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Transboundary Diagnostic Analyses and the preparation of Strategic Action Programs in the context of the GEF

Bay of Bengal Large Marine Ecosystem Project



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TRANSBOUNDARY DIAGNOSTIC ANALYSES AND THE PREPARATION OF STRATEGIC ACTION PROGRAMS IN THE CONTEXT OF THE GEF

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Introduction and Background to the purpose of Transboundary Diagnostic analyses and the preparation of Strategic Action Programmes.

It is important to recognise that the international waters (IW) portfolio of the GEF differs substantially from the other portfolio areas of biological diversity, climate change, chemicals and land degradation. In the case of the international waters portfolio, the GEF does not serve as the financial mechanism for any international convention and the majority of projects are multi-country rather than single country interventions. The focus of GEF interventions is the shared water body, either freshwater system or marine basin, and in this context one should note that the GEF usage of the term “*international waters*” is at variance with its usage under the United Nations Convention on the Law of the Sea (UNCLOS) where the term “*international waters*” is restricted to marine waters beyond those within national jurisdiction and the exclusive economic zone of states¹.

In international waters projects supported by the GEF, design and implementation of interventions and activities are not guided by the advice of Scientific and Technical Advisory Bodies such as the SBSTA of the UN Convention on Biological Diversity. As a result, the GEF implementing agencies² have, in consultation with the GEF Secretariat, developed a strategic approach to project design and implementation that has become gradually more formalised as the GEF has matured.

The first set of operational programmes developed by the GEF in 1997 make reference to the “*conduct of a transboundary diagnostic analysis (TDA) to identify priority environmental concerns*”³ and the formulation of “*a Strategic Action Program (SAP) of actions each country needs to take to address priority transboundary concerns (including differentiation of agreed baseline actions and those that would be additional in nature) and to leverage GEF resources for implementing both baseline and additional actions*”, (GEF, 1997). At that time, no guidance existed concerning how a TDA should be conducted nor how the preparation of such an analysis would lead to the development of a SAP. Subsequently, a number of TDAs and SAPs⁴ were prepared and the application of the approach in a number of different international water bodies, both freshwater and marine, has resulted in a considerable body of experience being developed within the GEF community. Nevertheless, no clear cut guidelines concerning the preparation and anticipated content of these documents have been developed although the Global International Waters Assessment (GIWA), a UNEP/GEF project produced preliminary guidelines on how to scope the problems of international water bodies (Figure 1).

The Transboundary Diagnostic Analysis (TDA) was referred to in the Study of GEF’s Overall Performance (GEF, 1998) as follows:

“The centerpiece of the GEF strategy is the concept of ‘strategic joint fact finding’ as a means of arriving at a consensus on what actions are needed to establish threats ... collaborating states establish technical teams that work to establish a common baseline of facts and analysis of the problem in the form of a transboundary diagnostic analysis (TDA), which is then used to set (national) priorities for actions to address threats to international waters in the form of the SAP”

Since that time, the finalisation and agreement of a TDA and the formal intergovernmental approval of a SAP, based on the findings of the TDA, have become important process indicators used in the evaluation of GEF performance in different water bodies and by the GEF in determining whether or not further funding will be made available for assistance in particular water bodies. Completion of these two steps and securing government commitments to support the implementation of the

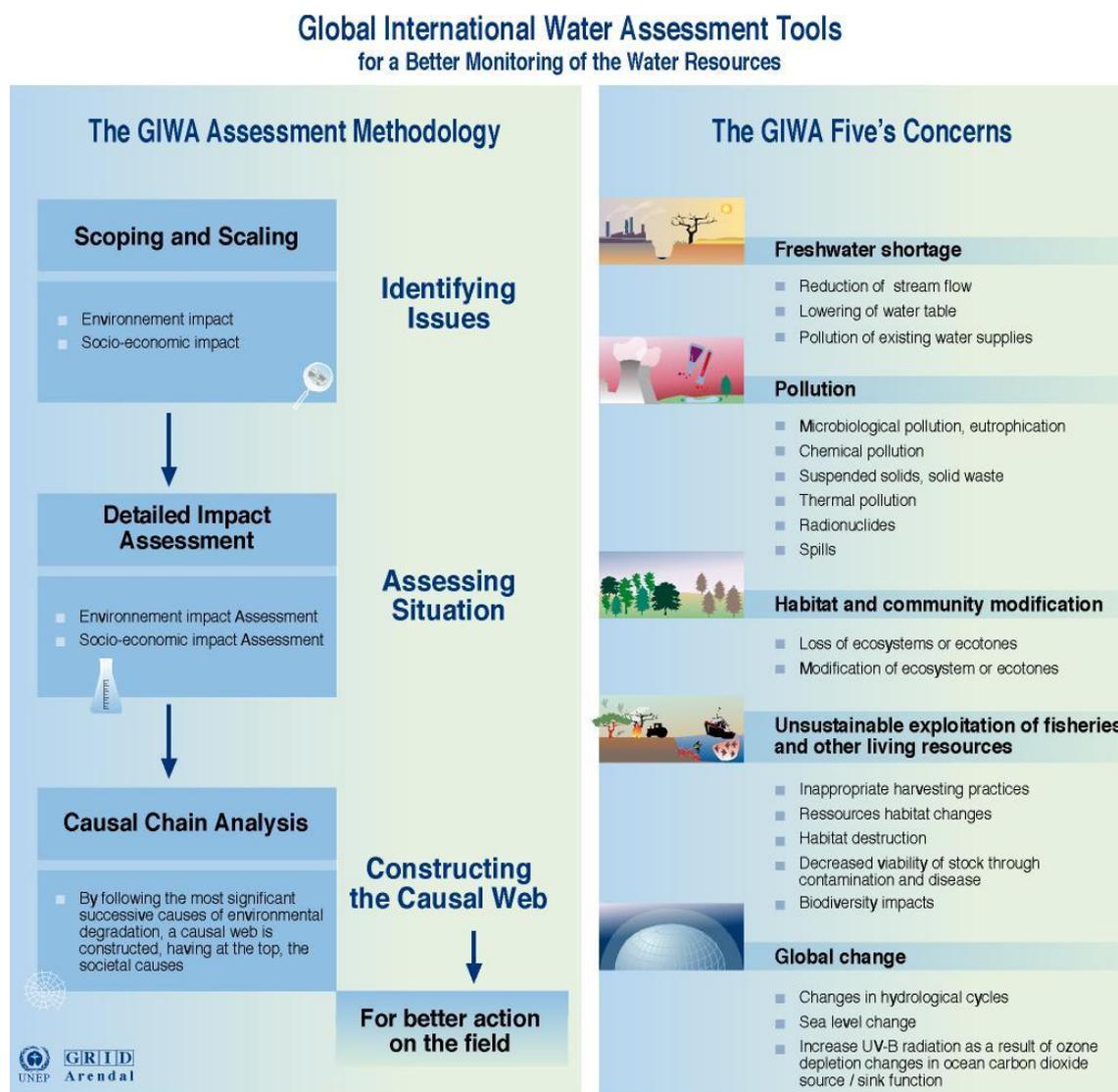
¹ Throughout this document the term “international waters” is used *sensu* GEF to mean a shared water body.

² The original GEF Implementing Agencies were the World Bank (WB), United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP), subsequently a group of executing agencies including the regional development banks, FAO and UNIDO were granted direct access to GEF resources, but the predominant role of the Implementing Agencies remains substantive in terms of GEF policy and process.

³ GEF, 1997. Operational Programs, page 8-3 para 8.9 sub-para (a)

⁴ A number of these can be downloaded from the International Waters Learning and Exchange Network website at <www.iwlearn.net>

Strategic Action Program is seen as a measure of success of the GEF process in any particular shared water body.



Source : Global International Water Assessment (GIWA), 2001.

Figure 1. GIWA assessment methodology: one approach to developing a TDA

Purpose of a Transboundary Diagnostic Analysis (TDA)⁵

A Transboundary Diagnostic Analysis (TDA) is a scientific and technical assessment of the environmental issues and problems of a particular international waters area (a shared water body). The TDA identifies and quantifies the environmental issues and problems in the area and identifies their immediate, intermediate and fundamental causes (sometimes referred to in GEF documents as the “root cause”). Such an analysis involves an identification of the causes and impacts of environmental disturbances and/or threats, and assesses the scale and distribution of those impacts at national, regional and global scales. Impacts are generally evaluated in socio-economic terms. The identification of causes results in the specification of practices, sources, locations and sectors of human activity from which environmental degradation arises or is threatened.

The purpose of a TDA is to assess the relative importance of all environmental disturbances and threats in the water body concerned and their causes and to identify potential preventative and remedial actions. A TDA thus provides the basis for the formulation of a Strategic Action Programme

⁵ Sections 2 and 3 of this document draw heavily on Annex 8 “An Evaluation of the Transboundary Diagnostic Analysis (TDA) Approach to the Preparation of Strategic Action Programmes (SAPs) of Bewers, J.M. & Uitto, J.I. 2002. International Waters Program Study. GEF Monitoring and Evaluation Unit. Washington DC.

(SAP) embodying specific actions or interventions that can be adopted nationally, usually within a harmonized multinational context, to restore or protect from further degradation a specific international waters area.

An implicit intention in the preparation of a TDA in the GEF context is to identify the priority issues that have their origins or consequences beyond the boundaries of the individual state jurisdictions. Although such analyses can be conducted by, and within, single countries, the need to identify **transboundary** effects and causes makes it desirable that the analyses be conducted on a multilateral basis involving all riparian states bordering an international water body.

The Transboundary Diagnostic Analysis for the South China Sea (Talaue-McManus, 2000) embodies a relatively succinct statement of the purpose of that TDA:

“The transboundary diagnostic analysis of the South China Sea and its associated catchment areas is a process that focuses on identifying water-related problems and concerns, their socio-economic root causes, and the sectorial implications of actions needed to mitigate them. The analysis further seeks to determine those issues which have transboundary, i.e. involves more than one country, causes and/or impacts, appropriate mitigation of which will have to be done on a regional or bilateral basis. The analysis then becomes the basis for a strategic action program which is coordinated both at the national and regional levels.”

On the basis of the above outline one can state that a TDA should yield:

- a comprehensive listing of environmental issues and problems;
- a quantification of the scope and scale of each issue and problem;
- a prioritisation of the issues and problems of an international waters area, based on their relative significance;
- identification of the causes and the jurisdictional origins of those causes for each issue and problem.

Whilst the listing of the water related environmental issues and problems of a particular water body may not be an excessive burden, quantification of such issues and problems poses particular difficulties in some developing countries. In some instances, data are lacking or are held in part by different national entities that are unwilling or unable⁶ to share the data, making synthesis difficult and in some instances impossible. Where the absence of data is a real problem, the data needs can be specified and subsequent collection of such data can become an integral part of the resultant SAP.

Prioritisation of the issues and problems is fraught with difficulty because, for example, there are few accepted techniques for comparing the relative significance of land based pollution with the impacts of over-fishing and, inevitably, prioritisation will involve some subjective elements and may be strongly influenced by “political” factors. It may for example be politically more expedient to address industrial pollution than to tackle the issues of over-fishing in a fishing sector where the individual vessels are of small size and owner operated. Legislating against pollution and imposing regulations and penalties on large industrial concerns may be more politically acceptable than depriving the poorest members of society of their sole source of livelihood. Prioritisation might be undertaken on the basis of the magnitude or extent of the problems with problems that are more widely distributed being afforded a higher priority than those of more restricted scale and, to a certain degree, this is true of the GEF itself that has previously focussed for example on mercury due to its widespread use in artisanal mining, its persistence in the environment and its widespread (global) distribution as a contaminant.

One technique that can be applied to both problems in an equitable manner is to perform an economic analysis of the costs of the environmental impacts in each sector and select as highest priority for intervention those problems that have the highest economic cost. One problem with this approach is that valuing impacts can be, and often is, extremely difficult due to the lack of agreement regarding how individual species might be valued economically and how one can apply an objective valuation process that transcends location and the economic and social system within which it is applied.

⁶ In many countries incompatibility between national databases results in considerable difficulties in synthesizing data from diverse sources.

A cost benefit approach can be more easily applied to the interventions proposed for inclusion in a SAP as at least the costs, in this instance, can be reasonably well determined. Even this approach cannot always be applied successfully, because the costs and benefits are not shared equally among all stakeholders with costs frequently falling more heavily on one sector or group of stakeholders, whilst the benefits are derived by another. A simpler approach is to undertake a "Delphi" type exercise with a group of well-informed individuals which is asked to individually rank in order of importance the identified issues and problems. Summation of the outcomes of individual rankings will result in a "group ranking" that can in many instances serve as a proxy for a more quantitative mode of analysis.

Ideally, the causes should be identified and analysed in a unidirectional manner commencing with the identified environmental issue and problem and progressing through the chain of immediate and fundamental causes and direct effects into the management and socio-economic domains. For example, harmful algal blooms in the marine environment may be caused by changes in the flux of nutrients from land to ocean, which in turn may be caused by point source discharges of inadequately treated sewage or by non-point discharge of excess fertiliser from agricultural runoff and groundwater discharge. The first of these, sewage discharge, may reflect a lack of sewage treatment facilities that may in turn reflect a lack of finance for capital investment, or a lack of the political will to take action. The term "root causes" should be reserved for the most fundamental of this hierarchy of causes.

In GEF parlance, this process is conceptually known as a causal chain, or root cause, analysis and is somewhat similar to the classic "problem tree" of the social sciences. The causal chain analysis should facilitate the specification of possible interventions to either remedy current environmental resource compromises or to obviate environmental threats.

Potential interventions can be made at technical, management, socio-economic and policy levels and each potential intervention at any of these levels will have both costs and benefits associated with it. The costs are not just financial costs, but may include adverse effects on other aspects of the environment or on resources and amenities of socio-economic or traditional significance. Accordingly, possible interventions have to be evaluated to decide which of them offer the greatest net benefits, within the context of the prevailing technical, social, economic and political situation. Once the most effective interventions addressing the most serious compromises or threats have been identified, these are incorporated into a Strategic Action Program (SAP) that specifies actions that are to be taken to rectify or prevent environmental degradation.

It is not always the case that the highest priority problem can in fact be addressed in the short-term as the following example illustrates. Let us suppose that excessive nitrogen in a semi-enclosed marine area is derived from both agricultural and domestic wastes and that this is considered by all parties to be the top priority environmental issue requiring action. It is imperative under such circumstances to analyse quantitatively the significance of the contribution of each source to the overall problem. It may be found that agricultural runoff accounts for only 10% of the loading and 90% derives from sewage. It would be fruitless therefore to invest in actions designed to address the agricultural source without at the same time addressing the issue of sewage derived inputs. A detailed economic analysis might reveal that the costs of treating the sewage and reducing nutrient inputs were beyond the financial resources of the government; hence a political decision might have to be taken to invest in less costly interventions that might reduce, rather than solve the problem. Such decisions however have no place in a TDA which should clearly and concisely state the problems, their magnitude, their causes, possible actions to address the causes and their costs.

The TDA Process

There are a variety of ways in which a TDA can be conducted. Some are more resource intensive than others but these usually provide greater insight and specificity thereby providing an improved information base for the formulation of SAPs. It is important to recognise that the preparation of the initial TDA should be based on existing data and information, rather than on the collection of new primary data, although the latter might be identified as an activity to be undertaken in the context of the SAP in cases where data and information are critical to objective decision making as, for example, in the choice of possible interventions. Resource intensive TDAs tend also to improve the objectivity of the process and hence enhance the acceptability of the outcome. They are a number of underlying principles that need to be considered during the development of a TDA including, *inter alia*: Full stakeholder participation; joint fact finding; transparency; causal chain correctly identifies the social

and economic root causes of the problem; inter-sectorial collaboration and policy development; and stepwise consensus building (see Box 1).

The starting point for a TDA is the characterization of concerns regarding an international waters area. Such characterisation can be developed from national perspectives. There is however a need for the concerns to be considered within a multinational or regional context simply because, from GEF perspectives, the issues of greatest relevance involve the adverse effects of national activities beyond national borders, namely transboundary impacts. Frequently, identification of concerns within individual national borders accompanied by initial causal chain analyses offers a mechanism for identifying problems which appear to have their origin outside the national jurisdiction concerned. Consideration of the range of national problems identified in a multinational forum facilitates consensus building regarding the range of concerns that individual riparian states have about a shared water body. In order to undertake this characterisation process a team of national experts might be formed representing the different sectorial interests in the water body concerned.

In a multilateral context, national concerns and the preliminary causal chain analyses derived nationally can be debated in a manner that allows the relationships between national activities and their effects to be characterized. While such a characterization may well be crude in the initial stages, the main focus thereafter is to obtain as meaningful and quantitative a description as possible of the correspondence between national activities and their transboundary consequences. It is this process that permits the identification of the options for restorative or preventative intervention. The more precise the correspondence between activities and effects, the more precisely can the nature and locations of options for intervention be specified.

BOX 1⁷

Principles underpinning a well developed TDA

- **Full stakeholder participation**

All parties involved in an environmental problem and/or solution are termed "stakeholders". In order to be objective in analysis and effective in solutions, the TDA/SAP process must reflect a shared vision that enables stakeholders to be independently identified, fully involved in the TDA and fully consulted throughout the SAP process. Whilst understanding that some solutions may not be acceptable to all parties, it is imperative that those that are eventually adopted should reflect a rigorous social assessment and be subjected to open stakeholder consultation.

- **Joint fact-finding**

The TDA should be conducted with the best available independent expertise, sourced locally where possible. The specialists should be selected by stakeholder representatives and consult with them during the process. This is important to ensure regional ownership of the process and its products.

- **Transparency**

The TDA is a document that will be in the public domain. During the fact-finding process, stakeholders should agree to freely share the necessary information and information products, taking care that full recognition is given to information sources.

- **Causal chain correctly identifies the social and economic root causes of the problem**

The analysis of causal chains between key transboundary problems and their social and economic causes is a critically important element of the TDA process. It is important to appreciate that the geographical scale may change between the environmental and social impacts of a problem, the problem itself and the causes of the problem. Actions taken nearer to the root causes are more likely to have a lasting impact on the problem. The causal chain analysis is an important reference point when designing the practical actions that will be included in the SAP.

- **Inter-sectorial collaboration and policy development**

Current systems of government are highly sectorial in nature. In order to develop a pragmatic programme of action, direct participation should be achieved by the key sectors involved in the problems. This involvement will normally consist of national inter-ministry committees, including appropriate government sectors as well as other relevant stakeholder representatives.

- **Stepwise consensus building**

Effective management requires a consensus to be built at every step. It is important not to advance to the subsequent step until a clear consensus emerges. By including clear stakeholder representation at all stages of the process, consensus-building is more likely to occur, ensuring a greater probability of long-term sustainability of the process and its outcomes.

- **Regional agreement on transboundary issues and their priority**

In order to develop a comprehensive SAP that is eligible for GEF support it is necessary that the TDA contain an agreed priority listing of transboundary issues and concerns and where possible alternative actions to remediate these issues and concerns.

⁷ Modified from notes prepared by Laurence Mee (2002)

The next stage in the process, although this can be conducted either within the TDA itself or within the subsequent SAP development, is an evaluation of potential interventions (*i.e.*, the options for intervention). This is a relatively resource intensive process that endeavours to determine the net benefits (*i.e.*, the benefits minus the social and economic costs) of each of the options for intervention. Interventions at technical levels may be able to deal piecemeal with individual problems manifested at either national or transboundary levels. Technical options, however, may not be as cost effective as measures adopted to address more fundamental causes existing at the policy and/or legislative levels. Furthermore, each option for intervention will entail adverse effects beyond the mere costs of the intervention itself. These costs may involve social disruption or adverse effects on other resources and/or amenities in the environment, adverse effects on social or economic development aspirations, and interruptions in industrial activities with consequent effects on workforces and employment opportunities, etc.

The purpose of determining the net benefits of alternative interventions is to determine which of the options for intervention offer the greatest net benefits in relation to costs and other adverse effects on the society involved. Both benefit and detriment may accrue at national levels and at supranational levels (*i.e.*, in other riparian states or at a global level). It is a desirable facet of GEF international waters proposals that the costs and benefits at supranational levels be used as a basis for determining what proportion of the costs incurred by a given country provide incremental benefits that accrue to other countries or to the regional or global communities. Accordingly, it is essentially mandatory that the evaluation of options for intervention be conducted at a multilateral level. Where an option for intervention would require to be implemented by more than one country to be effective, it allows the analysis of those interventions to be considered in a multilateral context. This offers mutual advantage in terms of resource commitments. It also ensures that any effects of national interventions on other countries in the region concerned are fully considered. The principles involved in developing a good SAP are presented in Box 2.

Box 2⁸

Principles required in a Good SAP

- **Adaptive management**
 Adaptive management is a process by which agreed long-term environmental goals are achieved in a series of pragmatic action-based steps. Within each step, agreed achievement indicators are monitored and there is a joint planning exercise to review progress and to plan the next step. For the purposes of most GEF IW projects, the adaptive management process consists of: establishing long-term Environmental Quality Objectives (EQOs); agreeing upon the most practical and achievable short-term (project length) measures for making substantive progress towards resolving the problems; agreeing upon the appropriate process, stress reduction and environmental and living resource status indicators to monitor progress.
- **Subsidiarity**
 Practical solutions to transboundary issues require action at regional, national and sub-national (or local) levels. The more closely defined are the national and sub national actions, the greater the likelihood of reaching the EQOs. The SAP should clearly address the balance between regional and national actions, attributing the most appropriate implementation mechanism to each level of action.
- **Incremental costs**
 The SAP should distinguish those actions involving the payment of incremental costs for those of purely national interest (baseline actions).
- **Donor partnerships**
 The SAP development process is designed to build partnerships between donors in order to address the identified problems and, where necessary, to assist governments to cover the costs of baseline actions. An effective donor partnership will act as an incentive for commitment to the SAP and avoid duplication of efforts by the donor community'
- **Government commitment**
 Signature of the SAP as a binding agreement between governments should be an important management objective of the process. If the process has been conducted in a stepwise manner, this final step should not be difficult to achieve (though it may well require administrative time). A SAP that does not involve a high level of formal commitment is unlikely to be taken seriously as a roadmap for policy development and implementation.

The results of the evaluation of costs and benefits allow the formulation of a so-called “*Strategic Action Programme*” that incorporates the interventions offering the greatest net benefits. These interventions are assigned at national level for each of the countries involved. The prior evaluation of the benefits and detriments associated with these options allows the overall benefits of the interventions to be apportioned among the riparian states involved as well as to countries beyond the

⁸ Based on notes prepared by Laurence Mee in 2002.

boundaries of the shared water body; indeed to the global environment if such benefits have been identified. This apportionment then forms the basis of an incremental analysis that determines the proportion of the national costs of intervention that are justified by external (*i.e.*, supranational) benefits. These become the incremental costs that are eligible for GEF funding.

Some Past experiences in developing TDAs and SAPs

To date, some twenty-two TDAs have been lodged on the International Waters Learning exchange and resource network website (<http://www.iwlearn.net>) of which eight concern marine basins, two groundwater aquifers, and twelve freshwater bodies (7 river systems and 5 lakes including the Caspian Sea). Obviously the requirements for conducting a TDA for a groundwater aquifer system differ substantially from those involving the diagnosis of problems in surface water lakes and rivers, all of which in turn differ from the conduct of such a process in a marine basin. During the early phase of the application of the TDA-SAP process by the GEF it was envisaged that the TDA would be completed during the preparatory phase of the project supported by GEF Project Development Facility (PDF) grants. Indeed it was also anticipated that a preliminary or framework SAP would be produced at this stage and that both documents would be refined and expanded during project implementation,

Clearly, the level of detail that is contained in the completed TDA documents reflects both the investment of widely diverse amounts of time and consequently finance, with rather superficial documents being produced in the earliest examples and progressively more complex and detailed analysis being achieved as the investments were increased. The original Black Sea TDA was a simple three page document that has subsequently been expanded as the initial SAP was developed and implemented. Part of the obvious heterogeneity among the TDAs appears to be due to differences in the allocation of SAP development steps to TDAs. In some instances, the issues and problems concerned are detailed and prioritised in the TDA, which includes no consideration of alternative courses of action to address the problems, these being confined to the SAP document. In others, some discussion of possible actions is included in the TDA.

In two marine cases [Mediterranean (UNEP/MAP/MED POL: 2005) and East African region (UNEP, 2008)] TDAs were initially completed only in respect of a single problem (in both cases, marine pollution) and, hence, no attempt was made to prioritise amongst diverse sets of environmental problems. In the case of the Mediterranean, a more comprehensive TDA was only finalised in 2005 following completion of the first phase GEF full project. The Lake Tanganyika TDA, in contrast, focuses heavily on biodiversity rather to the exclusion of other issues and other TDAs show similar biases towards individual problems or classes of problem. Such TDAs represent a “pre-selection” of the water-related environmental problems based either on political decisions or a preliminary (and undocumented) analysis of easily recognised problems. Where possible, such a ‘*pre-selection*’ should be avoided because it can result in hidden problems or causes being missed with a consequent risk that the interventions of the SAP will be ineffective in mitigating major unrecognised issues or future damage.

The method of prioritizing issues in existing TDAs differs significantly. That used in the Lake Tanganyika TDA assigns priorities to component problems within general categories and considers elements such as “feasibility” and “additional benefits” in the process of assigning priorities. These are somewhat peculiar terms to apply to “*problems*” rather than to the interventions aimed at dealing with them. Hence, an unconvincing case is made regarding the prioritization of problems in this TDA compared to the other examples. The South China Sea TDA (Talaue-McManus, L., 2000) incorporated a ‘Delphi’ type exercise in prioritising problems and issues in four major categories.

Approaches to root cause analysis also differ substantially. The closest approximation to a formal causal chain analysis for a marine basin as a basis for the identification of root causes is exhibited by the Red Sea TDA (PERSGA, 1998) whilst the Bermejo River TDA (OAS, 2000) presents an interesting variant in that each problem is analysed with respect to its underlying causes whilst, at the same time, a number of generic root causes for all the identified problems were identified, including, amongst others, informal migration of people from Bolivia to Argentina.

In a number of TDAs the logic process that has been used to derive root causes, such as in the Yellow Sea example, has not been included in the TDA documents. In the case of the Preliminary Yellow Sea TDA (GEF/UNDP, 2000) it is somewhat difficult to comprehend the logic flow that allows direct associations between the various **categories** of problems and their root causes (*i.e.*, the root cause analysis is undertaken at the generic rather than specific level). Similarly in the case of the

South China Sea the root causes of problems have not been clearly laid out in tabular form but are buried in the extensive text of each section.

The TDA for the Red Sea region appears largely to be a policy exercise clearly based on scientific and technical information but not presenting sufficient data and information to provide the reader with insight into the basis for assessing the actual scale and severity of the problems identified.

All the TDAs examined bring the process of SAP development to its starting point and hence serve as valuable examples of a logical sequence of activities leading to the formulation of an effective and credible SAP. The real value of a transboundary diagnostic analysis is that it permits the logical development of a strategic action program based on a reasoned, holistic and multi-sectorial consideration of the problems associated with the state of, and threats to, international waters.

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Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand are working together through the Bay of Bengal Large Marine Ecosystem (BOBLME) Project and to lay the foundations for a coordinated programme of action designed to improve the lives of the coastal populations through improved regional management of the Bay of Bengal environment and its fisheries.

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