Financing Global Public Goods: Issues and Prospects

2 Chapter

Pierre Jacquet and Sarah Marniesse

Agence Française de Développement

This paper focuses on the financing of global public goods (GPGs) and on the relation between financing mechanisms and the processes through which various GPGs can be produced. It draws on available GPG typologies as developed in the current literature to illustrate financing options. Discrete GPGs require a swift mobilization of adequate funding. A global fund is one of the typical vehicles available. The International Financial Facility initiative, also targeted at short-term massive needs, is a useful approach to financing discrete GPGs and has received a first concrete response in the creation of a facility for immunization. Continuous GPGs are more difficult to finance and produce as they require ongoing effort. Their financing needs to be based on secure, sustainable and predictable resources. This financing problem is akin to what taxation is about. One of the reasons why global taxation schemes deserve further attention stems from the lack of financing instruments designed to finance the provision of such GPGs. As a number of GPGs will exhibit both discrete and continuous characteristics, financing commitments of different natures are called for. There is a risk that the discrete component receives most attention, because it creates a short term concern, sometimes with a sense of urgency. The continuous aspect of GPG provision should not be postponed for later consideration.

This paper also develops the idea of a development-GPG nexus. Development and the provision of GPGs are joint processes. Public goods in general, and GPG in particular are necessary ingredients of any development strategy. This is especially obvious for the fight against contagious diseases, but, increasingly, local populations also realize the relevance of the preservation of natural resources for the sustainability of their development. Conversely, genuine development, meaning a sustainable increase in the standard of living of populations, is necessary both to allow the country to devote sufficient resources to the provision of GPGs,

but also to make it acceptable to the local populations to consider the longer term objective that is often involved in the provision of a GPG. As a consequence, this contribution argues that the public policy of official development assistance and its institutions are the proper locus to consider the provision of GPGs having a North-South dimension, in the following sense: for some GPGs, the only way to enlist developing countries is to include their provision into a global development package allowing the beneficiary to achieve its original objectives at no extra cost—a role for official development assistance is to compensate for any such cost; in many cases, GPGs are also strongly perceived as being local public goods and part of local development strategies and are thus legitimate objects for official development assistance; and, in many cases, the provision of GPGs also requires complementary goods and services, including technical assistance and capacity building at the local level, that are part of any development process and that official development assistance should also finance. Global financial resources must be substantially increased to take into account the requirements of collective action, including development aid, at the global level.

The concept of GPGs is relatively new. But collective action to produce them has existed for a long time and achieved positive results. The adoption of common standards or the principle of mutual recognition and the architecture of international institutions show the scope of international collective action. In several instances GPGs have been produced quite spontaneously—the Universal Postal Union in 1874 or the Intelsat communications system in 1964—illustrating successful global cooperation. When the stakes are clear, the interests identifiable and immediate for beneficiaries, and free-riders can be excluded (even if only partially), a framework of collective action seems to come together quite spontaneously, thanks to case-by-case negotiations and the creation of voluntary cooperation structures.

Nonetheless, the emergence of GPGs in recent debates heralds a qualitative change in the nature of international cooperation. During the 1980s the main theme on the international agenda was the coordination of economic policies. The idea was to improve the design and efficiency of national economic policies by recognizing their externalities. But objectives and instruments were still understood as national. Today the global community has scaled up its discourse, aiming at defining and working towards common objectives, or GPGs. But there are major issues in global governance: Which GPGs should be provided? In what quantity? How should they be produced? And how should cost and maintenance be covered?

This contribution focuses on financing GPGs. Keep in mind that financing is, of course, not the only concern—and perhaps even not always the limiting factor in their provision. Providing GPGs relates to the ability of various actors to effectively and efficiently engage in global collective action. Several issues are involved: regulation, organization, collective decision-making, providing proper incentives and, above all, willingness to pay. Financing issues should not be considered in abstraction but are intrinsically linked to the nature and characteristics of various GPGs. Thus the challenge is not primarily one of providing financial resources—however difficult that might be given the tight budget constraints bearing on many countries. It is one of building consensus on priorities, of generating and harnessing the willingness to pay for these priorities, of understanding the processes through which specific GPGs can be produced and of choosing the adequate institutional and financial framework. Multiple actors need to be involved, and institutions in charge of official development assistance are particularly well placed to make significant contributions towards GPG provision.

Five stylized observations on providing global public goods

Financing issues point to wider public policy challenges

In many cases producing GPGs essentially consists of "internalizing externalities" (Pigou 1920; Samuelson 1954), either through a Pigovian tax or the introduction of regulations, possibly by creating a market for rights (Dales 1968). Such direct production is relatively inexpensive for public resources because the costs (monetary and non-monetary—notably behavioural) are transferred to the private domain and thus imposed on those encouraged to change their behaviour.[1]

More so than financing, the definitions of common goals and indirect cost sharing are problematic.[2] The fight against global warming is a good example: the stumbling block is estimating costs and benefits, documenting any trade-offs between short- and long-term effects on growth, building a case for immediate action despite costs for uncertain, very long-term benefits and sharing the burden among developed and developing countries. The logic of collective action may call for an explicit focus on equity and thus some compensatory mechanism that eases the burden on countries likely to lose the most or benefit the least.[3] This is difficult because the utility value of global collective action may widely differ between various participants.

The 1987 Montreal Protocol on protecting the ozone layer provides an interesting example of the role of equity considerations. Largely because of their geography, developed countries stand to gain more than developing countries. Thus an amendment stipulates that developing countries will be compensated according to the incremental costs linked to the application of the agreement.

In other cases benefits are high and correctly perceived, but burden-sharing and ongoing commitment may be a problem—particularly for institutional cooperation. For example, the United Nations system is the by-product of the postwar attempt at reconstructing a peaceful international system financed through compulsory contributions. But as far as contributions are concerned, there is a lingering problem with arrears. As a result, the United Nations has a debt of more than $2.5 billion. This points to a deficit of incentives and sanctions in a context where the interests and priorities of different states diverge.

Regional experiences provide a useful laboratory for thinking about GPG provision and financing. In theory, goods shared by few countries (often regional public goods) should be easier to produce (Olson 1965; Barrett 2002, 2006). But how can these goods be organized and financed? Sometimes, a regional fund or agency centralizes and manages common resources. Examples include the regional fund for agricultural technology in Latin America, the Blue Plan in the Mediterranean or regional organizations managing salt-water halieutic resources. The European Union (EU), despite decades of successful economic integration, has no systematic mechanism to organize and finance collective action in several areas. The discussion over the EU budget illustrates how difficult it is to institutionalize a joint approach among sovereign states and create a European budget, even though there is already within the EU a remarkable acceptance of some "supra-nationality". This experience suggests that the task of institutionalizing GPG cooperation at the global level can only be more daunting.

Nationally based policies are crucial to provision

It is useful to think of the GPG production process as a chain involving national actions. Governments produce national public goods that at times are part and parcel of that production chain. In most cases no global collective action is necessary to coordinate this production.

When the domestic social benefit is perceived to justify the costs of a given public good, governments act through regulation, taxation or direct finance to make sure it is provided. When a public good also has a global dimension, its provision, short of any specific global initiative, will thus rest on various national contributions. When these national links are not sufficiently financed or are incorrectly organized GPG production becomes difficult, if not impossible.

Managing major pandemics, for example, requires action at the national level, stemming the spread of the disease and providing care for those infected. The same is true for internal security, for the production and dissemination of knowledge and technological innovations, for the stability and regulation of the banking and financial system. All these elements are national links in the production chain of key GPGs.

Other externalities are more difficult for national policies to deal with spontaneously. The fight against global warming is a good example. National incentives are weaker in areas in which the expected social benefits depend largely on the actions of other countries—a classic collective action problem.

Occasionally, however, benefits expected from the production of a GPG can encourage a country to assume the role of leader, shouldering at least some of the costs, and to strongly encourage other countries to participate in the effort when necessary. Because of its hegemonic situation, the United States has often led international collective action since the Second World War, notably in international trade, global security and with the Montreal Protocol.

Non-state actors play a growing role in financing

Non-state actors' contributions to financing GPGs are modest but on the rise (Sagasti and Bezanson 2001). They are often well ahead of governments in pushing issues relevant to GPGs and in producing ideas towards provision. Non-governmental organizations in particular help shape collective preferences and mobilize public opinions, a major step in organizing support. This process is essential to generating some willingness to pay.

Non-governmental organizations are also significant GPG providers. They generally act out of limited budgets, with the exception of a few that spend several tens of millions of dollars. Some major non-governmental organizations—Médecins Sans Frontières, CARE, Oxfam, World Wildlife Fund, Conservation International—receive support contracts from international institutions and development agencies. In 2002 international non-governmental organizations contributed $95.5 million to the fight against HIV/AIDS (UNAIDS 2004). Their operational budgets come from various sources: companies, foundations, private donations, government aid (direct or in the form of federal tax exoneration) and revenues from the sale of goods and services. They also act as monitoring agents.[4] They are environmental watchdogs, ensuring that all stakes are known during political debates. They also help keep international institutions accountable.

Private firms are also major actors in GPG provision as direct producers of the goods and services involved. In some instances, they may spontaneously take part in the so-called GPG production chain. An interesting example is to be found in the involvement of firms in the treatment of their employees suffering from AIDS in Sub-Saharan Africa, not out of ethical concern of philanthropy, but because AIDS is costly for the employer as well. Firms are profit maximizers. By definition, GPGs, like ordinary public goods, typically involve market failures that will prevent firms acting on pure market forces from producing them. Specific incentives are generally needed:

- Through public policy, such as taxes and regulations internalizing negative externalities. Firms will act within current regulations and tax systems, but might also act in anticipation of possible future legislation. For example, the private sector's willingness to invest in the World Bank–sponsored carbon funds—inspired by the Kyoto Protocol—has been remarkable.
- Through considerations linked to image and reputation. For example, the spread of corporate social responsibility has mostly taken place ahead of deliberate public policies to promote socially responsible behaviour, admittedly sometimes to pre-empt future regulations.
- Through public-private partnerships, in which firms get specific advantages (say, in terms of costs or risk mitigation) in exchange for specific behaviours. Public-private partnerships go well beyond the traditional model of public authorities delegating mandates to the private sector. Promising ideas for health and research on tropical pathologies have been floated (Kremer 2002; Glennester and Kremer 2001). New forms of expanded partnership are emerging that seek to bring together not only international private operators, but also the

local government, private sector and civil society. Involvement of local partners in public-private partnerships—aside from the fact that it strengthens local appropriation and enhances the creation of a fabric of small and medium enterprises and industries—is often one of the factors establishing trust between the actors, thus ensuring success.

Provision involves partnering among developed and developing countries

Ideally public goods would be funded based on consumers' willingness to pay, reflecting the satisfaction they expect. Intelsat, a network of 19 satellites in geostationary orbit, the costs of which are paid according to the number of transmission units used by members (companies, governments and other institutions), illustrates a contribution system based on the beneficiaries' willingness to pay. But willingness in that sense is hardly observable. Nor is it easily enforceable because of the free-rider problem and the incentive for public goods consumers to hide their willingness to pay in the expectation that the good might be financed by others without loss of availability for them.

The willingness to pay, however, introduces a major developed–developing country dimension in the provision of several GPGs. For reasons having to do with culture, history, geography, the level of development and several intrinsic factors, the willingness to pay will generally diverge widely between countries. Developing countries typically have shorter time horizons and higher rates of time preference. Hence GPGs with benefits spread over time are understandably less valued than in developed countries. Similarly, negative externalities with delayed costs are much less of a problem in developing countries' growth strategies.[5] There is, therefore, a potential perceived contradiction between GPGs and short-term development strategies.

Solving this contradiction is possible. It requires either compensation or, preferably, advocacy and conviction leading to the adoption of comprehensive sustainable development programmes involving effective development assistance.[6] Local populations in developing countries are increasingly aware of the importance of preserving their natural resources, particularly soil quality and biodiversity. New sustainable development programmes have been designed in which resource preservation is seen as a development factor rather than an arbitrary goal that inhabitants must side-step in order to improve their living conditions.

Nonetheless, the provision of GPGs is tightly linked to effective compensation. It has often meant setting up a fund maintained by contributions from developed countries in order to finance the contributions of the poorest countries. For instance, fighting global warming and protecting biodiversity are partially financed by the Global Environment Facility. The Global Fund to Fight AIDS, Tuberculosis and Malaria has been set up to help implement actions in developing countries. And the World Trade Organization manages several special allocation funds used to finance technical and training activities to help developing countries gain more from the multilateral trade system.

Although some willingness to pay is necessary to provide GPGs, burden-sharing does not extract a contribution from each country corresponding to the benefit it gets. Rather than the true willingness to pay, therefore, a more operational criterion has come to be a negotiated mix between the willingness and capacity to pay.[7] Official development assistance is a fundamental instrument in bringing to the fore such negotiation while linking GPG provision with actual development issues in the poorest countries.

Important synergies exist between GPG provision and official development assistance

As documented in recent studies, official development assistance has played a significant role in financing such GPGs as protecting global commons, fighting HIV/AIDS and restoring stability in post-conflict situations.[8] This has led to some concern that GPG finance might crowd out development finance. The GPG component of official development assistance has also been interpreted by some analysts and practitioners as a powerful factor to relegitimize official development assistance in the eyes of taxpayers asked to provide more resources (Severino and Jacquet 2002; Severino and Charnoz 2004).

Official development assistance finances a significant part of GPG production. In 2000 resources provided by donors in the form of concessional and non-concessional financing reached $2 billion (World Bank 2001). At the same time, private foundations and donors using trust funds provided $3 billion to similar use. Complementary activities were financed with an additional $11 billion.

Some aid flows directly finance GPGs (post-conflict operations, HIV/AIDS treatments, knowledge dissemination). Others help finance them through indirect action: international aid is often used to finance national public goods that indirectly contribute to GPG production or act as a lever in a co-financing framework. For instance, this is the case for the health system or providing access to clean drinking water, both of which are essential in the fight against HIV/AIDS.

Official development assistance for financing GPGs is rather concentrated. In 1998 the first five beneficiary countries were Bangladesh, China, India, Indonesia and the Philippines, with Indonesia and the Philippines receiving between one-fifth and one-quarter of aid (te Velde and others 2002). The use of official development assistance to finance GPGs is largely explained by the fact that development and GPG issues often overlap because global action must translate into local improvements. But international donors also want to contribute to GPG production as such. The question of the legitimacy of using official development assistance for financing GPGs is the subject of an ongoing debate.

Theoretical insights and typologies

Global public goods from a public economics perspective

Samuelson (1954) was the first to develop a formal theory of public goods provision. A key property is that each consumer can consume as much as wanted without diminishing the amount available to others (non-rivalry). There is a zero marginal cost in allowing another to enjoy the benefits of a public good. When it proves infeasible to exclude someone from these benefits (non-exclusion), the public good will not be privately produced in a competitive market; individuals will rely on others to pay so they can freely enjoy its benefits. Moreover, at the theoretical optimum, the level of production should be such that the marginal production cost is equal to the additional social utility (the sum of the marginal willingness to pay for the good from all individuals). But when the good is non-rival, consumers have no interest in revealing their willingness to pay.

Three implications stem from this simple discussion. First, a typology develops based on the degree of "purity" of public goods, namely the extent to which their production is non-rival and non-exclusive. Second, as Kolm (1987) has shown, the optimal solution will be based on a consensus negotiated between the beneficiaries and the producer(s) regarding the type and amount of the public good to produce and what each beneficiary will contribute to its financing. As soon as a public good exhibits some exclusion—those who might benefit without paying—it can be produced by the private sector on its own volition and according to market laws. When non-exclusion applies, however, negotiations will suffer from a lack of clarity and credibility, requiring outside (government) intervention to avoid a situation of suboptimal production.

Third, even though a public good can be privately provided, government intervention will generally—at least when there is no possibility of exclusion or exclusion is very costly—be necessary to deal with the free-rider problem and the transaction costs of any decentralized solution. Government action is called for to tax, spend, regulate, enforce contracts or distribute property rights. Options—with different financing requirements—differ by the distribution of the costs of providing the public good to the taxpayer (consumer) or to the producer of a negative externality (such as pollution). It is important for governments to internalize externalities so that market-based solutions can lead to adequate provision.

Moving to GPGs, there is an immediate difficulty. No entity at the global or multinational level is likely to take role that a government plays at the national level. Collective action must emerge from international cooperation and is subject to some difficult questions about efficiency, equity and legitimacy. Financing arrangements are only one aspect of these difficulties, and financing alone will hardly suffice. It is useful to think of financing GPGs as part of a package that includes rules, division of labour, monitoring devices, technical assistance, capacity building and redistribution mechanisms.

Production-based typologies

Recent literature on GPG finance has sought to identify the production and financing modalities adapted to different kinds of GPGs (see Sandler 2001; Sweden, Ministry for Foreign Affairs 2001). The geographic spread of the externalities determines the geographical framework of financing and production (Sandler 2001). The subsidiarity principle applies: the production of the good, according to its characteristics, must be carried out at the appropriate level (country, multicountry union, region) that will be able to produce it more efficiently or that will produce "pieces" that could lead to the setting up of compensatory financial flows.

Within the appropriate geography, we now turn to four possible typologies. First, it is useful to characterize a GPG as to whether it requires regulation of externalities or production of additional goods and services. Second, as mentioned before, GPGs can be ranked by their degree of "purity" in terms of non-rivalry and non-exclusion. Third, the nature of the production process (discrete or continuous) provides useful insights. Fourth, GPGs can typically be grouped according to different "aggregation technologies" (summation, weakest link, best shot, weighted sum).

Regulation versus production

A government can choose to regulate the production of externalities (such as pollution) or to finance the production of additional goods and services, which, in many cases, requires specific financing mechanisms.

- For regulation, the government defines a goal and sets up a mechanism that will force or encourage agents to achieve it. Taxes or user payments might provide the necessary incentives for gaining control of the negative externalities or congestion effects while generating resources for producing the GPG or for compensation payments ("double dividend"). Such an approach is particularly well suited for protecting common goods, especially the environment. The government can then focus on creating or strengthening markets to re-establish an efficient climate of private incentives—property must be defined and allocated, and transparent regulations implemented. Although there is no direct financing requirement, resources will be needed to organize compensation towards those who are perceived to support an undue share of the costs and to cover the unavoidable administrative and transaction costs (such as inspections to ensure compliance with the preset standards).
- For production, additional goods and services are more demanding in terms of financing. The general recommendation is to distinguish finance from production. While financing must be provided by governments (local or national), production need not be undertaken by the public sector. Once the coverage of production costs has been solved, actual production can be transferred to the private sector. Various forms of public-private partnerships can be envisaged (standard concession, management contract or leases). As far as club goods—a category of public goods allowing exclusion—are concerned, the role of the public sector is reduced. It can intervene to

ensure access to the good and to avoid suboptimal rationing (possibly caused by the price imposed by the private supplier). The production of the GPG, however, remains solely private in nature, financed by the users.

Pure versus impure

A second typology distinguishes between "pure" and "impure" GPGs—useful to determine the kind of public action needed to secure the good. A pure public good combines non-rivalry with non-exclusion. Free-riding is the greatest risk to pure public goods: all are free to benefit from the good, but it is in nobody's interest to help finance it. In this case, deliberate public action is required. Impure public goods exhibit partial rivalry or exclusion. The following conclusions emerge from the existing literature (see Sandler 2002).

- The possibility of at least partial exclusion invites private participation. Indeed, the possibility of total or partial club-type exclusion opens the way for financing (and independent production) by the private sector. According to the degree and the costs of exclusion, public action could take charge of part of the production to provide wider consumption possibilities. Institutional arrangements can strengthen the benefits linked to exclusion and the role of the private sector.
- Rivalry factors (such as limited resources faced with extinction) call for a regulatory framework that determines the rights of use, avoiding overconsumption spurred by rivalry. Purely financial aspects are not necessarily the main priority, but are important in terms of effort sharing.

Discrete versus continuous

Barrett (2006) focusses on production processes, which can be continuous, discrete or binary. A continuous process occurs when the result depends on all of the additional actions of the countries involved. A discrete process, such as the discovery of a vaccine, moves forward (relatively) chaotically and is more likely to succeed if it is bolstered by a continuous effort. A binary process includes a level beyond which the good is provided and below which it is not provided, such as with disease eradication. A binary process is at first continuous and later becomes discrete as it reaches its success threshold.

- For discrete and binary processes, the international community should amass large sums to produce the GPG as rapidly as possible. Such investment makes it possible to cancel all social, economic and environmental costs, present and future, that are the result of GPG non-production. Examples include: major regional works (such as canals), rehabilitating endangered heritage, vaccination campaigns against major diseases, emergency interventions in war-torn areas (which shifts the emphasis from long-term actions to peacekeeping) and research to identify new vaccines or treatments (assuming that the likelihood of finding a vaccine is positively correlated to the amount of research towards its discovery). The challenge for the international community is to prevent the international public bad (as the result of non-production) from surging out of control. Financial resources should be mobilized as soon as the production cost is less than the sum of the benefits gained by the countries (or companies) most encouraged to produce it. It is desirable to open all possibilities of contribution—private and public, including public-private partnerships. To this end, a global fund fulfils three tasks: receiving targeted resources, facilitating donor coordination, allowing easier monitoring of the global effort and its results and facilitating accountability in the use of funds thanks to its specific objective. The situation becomes more complicated if the production cost is markedly higher than the financial abilities of potential beneficiaries.
- Continuous GPGs (and some particularly complex binary goods) require long-term efforts from different actors. This often implies decentralized actions and numerous targets, making different modes of financing possible, which is why they are considerably more difficult to finance and produce. Two types of continuous GPGs are distinguishable by the nature of the associated externalities: public goods that call for changes in behaviours to limit negative externalities and those that require deliberate action to provide additional services to exploit positive externalities. Fighting global warming and protecting the ozone layer clearly belong to the first category. Maintaining existing international regimes and diffusing knowledge belong to the second.

Conclusions on the degree of urgency of collective action must not be drawn from this classification. In particular, we do not mean that because production is technology based (continuous or discrete), nothing is to be lost by waiting (though at times it might be advisable to wait in order to amass more information on the costs and benefits of production). For example, the fact that the struggle against global warming is continuous and not discrete does not mean that delaying action is an acceptable option—the damage caused by waiting is often irreversible (see Guesnerie 2003).

Aggregation technology

Hirshleifer (1983) distinguishes four production technologies:

- Summation—goods result from the sum of all actions undertaken to produce them.
- Weakest link—goods are determined by the least active producer.
- Best shot—goods require only one producer and are set by the best producer.
- Weighted sum—individual contributions possess weights, reflecting the marginal impact that a unit of a contributor's provision has for total provision of the GPG.

This distinction is useful in thinking about incentives to produce GPGs. Summation requires collective action, while weakest link and best shot call for a concentrated effort. In the weakest link case (and provided the negative externalities are large enough), everyone has an incentive to help improve the level of production.

Mixed public goods

Many public goods, however, exhibit several classifying properties. GPGs such as the fight against climate change involve many interventions, ranging form the local level to the global. They lead to actions directly oriented towards producing the GPG and complementary actions[9] that often come from the production of national public goods (construction of socio-economic infrastructures), large-scale one-off actions and long-term actions (support, maintenance). Direct GPG production is necessarily bolstered by many complementary actions, which can, in some cases, come from official development assistance. The fight against HIV/AIDS is another example, including actions by all victims to eradicate the pandemic (weakest link good) together with a discrete effort (finding a vaccine and eradicating the illness) and a continuous effort (developing performing national health systems). Actually, most GPGs mix a need for a major effort over the short term and an additional and continuous effort for maintenance operations or aid activities. It is not enough to provide for short-term financing needs, for example, through specific funds set up for that purpose. Longer term recurrent needs should also be provided for.

The fight against HIV/AIDS

The fight against HIV/AIDS is not yet covered by international treaties, but is partly financed by the Global Fund to Fight AIDS, Tuberculosis and Malaria.[10] It implies both prevention and cure. Prevention is a continuous component, and cure is urgent and discrete. But as long as a vaccine does not exist and prevention is partial, the fight against HIV/AIDS is a continuously discrete GPG because a cure will be continuously needed.

This GPG also encompasses a variety of elements of health care that can be defined as public goods: access to treatment, discovery of a vaccine and access to an effective health care system. The global or national nature of the various elements determines the nature of the action to be taken to produce them. The establishment of health care systems thus belongs to the realm of national policy and is funded by national budgets or official development assistance. On the other hand, funding of the "direct" fight against major pandemics is in the province of collective resources, whether global or decentralized.

Global collective action to mobilize and coordinate resources is only one aspect of successfully fighting HIV/AIDS. In particular, success hinges on consistent efforts to improve national health systems. It is not enough to make treatments available. They need to be administered and monitored, which requires trained staff and efficient public health systems. Public health spending barely represents 1.2% of GDP (less than $6 a person) in low-income countries and 3% of GDP ($60 a person) in middle-income countries. Compare that with 6.7% of GDP ($1,307 per person) in Western Europe (WHO 2004). Governments of the hardest hit countries simply cannot control the epidemic and strengthen their healthcare systems without external funding. The relationship between a GPG and sectorwide efficiency considerations stands at the heart of the development process. Besides the Global Fund, official development assistance for health sector equipment and capacity building is crucial, both for development and for fighting HIV/AIDS.

Crucial to the fight against HIV/AIDS—in order to allow for eradication and to transform the GPG into a discrete, binary public good—is the development of a vaccine. It requires substantial financial resources that the private sector is not ready to commit spontaneously because the solvency of the market for the future vaccine is uncertain at best. There is room to commit public resources to improving incentives and to commit some official development assistance resources to improving the solvency of developing countries' markets for such a vaccine. Proposals, notably by Kremer (2002), have been made to that end.

According to Sachs (2001), the total additional annual cost of responding to AIDS will reach $26 billion in 2007 and $46 billion in 2015.[11] The Global Fund (2004) has mobilized substantial resources: a little more than $3 billion, and $5.4 billion pledged up to 2008—with 95% coming from developed country governments. By 1 August 2005 the Global Fund had signed agreements for 316 grants in 127 countries. In little more than 30 months, it has disbursed more than $1.3 billion, or 55%, of grant commitments. It also largely contributes to the coordination and harmonization of programmes to combat HIV/AIDS, thereby reinforcing these programmes' combined effectiveness.[12] But its weaknesses in maintaining and renewing necessary commitments limit its efficiency.[13]

Private sector participation opens promising opportunities, as demonstrated by initiatives taken by large firms in Sub-Saharan Africa, where Daimler Chrysler developed a programme to fight HIV/AIDS among its workers. And there is much more potential to tap through innovative uses of official development assistance—public-private cofinancing schemes, public subsidies to extend the coverage provided by private healthcare centers, partial subsidization of individual costs.

The fight against global warming

Global warming is a global public bad. Climate stability, a global public good, is non-exclusive and non-rival, thus private actors are not prompted to invest for benefits that everybody will be able to enjoy freely—and free-riding should be expected. There is wide scientific consensus that global warming can be attributed to human activities and will continue with widely varied effects (Intergovernmental Panel in Climate Change 2001).

Fighting global warming is an additive and continuous process, calling on many national and international actors from the public and private sectors. Developing countries are reluctant to bear the burden of managing a global challenge that is historically not of their making. But they will likely be the hardest hit. And fast-growing emerging countries such as Brazil, China and India are becoming major producers of greenhouse gases.

The fight against global warming requires:

- Collective action—the more countries contributing to reducing emissions, the more effective global action will be.
- Sustainable action—a continuous process.
- Action at different levels—global, national and local, under the subsidiarity principle.
- Equitable action—to take into account the specific situation and development needs of developing countries.
- Swift action—at first sight, immediate action may appear more costly than a delayed action that would incorporate new scientific data, avoid accelerated obsolescence of the capital and take advantage of technological innovations. But these arguments must be counter-balanced—low-cost measures could be swiftly adopted, the risk of irreversible damage is high. (Uncertainties prevail, but they do not justify inaction as an irreversible climate change with daunting consequences could happen before we have sufficient proofs of warming and information on its causes and consequences.)[14]

The Kyoto Protocol, a limited cooperative framework ignored by the United States, is based on commitments by industrial countries to reduce greenhouse gas emissions. In order to partially offset inevitable flaws in the initial individual commitments, minimize the costs of implementation and enlist developing countries, the protocol has introduced a system of tradable emission permits (article 17) and allowed countries to register reductions in emissions resulting from an investment made in another industrial country (joint implementation) or from an investment in a developing country (Clean Development Mechanism). The World Bank leads in shaping the Clean Development Mechanism and acts as the manager of carbon credit purchaser funds and arranger of projects that generate carbon credits.[15] Other donors also help define and implement Clean Development Mechanism projects at different levels.[16]

It is likely, however, that more resources will be needed to promote clean development in developing countries. This task is carried forward by the Global Environmental Fund, the financial instrument of the climate convention.[17] This challenge provides a powerful reason why even emerging countries like Brazil, China or India need and deserve development aid. There is a good rationale, however, to direct aid towards GPG provision and, of course, to push for an increase in global aid levels.

Industrialists are increasingly environmentally conscious. This awareness, combined with reputational stakes, society's pressures and more binding regulations, are prompting manufacturers to invest in cleaner production techniques and equipment that treats downstream pollution (Vittek 2000). But such an investment, when less profitable than existing technologies, requires outside incentives or specific support.

Overall, countries, donors and private actors are still learning. Current mechanisms are quite cumbersome—the market for carbon credits needs to be created from scratch. Despite difficulties, useful projects can be built, and a potentially promising learning process seems to be in place.

A political economy perspective

Any collective action at the international level needs to recognize the difficulty of dealing with GPG financing without considering the position of the United States. To the extent that the production of a GPG requires either a single action by the United States or collective action implying its participation, one can distinguish four kinds of circumstances:

- *"What is good for the United States is good for the world."* The United States engages in the provision of the GPG because the expected return for its national interests is perceived to justify individual action. It then invites other countries to share part of the burden. Consider the Montreal Protocol. The United States stood to gain a great deal, even as simple producers, but encouraged other nations to take part in the collective effort. Thus as long as the interests of the leader nation are at stake, financing does not present a problem: solutions will be found. Sharing the burden comes only as a secondary issue, but can remain a controversial matter for a long time.
- *"What is good for the world is good for the United States."* The United States will not take the lead but may be willing to participate. This is a standard case of collective action. In this favourable scenario, the discussion is efficient; financing is a question of national and international politics, of diplomacy and international negotiations, with the best instrument and

best approach an issue ever in the background. Shared interests make collective action desirable but not necessarily easy to achieve goals, as Olson (1965) amply demonstrates.

- *"What is good for the world is not good enough for the United States."* More problematic, this case concerns public goods for which other countries see some value, but for which the United States sees no utility. These GPGs will be produced only if US participation is not a necessary condition. In the case of summation goods with a large impact from US behaviour, production by others will be inefficient. Again, consider the Kyoto Protocol. Any attempt to reduce greenhouse gas emissions without US participation will have limited effects.
- *"Neither the world nor the United States knows what is really good for it."* The demand is only partially revealed because the need has been poorly identified. What, for instance, is really known about conflict emergence or conditions for maintaining peace? In this case, work to understand the phenomena and work to convince must be initiated. At this point the question of financing might seem secondary.

Of course these observations do not seek to restrict GPG financing to the US position alone, but rather remind us that international politics remains a crucial factor.

Financing implications

The previous section has suggested that there will be no such thing as an "optimal" GPG financing instrument. Instead it is worthwhile to focus on the characteristics of GPGs to be financed and adapt instruments accordingly. Beyond political will and a proper institutional framework, financial engineering is crucial to the future of GPG finance.

- The nature of providing a given GPG: Does it imply the additional production of specific goods and services? Or does it rest on incentives to change behaviours, through regulation or taxation? While additional production requires additional financing, incentives imply mainly institutional and political economy challenges (appropriate regulation or taxation).
- The degree of purity or impurity of a given GPG determines if and how the private sector will be involved in its provision and who will bear the costs.

- Aggregation technology determines how best to share the provision of different GPGs and what kind of international action is needed.
- Directly influencing the type of instruments to be used is whether a given GPG is discrete or continuous. Continuous GPGs require predictable financial resources. Discrete GPGs require an immediate and possibly massive mobilization of resources.

From typology to financial schemes

To foster further brainstorming, we propose a simplified diagram of GPG provision and financing (see figure 2.1). A few boxes remain empty because of inconsistencies between GPG characteristics. Our classification is at best tentative, notably because a number of socially constructed public goods escape consistent classification. For example, information dissemination could be considered a pure public good. But it is a difficult and occasionally technical process, likely to exclude many potential users, and is classified here as an impure GPG. This diagram suggests that four broad and loosely defined categories of GPGs stand out in terms of their financial implications:

- *Private provision GPGs.* Club goods can typically be financed by the private sector. Public financing is limited to ensuring access and avoiding suboptimal rationing.
- *Leader-led provision GPGs.* In some cases a simple cost-benefit calculation provides an incentive for a country to act alone as a leader, notwithstanding later efforts to share the burden. Even when provision has clear national net benefits, global financing may be necessary when the potential leader faces a financing constraint. Political economy and diplomatic considerations will play a clear role in reaching any sort of agreement.
- *Behavioural GPGs.* When the externalities can be internalized, a GPG can be financed by consumers (or producers) through mechanisms that make them accept all the costs (or benefits), notably in terms of changes in behaviours of provision. Some negative externality GPGs such as fighting climate change belong to this category. And positive externality GPGs can be provided through adequate regulatory and taxation policies and through the implementation or strengthening of a prop-

erty rights system (essentially on pure GPGs produced using a best shot technology). These are basically "no-cost" GPGs, but proper incentives through adequate compensatory mechanisms are needed. Moreover, producing continuous effort GPGs means seeking out the active participation of the private sector, beyond taxation and regulation setting. For example, a series of incentives set up within the framework of the Kyoto Protocol encourages private actors to invest in greenhouse gas emission savings.

- *Additional production GPGs.* These require additional finance. Here, a crucial distinction needs to be made between continuous and discrete GPGs. Discrete GPGs depend on immediate funding availability (for example, through a fund set up specifically for that purpose), whereas continuous GPGs require sustainable and predictable funding.

Instruments and ideas

Since the UN Millennium Summit in 2000 and the Monterrey Summit in 2002, there has been a consensus, further confirmed at the UN Millennium Development Goals Summit in 2005, that financial resources for global issues have been insufficient. Various ideas have been raised for providing additional resources and increasing proposals' efficiency (see Atkinson 2003). Additionality is important to this discussion. Although probably useful for collecting resources, new instruments might simply substitute for older ones, without any significant net effect. In themselves, financial techniques do not generate a net willingness to pay. Increasing the perceived utility of providing a GPG is likely to increase the willingness to pay, thus generating additional resources. Scientists and civil societies are in the driver's seat to help build the perceived utility of GPGs.

Voluntary contributions

Several ideas for increasing voluntary contributions have recently been floated. A casual observation of people's behaviours suggests a substantial willingness to pay for GPGs that is not naturally exploited. This willingness stems from a growing sense of global citizenship, from concerns about biodiversity, from growing feelings of global solidarity. Non-governmental organizations are particularly important in identifying and

Figure 2.1 Global public good provision and financing

Provision of GPG at no cost (taxation mechanism or regulation)	Pure	Public push to build a financing scheme based on capacity to pay rather than willingness	Summation	Fight against climate change	Incentive mechanisms with a monitoring capacity (such as the United Nations Framework Convention on Climate Change) Transfers from developed to developing countries	Tax/Market Long-term public resources dedicated to compensations and innovation support (including official development assistance)	Coordination and emergency measures financed with public resources (funds, foundations, international institutions)
	Impure (with rivalry or exclusion)	Setting up a regulatory framework	Weighted sum	Fight against acid rain Protection of fish resources	Whether there is a leader nation or not, action will either be centralized or coordinated to be undertaken where it is most effective	Long-term public resources to finance compensations and support private initiatives (including official development assistance)	Discrete financing by the leader nation; in case the most beneficiary country cannot finance the good by itself, international institutions could help (funds, foundations)
Provision of additional goods and services	Pure	Public subventions to finance part of the production process	Summation	Endangered species census World heritage protection	Depending on the national interest–global interest ratio, national or global financing with public and private funding	Perennial resources (international institutions, foundations, public-private partnerships, official development assistance)	Coordination and emergency measures financed with public resources (funds, foundations, international institutions)
			Best shot	HIV/AIDS vaccine Green revolution	Coordination is necessary to avoid wasted efforts Developing countries will be helped by developed countries (official development assistance) Some developed countries may be helped by others through production or financial partnerships		Leader nation or discrete and massive resources with potential private financing or official development assistance
			Weighted sum	Research	Leader nation or support from developed countries	Leader nation or perennial resources (international institutions, foundations, official development assistance, public-private partnerships)	

National, with global impact	Public financing necessary	Summation	Health system building Vaccination campaigns International finance systems building	Developing countries financed by developed countries	Long-term and predictable resources such as official development assistance or public-private partnerships	Discrete and massive funding might be brought by official development assistance
Impure (with rivalry or exclusion)	Voluntary financing by the countries and constitution of club-like structures	Summation	Information dissemination Antimissiles shields	Partial exclusion allows for voluntary financing and dissemination of information helped by public subventions	Long-term resources (international institutions, official development assistance)	Coordination and emergency measures can be financed with public resources (funds, foundations, international institutions)
Club goods	Public financing limited, targeted at ensuring access to the good and avoiding suboptimal rationing Production financed by private actors	Summation	Canal construction	No public financing necessary; consumers pay for use	Long-term private financing or individual long-term financing (for maintenance)	Private or individual financing
		Best shot	Laboratory dedicated to studying pandemics	No public financing necessary	long-term private financing (for maintenance)	Private financing
		Weighted sum	Intelsat communication satellites	No public financing necessary; consumers pay for use	Long-term private or public financing (for maintenance)	Private or individual financing

Official development assistance
Private financing
Public resources (short term)
Public resources (long term)

mobilizing such willingness to pay and have been very active in many GPG dimensions. This must be encouraged. Global funds targeted to specific GPGs (such as ecosystem preservation funds, carbon funds or health funds) are particularly well suited for transforming a latent willingness to pay into actual resources if their transparency, effectiveness and accountability stand beyond doubt.

Governments can also help mobilize willingness to pay—for example, by allowing earmarked taxes or tax deductions for donations to a global cause. Both options are relatively simple and allow existing systems to collect GPG resources. But earmarked taxes are controversial in that they compromise fiscal sovereignty and the power of national bodies to decide how resources are spent. Another possibility could be to generalize a system of voluntary contributions when paying with credit cards and using teller cards. Regular contributions could be linked to recurring bills for essential services (water, electricity, telephone) and targeted towards helping developing countries finance these services. A link between the collection of resources and their destination is probably important for mobilizing willingness: "I have access to water, thus I help others to have access as well." Along those same lines, another idea might be to harvest resources from medical consultations.

A lottery has also been the subject of several proposals (Morgan 2000; Reisen 2003). Generally an important share of the income from national lotteries goes to the state or to projects of general interest (30% in the United States). This revenue share, in the case of a world lottery, could provide substantial funding for international objectives, easy to affect to a specific cause. Unlike voluntary contribution schemes, the lottery banks on the interest the individual shows in the system (admittedly high risk). It thus makes it possible to combine risk-taking and hope of gain with philanthropic finance.

These options share the goal of facilitating and coordinating the philanthropic impulse towards financing GPGs and are valuable as such. But the same concern of additionality must be kept in mind. Already in each country is a vast array of methods to channel the willingness to pay for common causes. What is needed is to increase that willingness, not to rechannel it by diverting it from existing mechanisms (such as voluntary contribution to non-governmental organizations) to new ones. But how can consciousness and the willingness to pay for global causes be raised? How can the voluntary collection of resources be effectively and efficiently organized at the national level?

International taxation

The idea of an international tax has increased in momentum over recent years. A first proposal was made by Zedillo (2001), in addition to the proposal to set up a council of heads of state in charge of world governance missions. The supranational vision implied by the Zedillo report, however, appears beyond current political feasibility. World taxation is indeed an extension of national taxation, but in the absence of a world government new ideas on how to move beyond national taxation are needed. For example, one could think of pooling resources from national taxation through formal, possibly legally binding, agreements calling for national governments to jointly implement well identified national tax mechanisms (which might vary from one state to another) to earmark resources for financing a specific global objective. For effectiveness and legitimacy reasons, the proposed use of such pooled resources should be made very explicit and verifiable so that the use of taxpayers' money, even at the international level, remains fully accountable.

The challenge is politically formidable. At the technical level, the choice of base is an important issue. As in traditional public finance, there are three sometimes conflicting objectives to take into account:

- Minimize tax-induced distortions (preserving the benefits from globalization).
- Maximize tax revenue.
- Use taxation in a Pigovian sense—internalize negative externalities and change behaviours accordingly.

Minimizing distortions and maximizing revenue lead to the choice of a small, uniform tax rate on a wide tax base. The Pigovian approach opens the possibility of a "double dividend", allowing for both raising revenues and fighting a negative externality. But there is a contradiction between the objective of raising revenue, best reached through the taxation of a weak demand elasticity tax base, and that of changing behaviour, which supposes that the tax base somehow melts away.

In 2004, a working group on international taxation, chaired by Jean-Pierre Landau (Landau 2004), was instructed by French President Jacques Chirac to explore the possibilities of securing additional resources for development. Five countries—Algeria, Brazil, Chile, Germany and Spain—publicly backed the initiative of developing innovative financing mechanisms to help finance the Millennium Development Goals.

A significant move forward has now taken place. Three countries—Chile, France and the United Kingdom—announced in September 2005 that they would implement a "solidarity contribution on airplane tickets" by the end of 2006. This first international solidarity levy will come into force in France on 1 July 2006. At the Paris March 2006 Conference on Innovative Development Financing Mechanisms, 41 countries joined the pilot group set up to review the technical aspects of the mechanism; 14 countries stated their intention to institute such a levy. Technically, this form of contribution is equivalent to a nationally based tax; the contribution would be paid when boarding an aircraft departing from a participating country. In practice airline companies would be responsible for collecting the contribution, which would be added to the fees and charges already part of a ticket. Revenues will be fully allocated to official development assistance and earmarked for spending on health.

New emission of special drawing rights

Created in 1968, special drawing rights (SDRs) are units of account and reserve holdings maintained by the International Monetary Fund (IMF).[18] The relevance of a new allocation is the subject of an unresolved discussion between member countries. Some expect a positive effect on development in developing countries. Others fear the impact on global inflation. In 1997 the IMF Council of Governors suggested setting up a special SDR allocation. This proposal, which would double the SDR 439 billion volume, received the approval of more than 125 members representing more than 75% of votes. US agreement is the sticking point for the entry into force.

In 2002 George Soros suggested that the United States approve this allocation and that developed countries make a donation (SDR 18 billion of SDR 27 billion, broadly speaking) to create a fund for financing GPG production, which would be managed by a "Council of Wise Men" at the world level. This proposal has been echoed many times and has become the foundation of positions, including that of Joseph Stiglitz, in favour of new emissions of SDRs for financing GPGs or aiding poor countries. There are two broad options to consider. One is to aim at a new amendment of the IMF statutes in order to allow for SDR allocations that would not be proportional to quotas and that would specifically target developing countries or GPG provision. The other is to use the system as it is, reinterpret the need for global liquidity by taking into account not only balance of payments constraints but also development and GPG needs and negotiate an arrangement through which developed countries automatically transfer any new SDR allocation to funds earmarked for development and GPG finance. Using the current system seems more feasible from a political economy perspective. It involves a few technical difficulties concerning interest payments on SDR allocations. It is also unclear what the specific, technical or political economy advantages of SDR allocations would be over other financing mechanisms.

The International Finance Facility

The International Finance Facility (IFF), proposed by the United Kingdom, will generate a higher volume of resources by securitizing increased official development assistance flows pledged at Monterrey, thus frontloading official development assistance disbursements towards reaching the Millennium Development Goals. Governments have committed to regularly increasing official development assistance. But this increase is progressive, while there are major needs now. When economic and social benefits of well targeted aid are expected to be higher than borrowing costs, there is a case for concentrating the present value of future commitments through a frontloading mechanism.

The IFF will receive formal, multiyear, irrevocable commitments to future contributions and, on this basis, issue bonds and use the resources thus raised to finance development in developing countries. Donors commit to providing financing at a later date without having to transfer funds or make budgetary commitments in the present (with the possibility of making legally binding commitments off the budget—essential for governments subject to the budgetary discipline of the European Growth and Stability Pact). These commitments are used as collateral to issues bonds on private financial markets. Given the quality of the issuers, these bonds are presumably rated AAA. The product of bond issues is used in existing bilateral and multilateral programmes. Upon maturity, bonds are paid back by the participating donors.

Governance conditions and the distribution of funding could push the burden onto future generations. And the problems of absorptive capacity experienced by many developing countries can make the frontloading of future official development assistance payments hazardous. The IFF does, however, present a twofold interest. Financial engineering innovations can make it possible to enlist private markets to generate large volumes of resources. And the constraint on public spending should not be used to justify short-term gaps in financing objectives that the international community has agreed on. It also allows separating the collection of official development assistance funds from spending. Thus the IFF initiative is the extension, at the international level, of both public debt and taxation.

The IFF has attracted the support of more than 80 countries, including Brazil, China, France, Italy, South Africa and Sweden, as well as from religious leaders, the business community and non-governmental organizations. On 9 September 2005 the United Kingdom, in partnership with France, Italy, Spain and Sweden, launched a pilot International Finance Facility for Immunization (IFFIm). Contributions from the Bill & Melinda Gates Foundation will be provided with the resources from donor governments. This initiative will use the frontloading mechanism to ensure the provision of an additional $4 billion over the next 10 years in support of the work of the Vaccine Fund and the Global Alliance for Vaccines and Immunization. The IFFIm is largely meant to demonstrate the technical feasibility of the larger IFF scheme.

Frontloading or phasing in?

Discrete GPGs require a swift mobilization of adequate funding. All possibilities of contributions need to be harnessed—from voluntary private and from public sources, including public-private partnerships. A global fund is a typical vehicle, fulfilling three tasks:

- Act as a recipient for targeted resources and facilitate donor coordination.
- Allow easier monitoring of the global effort and its results.
- Facilitate accountability in the use of funds thanks to its specific, visible objective.

The IFF is precisely targeted to short-term massive needs. While it has not met with global agreement, the idea behind it might be extended to smaller initiatives targeted towards financing several identified discrete public goods (for example, the search for vaccines against developing countries' pathologies). Such an instrument would not create new financing resources, but rather act as a coordinating mechanism and, presumably, frontload future official development assistance commitments to cross a given immediate threshold in GPG provision.

Continuous GPGs are considerably more difficult to finance and produce because they require ongoing attention and effort. For continuous GPGs based on internalizing negative externalities, provision is more a problem of appropriate regulation and taxation than of generating additional resources. Financial resources will need to cover administrative costs. They will also go towards compensating those who are perceived to support an undue share of the costs. Providing such GPGs therefore involves some sort of global redistribution.

For continuous GPGs associated with exploiting positive externalities, sustainable and predictable financial resources are necessary. An occasional one-shot levy cannot provide long-term needs. This problem is akin to taxation in countries, where periodic collection of a compulsory levy finances lasting needs. Multilateral institutions are financed through a compulsory contribution from member states, which is as close as one can get to international taxation. One of the reasons for further examining global taxation schemes stems precisely from the lack of instruments designed to finance the provision of continuous GPGs despite a growing perceived need to do so.

The need for core predictable and perennial funding can be met if all donor countries honour their commitment of setting aside 0.7% of GDP for development aid. But, as we know, the political economy constraints faced by most donors have made it impossible to fulfil that promise. Notwithstanding a renewed commitment by many countries to increase official development assistance at the 2002 Monterrey and 2005 UN development summits, this is a major reason to study alternatives—such as global taxation schemes—in order to anchor donor countries' commitments into a more conducive political economy context. There has been a very significant political move towards global taxation under French President Chirac's 2004 initiative. Implementing a global taxation scheme would indeed be a major turning point in global governance. Paradoxically, given the political symbol it would represent, it would also somehow depoliticize in the short term the collection of resources earmarked for development assistance and GPG provision because it would protect these resources and the needed budgetary tradeoffs from the vagaries of domestic politics. There is no international treaty establishing a global tax base, so global taxation schemes need to be understood as internationally coordinated national tax efforts.

Some GPGs will be both direct and continuous, thus requiring complementary financing commitments. There is a risk that the discrete component will receive the most attention because it creates a short-term concern, sometimes with a sense of urgency. The continuous aspect is simply ignored for later consideration. For example, financing the creation of protected areas is worthwhile, but providing for the long-term stream of financial resources needed to protect biodiversity in a developing country where budgetary resources are clearly inadequate will be key to reaping sustainable benefits. This problem echoes that of infrastructure finance in developing countries: the physical capital needed in the first place requires massive immediate financing. The value of the infrastructure, however, rests on the quality and sustainability of the flow of services it generates, and that requires ongoing resources for maintenance and administration.

Official development assistance—legitimate and indispensable

Four aspects of our analysis point to the notion of a GPG development nexus (see Severino and Jacquet 2002) suggesting that official development assistance can be a major financing instrument for GPG provision.

- GPGs often cannot be distinguished from local public goods. The GPG production chain goes from the local level to the global. For example, the fight against major pandemics cannot be dissociated from the efficiency of local health systems. Development is a necessary condition for GPG production. Aid agencies are particularly well placed to contribute by promoting local development.
- The relationship between the local and global aspects of GPGs may vary. Some public goods are clearly considered both local and global. Consider the preservation of fish resources. Fishermen will agree to limit catches and take into account stock preservation only when presented with economic alternatives allowing them to combine higher income with lower catches through cost control. This is a standard area for official development assistance.
- The local component of some GPGs is weak or perceived as absent, leading to a perceived contradiction between the local development objective and the GPG. Consider the management of forest resources in forest-abundant developing countries. Local priorities point towards exploitation, while global considerations may point to conservation. The developing country needs to be compensated for any contribution to biodiversity conservation. This can be done through a fund to support protected areas or through locally negotiated sus-

tainable management programmes that official development assistance may help put in place.

- There are local public goods without a global component. This is a more classic case for official development assistance.

Several recent studies have examined the risk of official development assistance misappropriation to the detriment of development and to the benefit of GPGs.[19] Some fear that it will negatively affect development financing and criticize this diversion as being unethical because it would cut resources for poverty reduction and inefficient because the kind of institutions and knowledge developed through development assistance may not be appropriate for delivering GPGs (Anand 2002). Without ignoring all risks for resources earmarked for development, these critiques are misleading. What they suggest is not that official development assistance is an inappropriate vector for GPG provision, but that financing resources for development and for GPG provision are insufficient. They point to a problem with additionality.

Conclusion

Global financial resources must be substantially increased to take into account the requirements of collective action, including official development assistance, at the global level. The official development assistance framework is particularly well adapted to contribute—both financially and in terms of local management capacity—to development and GPG provision. And the GPG–development link may help effectively bring home that the interests of developing and developed countries are tightly linked. This can help strengthen the willingness of developed countries' taxpayers to sustain the development assistance effort. Of course, such a reinterpretation of official development assistance—widening its scope to that of a global policy central in global governance—makes it all the more important to effectively focus on aid effectiveness.

Development and provision of GPGs are joint processes. The relationship goes both ways, and this is actually what sustainable development is about. First, public goods in general and GPGs in particular are necessary ingredients of any development strategy. This is particularly obvious for the fight against contagious diseases, but local populations also increasingly realize the relevance of biodiversity and natural resource preservation for sustainable development. Second, genuine development—a sustainable increase in populations' standard of living—is necessary both to allow the country to devote sufficient resources to GPG provision and to make it acceptable to the local populations to consider longer term objectives.

Official development assistance is also one of the major policies available to successfully address GPG financing and provision. This does not mean that we should divert scarce resources to finance goods for which there is no demand in developing countries. Instead it means that the public policy of official development assistance and its institutions are the proper locus to consider the relationship between developed and developing countries in GPG provision. For some GPGs the only way to enlist developing countries is to create a global development package allowing the beneficiary to achieve its original objectives at no extra cost. For example, carbon-saving investments may be in the global interest, but what developing countries need now is energy. The extra costs implied by the objective of reducing carbon emissions must be paid by developed countries and must not become a reason to slow local development. This use of official development assistance brings it closer to an incipient global policy of redistribution. In many cases GPGs are strongly seen as both local public goods and part of local development strategies. It is thus fully legitimate to consider their provision using official development assistance finance. In many cases GPG provision also requires complementary goods and services—including technical assistance and capacity building—that are part of any development process and that official development assistance should finance as well.

The preceding remarks suggest neither that the current level, structure and instruments of official development assistance are adequate nor that specific additional financing targeted to a given GPG outside the official development assistance apparatus would be unwelcome. It is essential to develop innovative financing mechanisms and associate the private sector and non-governmental organizations in providing certain types of GPGs. There are two broad ways to generate increased financing resources for development and GPG provision:

- Highlight specific, urgent needs and call for generosity and self-interest to produce given discrete public goods (such as the fight against HIV/AIDS).
- Frame official development assistance as one of the central collective policies of globalization, bridging the interests of developing and developed countries. But this will be credible only if multilateral and bilateral aid agencies can prove that they effectively use public money towards development. With-

out being the exclusive concern, GPGs have a crucial role to play. How could one explain to developed countries' taxpayers that their money is used to finance projects or programmes that generate global public bads?

GPG provision does not always require substantial additional financing. In some cases it rests on internalizing externalities through regulation or taxation, shifting the costs to private agents (beyond transaction costs linked to negotiation, implementation, enforcement, tax collection and monitoring). In other cases it entails the production of specific additional goods and services and requires financial resources. From a financing perspective, the distinction between discrete and continuous GPGs is particularly helpful.

- For discrete public goods, successful provision depends on the ability to generate and engage substantial resources. Global funds are a useful instrument. But current budgetary constraints suggest that thinking along the lines of the recent IFF initiative might be useful. The idea would not be to create a new all-purpose vehicle, but to "invent" a process of international public borrowing to finance specific GPGs. Of course this would necessarily amount to committing future taxpayers' resources. Similarly to some local public goods, GPGs carry long-term interests that will benefit future taxpayers, while current inaction could also be highly detrimental to their welfare.
- For continuous public goods, the lack of predictable, continuous financing instruments acts as a constraint. In some cases this constraint has been overcome. For example, the whole apparatus of international institutions is financed through compulsory contributions from member states based on the ability to pay. It is, however, a characteristic trend of globalization that the necessity of continuous, sustainable collective action becomes increasingly clear and that one has to think of ways to finance it, not on a one-shot basis, but as an ongoing feature. Current debates on global taxation should be carried forward.

GPGs exhibit several characteristics simultaneously—notably a discrete and a continuous component. It is indeed difficult to generate the resources needed to address the discrete component of any public good. And it requires a capacity both to generate and harness the necessary willingness to pay and to use innovative financial instruments. It is even more difficult to go beyond the discrete aspect and focus on sustainable GPG provision, which requires considering the continuous component. We invite policy-makers to focus their attention on the longer term, recurrent needs and to look at global taxation as a way to identify and set aside the necessary financial resources.

Notes

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1. According to the "polluter pays" principle.
2. Kindleberger (1986, p. 2) has noted that providing public goods is "a more serious problem in international political and economic relations in the absence of international government." See the literature on cooperation and international relations in Kaul and others (1999, chapter 1).
3. See Kaul and others (1999, chapter 2) and Kaul and others (2003, chapters 12 and 13). See also Barrett (2006, p. 20), who states: "When countries are strongly asymmetric, cooperation may make one kind of country worse off, even while it makes another kind substantially better off. In these situations, cooperation will require more than enforcement to stand. It will also require money transfers—in the jargon of economics, 'side payments'. Usually, these are compensating payments."
4. See Sweden, Ministry for Foreign Affairs (2001, p. 45).
5. See Kaul and others (2003, chapters 12 and 13).
6. The French Development Agency, for example, has had success in such programmes, including an experiment in sustainable forestry management in the Congo Basin and a sustainable shrimp-fishing programme in Madagascar. These projects typically involve the local populations in design, monitoring and implementation.
7. States' capacity to pay is a fundamental criterion for determining their UN contributions. It is determined through the use of verifiable and comparable data and re-examined every three years in order to adjust for new statistics and changes in revenue.
8. See Raffer (1999); World Bank (2001); te Velde and others (2002); Reisen (2003, 2004). See also Zedillo (2001).

9. According to Sagasti and Bezanson (2001, p. 7), "It is necessary to differentiate between the *core component* of the delivery system, which should be taken care of by the international community, from the *complementary* activities that are the primary responsibility of the national and local entities, for its provision and existence."
10. The Global Fund was created following the Special Session on HIV/AIDS held by the United Nations General Assembly in June 2001 and the G-8 Summit in Genoa in July 2001. It began operations in January 2002. Its aim is to collect, manage and dispense additional financial resources, acting on a large scale to reverse the spread of the AIDS, tuberculosis and malaria pandemics.
11. Adding the necessary spending for upstream management of local services, an improvement in absorption capacity (management and control) and salary increases to attract and motivate health professionals, the total adjusted additional costs amount to $57 billion in 2007 and $94 billion in 2015. By comparison, health spending in the countries concerned, deriving from internal resources and official development assistance, came to $106 billion in 2002.
12. This procedure is in various stages depending on the country—for example, there are currently 14 separate bilateral and multilateral projects in Burkina Faso. But it is globally progressing (discussions and information exchanges, division of labour between the World Bank and IMF).
13. The Global Fund operates on voluntary, irregular payments, which are not guaranteed beyond 2008. In the absence of substantial new commitments, it will lack the resources to extend action beyond the renewal of the operations currently under way ($8 billion over 5 years). The participation of the private sector in financing the Global Fund has been limited beyond donations from the Bill & Melinda Gates Foundation ($150 million). The involvement of pharmaceutical companies has not been successful either.
14. For a discussion, see Guesnerie (2003).
15. The World Bank oversees three such funds: the Prototype Carbon Fund, the Bio-Carbon Fund, focusing on forests and carbon sequestration, and the Community Development Carbon Fund, set aside for small projects with strong societal connotations.
16. For example, a project to collect methane emitted by the municipal dump of Durban, South Africa, is being co-financed by the local government and the French Development Agency. It involves converting methane to electricity and was turned to profit through its Clean Development Mechanism dimension. Profits come from the sale of carbon credits to

the Prototype Carbon Fund. In this type of project where commercial and country risks are limited, the Prototype Carbon Fund takes all the carbon risks. The carbon funds invest in a portfolio of projects eligible for the Clean Development Mechanism through futures trading agreements for the carbon credits generated by these projects. The investors are paid in carbon credits in proportion to their stake in the fund.

17. Between 1991 and June 2003 the Global Environment Fund co-financed 722 projects in 140 countries (medium- and full-scale projects). The 2,600 micro-credits awarded to non-governmental organizations and local groups in 60 countries should also be counted. The Global Environment Fund has been criticized for costly and highly complicated procedures, inadequate financial resources and sometimes questionable value added. It is trying to revamp its methods of intervention.

18. The value of special drawing rights is based on a basket of international currencies. They are allocated proportionally to IMF quotas by a three of five majority of member countries representing at least 85% of voting rights. They can be used without consulting the IMF and with no conditionality whenever countries encounter problems of financing balances of payment, after exchanges against other currencies and providing a payment of an interest rate. Two SDR allocations have been granted (the last in 1981) in the framework of general allocation decisions that can be taken every five years and which must be based on a clearly established need to complement the existing level of reserve assets in the world.

19. See Raffer (1999); World Bank (2001); te Velde and others (2002). Estimates from these studies claim that diversion of official development assistance for GPG provision may be important and crowds out aid for conventional development.

References

Anand, P. B. 2002. "Financing the Provision of Global Public Goods." Discussion paper. United Nations University, World Institute for Development Economics Research, Helsinki, Finland.

Atkinson, T. 2003. "Innovative Sources for Development Finance—Global Public Economics." Presented at the Annual Bank Conference on Development Economics, 15–16 May, Paris.

Barrett, S. 2002. "Supplying International Public Goods: How Nations Can Cooperate." In M. Ferroni and A. Mody, eds., *International Public*

Goods: Incentives, Measurement, and Financing. Norwell, Mass.: Kluwer Academic Publishers.

———. 2006. "Critical Factors for Providing Transnational Public Goods." Background study, Stockholm. Paper commissioned by the Secretariat of the International Task Force on Global Public Goods.

Bureau, D., O. Godard, J.-C. Hourcade, C. Henry and A. Lipietz. 1998. *Fiscalité de l'environnement.* Rapport du Conseil d'Analyse Economique 8. Paris: La Documentation Française.

Dales, J. 1968. *Pollution, Property and Prices.* Toronto: University of Toronto Press.

Feachem, R.G. A., and J. Sachs. 2001. *Global Public Goods for Health: Report of Working Group 2 of the Commission on Macroeconomics and Health.* Geneva: World Health Organization.

Glennester, R., and M. Kremer. 2001. "A Better Way to Spur Medical Research and Development." *Regulation* 23 (2).

Global Fund to Fight AIDS, Tuberculosis and Malaria. 2004. "Report on the Mobilization of Resources." Geneva.

Guesnerie, R. 2003. *Kyoto et l'économie de l'effet de serre.* Rapport du Conseil d'Analyse Economique 39. Paris: La Documentation Française.

Hirshleifer, J. 1983. "From Weakest-Link to Best-Shot: The Voluntary Provision of Public Goods." *Public Choice* 41: 371–86.

Intergovernmental Panel in Climate Change. 2001. *Climate Change 2001: The Scientific Basis.* Cambridge, Mass.: Cambridge University Press.

Kaul, I., I. Grunberg and M. Stern, eds. 1999. *Global Public Goods: International Cooperation in the 21st Century.* New York: Oxford University Press.

Kaul, I., P. Conceição, K. Le Goulven and R.U. Mendoza, eds. 2003. *Providing Global Public Goods: Managing Globalization.* New York: Oxford University Press.

Kindleberger, C.P. 1986. "Global Public Goods without International Government." *The American Political Review* 76 (1): 1–13.

Kolm, S. 1987. "Public Economics." In J. Eatwell, M. Milgate and P. Newman, eds., *The New Palgrave: A Dictionary of Economics.* London: Macmillan.

Kremer, M. 2002. "A Purchase Commitment for Vaccines." In I. Kaul, K. Le Goulven and M. Schnupf, eds., *Global Public Goods Financing: New Tools for New Challenges—A Policy Dialogue.* New York: United Nations Development Programme.

Landau, J.P. 2004. *Rapport à Monsieur Jacques Chirac, Président de la République, Groupe de travail sur les nouvelles contributions financières in-*

ternationales. English version available at www.diplomatie.gouv.fr/actual/pdf/landau_report.pdf.

Morgan, J. 2000. "Financing Public Goods by Means of Lotteries". *Review of Economic Studies* 67.

Olson, M. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups,* Cambridge, Mass.: Harvard University Press.

Pigou, A. 1920. *Economics of Welfare.* London: Macmillan.

Raffer, K. 1999. "ODA and Global Public Goods: A Trend Analysis of Past and Present Spending Patterns." ODS Background Paper. United Nations Development Programme, Office of Development Studies, New York.

Reisen, H. 2003. "New Sources in Development Finance." Organisation for Economic Co-operation and Development, Development Centre, Paris.

Reisen, H. 2004. "New Forms of Funding Development Goals." Paris: OECD Development Centre.

Sachs, J.D. 2001. *Macroeconomics and Health: Investing in Health for Economic Development; Report of the Commission on Macroeconomics and Health*. Geneva: World Health Organization.

Sagasti, F., and K. Bezanson. 2001. *Financing and Providing Global Public Goods: Expectations and Prospects.* Prepared for the Ministry for Foreign Affairs, Sweden, on behalf of the Institute of Development Studies, Sussex. Stockholm: Ministry for Foreign Affairs of Sweden.

Samuelson, P. 1954. "The Pure Theory of Public Expenditure." *Review of Economics and Statistics* 36 (4): 387–89.

Sandler, T. 2001. *On Financing Global and International Public Goods.* Policy Research Working Paper 2638. World Bank, Washington, D.C.

———. 2002. "Financing International Public Goods." In M. Ferroni and A. Mody, eds., *International Public Goods: Incentives, Measurement, and Financing.* Norwell, Mass.: Kluwer Academic Publishers.

Severino, J.M., and O. Charnoz. 2004. "Financer le développement aujourd'hui." In *Rapport Moral sur l'Argent dans le monde 2003–2004.* Paris: Association d'Economie Financière.

Severino, J.M., and P. Jacquet. 2002. "L'aide au développement: une politique publique au coeur du développement durable et de la gouvernance de la mondialisation." *Revue d'Economie Financière* 66: 229–51. Paris: Association d'Economie Financière.

Soros, G. 2002. *George Soros on Globalization*. New York: PublicAffairs.

Stiglitz, J. 2000. *Economics of the Public Sector: Third Edition*. New York: W.W. Norton.

Sweden, Ministry for Foreign Affairs. 2001. *Financing and Providing Global Public Goods: Expectations and Prospects.* Stockholm.

UNAIDS (Joint United Nations Programme on HIV/AIDS). 2004. *2004 Report on the Global AIDS Epidemic: 4th Global Report*. Geneva.

Vittek, G. 2000. "Quand les enterprises investissent pour protéger l'environnement." *Problèmes économiques,* 2675. Paris.

te Velde, D., O. Morrissey and A. Hewitt. 2002. "Allocating Aid to International Public Goods." In M. Ferroni and A. Mody, eds., *International Public Goods: Incentives, Measurement, and Financing.* Norwell, Mass.: Kluwer Academic Publishers.

World Bank. 2001. "Effective Use of Development Finance for Global Public Goods." *Global Development Finance.* Washington, D.C.

———. 2004. *Global Development Finance: Harnessing Cyclical Gains for Development*. Washington, D.C.

World Bank and IMF (International Monetary Fund). 2001. "Poverty Reduction and Global Public Goods: A Progress Report." DC2001-0007. Washington, D.C.

WHO (World Health Organization). 2004. *The World Health Report 2004: Changing History.* Geneva.

Zedillo, E. 2001. "Report of the High-Level Panel on Financing for Development." United Nations, New York.