Biotechnology, Cartagena Protocol and the WTO Rules

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Introduction

Since the early 1990s, biotechnology, intellectual property rights (IPRs) and the related policy have become extremely contentious areas of discussion at national and global levels. Historically, these areas were domains requiring specialists with specific training and skills to practise. However, recently these issues have become critical to several discussions on conservation and development. Recongnising the impacts of these two specific areas in development, several countries have started addressing them from several angles – economic, social, environment and political.

The Convention on Biological Diversity (CBD) is one of the three multilateral environmental agreements (MEAs) that was adopted as a result of the Rio Earth Summit in 1992. About 189 countries are Parties to the CBD, agreeing to implement various provisions of the Convention. Also, the CBD is one of the key trade-related MEAs that aim to promote the conservation and sustainable use of biodiversity besides sharing the benefits of such use equitably. One of the significant outcomes of the discussions under the CBD has been the adoption of

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the Cartagena Protocol on Biosafety (hereinafter, the Protocol) which was adopted after six years of tough negotiations in January 2000. The Protocol is based on the precautionary approach and establishes core procedures and a set of standards relating to the import and export of LMOs to ensure that the Parties are able to make informed decisions.

The World Trade Agreement is a set of internationally binding Agreements negotiated under the WTO. As of now, WTO has a membership of 146 countries and customs territories. The WTO rules are designed to liberalize market by removing unnecessary, discriminatory and protectionist barriers to free trade.

WTO has been discussing the need to address issues of environmental concerns of trade practices for a long time. More recently, the 4th Ministerial Conference in Doha agreed to launch negotiations on certain aspects of the trade and environmental linkage. This was followed by the Ministerial Declaration at CBD COP6 to the CBD and Plan of Implementation of the World Summit on Sustainable Development (WSSD) who all reaffirmed the importance and the need to design and implement mutually supportive activities with other conventions, international organizations and initiatives.

A quick review of CBD obligations to trade reveals the fact that even though the word 'trade' is not mentioned, several Articles relate to trade and associated issues (Table 1). Several decisions of the Conference of Parties relate to trade like the COP 5 decision V/6 on applying an ecosystem approach to conservation that mentions that any ecosystem management programme should:

a. reduce those market distortions that adversely affect biological diversity;
b. align incentives to promote biodiversity conservation and sustainable use;
c. internalize costs and benefits in the given ecosystem to the extent feasible.

A similar review of WTO obligations relating to biodiversity and environment provides mechanisms to address issues of trade and the importance of biodiversity (Table 2). The Doha Ministerial Declaration has implications for environment as well as biodiversity, especially on issues dealing with tariff and non-tariff barriers.

Biotechnology and IPRs

Article 27.3 (b) of the TRIPs Agreement deals with IPR protection of life-forms. While the TRIPs Agreement only sets minimum standards;

Table 1: CBD Obligations relating to Trade

Article	What it says
Preamble	Calls on Parties to adopt a precautionary approach.
Article 6 (b)	Requests sectoral integration of conservation, sustainable use and benefit sharing issues.
Article 8 (h)	Calls for preventing introduction of invasive alien species besides their control and eradication.
Article 8 (l)	Calls for regulating or managing processes and activities that will have adverse impacts on biodiversity.
Article 10 (b)	Calls on Parties to adopt measure relating to use of biological resources to avoid or minimize adverse impacts on biodiversity.
Article 10 (d)	Calls for protection of customary use of biodiversity that is compatible with conservation and sustainable use.
Article 11	Calls on Parties to adopt economically and socially sound measures that act as incentives for conservation and sustainable use of biodiversity.
Article 14	Calls on Parties to establish sound environmental impact assessment methodologies.
Article 15	Establishes the rules on access to genetic resources and equitable sharing of benefits arising out of such use.
Article 16	Calls for the transfer of technologies, considering the IPRs.
Article 19	Calls for measures to ensure safe use of biotechnology.
Article 22	Relationship with other Conventions.

members may, but shall not be obliged to, incorporate into their law more extensive protection than that required by the TRIPs Agreement. Discussions under Article 27.3 (b) are still on with countries understanding and responding to the provisions in varied ways.

Related to conservation of biodiversity, Article 27 (2) enables member states to avoid or limit patent protection on plants to the extent that patents could adversely affect genetic diversity by accelerating genetic erosion.[1] However, it is inconceivable that such exclusions or limitations should be based upon Article 27 (2) of TRIPs, given the fact that Article 27 (3) of TRIPs explicitly allows the exclusion of plants in general. Furthermore, Article 27 (2) only allows the exclusion of inventions whose "commercial exploitation" is necessary to be prevented; it does not seem to allow exclusions where the mere patent itself could have adverse effects.

TRIPs require micro-organisms to be patentable, while plant variety rights must come under some kind of IPR system, but not necessarily under patents. Countries are still divided on the issue of patenting

Table 2: WTO Obligations relating to Biodiversity

Issue	What it says
Preamble	Commits for sustainable development and to protect and preserve environment.
Article 6 (relevance to Agreement on Agriculture)	Provides framework for reducing subsidies, but exempts certain environmental activities.
Article 2 (relevance to SPS)	SPS measures to be applied only to the extent necessary and not to be applied without scientific evidence.
Article 3 (relevance to SPS)	Expresses presumption of consistency for international standards.
Articles 3.3, 5 and 5.7 (relevance to SPS)	Risk Assessment procedures as relevant to Member's needs.
Article 2.6 (relevance to TBT)	Requests international standards to be set up as per technical regulations.
Article 2.2 and 2.4 (relevance to TBT)	Requests members to use international standards for legitimate objectives that include protection to human health or safety, animal or plant life or health, or the environment.
Articles 2.9, 2.11, 5.6, 5.8 and 10	Seek to enhance transparency in the establishment of the standards.
Article 3.1 (Relevance to Agreement on Subsidies and Countervailing measures	Prohibits subsidies if they rely on export performance, or are contingent on use of domestic rather than imported goods.
Article 8.2 (c) (relevance to ASCM)	Allows for assistance to existing facilities to promote adaptation to new environmental requirement in specific circumstances; however, this provision is time limited and not renewed in 1999.
Article 27 (2) (Relevance to TRIPs)	Requires that patents be available for all inventions, but adds that members can prevent patents to protect *ordre public* or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law.
Article 27. 3 (b)	Allow members to exclude from patenting "plant, animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological or microbiological processes. However, members are to provide for the protection of plant varieties either by patents or by an effective *sui generis* system or a combination thereof".
Article 66.2	Calls for developed country partners to encourage transfer of technology to developing countries.

natural substances, especially those based on either process or product. Biotechnological interventions receive much attention since many patents based on biotechnology fall within the two categories (products and processes). While Europe and North America do not differentiate these categories, several developing countries prefer otherwise. The present amendment to the Indian Patent Act recognizes the fine difference between these categories when it comes to biotechnological intervention, offering product patents.

Regarding patenting of plants, several countries have already adopted the UPOV systems in Asia while some countries like India have opted to develop a *sui generic* system to suit the national needs and interests. Sahai and Kumar (2003) offer a comprehensive comparison of the plant variety protection scenario in Asia.

CBD, Biosafety Protocol and WTO: Linkages and Conflicts

At the WTO ministerial conference in Doha, the relationship between WTO rules and MEAs was identified as a key issue for the ninth round of multilateral trade negotiations at the 5th WTO Ministerial Conference. Identification of specific trade obligations (STOs) will be the starting point of the negotiations of the WTO-MEAs' relationship. WTO Members have begun substantive discussions to examine STOs under certain MEAs. However, STOs under MEAs can cover a wide spectrum of possibilities, ranging from trade bans to notification procedures or labelling requirements. For example, Switzerland identified two categories of measures that arose from trade obligations. The first category includes mandatory trade measures explicitly provided for under the MEAs. This is the case of the Protocol since it requires advanced informed agreement (AIA) procedure for the first shipment of LMOs; the second category, non-mandatory measures, which are not explicitly provided for under MEAs, but are appropriate and necessary to achieve a MEAs' objectives. Under the Protocol issues of labelling will come under discussion through this category.

It must be noted that the Protocol is one of the elements of an MEA that has been negotiated by the countries with different backgrounds and interests in biotechnology and the final outcome is a package reflecting the internal balance of rights and obligations. Hence, identifying and clarifying what constitutes the STOs will be helpful to increase the weight of the Protocol on the negotiations on environment and trade.[2] A detailed analysis of the text of the Protocol reveals the following aspects as relevant to trade related measures and LMOs.

(1) Advance informed agreement (AIA) procedure (Article 8-10). The procedure is the Protocol's central mechanism regulating the decision-making process for the first shipment of LMOs intended for introduction into the environment of the Party of import. The AIA procedure starts with the notification of the proposed movement (transboundary) of the LMO to the Party of import. This notification needs to contain certain information relating to the exporter, the LMO and its intended use, as well as other information. The next step is that, within 90 and 270 days of receiving the notification, the Party of import must acknowledge receipt and inform its decision to the notifier and the Biosafety Clearing-House (established by the CBD), respectively. According to the AIA procedure, four possible decisions from the Party of import may be made: approve the import of the LMO, with or without conditions; prohibit the import of the LMO; request additional information; or inform the notifier that the import decision will be taken within a further defined period of time.

As per the AIA procedure, the elements which influence the decision of import of LMOs include the accuracy of information provided by the exporter (Article 8(1)), the existing scientific evidence available for risk assessment (Article 10(1)), the efficiency of decision-making of the importing Party (Article 9(2) and 10(2)), and the flexibility of applying the precautionary approach (Article 10(6) and 11(8)). In effect, inaccurate information from the exporter and inefficient decision-making processes of the importing Party will cause the exporter to lose the good chance to occupy the international market of LMOs, while discretion on the risk associated with a LMO, in the case of insufficient scientific knowledge and evidence may lead to a refusal to the import of the LMO.[3]

(2) Precautionary approach (Article 1, 10 and 11). The precautionary principle has increasingly been reflected in many international treaties and national laws on environment and natural conservation since 1970s. However, two different formulations of precautionary principles are in use, ranging from soft to strong formulations (Box 1).

While examining the Protocol, it is easy to understand that the precautionary principle under the Protocol is a soft formulation. For example, the preamble under the Protocol reaffirms the precautionary approach contained in Principle 15 of the Rio Declaration and Article 1

Box 1: Two formulations of precautionary principle

The formulation contained in Principle 15 of the Rio Declaration on Environment and Development is relatively soft, where it says "to protect the environment, the precautionary approach shall be widely applied by states according to capability. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not used as a reason for postponing cost effective measures to prevent environmental degradation". That is, regulators can take cost-effective steps to prevent serious or irreversible harm even when there is no certainty that such harm will occur.

A strong formulation is set out in the 1990 Third Ministerial Declaration on the North Sea, which requires governments to "apply the precautionary principle, that is to take action to avoid potentially damaging impacts of (toxic) substances… even where there is no scientific evidence to prove a causal link between emissions and effects". The formulation requires governments to take action without considering offsetting factors and without scientific evidence of harm.

Source: UNDP-HDR, 2001.

states that the objective of the Protocol is to be pursued "in accordance with the precautionary approach contained in Principle 15 of the Rio Declaration".

In addition, the Protocol also contains some strong provisions for actions in circumstances of scientific uncertainty. For instance, the commitment to the precautionary approach is further operationalised in Article 10, which governs the AIA procedure by which the Party decides on the import of LMOs. Article 10 (6) states that "lack of scientific certainty… shall not prevent a Party from taking a decision, as appropriate, with regard to the import of the LMO in question… " A similar clause is contained in Article 11, which covers the special case of the LMOs intended for direct use as food, feed or for processing (LMO-FFPs). This gives the precautionary principle a significant role in the decision to restrict or prohibit the import of LMOs.

(3) Risk assessment (Article 15). Risk Assessment under the Protocol is a scientific tool for the implementation of the AIA procedure. As per the Protocol, the importing Party's decision must be based on a careful assessment of risk(s) that must be undertaken in a scientifically sound manner, taking into account recognized risk assessment techniques. Such risk assessment shall be based, at a minimum, on information provided in accordance with Article 8

and other available scientific evidence as well as shall be carried out on the case-by-case basis. In addition, the Party of import has a right to require the exporter to carry out the risk assessment and its cost shall be borne by the notifier.

(4) Handling, transport, packaging or labelling requirements (Article 18). Article 18 of the Protocol requires all Parties, prior to export, to identify through accompanying documentation any LMO-FFPs that "may contain" LMOs, and identify any LMOs for intentional introduction into the environment (LMO-IIEs) or LMOs destined for contained use (LMO-CTUs). The Protocol also authorizes both exporting and importing Parties to take measures to ensure this identification takes place. The labelling of LMO-FFPs may lead to better matching of individual consumer preference, but when preferences differ, some consumers shall necessarily be unsatisfied by the social outcome. For example, if consumers perceive genetically modified (GM) foods as posing potential health and environmental risk, then presumably, risk-averse consumers would choose to consume more conventional foods, while the risk-neutral would choose either GM or conventional foods. On the other hand, the labelling of the products derived from modern biotechnology will also cause an increase in the cost of their production. In addition, Article 18 states that handling, transport, and packaging requirements for GM products shall be considered for elaboration in the future meeting of the Party to the Protocol. However, the impacts of this future outcome on LMO trade needs to be further identified.

While many policy makers and environmentalists weigh the benefits and costs of labelling, they are not always clear on whether labelling can be a useful policy tool.

This might lead to conflicts under the WTO regime when labelling becomes mandatory. This is why the Protocol discussion is on going about labelling and the *'may contain'* clause is becoming contentious. One way out of this impasse will be to make labelling voluntary but based on discussion between importers and exporters. However, if the importers require further information, the exporters could have the choice to provide the contents of the labels supplemented by the labels provided by the importing countries.

(5) Socio-economic considerations (Article 26). The Party, in reaching a decision on an import, may take into account the socio-economic considerations arising from the impact of LMOs on the conservation and sustainable use of biodiversity, especially with regard

to the value of biodiversity to indigenous and local communities. Article 26 identifies the types of socio-economic considerations and require that such considerations be taken into account consistent with a Party's other international obligations. Finally, it encourages Parties to cooperate on research and information exchange on the potential socio-economic impacts of LMOs.

Concerns and Conflicts between the Protocol and WTO Rules

Relevance of the Protocol with the WTO Rules

Article I of the GATT requires any trade advantage conferred by one country on another to be extended to all WTO members (Most-Favoured-Nation Clause). Article III prohibits discriminatory treatment between "like" or competing domestic and imported products (National Treatment Clause). Article XI forbids any quantitative restrictions other than duties, taxes or other charges. Article XX contains a general exceptions' clause. The relevant parts of Article XX states that "nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures: (b) necessary to protect human, animal or plant life or health; (g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption;... "

The Technical Barriers to Trade (TBT) and the Sanitary and Phytosanitary Standards (SPS) Agreements were adopted to "further the objectives" and to "elaborate rules for the application of the provisions" of the GATT. The TBT and the SPS both are exclusive from each other. If a trade-related measure does not fall within the scope of the SPS Agreement, the TBT Agreement can cover it. The TBT Agreement applies to all measures affecting the trade in any products that are technical regulations or technical standards, as long as those measures do not fall under the SPS Agreement. The most specific of the three Agreements is the SPS Agreement. This Agreement, in simplest terms, governs all measures that may directly or indirectly affect international trade in any product. Unlike the SPS Agreement, the TBT Agreement does not expressly require a Member to analyze its regulation on the basis of a risk.

The scope of the Protocol implies that its implementation has implications for following the WTO rules. For example, the AIA

procedures for the import of LMOs are likely to fall under the SPS Agreement, while labelling required under Article 18 of the Protocol will likely fall under the TBT Agreement. The GATT applies to all measures affecting any product in international trade, including LMOs.

Issues between the Protocol and the WTO Rules

Both the SPS and the TBT Agreements promote the use of science and risk assessment as a means for justifying trade-related measures. The Protocol's risk assessment procedures were designed along similar lines, viz. scientific evidence. In analysis of the texts of the Protocol and the three WTO rules, the following issues emerge that both the Protocol and WTO rules:

(1) recognize the impact of international trade activities on the environment and biodiversity in which species are basic components;
(2) realize the importance and necessity to ensure the safety for human, animal or plant life and health as well as environment;
(3) recognize the possibility of risks arising from of the transboundary movement of the products which contain harmful living organisms, including LMOs;
(4) recognize that it is necessary to take appropriate measures to regulate the transboundary movement of the products which contain harmful living organisms, including LMOs;
(5) recognize that risk assessment is rather critical to take appropriate measures to regulate the transboundary movement of the products which contain harmful living organisms, including LMOs and emphasized that the risk assessment must be based on scientific information and data, as well as should take into account internationally recognized techniques and methodology (Table3);
(6) consider that application of the precautionary principle to the decision in the case of insufficient scientific knowledge and evidence;

Potential Conflicts between the Protocol and the WTO Rules

Even though the WTO Rules and the Protocol took into consideration respective needs of trade and environment safety, the distinction of their fundamental objectives may lead to the potential conflicts in regulatory measures taken to ensure the achieving of their respective objectives. From the drafting and negotiation of the Protocol through

Table3: Similarities in Risk Assessment Elements under the Protocol and SPS

Risk assessment under the Protocol	Risk assessment under the SPS
In a scientific sound and transparent manner (Article 15 and Annex III)	Take into account available scientific evidence (Article 5(2))
Taking into account expert advice of, and guidelines developed by, relevant international organizations (Annex III)	Taking into account risk assessment techniques developed by the relevant international organizations (Article 5(1))
Based on the available scientific evidence (Article 15(1))	Take into account available scientific evidence (Article 5(2))

its finalization, among the most contentious subjects are the application of precautionary approach in the conditions that scientific evidence is insufficient and the socio-economic considerations in the decision of importing LMOs. Following are the analyses of some potential conflicts between the Protocol and the three WTO rules.[4]

(1) From the risk assessment perspective, the LMOs considered under the Protocol are equivalent to the organisms that are regarded as pests, diseases, disease carrying or disease causing under the SPS. This means if substantive equivalence exists between the both, there is a possibility to undertake risk assessment in same or similar manner for the products under the Protocol and the SPS. Otherwise, it may be scientifically sound and reasonable to undertake risk assessment in line with the nature of the organism.

(2) The specified risks that LMOs may pose to biodiversity and to human health are not identified in the Protocol, while three categories of risks have clearly been identified in Annex A of the SPS. Hence, it is not possible to determine in advance, which WTO Agreement (the SPS or the TBT) will apply to trade-related measures taken under the Protocol.

(3) There are clear differences in the details of carrying out risk assessment for a LMO (Table 4). This may lead to a different risk estimate made on the basis of the assessment. As shown in Table 4, with regard to a certain biotechnology product, the details needed to be considered for risk assessment under the Protocol and the SPS are very different. Cosbey and Burgiel (2000) identified several differences in the approach to risk assessment between Article 5.7 of the SPS and the relevant provisions of the Protocol. First, the SPS does not specify exactly what a risk assessment is, but the Protocol elaborates this in detail in Annex

Table 4: Different Elements to be Considered in the Risk Assessment

The risk assessment under the Protocol	The risk assessment under the SPS
Lack of scientific knowledge or scientific consensus should not necessarily be interpreted as indicating a particular level of risk, an absence of risk, or an acceptable risk (Annex III)	In the case of insufficient relevant scientific evidence, a Member may provisionally adopt sanitary or phytosanitary measures which will be subject to following points:(i) they must be adopted on the basis of available pertinent information;(ii) the Member must seek to obtain the additional information necessary for a more objective assessment of the risk; and(iii) the Member must review the measure within a reasonable period of time.(Article 5(7))
Details needed to be considered for the LMO in risk assessment (Article 15 and Annex III): - Recipient organisms or parental organisms - Donor organism(s) - Vector - Insert and/or characteristics of modification - Characteristics of LMOs - Detection and identification of LMOs - Information relating to the intended use - Receiving environment	Details needed to be considered for the product in risk assessment (Article 5(2)): - Processes and production methods - Relevant inspection, sampling and testing methods - Prevalence of specific diseases or pests - Existence of pest- or disease-free areas; - Quarantine or other treatment. - Relevant ecological and environmental conditions
The steps to carry out risk assessment (Annex III)	Not specified
The cost of risk assessment may be borne by the exporter (Article15.3)	Not specified

III. Secondly, the SPS does not mention risk management, but merely risk assessment. The Article 15 and 16 of the Protocol mentions both exercises, respectively, defining the latter as the gathering of the data, and the former as the building of a regulatory regime based on that data. It gives detailed guidance as to the establishment of the regime, e.g. asking parties to try to ensure that any LMO should undergo an appropriate period of observation commensurate with its life-cycle or generation time before it is put to its intended use.[5]

(4) The application of the precautionary approach under the Protocol and the SPS is different. Under Article 10 (6) of the Protocol, lack of scientific certainty shall not prevent a Party from taking a decision, as appropriate, with regard to the import of the LMO in order to avoid the adverse effect of the LMO on conservation and sustainable use of

biodiversity, taking into account risks to human health. Because the Protocol does not give a limit to the application of the precautionary approach, its application is very flexible based on the different purposes. However, the SPS clearly indicates that the level of sanitary or phytosanitary protection shall be appropriate (Article 3.3). The measures are not more trade-restrictive than required to achieve their appropriate level of sanitary or phytosanitary protection, taking into account technical and economic feasibility (Article 5.4). To sum up, the significance of the precautionary provisions in the Protocol is that they fill in some of the gaps in the SPS. Indeed some precautionary provisions (Article 10(6) and 11(8)) of the Protocol are even stronger than the general expression of the precautionary principles in Principle 15 of the Rio Declaration and obviously geared towards an area in which there is a great deal of uncertainty and concern.

(5) The socio-economic considerations applied to a decision of import in regard to a LMO aroused debates during the negotiation of the BSP. Pursuant to Article 26 of the Protocol, in reaching an import decision of a LMO, the Party of import shall consider: the impact of LMOs on the conservation and sustainable use of biodiversity, and the value of biodiversity to indigenous and local communities. Hence, the scope of socio-economic considerations under the Protocol is wide, while SPS puts strict limits on the economic considerations: the potential damage in terms of loss of production or sales in the event of the entry, the establishment or spread of a pest or disease, the costs of control or eradication in the territory of the importing Member, and the relative cost-effectiveness of alternative approaches to limiting risks.

(6) The mandatory labelling of LMO-FFPs under the Protocol may be in conflict with the WTO rules. Firstly, under the Protocol, each party takes measure to require that documentation accompanying LMO-FFPs clearly identifies that they "may contain" LMOs. This involves very costly identity preservation mechanisms all along the supply chain from input suppliers and farmers to retailers. As a result, this will also put those wishing to sell non-LMO products at a considerable commercial disadvantage. Secondly, the TBT and the SPS in the WTO cover the issue of labelling, but the labelling must have a scientific basis and a risk assessment must be undertaken before labelling. However, the Protocol mandates a risk assessment without making clear which part the precautionary principle will play a role in the risk assessment

process. Further, the kind of risk assessment to be carried out for the purpose of labelling is also not defined under the protocol.

Conclusions

The development discussions related to technology transfer and cooperation are taking a centre stage. The Millennium Development Goal (MDG) 8 calls for global partnership to achieving sustainable development. Focus on biotechnology and IPRs are important since there is increasing interest in assessing their role in improving economic and social well-being besides contributing to better environmental management. However, the complexities of processes and impacts of international processes such as CBD, WTO and the related (Biosafety Protocol and TRIPs) are yet to be understood by many countries. In addition, countries are yet to assess the capacity needs to deal with the issues at national levels making cooperation a one-sided debate. It is important that assessment of national implications and obligations of CBD and WTO is carried out thoroughly.

Like development debates that are based on social, economic and environmental issues, technical and technological issues should also be based on the above issues. Unfortunately, the social elements are often missing in the debates related to biotechnology and IPRs making the issues complex and questioned by common people.

With increasing moves towards south-south cooperation, Asia is very well placed to take forward the technology transfer and cooperation agenda. The following might help the process:

1. Establishment of a regional clearing house on information and experiences related to biotechnology and IPRs
2. Creation of a regional network of experts on these issues
3. Further strengthening of initiatives such as the Asian Cooperation Mechanism
4. Joint efforts between countries to exchange expertise and share lessons learnt
5. Stronger regional and sub-regional (SAARC and ASEAN) 'voices' at international debates and negotiations – based on proper preparatory processes and needs assessments, and
6. Development of human and institutional capacities to deal with the issues.

While the issues on hand are no doubt complex, complexity should not be an excuse for inaction.

Endnotes

1 Crucible Group 1994; Cameron and Makuch 1995
2 Wang, 2003
3 Mackenzie, 2003
4 Mackenzie et.al. 2003
5 Mackenzie et.al. 2003

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