Communicable disease control: a ‘Global Public Good’ perspective

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Despite the increasing ‘globalization’ of health, the responsibility for it remains primarily national, generating a potential mismatch between global health problems and current institutions and mechanisms to deal with them. The ‘Global Public Good’ (GPG) concept has been suggested as a framework to address this mismatch in different areas of public policy. This paper considers the application of the GPG concept as an organizing principle for communicable disease control (CDC), considering in particular its potential to improve the health and welfare of the developing world.

The paper concludes that there are significant limitations to the GPG concept’s effectiveness as an organizing principle for global health priorities, with respect to CDC. More specifically, there are few areas of CDC which qualify as GPG, and even among those that can be considered GPGs, it is not necessarily appropriate to provide everything which can be considered a GPG. It is therefore suggested that it may be more useful to focus instead on the failure of ‘collective action’, where the GPG concept may then: (1) provide a rationale to raise funds additional to aid from developed countries’ domestic budgets; (2) promote investment by developed countries in the health systems of developing countries; (3) promote strategic partnerships between developed and developing countries to tackle major global communicable diseases; and (4) guide the political process of establishing, and mechanisms for providing and financing, global CDC programmes with GPG characteristics, and GPGs which have benefits for CDC.

In short, the GPG concept is not without limitations and weaknesses as an organizing principle, but does provide, at least in some areas, guidance in improving collective action at the international level for the improvement of global CDC.

Key words: public goods, globalization, communicable disease control

1. Introduction

It has long been recognized that our health is affected by the health of others, and that the strength of this effect depends on the scope of interactions between people (Szreter 1988). During the 20th Century, globalization (in its broadest sense) has highlighted the global interconnectedness of health. In particular, the ability of communicable diseases to travel faster and further than ever before has led to more than 20 diseases re-emerging or spreading since the 1970s, many in drug-resistant form (WHO 2000). It is thus clearer than ever that securing one country’s health requires securing the health of others (Folland et al. 1997).

However, despite globalization, the responsibility for health remains primarily national, generating a potential mismatch between global health problems and current institutions and mechanisms to deal with them (Fidler 1998; Jamison et al. 1998). The Global Public Good (GPG) concept has been suggested as a framework to address this mismatch in different areas of public policy (Cornes and Sandler 1996; Sandler 1997; Chen et al. 1999; Arhin-Tenkorang and Conceição 2003; Smith et al. 2003). This paper considers the specific application of the GPG concept as an organizing principle for communicable disease control (CDC), considering in particular its potential, through focusing on mutual benefits to developing and developed nations, to improve the health and welfare of the developing world.

Following this introduction, section 2 outlines briefly the concept of GPGs and places CDC within the GPG paradigm. Section 3 then considers the production of CDC as a GPG, section 4 the agendas and incentives of the players involved in CDC production, and section 5 implications for financing CDC. Section 6 concludes by assessing the value of the GPG concept as an organizing principle with respect to CDC.

2. The GPG concept and communicable disease control

Public goods yield benefits that are non-rival in consumption (they can be enjoyed simultaneously by all in a specified community) and non-excludable (from which no-one in that community can be prevented from consuming). For example,
no vessel can be excluded from the warning a lighthouse provides, and the warning received by one does not prevent others from also benefiting equally from that warning (Cornes and Sandler 1996).

Public goods also provide a ‘consumption externality’: a benefit (or harm) is provided to someone due solely to the fact that the good is being consumed by others (Atkinson and Stiglitz 1980; Varian 1992). Communicable diseases have important externality effects since preventing one person from contracting a communicable disease (or treating it successfully) clearly benefits the individual concerned, but also benefits others by reducing their risk of infection. For example, while measles vaccination provides complete protection to those children who are vaccinated, others also benefit from a lower risk of catching measles. Similarly, the control of communicable diseases within one country reduces the probability of their transmission to other countries.

The benefits of CDC are thus non-rival, in that one person’s lower risk of contracting a disease does not limit the benefits of that lower risk to others. However, its production requires excludable inputs (private goods), such as vaccination, clean water or condoms, as well as non-excludable inputs, such as knowledge of preventive interventions and best practice in treatment. In this sense CDC may be partially excludable, where no-one can be excluded from benefiting from a lower risk, but some can benefit more than others, such as the case of measles vaccination above (Sandler and Arce 2002).

However, the non-rival nature of CDC means that even if it is feasible to exclude some people from some of these mechanisms, it is not desirable. For example, imagine a society where some families vaccinate their children and some do not. This decision is based on the expected costs and benefits to the families themselves and their children, and not to others. The marginal benefit of vaccination to those not vaccinating must therefore be less than the marginal cost in time and/or money. However, the gain to society is much larger than it is to the family, as a higher rate of vaccination affords greater protection to others by decreasing exposure. Thus, although people could be excluded from vaccination, these external benefits make their exclusion socially sub-optimal (Bart et al. 1996). The extent to which mechanisms for CDC are (or could be) excludable is therefore important, primarily in determining how it can be provided and financed.

Global public goods are public goods with significant cross-border benefits on a global level (Woodward and Smith 2003). Since not all communicable diseases are global, or prone to cross-border transmission, clearly only some elements of CDC will be global public goods (as distinct from regional or national public goods). For example, malaria control benefits only endemic areas, and diarrhoeal disease is primarily a disease of poverty, thus their impact is limited to specific geographic or socio-economic populations, and hence is somewhat less than ‘global’. It is therefore only for a sub-set of communicable diseases that CDC can be considered a global public good; for example, HIV/AIDS, tuberculosis and eradicable diseases, such as polio, for which effective low-cost preventive interventions (e.g. vaccination) are available and there is no non-human reservoir.¹

Importantly, public good attributes (or non-rivalry in consumption and non-excludability) create a paradox: although there is significant benefit to be gained from them, since many people can benefit without reducing the benefit to others, there is no commercial incentive for their production because ‘non-exclusion’ means that a price cannot be enforced. With national public goods, government therefore intervenes in either finance, such as taxation or licenses, or direct provision. For global public goods the situation is exacerbated because no ‘global government’ exists to regulate or enforce finance or production. The central issue addressed by GPGs is therefore how best to ensure collective action at the international level, which is a theme running throughout the remainder of this paper.

3. The production of communicable disease control: a GPG perspective

Like any ‘good’, CDC requires a wide range of inputs; from public goods to private goods, and from the disease-specific to the generic. Some are essential to produce CDC, others only make its attainment more likely, easier, cheaper or faster, affecting its economic viability or political feasibility. However, all together determine whether or not CDC will be produced. In considering the effectiveness of the GPG concept as an organizing principle for global health priorities with respect to CDC, it is therefore necessary to consider briefly what the GPG concept may reveal of the nature of the production of CDC. This section therefore outlines the GPG concept with respect to four broad categories of inputs.

3.1 Knowledge and technology

CDC relies heavily on the generation and transmission of knowledge about the incidence of disease (surveillance) and the means of its control (e.g. best practice for prevention and treatment). Surveillance information and knowledge of best practice are both national and (potentially) global public goods in their own right, and the consequent lack of commercial incentive for their production necessitates public provision, with appropriate international support and coordination.

Medical knowledge² is also a GPG in principle, but the embodiment of that knowledge within (e.g. pharmaceutical) products, together with patent regimes, makes knowledge ‘artificially’ excludable, limited to those who can afford to purchase the products. Nonetheless, the products may be necessary to produce CDC, just as private goods are needed for the production of other public goods (e.g. bricks and labour in the case of the lighthouse), and it will therefore be necessary to ensure access to them in order for CDC to be produced (Ghosh 2003; Smith and Coast 2003; Thorsteindóttir et al. 2003).

For knowledge to contribute effectively to CDC, it must also be applied, which requires effective health systems. For example, surveillance requires countries both to produce
information and to act on it, which in turn requires an effective health infrastructure and appropriate technical expertise at the national level. Similarly, knowledge of best practice and medical technologies depend on effective health services for their application. Thus, as discussed in section 3.3, below, where health systems are inadequate to allow knowledge to be applied effectively, their strengthening will be important to the provision of CDC (Powles and Comim 2003).

There may also be a need for an ‘international research network’, or ‘international research council’, to rationalize research priorities, balance developed and developing country interests and avoid duplication. The ‘Malaria for Malaria Venture’, a public-private partnership, supported by the World Health Organization (WHO) and the World Bank to coordinate research on antimalarial products, provides an example of such international support and cooperation for diseases of international concern (Butler 1997; Gallagher 1997; Mons et al. 1998). Together with similar ventures, such as the Global Alliance for TB Drugs, the International AIDS Vaccine Initiative, the International Partnership for Micronutrients and the Paediatric Dengue Vaccine Initiative, such initiatives indicate that a variety of GPG-like entities are emerging that redress important private, and public, market failure in CDC production, and therefore also the problems of failure in international collective action (as indicated below).

3.2 International collective action

CDC requires appropriate policies and regulations, varying according to the disease concerned, which are public goods at the corresponding (national, regional and/or global) level (Fidler 2003). This requires international collective action (highlighted above), as well as intervention by national governments, which could be enhanced if: (1) decision-making processes in those international bodies which develop international policies and regulatory regimes were fully representative of developing countries and their populations; and (2) health considerations were fully and effectively taken into consideration in non-health fora where decisions have potential effects on health (e.g. international agreements concerning pharmaceutical patents).

3.3 National health systems

The absence of functioning health systems in some countries is an important constraint on GPG provision, rendering the production of some GPGs impossible, and increasing the cost and/or reducing the benefits of others, thus increasing the likelihood of under-provision or preventing benefits from being universal. In many developing countries, for example, per capita expenditure on health is a fraction of the US$30–40 per person per year considered necessary for an effective health system (Evans et al. 2001), so that disease surveillance and reporting are non-existent, facilities poorly staffed, and basic public health and health service infrastructure sorely lacking.

To the extent that effective health systems are necessary to universalize the benefits from some potential health-related GPGs (e.g. medical technologies and best practice), they may be considered as access goods: private goods necessary for someone to benefit from a public good, as a household’s connection is required for it to benefit from a clean water or sanitation system. This suggests that they might appropriately be treated as if they were GPGs (Powles and Comim 2003). International collective action in the finance of, and support to, health systems would therefore improve the provision of CDC, with the GPG concept suggesting that efficiencies may be gained by taking a more ‘horizontal’ (system-wide) approach to the provision of inputs.

Donors have traditionally worked in countries through ‘vertical’ (disease-specific) programmes, partly as a means of limiting the problems of working through under-resourced health systems. However, while such programmes have often been successful, at least in the short term, they have been seen as inefficient, giving rise to problems of coordination, skewing priorities from national towards donor concerns, diverting scarce human and other resources away from general health services, and generating costly duplication between parallel programmes (LaFond 1995; Koivusalo and Ollila 1997). In developing a more ‘horizontal’ approach, looking at health systems, the GPG concept highlights the importance of managing relations between national level health programmes, and designing international support for them, in such a way as to ensure that ‘vertical’ programmes facilitate and promote the effectiveness of overall health systems, and do not create inefficiencies in GPG production or health service provision more generally.

The GPG perspective thus provides an additional rationale for the international support of health systems in countries where they are critically weak. It also highlights the long-term view required of GPG provision, to take account of the potential for health system strengthening to contribute to future provision as well as the direct benefits of immediate provision.

3.4 Non-health system inputs

A mixture of non-health sector private goods (e.g. nutrition, living conditions and education), and national public goods or club goods (e.g. water and sanitation systems) are critical to health. While their absence is unlikely to prevent CDC, they may have a substantial effect on its production. Poverty reduction, food subsidies, supplements and fortification, housing improvement, and water and sanitation provision may play a major role in the control of many communicable diseases. GPG considerations may thus strengthen the case for supporting such programmes.

4. Communicable disease control: ensuring international collective action

At the ‘core’ of the public goods concept is the existence of a collective action problem: the community as a whole is better off if these goods are provided, but their non-rival and non-excludable characteristics require collective action to avoid free-riding (individuals benefiting from the actions of
others without reciprocating) and the ‘prisoner’s dilemma’ (lack of communication and information about each participant’s actions, and lack of enforcement mechanisms, impeding cooperation). Fundamental to securing the provision of global public goods is therefore the political process of ensuring collective action at the international level. This requires consideration of the major players and their agendas, and the dynamics of international cooperation.

Major players for developing and implementing CDC strategies are: (1) national governments, as potential beneficiaries, sources of funding (internally and externally), and providers of many of the mechanisms for control; (2) international agencies, as fora for consensus-building and collective decision-making, coordinators, promoters and channels of government support, and supporters of control mechanisms and regulatory frameworks; and (3) pharmaceutical and other commercial companies, as developers and suppliers of relevant medical technologies, and as political players at the national and international levels.

However, the problem is that these players’ agendas (their preferences or priorities) do not necessarily coincide with each other, or with public health priorities. For example, it is unlikely that each national agenda will give equal priority to control of the same communicable diseases, or to CDC relative to other priorities; and companies’ agendas will inevitably differ from those of governments and international agencies. The more divergent these agendas are, the greater is the potential for free-riding and the prisoner’s dilemma to compromise CDC. For example, the interdependence between countries for CDC in particular creates a potential for free-riding. If many nations adopt strategies, one country may avoid involvement (or not contribute financially) and still benefit from the global reduction in incidence. Conversely, however well one country performs within its own borders, it cannot hope to insulate itself from the results of inaction by others. Impediments to international cooperation, and the role of international bodies in facilitating it, are therefore central to consideration of the potential for the GPG concept to assist CDC.

The value of the GPG concept in this respect is in highlighting the importance of assessing where CDC is on different players’ agendas, why it is there, and its costs and benefits to them, in order to support means to move forward its provision. Resolving collective action problems requires a clear understanding of the nature, scale and timing of costs and benefits to different countries, and other parties, and proactive efforts to reconcile different interests and priorities. Thus, for example, to ensure informed decision-making, it may be preferable to extend the decision-making process, to encompass an initial agreement in principle with full agreement following after a period of intensive technical and economic analysis. This requires international fora that are legitimate, credible and effective in decision-making, and in which national public interests are effectively and proportionally represented. A markedly unequal distribution of power may limit the commitment of some countries to decisions taken, undermining GPG, and hence CDC, provision.

5. Paying for communicable disease control: a GPG perspective

Controlling communicable disease is expensive. For example, in Sub-Saharan Africa alone, increasing the coverage of malaria and HIV/AIDS prevention, and the treatment of malaria and tuberculosis, to 70% of the population by 2015 would cost an additional US$10–17bn per year (at 2001 prices). Providing care for 50%, and treatment for 62%, of people with HIV/AIDS would cost a further US$24–41bn per year. Even on optimistic assumptions for economic growth, together they would represent around 8–14% of national income in 2015 (Arndt and Lewis 2000; Kumaranayake et al. 2001). Thus, who pays, and how they pay, are crucial elements of a global approach to CDC, and critical under a GPG perspective, for collective action.

5.1 Who should – or could – pay?

In an ideal world, the cost of providing GPGs would be allocated between countries in proportion to their benefits. However, health care expenditure, reflecting income, is very low in many developing countries. This impedes effective global collective action through undermining the political will to cooperate, and limiting effective participation in international CDC. Even the creation of a legal duty does not ensure compliance, as this depends on having adequate resources to fulfil such obligations (Fidler 1996, 1997).

Further, where countries with inadequate resources do participate in global programmes, financial and human resources may be diverted from other essential activities, with possible adverse effects on health, including other aspects of CDC. The opportunity cost of these resources is far greater in developing than developed countries, creating tensions in securing global cooperation, and reducing the net health benefits. Circumventing this problem requires that financial and other contributions reflect each country’s ability to contribute, as well as its potential benefits from the GPG. In practice, this means that financing needs to come predominantly from the developed world.

Contributing to the production of a GPG may mean that resources (whether domestic or foreign) are spent on activities that do not accord with national priorities, in at least some countries. This issue is at its most acute, for example, in the latter stages of a disease eradication programme. The Polio Eradication Initiative’s estimated external financial needs – excluding volunteer time and governments’ contributions to control efforts in their own countries – are estimated at US$370m in 2001–2. If the incidence of polio remains at the 2001 level (537 cases), this implies a cost of around US$0.7m per case. Reallocating this money to more immediate health priorities could improve health outcomes in the short term, although these benefits might be outweighed in the long term by the major (and permanent) costs (health and financial) from the resulting failure of the eradication effort, even accounting for the cost of continuing vaccination in the case of non-eradication, variations in discount rates and most plausible future scenarios to achieve eradication (Aylward et al. 2003). Diverting existing development assistance to finance
GPGs could also generate negative effects on health elsewhere, and these opportunity costs would need to be explicitly assessed. Clearly, much of this analysis depends upon the time frame for assessing benefits. In the case of eradication, the benefits are infinite, but even in areas of control they may run to many years in the future, meaning that the willingness to forgo benefits now is a critical issue.

The main GPG contribution here is to show that supporting other countries’ CDC strategies is not a question of humanitarian aid, but a self-interested investment (as alluded to earlier) in domestic health: while recipient countries also benefit, the primary objective for the developed countries is to improve their own health. This suggests that national health budgets in donor countries are a more appropriate source of funding, leaving existing aid monies unaffected, and thus increasing total funding to developing countries rather than merely reallocating it between uses.

Another possible source of finance is the non-government sector. NGOs play an important role in the provision of CDC, particularly as health-service providers. In this capacity, they are likely to fund their activities largely from their own resources. However, few NGOs have sufficient resources to provide significant financing for CDC-related activities of other actors at a global level. Private foundations and philanthropic trusts may be a more feasible funding source, as in the case of Rotary International’s financial support for the Polio Eradication Initiative (PEI). However, the relatively limited resources available overall from such institutions (compared with developed country governments) means that their main role is catalysing larger contributions from public sector institutions, rather than direct funding.

The commercial sector may also be a possible source of financing in some areas of CDC, principally through ‘in-kind’ contributions, such as donation of vaccines or pharmaceuticals.9 In other cases, however, they may have little incentive to support GPG provision. The incentives for pharmaceutical company involvement in disease eradication, for example, depend on the additional demand for their eradication-associated products in the short term offsetting the long-term loss of markets for preventive and treatment products. Similarly, although commercial companies may play a critical role in the development of new technologies required for CDC, their role is often in the subsequent development and mass production of discoveries initially made in public research facilities, as with antimicrobial and vaccine development. However, in the current political climate, it is likely that the private sector would be looked to, at least for collaboration in the development of new therapies (Buse and Walt 2000a,b). In this case, specific incentives for research and development may be required, including alterations to patents regimes, purchase funds and/or public-private partnership in investment (Buse and Waxman 2001).

5.2 Financing mechanisms

Although numerous possible mechanisms can be envisaged for financing GPGs, there are four main strategies that might be pursued:

1. Voluntary contributions. These are the most straightforward option, but are particularly prone to the free-rider problem as demonstrated by the meagre contributions thus far to the Global Fund for AIDS, Tuberculosis and Malaria6 – since each country has an incentive to minimize its contribution.

2. Coordinated contributions. Contributions that are negotiated between countries, or determined by an agreed formula, form the basis for core funding of most international organizations. While this may limit the ‘free-rider’ problem, each country has an incentive to negotiate the lowest possible contribution for itself (or the formula that will produce this result). Rewarding contributions with influence, to avoid this problem, skews power towards the richest countries (e.g. the IMF and World Bank); but without such incentives (or effective sanctions), countries have little incentive to pay their contributions in full (e.g. US contributions to the United Nations). Basing contributions on an existing formula may be more effective: the starting point for financial contributions to the PEI was contributions to WHO funding. However, as the PEI demonstrates, the free-rider problem remains.

3. Global taxes. Taxes, such as the ‘Tobin tax’10, are theoretically the most efficient means for financing GPGs, comparable to the use of national taxes to provide national public goods. However, substantial opposition remains from some developed countries, limiting the prospects of securing funding from this source for the foreseeable future.

4. ‘Market’ based systems. Some form of market type system could contribute to the provision of some GPGs while being largely self-financing. However, as the USA’s withdrawal from the carbon-trading system proposed in the Kyoto Agreement demonstrates, without effective enforcement mechanisms, the free-rider problem remains.

The global nature of CDC, and the vast range of countries involved, make it unlikely that voluntary – or even coordinated – contributions can be relied upon to generate sufficient revenues in many cases. For CDC to be financed as a GPG is therefore likely to require market-based and/or global tax systems, depending on the aspect of CDC concerned and the type of GPG involved.

Disease eradication, for example, is a prime case of a ‘weakest-link’ GPG; it is provided only when the disease has been eliminated in the worst-performing country. Control of non-eradicable diseases, such as HIV/AIDS, is, by contrast, a ‘weighted-sum’ GPG, with marked variations in the effects of control efforts in different countries. The primary benefits of reducing cross-border transmission, and the greatest ability to pay, are in low-incidence countries, while the need for control is greatest in high-incidence countries, which are least able to pay. In both cases, cross-subsidy between countries is therefore essential (and, for eradication, increasingly so over time). Market mechanisms have been suggested as the most efficient manner with which to tackle this with respect to antimicrobial resistant diseases (Smith and Coast 1998). However, clearly more consideration of the most
appropriate (that is, efficient and feasible) systems is required on a case-by-case basis, rather than a generic recommendation being given here.

6. Conclusion

This paper has outlined several key aspects of the GPG concept, and applied it to the case of CDC to explore the usefulness of the concept as an organizing principle for health care priorities. Two important implications arise from the discussion presented in this paper.

First, the GPG concept’s limited coverage means that it is clearly limited as an organizing principle for global health priorities,11 as this would mean neglecting most aspects of health. It must not, therefore, be allowed to detract from other motivations for international health programmes, such as social justice, equity, altruism, poverty reduction and economic benefits (Mooney and Dzator 2003).

Second, even among those limited aspects of CDC which can be considered GPGs, there are limits to the GPG concept’s effectiveness as a means of identifying international objectives, as it is not necessarily appropriate to provide everything which can be considered a GPG. Eradicating a disease is, by its nature, a GPG; but if the cost outweighs the potential benefits for technical or economic reasons, non-GPGs may be a better use of funds.

The GPG concept is therefore severely limited as an organizing principle for health care priorities. However, it may perhaps be more appropriate to focus on the ‘core’ feature of the GPG concept, collective action, and on the application of this concept to the development of effective and representative mechanisms for international decision-making as the primary means of developing appropriate priorities, policies and programmes for health at the global level (Smith and Woodward 2003). The discussion provided in this paper suggests that the GPG concept may then, when focussed on the failure and resolution of collective action, be a useful framework to:

- raise additional funds for global CDC programmes from developed countries’ domestic budgets, to supplement aid funds;
- promote investment by developed countries in the health systems of developing countries, as ‘access goods’;
- promote strategic partnerships between developed and developing countries, particularly in the generation and dissemination of knowledge, to tackle major global communicable diseases; and to
- guide the political process of establishing, and mechanisms for providing and financing, global CDC programmes with GPG characteristics, and GPGs which have benefits for CDC.

In short, the GPG concept is not without limitations and weaknesses as an organizing principle, but does provide, at least in some areas, guidance for improving collective action at the international level for the improvement of global CDC.

Endnotes

1 Further detail on classifying a variety of communicable diseases as global public goods can be found in Woodward and Smith (2003).

2 Defined here broadly, comprising ‘a wide variety of elements, from the understanding of health risks, through the impact of preventive, diagnostic, curative and palliative procedures, to the effect of different delivery systems for medical technologies’ (Gosh 2003, p. 119).

3 It should be noted that the extent of these two problems varies across different types of public good. For example, the ‘weakest link’ public good will encounter a less severe prisoner’s dilemma than the ‘summation’ public good. However, this does not affect the general argument advanced in this paper.

4 Of course, one could see such expenditure as an investment (a healthy population being a productive population, prevention saving treatment etc.) rather than a consumption item. However, the nuances of this debate are beyond the scope of this paper, suffice to say that it is assumed for the discussion here that countries would, ceterus paribus, wish to avoid such expenditure if possible.

5 From: [http://www.polioeradication.org/all/news_files/pdf/FinalPolioFinancial01_05.pdf].


7 The experience of PEI suggests that the potential for direct financial contributions is limited. The private commercial sector has contributed less than 2% of the financial costs (i.e. excluding the opportunity cost of volunteer time).

8 Again, for more information on each of these options see Smith et al. (2003).

9 The Global Fund for AIDS, Tuberculosis and Malaria is an international fund, financed by donations from governments, private foundations and corporations, to support programmes for health, principally HIV/AIDS, tuberculosis and malaria. It is to be run by governments independently of, but with advice and support from, the UN system.

10 The Tobin tax refers to a proposal by Nobel Economics Laureate James Tobin (Tobin 1978) to levy a tax at a very low rate on all currency conversion transactions conducted through the international clearing system.

11 Indeed, as Preker et al. (2000) point out, (global) public goods theory is defined by consumption rather than production characteristics, and as such provides no organizational basis to the provision or financing of such goods.

References


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