top 5 percent and the bottom 5 percent is 165 to 1. These figures hide an even more unequal distribution at the individual level (given the clustering in quintiles etc.), and in part also because of the practice (adopted in the United States, among other) of ‘top-coding’ all incomes above a certain ceiling as equal to that ceiling, thus tempering the effect of extremely high incomes on income distribution (Milanovic 2006, 11). Discrepancies in wealth, a significant source of income, are even bigger. In 2000, by some calculations, 1 per cent of households held more than and 40 percent of global assets, and the top 5 per cent and the top 10 per cent 71 per cent and 85 per cent, respectively (Davies et al. 2007, 7). The number of super-wealthy continues to grow rapidly, by 8.8 per cent in 2007 alone, increasing their collective accumulated wealth by 14.5 per cent (Capgemini/Merrill Lynch 2008). In 2008, the number of billionaires in the world identified by Forbes crossed into four figures (1125), 42% of whom can be found in the United States (Kroll 2008).

Although there are still people who consider a discussion of income distribution and policy at the global level as irrelevant (regarding it as a matter exclusively for states), the debate on distributional justice is expanding, notably in ‘cosmopolitan’ circles (Caney 2006, Held 2004, Pogge 2005), influenced in part by increasing knowledge, awareness and indignation about this state of affairs. As Milanovic notes, it is an issue “Whose time has come” (Milanovic 2005, 3). With socio-political globalisation and the gradual development of a global polity, concern about income distribution and other social justice issues is also becoming global, following the same logic as the process towards national agenda setting in earlier centuries.

This trend is fed also by economic globalization, which increasingly makes apparent the need for the adoption and strengthening of global economic policies and the regulation of economic transactions. There is growing recognition of the instability, risks and damage caused by an unregulated global economic market, reflected also in the stagnation in global negotiations on the expansion of ‘free trade’, particularly because of its effects on low and middle-income countries. Working conditions, workers’ rights and relative as well as absolute levels of income are issues central to the legitimation and acceptance of the further globalization of economic policy. Global economic policy, in the form it has been pursued and implemented thus far (focused on the deregulation of finance and trade), is widely regarded as being too narrow, primarily serving the interests of transnational corporations. To protect the interests of most other groups, including those of countries that do not harbour the headquarters of TNCs, global economic policy needs to be expanded to include many of the issues and concerns that are (or were) central to welfare states, including income distribution and policy. It could be argued that the process of economic globalization that has been pursued thus far effectively contributed to the erosion of the welfare

state in many countries, largely because of the economic ‘imperative’ to remain or become more competitive in the ‘global market’. Consequently, the protection of existing welfare states, and the introduction of welfare policies in other countries, requires the development of a ‘global welfare state’ policy or meta-policy.

The need to reduce and restrict the use of environmental space further strengthens the case of a global income policy. As discussed above, the environmental space approach is based on two main principles: the recognition of environmental limits and equity. The recognition of environmental limits implies the need to limit and/or reduce the consumption of natural resources. Resource exploitation and consumption inevitably translate into a range of environmental pressures (associated with the ‘throughput’ of materials), even if mitigated by new technology and increased resource efficiency. Already, the global consumption of resources exceeds what the earth can sustain. These limits, combined with the equity principle, imply that, if world consumption of resources is to be brought back to sustainable levels, those who presently exceed their ‘fair share’ of environmental space should reduce their consumption to allow those who consume less than their share to expand their consumption.

Several ideas have been put forward for how environmental space could be redistributed using financial means, notably by some form of global taxation. These include Beitz’s distribution of natural resources principle (Beitz 1979, 125-176), Steiner’s proposal for a universal land tax (Steiner 1999), and Pogge’s suggestion of a Global Resource Dividend (Pogge 2002). As discussed by Hayward (Hayward 2006), each of these schemes has limitations. Beitz’s principle is based on endowment, making countries that are resource rich (but economically poor) potentially liable rather than giving them rights. Whether and to what extent countries have consumed and benefited from natural resources is a more appropriate basis for assessing claims to environmental space (including natural resources) than endowment and geographical distribution. Steiner’s idea of a universal land tax, although it does take into account the extent to which a resource (c.q. land) of a country has gained in value, is too narrow as a proxy for all natural resources and the extent to which a country has benefited from them by adding (or receiving) value to/from them, and may promote the development rather than the conservation of resources (Hayward 2006, 367). Pogge’s proposed levy on (selected) resources when they are harvested or extracted (rather than consumed) potentially hits poor countries more than the rich, and may also work counterproductively with regard to their conservation (Hayward 2006, 367-368). Hayward’s suggestion, imposing a tax on the extent to which a country exceeds its use of ecological space, appears to serve better the dual aims of discouraging environmental ‘overuse’ as well as enhancing distributional justice.

Hayward uses ecological footprint as the basis for assessing a country’s consumption of ecological space. However, this also raises an equity issue as this approach calculates ecological deficits (or surpluses) on the basis of the natural endowment of countries. Yet, it seems unfair to expect people in smaller and more densely populated countries to accept a lower level of sustainable consumption than people in big and sparsely populated countries, even if people in the latter have a higher *per capita* ecological footprint. A more appropriate assessment of environmental space overuse, at least in terms of resources, would be to base it on actual resource or material flows between countries, and on an assessment of the amount of ‘embodied’ pollution that is exported or imported with those (Adriaanse et al. 1997, Muradian, O’Connor and

Martinez-Alier 2001). However, such assessments are still in their early days and arguably too complicated to serve as a basis for policy (taxation) purposes.

Another shortcoming of the suggestions discussed above is that they are based on national averages of resource consumption and ignore inequalities in this respect *within* countries. Given that the inequality of resource use between individuals or households differs significantly in both rich and poor countries, application of the equity principle requires a differentiation of responsibilities with regard to limiting resource consumption. This is also important in the context of international aid, as one wants to avoid that aid does not benefit those with wealth and incomes higher than that of the people who contribute it; in other words, redistribution needs to be globally progressive (Milanovic 2006, 27).

Given these complexities and issues, using income as a basis for calculating the extent to which individuals, as well as countries, are liable to contribute to a reduction of resource consumption or eligible for financial support to increase their consumption, has considerable advantages. As resource consumption is roughly correlated with the level of personal income and wealth (World Resources Institute 1994, 16), it would be much easier, and fairer, to impose an environmental space overuse tax on individual income and wealth. Global income policy, using a variety of instruments, is a logical and potentially powerful means for influencing both the overall level of resource consumption and reducing inequity.

Limiting incomes of those who exceed their ‘fair share’ of resource consumption could take the form of the adoption of an international convention on progressive taxation (potentially as a lead up to the harmonisation of income tax regimes), with at least part (if not all) of the tax revenue generated from incomes above a certain level accruing to a global fund managed by a new international agency. A convention could also reconfirm the right to a global minimum income as well as adopt a maximum income level, to limit the ratio between the highest and lowest incomes referred to above. Globally collected tax revenues could be used to support those without or on lower incomes (possibly in the form of cash grants), bypassing national governments (Milanovic 2006, 29), but could also take the form of subsidies to low income groups for getting access to sustainable housing, water and sanitary facilities, and vouchers for energy efficient lighting, heating and transport goods and services, thus contributing to sustainable development.

Such policies could be accompanied by measures that, although not part of a personal income tax policy, do or may affect the purchasing power of individuals and groups, such as a global tax on luxury goods, which would affect mostly those on high incomes (Atkinson 2006, 331, Blejer 2007). Very high taxes could be imposed on goods and services that are both a luxury and have a high ecological footprint (like private jets, gold and diamonds). Cars are another candidate for global taxation (varying in relation to emissions, size, weight or other variables), affecting a much larger group of global consumers. A global tax on TNCs, especially those that are responsible for the greater amounts of ‘throughput’ (and who presently are able to escape paying significant taxes) is another option. However, such indirect income policies may be less effective than policies that directly limit or enlarge personal, individual incomes. They may have very little if any effect on the resource consumption of those on very high incomes (Capgemini/Merrill Lynch 2008, 21-23), and TNCs may simply pass on, through price increases,

any taxes to consumers including those on low incomes, thus aggravating rather than reducing inequality, like indirect taxes.

The introduction of a global income tax on the highest individual incomes does not necessarily bring about a much less inequitable income distribution between countries. Differences in income levels between countries (also when weighted by population) account for some 70 per cent of global inequality (Milanovic 2006, 16). To address this discrepancy, and to reduce resource consumption between countries in an equitable way, an average global level of income could be determined that is based on an estimate of what is a globally sustainable standard of living. This means that if all people were to attain this income, the total demand for goods and services generated would not exceed the amount of resource consumption that is considered sustainable. Applying a strong equity principle, this also implies that, to achieve a globally sustainable level of income, average incomes in all countries need to converge, within a set timeframe, towards the globally sustainable average.⁵ Ultimately, every country would be expected to bring its national income within its fair share determined by the average globally sustainable income level multiplied by a country's population. 'Surplus' income could be gradually creamed off and deposited in the global fund suggested above, whilst countries below this level could be granted 'drawing rights' to assist the funding of sustainable development projects, especially those of a collective good nature.

One way of determining the globally sustainable level of income may be to link income to the ecological footprint of countries and the world as a whole, referred to above. It has been calculated that the world as a whole is already consuming more resources than is sustainable. To bring total resource consumption to within sustainable levels, as a rule of thumb, total global income (based on PPP), might need to be reduced by at least 20 per cent (Global Footprint Network 2008).⁶ Assuming that world population will grow to 9 billion around 2050, total global income needs to be divided by 9 billion to arrive at the average globally sustainable income, which can then be used to calculate a country's 'fair share'.⁷ Admittedly, this is a very rudimentary methodology for determining a globally sustainable level of income, but it can be a starting point. Assessing the ecological effectiveness of a variety and combination of income policy measures requires further research.

Bringing the income levels of, and within, rich countries to within sustainable levels does not imply a reduction of the quality of life or degree of happiness in those countries. It has been shown that the level of happiness in high income countries has not increased since the 1970s, even though income levels have grown considerably since that time (Homer-Dixon 2006, 192-

⁵ This can be seen as a variation on the 'Contraction and Convergence' model which has been proposed for reducing climate change emissions (Meyer 2000), and which Sachs and Santarius (Sachs and Santarius 2007, 152) apply to resource consumption in general (the "consumption of nature").

⁶ This is just a tentative figure used for illustrative purposes. The reduction required depends in large measure on the extent to which a reduction in income brings about a reduction of resource consumption (mostly embedded in products and services), especially of those resources whose exploitation and use is responsible for significant environmental damage and resource depletion.

⁷ It should be noted that here it is assumed that all people (of all ages) have an equal share of global income, reflecting the principle that all people have an equal right to (the use of) the world's resources. As noted above, this does not imply, in practice, complete equality of income. Income distribution within a country, under this arrangement, may still vary depending on collectively determined criteria.

193, Sachs and Santarius 2007, 157). Beyond a certain level, the relationship between income level and quality of life is tenuous, and further economic growth is actually socially (as well as environmentally) damaging (Hamilton 2003). The level of income inequality in countries appears to be inversely related to the health of the population (Kawachi and Kennedy 2006). By contrast, it seems plausible, also on narrow economic grounds, that the marginal level of satisfaction (or ‘utility’) derived from income growth enjoyed by people on low incomes is higher than that of people on higher incomes. Moving towards a more egalitarian global income distribution, therefore, can be expected to increase rather than decrease the overall quality of life and satisfaction in the world, even apart from the sustainability argument.

Setting limits to total global income also does not rule out the possibility of economic growth or the growth of income. It is very likely that imposing limits will only stimulate the development and adoption of more resource efficient forms production and consumption, which effectively amounts to an increase in total available environmental space. It will probably also bring about an increase in demand for less resource intensive products and services, creating opportunities for growth and expansion, be it at the expense of less resource efficient industries. No doubt, the adoption of income limits and a global income policy creates winners and losers. The argument defended here is that such a policy will create many more winners than losers, and not only in low income countries. Ultimately, everyone will be a loser if global levels of resource consumption will be allowed to continue to rise and exceed to earth’s capacity.

With regard to efficiency, the adoption of a global income policy as a means of reducing resource consumption and throughput has considerable advantages above the two other options discussed above. Both other approaches imply much higher information and transaction costs related to the need to determine and set limits on a resource-by-resource basis. Although the environmental space approach is meant to provide specific policy guidance, calculating global environmental space for each resource (or category of resources) and all countries is a huge task; determining ‘fair shares’ is even more complex if resource flows embedded in the import and export of resources (including those embedded in consumer products) is to be taken into account (Zuindeau 2007). Moreover, concluding international and global agreements on resource consumption for all resources, and their integration into a comprehensive global green plan, involves enormous transaction costs, and is likely to generate and require a large bureaucracy. By contrast, the adoption of a global income policy is a crude but elegant, and economically efficient, solution.

Of course, the greatest stumbling block facing the adoption of a global income policy is political. In the last two decades, many governments have pursued policies that increased income inequality, for instance, by reducing the progressive nature of income taxes and by adopting or increasing indirect taxes (such as the value added tax), which weigh more heavily on lower incomes than on high incomes. This shift has been deliberate, justified on neo-liberal ideological grounds, promoting ‘competition’ and the interests of well-placed individuals and businesses. The need to remain or become more ‘competitive’ with other countries, in the context of economic globalisation, has been a main part of the argument. The argument is contestable, as competitiveness is not only determined by relative wage levels. Low income inequality is no impediment to being highly competitive, as demonstrated by countries like Sweden, Denmark, Finland, Germany and Japan, which are some of the most equal (or least unequal) in the world

(CIA 2008, United Nations 2008) but which also rank among the top-ten most competitive countries (World Economic Forum 2008). Some research suggest that there is a positive relationship between a more egalitarian income distribution and economic growth (Alfranca and Galindo 2006). But inasmuch as globalisation has been used at the national level as an excuse for not pursuing more egalitarian income policies, it reinforces the case for adopting an income policy at the global level, creating a more 'level playing field' as well as creating the conditions for reducing income inequality within countries.

The institutionalisation and implementation of a global income policy would imply a departure from the paternalistic and failed policies of international aid, poverty relief, and charity. It would confirm that a decent income is a human right, not a privilege to be granted by the rich. Despite the repeated formal commitments of rich countries to increase funding for 'development assistance', the achievement of the Millennium Development Goals, and towards debt reduction or cancellation, actually forthcoming financial support has been woefully inadequate, and many low income countries remain trapped in a position of systemic economic dependency. A global income policy would institutionalise the provision of a decent (or minimum) level of income as a collective *obligation* rooted in basic human rights, to be implemented on the part or responsible authorities, not at the mercy of well-meaning individuals and charities, as in pre-social welfare societies in the west and still in much of the present world.

No doubt, the opposition against the adoption of a global income policy is formidable. However, with the progression of globalisation, the economic, social and political basis for its introduction has been laid and is steadily being strengthened. As the social welfare states in the west, its introduction is likely to come about by a combination of growing social instability, effective advocates, social mobilisation, and the recognition of enlightened self-interest on the part of the rich and powerful.

Conclusion

This paper has argued that the notion of environmental space has much to offer as a basis for advancing sustainability at the global level. Based on two main principles, recognition of environmental limits and equity, it offers a comprehensive and integrated framework for assessing the amount of resource consumption, in all main categories, that is ecologically sustainable, and for determining the extent to which countries consume more or less than their 'fair share' of resources. However, to overcome the 'free rider' problem, the environmental space approach needs to be adopted at the global level.

Three options of institutionalising environmental space at the global level were discussed and assessed on their relative strengths and limitations, in particular with regard to their ecological effectiveness, their equity implications, feasibility (practical and political) and efficiency.

The commercialisation of environmental space, in the form of existing or newly created private property rights or tradable entitlements, scores well on the political feasibility criterion, as businesses, and increasingly also governments, prefer to use market mechanisms to deal with scarce resources, based largely on the claimed efficiency of this approach. However, although tradable entitlement schemes potentially can operate within defined limits, the ecological effectiveness of such schemes has proved to be very modest, also because the approach seems

applicable only to a fairly limited range of resources or environmental issues (mainly ‘common pool’ resources). Full privatisation of natural resources has proven to be even less ecologically effective, and arguably is a major source of environmental neglect. Moreover, tradable entitlement schemes raise considerable equity issues, as entitlements tend to become concentrated in ever fewer hands. Although practically as well as politically feasible, and offering scope for tackling some important environmental problems like climate change in an equitable manner (if entitlements are distributed on a *per capita* basis and allocated to all people rather than polluters or businesses), this approach is not capable, on its own, of achieving global sustainability.

Global green planning potentially provides a more comprehensive and integrated approach to the allocation and management of environmental space. Assuming its goals, objectives and targets are reliable approximations of environmental limits, and that these are effectively implemented and achieved, it should be ecologically effective. If based on the two core principles of environmental space, it can also take account of equity concerns, especially between nations, by calculating and assigning each country’s ‘fair share’ of resources. *Agenda 21* and the MDG can be seen as incipient but weak and not very effective forms of global green planning. Weak political commitment to, and support for, green planning at all levels of governance compromises its political feasibility, making it unlikely that it will be strengthened significantly. Doing so would also pose considerable co-ordination challenges and engender high transaction costs. For all these reasons, global green planning is likely to remain ineffective for as long as global political institutions, and in particular global institutional capacity for green planning, also stay weak.

A global income policy may seem an even less likely option for institutionalising environmental space at the global level, given the dominant political-economic paradigm. Yet, at a very general level, it already exists, embedded in international law, reflecting global recognition of the values and rights that are associated with it. Arguably, the enormous and growing inequality of income and wealth, reflecting the discrepancies in power and privilege entrenched in the dominant political-economic systems, constitutes the most important source of global conflict and instability, undermining all efforts towards environmental protection. As income is the most important determinant of resource consumption, and thus environmental pressure, a global income policy can be ecologically effective (be it that further study of the relative effectiveness of the various forms is required), adding an environmental rationale to the ethical and political rationales for the adoption and strengthening of such a policy. Given the political will, there are also no major practical impediments to its adoption, as governments have a long experience with the implementation of a broad range and variety of income policies. Compared to the other two options discussed in this paper, a global income policy arguably would be the most efficient option, involving the lowest transaction costs. The biggest challenge it obviously faces is opposition from those who stand to lose from such a policy. However, as many more people, and ultimately everyone, will gain from it, not in the least in the way of ensuring the long-term sustainability of human life on earth, its potential political support basis should not be underestimated. Most needed are political leaders with the courage and ability to mobilise that support.

However, as the strength of short-term, narrow, self-interested behaviour, and the power of vested interests and existing political-economic structures, cannot be circumvented, let alone

ignored, it is likely that the institutionalisation of environmental space at the global level will require a combination of approaches that appeal to the different rationales on which much policy development is based. The commercialisation of environmental space, as discussed, appeals in particular to vested and powerful economic interests. Green planning reflects a rational-comprehensive approach to policy development that connects naturally with administrative rationality, and thus finds its support basis mostly within bureaucratic circles. A global income policy holds most appeal and promise to those who advocate global and environmental justice, rooted in ethical and ecological rationalities, and who form a global constituency of significant and growing importance. Institutionalising environmental space at the global level is likely to come about only by accommodation and compromise between these three constituencies, through the messy process of global politics.

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