

IMPLEMENTATION CHALLENGES IN PROTECTING THE GLOBAL ENVIRONMENTAL COMMONS: THE CASE OF CLIMATE CHANGE POLICIES IN BRAZIL

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SUMMARY

The effective control of climate change rests, to a great extent, on governance mechanisms to protect the global commons as a type of common pool resource on a global scale. This calls for action beyond the boundaries of the state and of local interests. Collective solutions at the global level are needed as a means of sharing in the promises that globalisation holds. Moreover, global policies need to rest on the harmonisation of local and national interests in order to be effectively implemented. The attendant implementation challenges are addressed in this article with reference to Brazil's experience, against the backdrop of considerations also applicable to other developing countries. Copyright © 2008 John Wiley & Sons, Ltd.

KEY WORDS — Global commons; international public goods; national government goods; vertical global programmes; Kyoto Protocol; Clean Development Mechanism; Brazil; Latin America; climate change; implementation

INTRODUCTION

We are experiencing today, at the global level, the 'tragedy of the commons' phenomenon which Hardin (1968) identified at the local level. In the 21st century, nation states are behaving in ways similar to Hardin's herdsmen when they over used and/or abused pastures on which their livelihood depended. Predatory practices for short-term gains to individual national or local interests, if unchecked, may entail long-term losses to the global community, including those that use the resources for short-term gain. The two solutions proposed by Hardin—the privatisation of the pastures or a coercive state—are not available in the case of the global commons, particularly in the case of climate change, as the atmosphere is not divisible and there is no global state (yet) with coercive power. Therefore, we must look for other forms of governing the use of the global commons (Ostrom, 1990).

Globalisation is both part of the problem and the solution to the management of global commons given its externalities involving the increasing flow of capital, goods, information and people across national boundaries. Globalisation requires effective global governance mechanisms to balance short-term national and individual gains with long-term global sustainability through a process which raises global awareness and increases the transfer of technology to solve problems. The clean development mechanism (CDM) of the Kyoto Protocol is one example of the opportunities globalisation offers to create global governance tools for managing the global commons.

Matching collective needs and interests in a globalised world demands the provision of a range of international public goods (IPGs): goods that transcend national boundaries and require mechanisms for global governance (World Bank, 2007). The response of the international community to these cross-border imperatives is reflected in

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the current trend towards vertical global programmes (VGPs)¹, which provide support for global benefits that transcend the interests of individual countries by complementing the traditional focus on country-by-country international assistance². However, while intended to provide IPGs to sustain the global commons, some VGPs present a particular challenge in that, in their pursuit of global interests, they may clash with the provision of national public goods (NPGs)³, thus creating critical alignment problems between the collective policies driving global initiatives and the policy premises and implementation mechanisms of national and local institutions. The congruence of interests, priorities, stakeholders and time horizons of the global community with those of the host country in which VGPs are being implemented cannot be assumed to obtain in many cases, and usually translates into misalignments.

This article analyses these misalignments as obstacles, at national and local levels, to the implementation of global policies to curb climate change. It is supported with illustrations based on the case of Brazil, which has received a fair amount of resource support from VGPs for problems related to climate change, causing considerable misalignments and setbacks in policy implementation.

GLOBAL COMMON POOL RESOURCES AND DEVELOPMENT POLICY

A global commons constitutes a natural endowment of global value, which may span the entire planet (such as climate stability), or be located within national jurisdictions but with spillover properties with global externalities, positive or negative (such as fisheries, aquifers and forests). In public goods theory, global commons constitute a common pool resource rather than a pure public good, which is the product of collective human action and not the case of a natural endowment (Ostrom, 1990). A global commons represents a finite stock of a natural resource, while a pure public good represents a continuous flow of services. While some common pool goods are non-excludable and non-rivalrous as public goods are, these characteristics are often not applicable to them. For example, the use or abuse of common pool resources such as pastures, fisheries and underground water reduces their use by others and/or their quality for others, which would render them both excludable and rivalrous.⁴ Greenhouse emissions as a result of abusing a global commons are unique as they cause adverse climate change that affects all on a global scale. The global value of these commons is rooted in properties such as being tied to long-term global human survival or to the sustained livelihood of segments of the planet's population that cut across national boundaries.

Global commons often provide the natural resource foundation from which local businesses and populations derive their livelihood. In the case of forests, for example, they constitute a natural source of raw materials for companies operating in agro-industries, cattle-raising, logging and assorted harvesting which drive them to practices which may be inconsistent with the sustainability of these commons. In the case of developing countries, with aggressive growth policies pursued through the generation of national government goods, the short-term interests of these stakeholders usually take priority over those of the wider global community, as they have a stronger voice in local and national politics. While immediate stakeholders may favour the protection of a resource against clear adverse effects of local scope, the global interests generally converge more widely on the preservation of water and air quality, biodiversity and protection against climate change and solar radiation.

Developing countries face the multiple challenges of having to improve their NPGs, as their provision depends directly on government action and are needed in the short term for political and economic reasons such as sustaining economic activity and generating political dividends. These countries tend to be less concerned about

¹As defined by the Paris High Level Forum on Aid Effectiveness of March, 2000 (OECD-DAC, UNDP, AfDB, AsDB, EBRD, World Bank and IDB) and in the *Strategic Framework for the World Bank's Global Programs and Partnerships*. In this article, national endowments such as the ozone layer are treated as a global commons, not a public good such as a VGP.

²The World Bank estimates that direct contributions to VGPs represent 3% official development assistance (ODA) (IDA/WB, 2007). In addition, it is estimated that one third of ODA at the country level is being channelled through VGPs (Kaul and Conceição, 2006).

³A national policy is a type of public good known as a 'national government good'.

⁴Rivalry (or subtractability) implies the degree to which one person's use of a resource diminishes the availability for use by others. Excludability is the property of excluding potential users from consuming a good (Olson, 2000).

complying with international conventions to protect the global commons which may lie within their borders, as the provision of IPGs does not depend directly on one government and do not deliver economic or political results in the short term. Moreover, civil society is frequently not sufficiently organised and resourceful to press politically for compliance with international agreements.

International organisations try to persuade developing countries to promote the sustainability of the global commons, as they play an important role in the monitoring of international agreements. Compliance with these agreements may also be supported by VGPs—that is, if qualifying countries solicit such assistance, which is not always the case. Short and long term development priorities and the general welfare of citizens in developing countries call for a combination of NPGs and IPGs.⁵

Reforms in international organisations and the target countries could facilitate the integration of VGPs and NPGs and, in doing so, strengthen global governance structures to prepare the world for global challenges such as the protection of the global commons, without curbing the local needs of the people whose livelihood depends on these commons. Despite the clear comparative advantage of international organisations to lead, manage and oversee VGPs, their role and performance are not without weaknesses.⁶ While they are suitable conduits for openness and for the funding and technical assistance of such programmes, they need to speed up the reforms in their own governance structures in order to be more efficient, democratic, transparent and responsive to global needs.

The provision of NPGs and IPGs can be in conflict with each other. The first type of conflict is that between the NPGs of two countries. An example of this is the US policy, proposed by trade and environmental protection authorities, to place tariff barriers on imports of shrimp from Brazil and other countries which were harvested in a way that unintentionally put at risk an endangered type of sea turtle. The protection of this species was enforced by virtue of the US policy and in response to a vocal and resourceful interest group that Brazilian authorities had to heed. The protection was in the name of the preservation of animal biodiversity as a form of global commons, but clearly not in the short-term interest of Brazilian ‘shrimpers’. In this case, national institutions and policies were in place to protect the interest of the shrimp exporters, but were overridden by specifications contained in US policy and also global interests in the preservation of biodiversity.

A second type of conflict is between a NPG and an IPG. An example is the case of policies and programmes to protect tropical forests, as discussed below.⁷

A third type of conflict is when the policies for different IPGs oppose each other. For example, the Montreal Protocol led to the emergence of hydrofluorocarbons (HFCs) as substitutes for chlorofluorocarbons (CFCs), which were regarded as the main villains in the destruction of the ozone layer. But HFCs have since proven to be heavy polluters in terms of global warming.⁸

NPGs are usually the target of most state reforms focused on policy and institutions, as they respond to the needs of national constituencies and bear on development efforts. To the extent that IPGs interfere or complement NPGs they are also targeted by the state and policy reformers. However, the issues of national policies, institutions and their alignment with those of VGPs delivering IPGs to sustain the global commons are still not high priority on state reform agendas. For this reason, international networks, NGOs and multilateral development agencies such as those that gathered around the Paris High Level Forum on Aid Effectiveness⁹ are proactive in bringing about these types of reforms, as a clear case of international collective action to protect the global commons. The rationale for the

⁵In September 2000, the Development Committee of the World Bank endorsed five critical IPGs which are intended to preserve the environment, control communicable diseases, strengthen the international financial architecture, enhance developing countries' participation in the global trading system and create and share knowledge for development.

⁶For example, the independent evaluation in 2004 by the World Bank's Operations Evaluation Department of 26 global programmes. The evaluation highlights their impact on reducing poverty and on assisting developing countries in dealing with sustainable economic growth. It indicates several of their weaknesses, along with their strengths (World Bank, 2004).

⁷This conflict provides an illustration of what Reinecke calls 'internal and external sovereignty', reflecting Weber's assertion that internal sovereignty is the capacity of a state to formulate and execute public policy Maggi and Dirk Messner, 2002.

⁸For example, the same quantity of one type of HFC—HFC-23—can generate 12,000 times more greenhouse effect than carbon dioxide.

⁹Sponsors of this forum were: OECD, UNDP, AFDB, ASDB, EBRD, IDB and World Bank.

VGPs is that, left exclusively to national policy, the degradation and demise of the global commons would be certain and commensurate with the speed and rate of developmental growth around the world.

The principles that apply to local commons tied to local economic activity do not necessarily apply to the global commons. Scales, scope of stakeholders, organisation, political influence and power, costs and benefits, time horizons and externalities are usually different. There are isolated instances where local communities have indeed engaged in clean development, based on a tradition of protecting and preserving local commons, without much external support. This is the case of some indigenous communities in the Brazilian Amazon and elsewhere, which preserve forest biodiversity on the grounds of ancestral practices. Communities can also build and successfully manage water commons such as through irrigation systems in Nepal (Ostrom *et al.*, 1999; Lam, 1996).

The merit of VGPs rests on the IPGs which they deliver. As VGPs are usually tied to international conventions and protocols, they perform the critical functions of assisting and funding compliance by signatory countries. Their functions also include translating the principles contained in conventions into operational rules, standards and criteria and performance monitoring by beneficiaries. Because the effort of sustaining the global commons involves projects of high technical and scientific content, these IPGs can contribute to the development and dissemination of scientific knowledge and technology to carry out projects for the prevention and correction of practices that compromise the commons. The metrics and measurement of deterioration or mitigation rates are important features of the IPGs provided by VGPs. Moreover, the pull effect of VGPs is considerable in terms not only of an increased awareness of the risks of the global commons, but also of the emergence of institutional arrangements and capacity to implement projects at the local level.

BRAZIL'S EXPERIENCE

Participation in VGPs

In regard to VGPs, Brazil has made only modest strides to reconcile its development quest and compliance with most international protocols protecting the global commons. In effect, although exact figures are not available, it appears that Brazil spends only some 5–25% of its own resources and relies substantially on the financial assistance from VGPs to carry out its own projects to protect the global commons (Diewald and Pinto, 2006). The most conclusive evidence of this modest performance concerns greenhouse gas emissions (GGEs) which are tied to economic activity in the Amazon rain forest, where the pressures from local stakeholders and large agro-industry and cattle ranchers bear down on government with considerable success.¹⁰ This has led to the government's inability to bring deforestation under control, despite the fact that deterioration of the Amazon biome translates into a loss of environmental services that have local and national negative externalities in the form of the degradation of soils, water quality and supply, floods, quality of air, and local climate destabilisation. Paradoxically, in Brazil there still is less public outcry and concerted opposition to the loss of these environmental services to national resources than to the negative externalities on a global level.

Brazil participates in all VGPs linked to conventions which it has signed. The motivation to do so is not only its intention to comply with its respective obligations, but also the incentive provided by the funding it gets from them. Brazil is one of the largest clients of the Global Environment Facility (GEF)¹¹, a financial mechanism to channel funds for the implementation of the UNFCCC, the Convention on Biological Diversity (CBD) and the United Nations Convention to Combat Desertification (UNCCD)¹². Access to GEF funding is through so called intermediary agencies such as the World Bank, the United Nations Development Program (UNDP) and the International Fund for Agricultural Development (IFAD). The problematic rules of engagement among these agencies and the GEF have contributed to faltering collaboration and even competition among them.

¹⁰The institutional alienation of the Ministry of the Environment (MMA) from policy making on matters that concern it came to a climax on 13 May 2008 when Minister Marina da Silva resigned over issues related to the side-lining of the MMA in the government's "Plan for the Acceleration of Development" and its potential social and environmental impacts on the Amazon.

¹¹The US\$338.5 million that Brazil receives from the GEF is the largest source of funding for its VGPs.

¹²The Montreal Protocol on the Protection of the Ozone has its own funding mechanism: the Montreal Protocol Fund (MPF).

Regarding the United Nations Framework Convention on Climate Change (UNFCCC), Brazil has been at odds with certain provisions of the Kyoto Protocol. Brazil's contention mostly concerns limits on GGEs for developing countries and carbon projects for native forest conservation under the CDM, despite being one of the leaders in the promotion and application of this mechanism. Brazil is responsible for some 3% of the world's GGEs, mostly from forest burning and clearing. GGEs by the burning of the Amazon forest account for around 80% of Brazil's share of GGEs.¹³ There is clearly tension and outright conflict between the interests of segments of Brazilian society and the national as well as international environment protection advocates. VGPs regarding the environment are caught in this tension as the issues surrounding the environment are far more controversial than those of the Global HIV/AIDS and Tuberculosis and Malaria (GFATM) VGPs. With regard to these VGPs, there is a far greater level of consensus around the goals and modus operandi (Shakow, 2006).

The conflicts between the provision of VPGs and NPGs are illustrated in the case of climate change policies and institutions in Brazil. The country has been active in international negotiations on climate change and in the implementation of projects under the CDM.¹⁴ It was one of the first countries to establish a designated national authority (DNA), and had the first two projects registered with the UNFCCC. However, there are obstacles to the effective implementation of climate change-related VGPs in Brazil, as well as conflicts between those VGPs and the provision of NPGs. Four of these conflicts are addressed below.

Conflicts over the purpose of VGPs

As a member of the GEF council, Brazil has had reservations with regard to its governance, mostly due to a perception that GEF's autonomy fails to yield to the circumstances and policies of its member countries. This dispute is in part due to Brazil's perception of the GEF as the lead enforcer of the Kyoto Protocol provision requiring developing countries to follow climate change requirements as opposed to staying within the mitigation limits applied to Non-Annex 1 countries which have no target commitment. The World Bank as the GEF's lead executing arm is the subject of the same criticism.

Regarding the Kyoto Protocol, Brazil advocates against the limitation or reduction of current levels of GGE (mitigation) for developing countries, and argues that the onus of such reduction should rest on the developed countries—those in Annex I of the Protocol/UNFCCC. It also does not support carbon credits under the CDM for native forest conservation in fear of the immobilisation of the forest resources.

The problematic commitment of Brazil to the Kyoto Protocol is no match to the national pressures for rapid economic development, which would require a substantial increase in the use of energy and probably an increase in the GGEs. This explains in part the low priority of climate change related activities in Brazil's national budget, despite its capture of substantial funds through the GEF and its being a large player in the carbon credit CDM programme, after China and India.

Desertification of semi-arid areas of the Northeast of Brazil has a much greater short-term impact in terms of the degradation of soil and water sources than the local externalities of deforestation: so, in principle it should favour the VGP tied to the UN Convention to Combat Desertification (UNCCD) over any VGP tied to the funding of GEFs, CDM or IBRD Carbon funds. But this is not the case, as UNCCD projects have been under-funded by VGPs. Brazil has worked to bring about the UNCCD and has taken the lead in getting it implemented, relying mostly on its own funding¹⁵.

Tropical forests (Amazon and Mata Atlântica) as a natural endowment have global value due to their biodiversity and impact on global climate. However, forest protection for medium and long-term global interests may go against the short-term interests of forest dwellers, businesses and national authorities and politicians. Timber extraction and alternative uses of land are critical for this economic frontier of Brazil. National energy policy requires the flooding of large areas for the construction of hydropower plants, as in the recent case of the dam to be built in the Madeira River in the Amazon, despite national and international protests. The government claims that national development is a priority, and the national policy of generating cheap hydropower energy is utterly

¹³The remaining comes from the burning of non-renewable fossil fuels (Diewald and Pinto, 2006).

¹⁴It is now third in the number of CDM projects, behind China and India; but it was first until 2006.

¹⁵GEF funding currently supports only one WB-executed project for US\$7 million to combat desertification in Brazil.

necessary. These views are further inflamed by powerful nationalistic sentiments of some stakeholders regarding sovereign rights to use Brazilian forest resources, particularly in the Amazon, as reflected in the commonly uttered expression 'a Amazonia é nossa'¹⁶.

The issue of the inclusion of the Amazon forest in negotiations between Brazil and the international community concerned with climate change provides an illustration of contrasting views on IPGs and NPGs. These contrasting views are held, on the one hand, by those who argue the need to remove the forest conservation from any international negotiations regarding its role in global warming. This group, moved by nationalistic and sovereignty motives, comprises officials of such agencies as the Ministries of External Affairs, Science and Technology, and Mines and Energy, along with certain segments of the military who feel that the forest dilemma should be dealt with entirely through NPGs. They want to bring to the table only afforestation and forestation projects. On the other hand, the opposing group, mostly represented by officials from the Ministry of the Environment (MMA) and by NGOs (both local and international) is prepared to negotiate around the deforestation and conservation of native forests as their inclusion may provide access to significant resources for forest conservation from IPGs that are tied to VGPs targeting the CDM. This position is intended to reconcile environmental protection with sustainable development, with the aim of reconciling IPGs and NPGs. The different opinions between these two groups were evident just before the Bali meeting in 2007, as well as before the sixth Conference of the Parties (COPs-6) of the Convention on Climate Change in The Hague in 2000.

Protection of the biodiversity contained in the Amazon rain forest presents a different dilemma than that of climate change, as the positive externalities of this endowment play out differently on a global scale. Destruction of this biome deprives researchers and pharmaceutical enterprises (both national and international) of its biological resource base and its conversion into drugs that can be brought to market with substantial benefit to all humanity, albeit at considerable profit to the risk-taking pharmaceutical corporations. Extinction of endangered animal species is also of concern to environmental groups such as the WWF, among others, who are dedicated to the preservation of species endemic to the rain forest. The predominance of global versus national interests in regard to the preservation of biodiversity may explain why Brazil derives some 70–80% of its expenditures in biodiversity protection projects from VGPs tied to the Convention on Biological Diversity, despite being at odds with some of its provisions.

Problems of capacity and coordination at the national and local levels

The GEF's interface with Brazilian authorities is through the Ministry of Foreign Relations (MRE), which is the diplomatic and political entry point for any VGPs. The technical focal point is the Secretariat for International Affairs (SEAIN) of the Ministry of Planning, which in effect has no technical expertise in environmental matters and has a reactive rather than proactive coordination role. SEAIN serves as the secretariat to the Work Group on Project Assessment (GTAP) consisting of representatives of the MRE, the Ministry of Science and Technology (MCT) and the Ministry of Planning which reviews projects submitted by government agencies as well as by offering VGPs. The MMA was conspicuously absent from the GTAP until 2007 (Diewald and Pinto, 2006). This lack of institutional and technical capacity of the technical focal point may be a consequence of the squeamish relations of Brazil with the GEF. The MMA also plays a secondary role in the climate negotiations, as the MCT is the main technical supporting body in these negotiations.

The institutional interface of the Montreal Protocol over ozone depleting substances and its funding mechanism (the MPF), in turn, is quite different. The policy making and host entity for the MPF was the Directorate for Environmental Quality and Human Settlements in the MMA, with the Brazilian Environmental Agency (IBAMA)¹⁷ being responsible for carrying out the monitoring and on site enforcement of the rules and standards of the Montreal Protocol. The carbon credits programme under the CDM is managed mostly within the private sector under the guidance and oversight of the National Commission on Climate Change and the Ministry of Science and Technology.

¹⁶Meaning: 'the Amazon is ours'.

¹⁷The IBAMA is an executive agency of the MMA with police powers.

The federal nature of the Brazilian state further aggravates the implementation of the Kyoto Protocol and other environment-related international programmes. The Brazilian Constitution, in articles 21, 22, 23, 24, 25, 29 and 30, distributes responsibilities among the units of the federation: the federal government, states and municipalities. The principle driving this distribution is that of the 'predominance of interest'. This supports cooperative federalism, allowing the co-existence of responsibilities of the federal government, common administrative responsibilities, and concurrent legislation for the implementation of activities of general interest. In the case of concurrent legislation, the federal government establishes general norms and the states customise them through complementary legislation on the basis of regional circumstances. Municipalities may legislate on matters of local interest, when necessary. In contrast to environmental legislation in general, on matters pertaining to the use and management of forests, the constitutional bias is towards centralisation. Only the federal government can legislate on forests, and the states may only issue legislation to cover gaps in federal laws. For these constitutional reasons, the states have a rather passive legislative role when it comes to forestry matters. The only exception to this has been the case of the states of Minas Gerais, São Paulo and Paraná, which fall outside the jurisdiction of the Amazon forest. These limitations have had a major impact on the attempts to decentralise to the state level the implementation of forestry programmes.

The alignment problems inherent in these arrangements are further accentuated by the multiplicity of donors and the very complex funding systems of some VGPs, which allow donors to dictate where and how their contributions are spent and through which executing agency. On the ownership by Brazil of certain VGPs, there was no overt policy or institutional focal point systematically supporting the VPGs, despite the commitment to the convention that engenders them. The ownership that exists is fragmented and agency-specific, and taken as a whole has not amounted to any trend towards concerted national ownership of the global commons cause. This applies especially to implementation efforts at the sub-national level. It is not surprising that with 27 states and over 5500 municipalities, in addition to the constitutional constraints identified above, the implementation of VGPs has not trickled down.

Another hindrance to the implementation of CDM projects in Brazil are the excessive bureaucratic procedures and time required for approval by the DNA. There are also general transaction costs involved in any CDM project worldwide, including the preparation of the project design documents, validation, monitoring, registration and so on.¹⁸ Managers of CDM projects complain that the DNA repeats many procedures required by the UNFCCC to register a project. Moreover, the DNA in general lacks organisational capacity and relies on the ad hoc voluntary work of ministry staff over and above their normal duties.

Conflicts regarding carbon projects at the local level

The UNFCCC, the Kyoto Protocol and the CDM are the results of long negotiations and a general consensus about the need to reduce GGEs. The CDM rapidly engaged governments and companies in its implementation in developed and developing countries, as CDM projects are viewed as a win-win situation—'doing good by making good'. The CDM also provides a form of generation and exchange of scientific and technological knowledge, along with funding, advice, advocacy and mobilisation among countries and all sectors of society: UN, governments, companies, communities and NGOs.

Notwithstanding these positive features of the CDM, some conflicts between companies and communities have appeared in the implementation of CDM projects in Brazil, including conflicts about projects that involve large forest plantations and about the location of projects such as landfills. There is a strong misalignment between global, national and corporate interests, as well as with the interests of other stakeholders, including NGOs and communities. The latter stakeholders claim that such projects do not lead to local sustainable development, which is one of the requirements for the approval of CDM projects at the national and UNFCCC level.

Alignment problems are not only due to stakeholders' economic interests, but also their own views on the local and global externalities of projects. The case of the Plantar Project, financed by the World Bank's Prototype Carbon

¹⁸According to specialists, these costs can be at least €100,000 for a small project.

Fund, illustrates the conflicts (Ventura and Andrade, 2008). The project involves the production of steel from charcoal coke which comes from large eucalyptus plantations in the state of Minas Gerais. It was one of the first to have carbon credits negotiated. However, several civil society organisations protested against the project. They argued that large eucalyptus plantations caused several local and regional social and environmental problems, and that the local communities would barely get any benefit from the project.

Thus, while the CDM may be aligned with the global interest of reducing GGEs and the national interest of economic development (through the money brought to the country with the commercialisation of the carbon credits), some CDM projects can be at odds with local interests and values. This can cause a misalignment in the provision of the different goods involved.

Conflicts regarding biomass and bio-fuel policies

Brazil's bio-fuels development programme is an example of its unique approach to climate control by reducing carbon emissions from the use of fossil fuels, mostly from automotive applications. However, even though Brazilian and other countries' biofuel programmes have positive effects in controlling GGEs, some claim that they may clash with the provision of other IPGs, especially regarding the affordability of some staple food.¹⁹

The country has a long tradition of using sugar cane alcohol for fuelling cars. This began with the oil crises of the 1970s, when the military government decided to reduce Brazil's dependence on foreign oil by investing in the development of alcohol technology and subsidising alcohol production (Puppim de Oliveira, 2002b). In 1989, almost 90% of new cars were fuelled by alcohol, but the sharp drop in oil prices and shortage of alcohol supply in the 1990s made consumers return to oil derivatives to fuel their automotive vehicles.

Oil price increases in recent years, coupled with climate change awareness, has again made alcohol and other biofuels popular, with the federal government adopting policies supporting biodiesel and alcohol production. In 2008, biomass-related energy became the second most important source of energy in Brazil, as its production surpassed hydro-energy. The government has also made tireless efforts to promote biofuels internationally. President Lula has championed biofuels in his international trips and envisions Brazil becoming a leading exporter of biofuels and biofuel technology. Indeed, the country's biofuel policies have attracted the attention of other countries. For example, much of the biofuel policies of the United States have been triggered by the interest in the Brazilian experience.²⁰

Biofuels can contribute to the reduction of GGEs, in addition to representing a very promising new economic frontier in Brazil, with considerable impact on automotive fossil fuel consumption globally. Nevertheless, the biofuels breakthrough has recently generated a heated polemical debate about the expansion of crops that generate biofuels. Moreover, if the situation is not managed properly, it will push the agricultural frontier to encroach further on the Amazon forest which can generate losses in biodiversity and global warming. The aggressive biofuel policies of Brazil, the USA and other countries are seen as creating perverse incentives for crops which produce biofuels, thus inflating the prices of typical staple food such as corn and cassava.

GOVERNANCE AND INSTITUTIONAL OPTIONS

Climate change is arguably the most critical global challenge today as a result of the tangible effects of increases in GGEs (Stern, 2006). Climate change VGP is driven by the compelling crisis of the global commons and the willingness of many governments to comply with their obligations under the assorted international conventions and protocols linked to global environmental protection. International policy considerations and the trend towards greater consistency with certain national policies are also driving forces. In the context of multiple threats to the

¹⁹In an interview with a Brazilian newspaper, Raj Patel argued that the CO₂ emission reductions gained in the use of bio-fuels do not offset the increased emissions from the slash and burn methods that accompany the spread of the agricultural frontiers associated with the Brazilian ethanol programme. The argument is developed in his bestseller book, *Stuffed and Starved: The Hidden Battle for the World Food System* (Patel, 2008).

²⁰President George W. Bush and governor Arnold Schwarzenegger have visited Brazil in recent years allegedly to learn about the Brazilian alcohol programme.

environmental global commons, the challenge for VGPs is to develop rules of engagement and governance congruent with suitable institutional arrangements within host countries. As seen in the case of Brazil, these provisions and arrangements, still tentative, are far from perfect and reflect the novelty of such an institutional challenge. The literature on this topic is scant. It refers mostly to health VGPs and stresses evaluation rather than institutional design and modelling (World Bank, 2006; Kaul and Conceição, 2006).

While the significance of the global environmental condition is appreciated at the higher echelons of Brazil's government and within its technical and scientific communities (especially its numerous research centres and universities), it has not yet been translated into a high priority being given to counterpart funding or to an increased visibility for the climate change challenge. Among the many reasons for this are the sheer size of the country, the turmoil caused by its enormous social gap, and the poverty this gap entails. The funds involved in VGPs benefiting Brazil pale compared to the funds required by the broader government effort to deal with its social challenges.

The oversight and accountability features of VGPs in Brazil are also problematic. Institutional oversight varies, and little is known about their relative performance, as they are not yet a topic of great interest for public management. In general, it has been accepted that, where oversight rests with the technical secretariat of the VGP outside Brazil, attention to harmonisation and alignment is greater. The accountability of VGPs is consistent with the low priority and performance of this key institutional feature within the Brazilian bureaucracy. Moreover, to the extent that accountability hinges on the availability of targets and indicators to measure their achievement, when they are not developed, accountability becomes based on input measurements or guesswork—or is simply not practiced.

The incongruence between the international elements of VGPs and national policies play a decisive role in the outcome of the VGPs. The multiple points of institutional entry and engagement do not necessarily share the same assumptions on the causes and remedies to the risks afflicting the global commons. More importantly, they have differing notions of the international and national interests at stake. These discrepancies trickle down to the operational level of engagement, rendering implementation equally problematic and resistant to any coordination efforts, either horizontally between sectors or vertically among levels of government (Puppim de Oliveira, 2008a, forthcoming). A policy focal point on matters relating to the global commons and how to align them to national policy is still non-existent. As seen in the case of Brazil, a number of key governmental entry points compete to play such a role.

Unlike NPGs, most implementation strategies related to IPGs are not amenable to influence through national citizen voice, especially in countries where there are pressing domestic needs and no strong civil society movements to get the relevant issues onto the public agenda. Yet they have an enormous impact on lives across national boundaries. Ironically, because of the IPGs' international collective character they fall beyond the reach of the citizenry that comprise the participating nations. This democratic gap has been replaced by tumultuous and disruptive voice mechanisms through the conduit of international activist NGOs, which have targeted the leading IFIs and the World Trade Organisation, and are likely to target others. In Brazil, the demonstrations orchestrated by national and international NGOs are the equivalent.

Governance mechanisms to protect the global commons must be linked to the functioning of local institutions (Ostrom *et al.*, 1999). The institutional theory of 'polycentricity' provides conceptual clarity on the relationships among multiple authorities with overlapping jurisdictions at the national level (Andersson and Ostrom, 2008); and the same may be true regarding the overlapping of international, national, regional and local governance structures, which may be in conflict with each other. The theory emphasises multi-level dynamics transcending the romanticised dynamics of the local sphere and the autonomy of local communities to govern their local commons. Local-central government dynamics are important and need to be analysed in service delivery, including services involved in environmental protection (Pinto, 2004). The relations among the different levels of governance may be as important as the technical capacity or resources of the implementing bodies at the global, national and local level. The existence of incentive mechanisms for the participation of non-environmental actors in the implementation of environmental policies is essential for the effectiveness of environmental policies, including global ones (Puppim de Oliveira, 2002a, Puppim de Oliveira, 2008b).

Openness to global exposure is no substitute for self-reliance and determination in dealing with state problems inherent in the local political and administrative culture, amenable primarily to local solutions or reform measures. Among these problems, weak governance and capture by corruption stand out as particularly critical. The influence of IPGs²¹ may be limited in such cases, as they pose essentially a domestic challenge and a test to the local political will to face up to them. In the environmental protection area, the incidence of corrupt practices in the case of Brazil is illustrated by the repeated scandals involving the IBAMA and tied to bribes associated with illegal logging in the Amazon forest.²²

With regard to the institutional approach, the following features of the global commons should be kept in mind:

- the order of magnitude of the causes and consequences of the global commons challenge, and the scaling up of the institutional solutions devised for local commons;
- the cultural and institutional diversity entailed by the multiplicity of national, regional and local jurisdictions involved;
- the interdependence of the global commons and the limitations caused by the compartmentalised approach hitherto adopted;
- the pace of change and the world-wide dissemination that globalised means of communication and information bring to the commons dilemma; and
- the need for global consensus around solutions proposed for the dilemma.

Since the case of Brazil is unique in many respects in relation to climate change, there are limits to which the lessons from its experience can and should be generalised. The determining factors of this experience are, among other things, the nature of the endowment in question, the developmental circumstances of the country, and certainly the political dynamics behind the national development agenda. Also significant is that the various governance arrangements are anything but uniform; they vary with the nature of the IPG being delivered, the point of entry and engagement, and the constituencies and stakeholders concerned. A lack of sensitivity to these features has played an important role in determining the level at which the arrangements have performed.

Bearing in mind the limits to generalisation, several ‘principles’ nevertheless emerge from Brazil’s experience which can guide the search for governance models for VGPs in their interface with host countries. Nine are worth highlighting.

First, given the implications of VGPs for national policy and interests, a political prerequisite for any VGP is that national stakeholders and relevant constituencies participate in key aspects of the policy processes involved. These include: the policy discussions, exchanges and negotiations leading to the engagement of a VGP; the design of the respective institutional architecture and organisational arrangements; the provision of input into the selection of appointees to represent the host government in the VGPs deliberating bodies; and the monitoring and evaluation of the VGPs’ performance as a basis for accountability to both government and other stakeholders.

Second, it is necessary to combine the high level scientific and technological content of VGPs with a measure of social, economic and institutional awareness and sensitivity to the consequences of VGPs for local communities and their interests. This requires that a broad range of expertise be brought to the design and implementation of such programmes.

Third, national implementation arrangements for VGPs should be enhanced both vertically to sub-national levels of government and horizontally to different sector agencies within government. This implementation strategy needs to ensure a tighter fit between the sustainability of the global commons and local/national development goals. It should also place the responsibility for environmental protection and the enforcement of VGPs’ standards with those most responsible for putting the environment at risk.

Fourth, it is important to charge those who benefit from activities that endanger the global commons, while compensating those who incur costs in preventing such endangerment. That is, there is a need for taxes and tax

²¹The exception here is the increasing international collaboration to deter and prosecute money laundering.

²²Notwithstanding these constraints, international organisations have stepped up their assistance programmes to fight corruption at the country level, and have set the absence of corruption as a condition for financial assistance.

credits for productive operations that affect the commons. This would mirror the carbon tax being considered by several countries.

Fifth, an appropriate mix of NPGs and IPGs is required. Institutional arrangements consistent with the mix need to be designed, and with the results, in turn, being factored into the design of state reform strategies.

Sixth, increased attention should be paid to the study of the institutional and managerial implications of VGP. This applies especially to their design and interface with host countries, with particular attention being given to institutional and policy alignments, in addition to managerial arrangements.

Seventh, in the case of federal countries, special attention must be paid to the respective constitutional responsibilities of the union, the states and local governments. Electoral calendars must also be factored in, lest the programmes become victims of a lack of continuity due to political successions.

Eighth, it is necessary to confront head on the multiplicity of managerial rules and standards as applied by different sources of donor funding. The rules and standards must be harmonised wherever possible, as they can wreak havoc in implementation.

Finally, special attention must be paid to building social capital in support of those VGPs that are concerned with reconciling protection of the global commons and sustainable development ensuring the livelihood of local populations. To achieve this, the participation of civil society organisations must be assured.

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