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A Kyoto-like Market-based Protocol on Sustainable Use of Biodiversity

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Two major mutually interrelated global environmental problems have come to the fore: climate change and biodiversity depletion (Fig.1). Both are internationally addressed through their respective conventions, namely the Framework Convention on Climate Change (ECCC) and the Convention on Biological Diversity (CBD). The former has a market-based GHG (greenhouse gas) emission trading instrument, or the Kyoto Protocol. The other still needs, in our view, designing a similar market-based international mechanism.

Several initiatives in this direction have recently been made public. **The Venezuelan President** announced at the World Summit for Sustainable Development (WSSD, Johannesburg, 2002) the establishment of an OPEC-like eco-services cartel that consisted of 12 countries and wanted developed countries and corporations to pay for access to a wide range of plants, animals and indigenous expertise in using them for health, food, and life support rather than exploiting them without recompense. The twelve countries included Brazil, China, Colombia, Costa Rica, Ecuador, India, Indonesia, Kenya, Mexico, Peru, South Africa and Venezuela. It was the core of the UN Mega-group of countries.

The **Katoomba Working Group** was set up. It is composed of experts from forestry, finance, environmental research and policy, government officials and other private and non-profit sectors from all regions of the world - Canada, China, Germany, Japan, Netherlands, the UK, USA, the World Bank, the Ford Foundation, IUCN, WWF, etc. The group promotes the global interest in markets for environmental services from forests and stresses growing recognition of two fundamental issues: (1) in general, forest degradation and the conversion of forest to alternative land uses is often more profitable, at least in the short-run, than forest stewardship; and (2) markets, in general, do not recognise or reward forest owners for the host of environmental services generated by forests that are beneficial to society, including carbon storage, watershed protection and biodiversity conservation.

The Katoomba group aims to spur development of markets and market-based instruments for forest ecosystem services. It points out that if some of the value of these social benefits could be returned to forest owners, there would be a double benefit: additional incentives for forest stewardship and conservation, and new sources of income for forest landholders.

Furthermore, in his speech at the WSSD, the **Russian prime-ministre** pointed out, in particular, the need for compensating global ecological services of ecological donor countries, adding that Russia is one of them. Debt-for-sustainable development swaps were mentioned as one such tool.

International experience (OECD, WTO) has so far been instrumental in classifying and discussing **environmental goods and services** (end-of-pipe technologies, such as services providing drinking water, waste, alternative energy, sewage and waste treatment, etc.) that such goods and services have well defined owners, their rights to them, values (prices). Both are movable. They are provided using traditional market mechanisms among companies and countries. Sometimes, transboundary aspects are involved, such as international supplies of drinking water (using tankers, pipelines, etc.), international trade in waste, including its treatment and return of decontaminated waste.

However, **ecological (ecosystem) goods and services** have got into the picture only recently. That was related to the creation of a new science – ecological economics, introduction of the total economic value notion, case studies in environmental valuation of renewables and biodiversity, the design of a UN integrated system of economic and

environmental accounting (UNEP, the UN Statistical Department). Intercountry comparisons of ecosystem services have been reflected in assessment of 'ecological footprints' (WWF). While ecological goods are movable, ecological services are not and are firmly tied to ecosystems. The world market is at present dominated by trade relating to produced and non-renewable natural capital, while renewable natural capital that is abundant in many developing and other nature dependant countries (it exceeds a share of producing capital) is largely undervalued and real trade in its goods and services is unjustly small.

International economic relations seem to operate largely with three kinds of currencies, namely, money, technologies, and ecological goods and services. The failure of traditional markets to adequately handle exchanges of ecosystem services to human produced wealth (goods and technologies) and money have resulted in the advent of new markets with specific market and trade instruments and trade commodities. For example, such a mechanism is envisaged in an agreement on the trade in CO₂ emission quotas and on accounting carbon sequestration by means of forest planting (the Kyoto Protocol).

The following issues are suggested for research and discussion:

- 1) global ecological services and goods (their notion, definition, taxonomy),
- 2) ecological property rights,
- 3) economic valuation of ecological services and goods,
- 4) exchanges in ecological services and goods, including market and market-based instruments.

Below is a list of major research and discussion items that can lead to a Kyoto-like market based protocol on sustainable use of biodiversity (fig.2).

1) Global ecological services and goods (their notion, definition, taxonomy),

The WRI classification (http://www.wri.org/wri/wr2000/goods_and_services.html) is suggested as a starting point. This classification is quite general and partial needing further development to be used operationally. It leaves out marine and mountain ecosystems to name but two, etc. For example, the WSSD stressed the necessity of enlisting indigenous peoples' expertise in regard to the use of living natural resources and biodiversity for human life support. The availability of and access to gene banks could also be considered.

The classification could take into account ecosystem values (direct, indirect, optional, inherited, etc.). The Kyoto protocol artificially limits the value of ecosystem services in time (only after 1990), and covers only carbon sequestration by new (after 1990) forests. The contribution of ecosystems to maintaining the Earth's biosphere or regional sustainability could be another criterion for classification. Ecosystem services important nationally and maintained nationally versus national ecosystem services of international and global importance that could be treated accordingly can also be considered. The classification should be useful for defining ecological property rights and values.

2) Ecological property rights

A spectrum of approaches can be considered based on ecosystemic, territorial, administrative boundaries or the ownership of land plots, water bodies, forests, habitats, etc. One may try to find some similarities with intellectual property rights, especially applicable for indigenous knowledge and experience. Protection of local indigenous community rights to the ecosystem knowledge and expertise; sovereign versus private ownerships. The Kyoto protocol seemingly prefers the sovereign property rights for global ecosystem services.

3) Economic valuation of ecological services and goods,

Environmental valuation can be discussed in physical and monetary terms. One publication argues that global ecoservices are equal to 1.1 times the global GDP in the 1990s. Is this indicator operationally useful? What volumes of trade in ecosystem goods and services can be expected? Which valuation methodology should be taken as a basic one – the UN SEEA, ecological footprints, total economic value, used/unused assimilating capacity, ecosystems biomass, etc.

4) Exchanges in ecological services and goods, including market and market-based instruments

The following issues can be discussed. Exchanges of ecosystem services for technologies, debt-for-nature (ecoservices) swaps, selling ecosystem services and goods (monetary exchanges). The volume of trade in ecosystem goods can be roughly assessed from the existing few publications. Three major currencies: money, technologies, and ecosystem services (goods). Trade in rights to bio-prospecting. Sanctions for eco-piracy? The trade in ecosystem goods is partially regulated by the CITES and in ecosystem services by the Kyoto protocol. The CBD does not cover these issues but has relevance to them. However, pharmaceutical and perfume companies largely make use of plants and animals that are not covered by the above conventions. Nowadays, some developing countries have initiated the practice of concluding agreements with transnational companies on bio-prospecting activity and benefit sharing from the activity that make use of biodiversity of the given country (see more at. The role of UNEP and WTO? Is there the need in a convention (a protocol to the Convention on biodiversity) on ecosystem goods and services? How other ecological goods and services that are not marketed at present but important for human life support and transition to sustainable development should be treated? Should a taxonomy table indicate what trade (exchange) mechanisms exist for different kinds of ecological goods and services? At present there is very little regulation of trade in ecological goods and services. CITES and the Kyoto protocol represent exceptions rather than the norm, and the CBD is only a framework, and does not provide actual regulations for transactions in these goods and services. It should also be noted that ecosystem services are beneficial to the country (ecosystem) of their origin, a neighboring region and the globe.

Could market based bilateral (multilateral?) agreements between internationally legal entities be enough to optimize (compensatory) payments for conserving natural ecosystems? Say, some (post) industrial countries that have lost their ecosystems (natural capital) for economic development can invest in conserving ecosystems not on their territory but concluding agreements with other nature-rich countries in which marginal ecosystem conservation (equivalent increments in ecosystem areas, biomass, bio-productivity and biodiversity) is less costly than in their countries. The cost of such contracts can be considered as a contribution to maintaining biospheric sustainability while costs per unit of ecosystem services can give a clue to their economic values. Is such an approach realistic bearing in mind that debt-for-nature swaps implicitly recognize it? Could this understanding be expanded beyond the DNS pattern? What other new ideas can be generated? It is interesting to note that the European countries did not make use of a compensatory mechanism (did not claim money) to cover damages to their ecosystems due to acid deposition from neighbouring countries, though tables of transboundary SO₂ movements (acid rain inter-country balances) were made from which it was clear which countries and how much affect other (acid deposition recipient) nations.

In conclusion, it is suggested that the above coverage lead to a careful consideration of the issues raised before arriving to a definitive international instrument that could be an incentive to sustainable use of biodiversity and developing a market for renewable natural capital.

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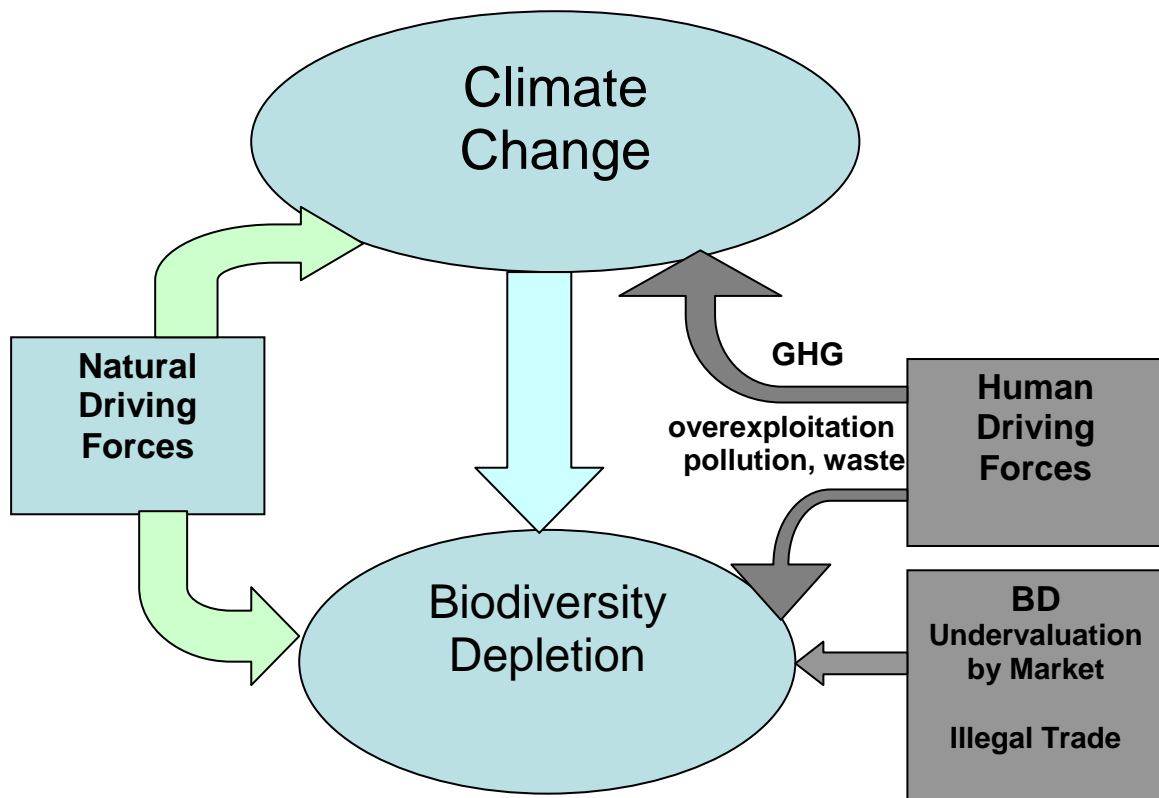


Fig.1 . Climate – Biodiversity Interactions

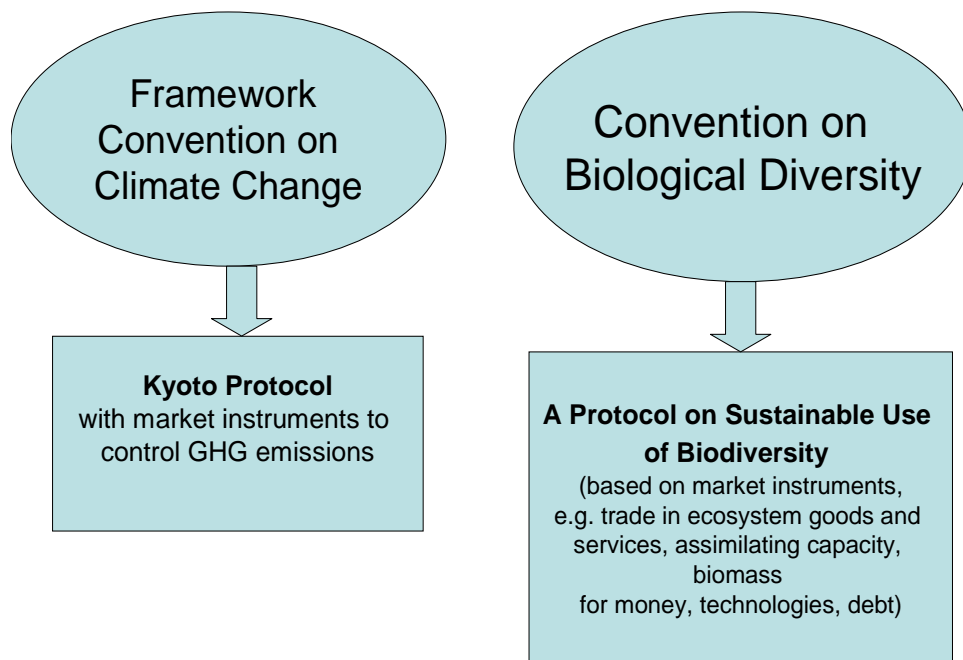


Fig. 2. The framework of a suggested Protocol on sustainable use of biodiversity