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Review

Transboundary diagnostic analysis in international waters interventions funded by the global environment facility

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ABSTRACT

This paper first describes the nature and objectives of transboundary diagnostic analysis promoted by the Global Environmental Facility (GEF) in its international waters focal area. Transboundary diagnostic analysis (TDA) is a procedure intended to provide a means of identifying the proximal, intermediate and fundamental causes of environmental problems and threats in shared (multilateral) water bodies. A table of what the authors consider *a priori* to be essential elements for inclusion in a TDA is presented as a framework for a comparative analysis of completed TDAs. A summary of experience to date in GEF international waters marine projects is then provided as a basis for defining inconsistencies and variances among a variety of TDAs. Such inconsistencies are largely attributable to the absence of clear guidelines for conducting TDAs and inadequate specification of the content and level of detail appropriate to the formulation of GEF projects to rectify existing environmental compromises and mitigate impending threats. We advocate that the GEF develop such guidelines on an urgent basis as a means of improving the utility and comprehensiveness of TDAs. We also note that, in a number of cases, the issues addressed in individual TDAs and SAPs appear to have been "pre-selected". Consequently, *it is difficult to justify the provision of GEF funding because there is no objective way of ensuring that the selected issues are of any priority from either a global environmental perspective or the perspective of the water body itself. This adds further justification for the development of guidelines. Finally,* we conclude that the processes inherently embodied in the GEF concept of transboundary diagnostic analysis have the potential for wider application. Therefore, should the GEF not undertake the preparation of associated guidelines, there would be considerable merit in the preparation, by another organization or group of individuals, of more general guidelines embodying the same concepts and objectives as those defined by the GEF.

1. Introduction

The Global Environment Fund was established in 1991 under the auspices of the World Bank and was run as a pilot phase between 1991 and 1994. In 1994, the fund was restructured as the Global Environment Facility (GEF) and established as a partnership between the Bretton Woods Institutions and the United Nations System. This restructuring followed the United Nations Conference on Sustainable Development in 1992 and signatures to the UN Framework Convention on Climate Change (UNFCC) and the Convention on Biological Diversity (CBD). At that time, the World Bank, the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP) were designated as "*implementing agencies*" responsible for commissioning activities in the focal areas of Climate Change; Biological Diversity; International Waters; and Ozone (i.e., measures to reduce ozone depletion in the stratosphere). Although, subsequently, a group of project executing agencies (i.e., those agencies responsible for project execution and management), including the regional development banks, FAO, IFAD and UNIDO, were granted direct access to GEF resources,[1] the original implementing agencies retained substantive influence on GEF policy and process. More recently, the distinction between implementing agencies and executing agencies has become blurred and the scope of the GEF has been

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[1] Subsequent to the drafting of this paper the GEF Council took the decision to permit a limited number of national and regional organizations to access GEF resources directly.

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expanded to include land degradation and chemicals.[2] Coincident with these changes in GEF structure, the Facility has evolved into an organization for funding programmes of intervention in six areas of environmental concern: *biological diversity*, *climate change*, *persistent organic pollutants*, *land degradation*, *international waters and ozone depletion*. The GEF is today the largest funder of projects to improve the global environment. The GEF has allocated $9.2 billion, supplemented by in excess of $40 billion of cofinancing, for more than 2700 projects in more than 165 developing countries and countries with economies in transition. Over 100 million US dollars will be spent each year on international waters projects during the current phase of the GEF between 2011 and 2015. This paper deals only with aspects of prior GEF intervention in the international waters focal area.

The focus of GEF interventions in international waters is shared water bodies, both marine and freshwater, including surface and groundwater. In this context, it should be noted that the GEF use of the term "*international waters*" is at variance with its use under the United Nations Convention on the Law of the Sea (UNCLOS) wherein the term '*High Seas*' (equivalent to the "*international waters*" of previous maritime conventions) is restricted to marine waters beyond those within national jurisdiction and the exclusive economic zones of states.[3] In practice, most transboundary water basins are too large and the problems too extensive to be adequately addressed through a single intervention. Consequently, most GEF projects in the marine environment focus on large marine basins (in GEF terminology *Large Marine Ecosystems*). This focus on large water bodies results in a majority of GEF projects being multiple country rather than single country interventions. In other words, international waters projects are predominantly designed and undertaken bilaterally or multilaterally rather than by individual states.

Again, unlike the other focal areas, the design and implementation of interventions funded by the GEF in the international waters focal area are not guided by the advice of scientific and technical advisory bodies of an international convention. Until 2004, the GEF Secretariat had considerable freedom in deciding on the nature of, and priorities for, funding international waters interventions. From 1995 onwards, the three original GEF implementing agencies, in consultation with the GEF Secretariat, developed a strategic approach to project design and implementation that has become gradually more formalized as the GEF has matured. More recently, the GEF Council has assumed a proactive role in determining the programmatic and strategic priorities for funding.

2. The TDA concept in GEF international waters interventions

The first set of operational programs for international waters (the term for categories of activity within the international waters focal area) developed by the GEF (GEF, 1997) made reference to the "*conduct of a transboundary diagnostic analysis (TDA) to identify priority environmental concerns*"[4] and the formulation of "*a Strategic Action Program*[5] *(SAP) of actions each country needs to take to address priority transboundary concerns*."

The underlying rationale for the conduct of a TDA was the need to identify those issues and problems that transcend national boundaries. This was because the GEF was established to fund the costs of achieving global environmental benefits. Diagnostic studies of the environmental issues and problems facing freshwater catchments had previously been adopted in the context of the freshwater programme of the United Nations Environment Programme (UNEP) but these did not involve any explicit identification of environmental compromise resulting from the actions of one country having impacts manifest in another. Similarly, the Regional Seas Programme of UNEP initiated joint actions on the basis of multilateral reviews of marine and coastal problems within marine regions. These were published as "*state of the marine and coastal environment*" reports. The rationale for regional co-operation in the context of the UNEP Regional Seas Programme was that neither the medium (seawater) nor the living marine resources were confined within national boundaries; consequently, the impacts of actions by one state were felt by all other states sharing the same marine water body.

The approach of the GEF in providing funding in the international waters focal area is that the costs associated with achieving benefits at a national level should be borne by the nation concerned. In contrast, the costs incurred by a country to achieve environmental benefits beyond its national boundaries (i.e., addressing environmental compromises and threats caused by a single state's policies and practices but manifest beyond its borders) are eligible for GEF financing.

At the time the operational programs of the GEF were drafted, no guidance existed regarding how a TDA should be conducted or how its preparation would lead to the development of a SAP. Subsequently, a number of TDAs and SAPs[6] were prepared and the application of the approach to 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 content of these documents have yet been prepared although a training course has been developed through the Train-Sea-Coast Programme to familiarize potential practitioners with the TDA-SAP process (Bloxham et al., 2005). Furthermore, no selection process has been defined by the GEF to determine which individual water bodies receive funding; rather, the acceptance for funding has been based on a first come, first served, basis and is dependent upon a group countries sharing a joint water body agreeing on a joint approach to addressing the environmental problems of the water body concerned.

The Study of GEF's Overall Performance (Porter et al., 1998) noted:

> "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."

In 1999, a GEF funded project entitled "*The Global International Waters Assessment*" (GIWA) commenced following a 2-year project development phase. This project constituted an attempt to identify and scope the predominant environmental problems and threats in transboundary marine and freshwater basins throughout the globe.

[2] It should be noted that GEF activities in the focal areas, of climate change, biodiversity, ozone, land degradation and chemicals are pursuant to the implementation of international conventions.

[3] Throughout this document the term "*international waters*" is used *sensu* GEF to mean a shared water basin or water body.

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

[5] The spelling "program" has necessarily been used in verbatim quotations from American language sources. In normal text, the correct English spelling "programme" is used and, in all cases, assumes the same meaning.

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

The development phase included an initial attempt at the conduct of a generic globally-applicable TDA as a means of identifying the likely priority problems and threats in inland waters and marginal sea areas. This resulted in the full project focusing on an evaluation of five main categories of environmental problem: freshwater shortage; degradation of the quality of transboundary water resources; physical habitat degradation; excessive exploitation of living and non-living resources; and global environmental change. The relative importance of these generic categories of problem and the nature of their causes vary considerably both within and between individual transboundary water bodies. Consequently, there is a need for more detailed and spatially more narrowly defined analyses at the level of individual water bodies.

Since that time, the completion of a TDA and formal intergovernmental approval of a SAP, based on the findings of the TDA, have become important process indicators in the evaluation of GEF performance in different water bodies and by the GEF in determining whether or not further financial assistance will be made available for interventions in particular water bodies. The acceptance of the scientific assessment of the problems (the TDA) and the political agreement to joint action to address these problems are not the only process indicators used by the GEF in assessing support to particular water bodies. Other indicators include, for example, the establishment of functional inter-ministry committees at the national level, regional mechanisms for intergovernmental action and the participation of a broad community of stakeholders. Nevertheless, the TDA and SAP remain critically important indicators of GEF success at the programmatic level.

Thus completion of these two steps (the TDA and SAP) and securing government commitments to support the implementation of strategic action programmes has heightened the importance of ensuring that a TDA is undertaken within the preparative stages of GEF projects. The TDA serves as a means of ensuring that a rational and mutually-agreed list of priority problems and threats is identified for each water basin. In turn, this has led to a need for more explicit and detailed guidelines for the conduct of a TDA as a means of ensuring comprehensiveness and enhanced uniformity.

The 2005 Program Study on International Waters (GEF, 2005), which had before it a wider set of TDAs and SAPs (thirteen) than the 1998 study of GEF performance, concluded that:

> "*We are particularly concerned that many IW projects have failed to conduct careful analyses of stakeholders,* institutional capacities and responsibilities. This has led to difficulties in strategic planning and effective opera*tionalization* [sic] of projects at a later stage. It also risks capture of projects by particular sectors. Stakeholder analysis and institutional mapping should be an integral component of all TDAs and proposals for demonstration sites."

3. Materials and methods

The present paper reviews the content and level of detail contained within the published TDA documents available on the "*International Waters Learn*" website (http://www.iwlearn.net) and various GEF project websites. None of these have been formally published in the international literature; consequently there is a lack of peer discussion of the merits or otherwise of the TDA approach. A total of nineteen TDAs are contained on the website of which two address the problems of groundwater aquifers (the Guarani in Latin America and Lullemeden in Africa); four focus on freshwater lakes (Lakes Peipsi and Shkoder in Eastern Europe and Lakes Tanganyka and Victoria in Africa); five deal with entire river basins (Kura River, draining to the Caspian Sea; the Orange and Volta Rivers in Africa, the San Juan in Central America and the Dnipro in Eastern Europe). The marine TDAs are more numerous. There are eight in total with the majority focused on tropical and subtropical large marine ecosystems: the Canary Current, the Guinea Current, the Benguela Current, the Western Indian Ocean; the Black Sea; the Mediterranean Sea; the Yellow Sea; and South China 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. Similar system differences exist when comparing lotic and lentic surface waters and the nature and uses of groundwater aquifers which lack biological components to the system are different yet again. This review focuses primarily on the TDAs conducted for marine basins but includes specific examples from freshwater basins that add substance to the discussion. The approach has been to evaluate the subject matter and content of the various marine TDAs completed to date not from the perspective of quality but rather by comparison with a listing of elements considered essential by the present authors.

4. Transboundary diagnostic analyses

4.1. Purpose, objectives and essential elements

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

In simple terms, a TDA is a scientific and technical assessment of the environmental issues and problems associated with a particular shared water body. The TDA identifies and quantifies the environmental issues and problems in the area and identifies their immediate, intermediate and fundamental causes (the latter sometimes referred to in GEF documents as "*root causes*"). 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 predominantly 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 essential elements of a Transboundary Diagnostic Analysis are presented in Table 1.

An early 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

Table 1
Essential elements of a transboundary diagnostic analysis.

Characterization of the regional/global significance of the subject aquatic system	Description of the natural aquatic ecosystem; uniqueness; natural productivity; biodiversity; current use and societal values (both economic and cultural).
Identification of aquatic environmental issues/problems	Identification of compromises of, and threats to, aquatic uses, resources and amenities, associated hazards to human health and legitimate uses of the aquatic environment, associated limitations on traditional and cultural activities. (Technical and Scientific) Scientific evaluation of the aquatic environmental issues and problems (e.g., types and volume/magnitude of pollutants entering the system; rates of loss of coastal habitats/ecosystems; changes in species composition and catch per unit effort in fisheries; magnitude of changes in freshwater flows and fluxes); species displacement; salination and desalination; changes in turbidity and sedimentation rates; reductions in oxygen concentration; increases in algal density; increases in the incidence of red tides.
Quantification of the aquatic compromises	Social and economic evaluation of the aquatic environmental issues and problems (e.g., economic costs of environmental impacts; social costs of the issues such as adverse effects on human health and welfare).
Initial prioritization of problems	Based on the system description, identification and quantification of compromises, (steps one to three above) and threats, an initial prioritization of the compromises, hazards and limitations to legitimate uses and activities.
Identification and characterization of immediate, secondary, and higher level causes up to the penultimate causes of identified issues/problems[a] (referred to, in GEF parlance, as "*causal chain analysis*")	Determination and description of the immediate causes of identified issues. Determination and description of the secondary causes of identified issues. Determination and description of the tertiary……to penultimate causes of identified issues.
Identification and characterization of ultimate (root) causes of issues/problems	Determination and description of the ultimate/root causes of identified issues.
Identification and characterization of options for intervention	Identifying and then describing options for intervention, with emphasis on potential interventions at the most fundamental levels of cause. However, potential options at all levels should be characterized where possible.
Analysis of options for intervention	Examine options for intervention for commonalities and crosstalk/conflicts. Establish criteria for net benefit analyses of options.
Determination of comparative net benefit of options for intervention	Establish costs of intervention, potential benefits of intervention (preferably in monetary terms) taking account of feedback loops/conflicts to determine the most effective options for intervention.
Identification of priority options for intervention	Identify, characterize and specify any conditions that should be imposed upon priority options for intervention based on the magnitude of their net benefit and ability to resolve/ameliorate. Multiple issues

[a] This row represents, and can comprise, several levels between the secondary and ultimate causes depending on the nature of the issue being considered.

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, it can be concluded that a TDA should yield:

- A comprehensive listing of environmental issues and threats;
- A quantification of the scope and scale of each issue and threat;
- Prioritization of the issues and threats in an international waters area, based on their relative significance;
- Identification of the causes and the jurisdictional origins of those causes for each issue and threat (i.e., identification of which issues and threats are purely national and which are transboundary); and
- Identification and evaluation of options for intervention, primarily to address the causes of environmental degradation and threats.

Whilst the listing of the water-related environmental issues manifest in a particular water body may not be an excessive burden, quantification of such issues 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 unable[7] to share the data, making synthesis difficult and, in some instances, impossible. Where the absence of data is a real barrier, requirements for additional information can be specified and the collection of such information can become an integral part of the subsequent SAP.

The prioritization of the issues and problems is also 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. Accordingly, prioritization will inevitably involve some subjective elements and may be strongly influenced by 'political' factors, or indeed by the choice of national focal points[8]; a focal point from the environment ministry might be expected to give a different perspective from a focal point selected from a ministry responsible for fisheries.

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. Prioritization might be undertaken on the basis of the magnitude and/or extent of the problems such that problems that are more widely distributed are afforded higher priority that those of more restricted scale. To a certain degree, this has been epitomized by the GEF itself that has previously focused, for example, on mercury due to its widespread

[7] In many countries, incompatibility among national databases results in considerable difficulties in synthesizing data from diverse sources.

[8] In most GEF Projects, a senior Government officer serves as a "Focal Point" in each country for the coordination and management of national activities.

use in artisanal mining, its persistence and wide distribution in the environment.

One option for overcoming both of the aforementioned difficulties 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 having the highest economic cost to society. One drawback associated with this approach is that valuing impacts can be, and often is, extremely difficult due to the lack of agreement regarding how to assign economic values to individual species and how to define the economic scales of damage to environmental amenities in a multilateral context. This means that an *a priori* valuation scheme has to be established that transcends the national locations and economic and social systems to be applicable to the region or water body within which the evaluation is to be conducted.

A cost-benefit approach can be more easily applied to choices regarding alternative interventions proposed for inclusion in a SAP because the costs of each alternative 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; costs frequently falling more heavily on one sector or group of stakeholders and the principal benefits being derived by another. A simpler approach is to undertake a "Delphi" type exercise with a group of well-informed individuals that is asked to individually rank, in order of importance, the identified issues and threats. 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 hierarchy of causes should be identified and analyzed in a unidirectional manner commencing with the identified environmental issue or threat and progressing through the chain of immediate, intermediate and fundamental causes into the management, socio-economic and policy 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 discharges of excess fertilizer 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 always be reserved for the most fundamental of the 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, or reduce, environmental threats.

It is not always the case that the highest priority problem can 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 analyze 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 while 90% is derived from sewage. It would be fruitless therefore to invest in actions designed to address agricultural sources without at the same time addressing 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. The basis for such decisions should be included in the SAP and have no place in a TDA that should clearly and concisely state the problems, their magnitude, their causes and the options for interventions to address causes.

4.2. Process of conducting a TDA

There are a variety of ways in which a TDA can be conducted. Some are more resource intensive than others but the former usually provide greater insight and specificity thereby providing an improved information base for the formulation of SAPs. The preparation of the initial TDA should be based on existing data and information and should not involve the collection of new primary data. Nevertheless, as previously noted, data collection may be identified as an activity to be undertaken in the context of the SAP in cases where additional information is critical to objective decision making as, for example, in the choice of possible interventions.

The starting point for a TDA is the characterization of concerns within an international waters area. Such characterization can be developed from individual 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 a preliminary causal chain analyses offers a mechanism for identifying problems that appear to have their origin outside the national jurisdiction concerned. In order to undertake this characterization process, a team of national experts can be created that represents the range of sectorial interests in the water body concerned.

In a multilateral context, national concerns and preliminary causal chain analyses undertaken 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, (i.e., the inverse of the correspondence between environmental effects and causes) the more precisely can the nature and locations of options for intervention be specified.

In order to ensure that all potential and actual environmental issues and problems and their causes are identified, it is of paramount importance that the TDA be conducted as a multidisciplinary activity involving expertise from all government sectors, not merely from the environmental sector. Such resource-intensive TDAs tend to improve the objectivity of the process because a greater number of viewpoints are considered reflecting more extensive and wider stakeholder involvement in the process. This, in turn, leads to greater acceptability of the end product, the TDA. There 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; a logical causal chain identifying root causes; inter-sectorial collaboration and policy development; and stepwise consensus building (see Box 1 after Mee, 2002, incorporated into Bloxham et al., 2005).

Box 1. Principles underlying 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 among all stakeholders who must be fully involved in the TDA and fully consulted throughout the SAP development 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 program 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.

The next stage in the process, which we believe should be conducted within the TDA itself is an evaluation of potential interventions (i.e., the options for intervention). It is clear, however, that many previous TDAs have omitted this step and implicitly left the topic to be included in the SAP formulation process. Potential interventions can be made at technical, management, socio-economic and policy levels with each intervention at any of these levels having both associated costs and benefits. Evaluating costs and benefits is a relatively resource intensive process that endeavors to determine the net benefits (i.e., the benefits minus the social and economic costs) of each of the options for intervention. The costs are not just financial but can include adverse effects on other characteristics of the environment or on resources and amenities of socio-economic or traditional significance. Interventions at technical levels may be able to deal piecemeal with individual problems manifested at either national or transboundary levels. Such technical interventions are, however, usually not as cost effective as measures adopted to address more fundamental causes existing at the policy and/or legislative levels.

Each option for intervention will entail adverse effects beyond the mere costs of the intervention itself. These costs may include social disruption or adverse effects on other resources and/or amenities in the environment, adverse effects on social or economic development aspirations and interruptions of industrial activities with consequent effects on populations, workforces and employment opportunities, etc. For example, over-fishing is a major problem in many coastal areas but a reduction in fishing capacity in a fishery dominated by small-scale fishermen may result in unacceptable social and economic upheaval on the coastal poor. Accordingly, possible interventions have to be evaluated to decide which of them offer the greatest net benefits to society as a whole within the context of their costs and the prevailing technical, social, economic and political situations. Obviously from the perspective of a participating state, such an evaluation is likely to place greater weight on national rather than regional or global net benefits. However, the purpose for which the GEF was established, was to meet the costs associated with the extra-national environmental benefits, while the costs of meeting national environmental benefits are met though national financing.

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 implementation by more than one country to be effective, it ensures that the analysis of those interventions is considered in a multilateral context. This offers mutual advantage and commitment in terms of resource commitments. It also ensures that any effects of national interventions on other countries in the region concerned are fully taken into account.

The results of this exercise allow the formulation of a so-called "*Strategic Action Program*" (SAP) that incorporates the interventions offering the greatest net benefits. SAP interventions are partitioned and 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 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.

The attributes of a well-formulated SAP have been described by Mee (2002) and are summarized in Box 2, which is based on Bloxham et al. (2005).

Box 2. Attributes of 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 toward 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.

4.3. Experience in applying a TDA-SAP approach to GEF projects

During the early phase of the application of the TDA-SAP process by the GEF, it was envisaged that the TDA would be completed within 12 months. This would allow the TDA to be undertaken during the preparatory phase of a project[9] supported by GEF Project Development Facility (PDF) grants.[10] Similarly, it was envisaged that a SAP would be one of the primary outputs of the first GEF full-sized project. The level of detail that is contained in completed TDA documents reflects both the investment of differing amounts of time and finance with rather superficial documents being produced in the earliest examples and progressively more complex and detailed analyses being achieved as the investments were increased and experience gained.

Table 2a and b presents a summary of the contents of eight published marine TDAs compared with the list of essential elements for inclusion in a TDA presented in Table 1. It should be noted that a separate, published TDA for the Red Sea is not available. The analysis appears to have been reduced to tables of threats to coastal and marine environments and resources within the SAP; tables of thematic issues by subregion, and by country (PERSGA, 1998). The only attempt at a transboundary diagnostic analysis appears as a simple table of common concerns by country. This analysis appears largely to be a policy exercise based on scientific and technical information but clearly 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. This TDA has therefore been omitted from Table 2a and b.

The original Black Sea TDA (Mee, 1996), the first one produced, was a simple document consisting of a causal chain analysis in the form of nested tables with a rather short explanatory text that was subsequently expanded and extensively amended as the initial SAP was developed and implemented (Anon, 2007). Two similar cases of initial publication and subsequent expansion and amendment of a TDA are seen in the cases of the Yellow Sea first published in 2000 and revised in 2007 and the Mediterranean first published in 1997 and revised in 2005. In the case of the Mediterranean (UNEP/MAP/MED POL, 2005) the TDA was initially completed only in respect of a single class of problem, marine pollution and, hence, no attempt was made to prioritize among diverse sets of environmental problems. In the Mediterranean, twenty one countries and the European Union were involved and strong views concerning the exclusion of fisheries and biodiversity issues were expressed by some countries and the EU at the time of first drafting of the TDA. The more comprehensive TDA was only finalized 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 toward individual problems or classes of problem without a clear description of the data or information upon which such biases are based. Such TDAs embody a “pre-selection” of the water-related environmental problems based either on political decisions or a preliminary (and undocumented) analysis of easily recognized problems. Five of the eight TDAs describe the issues and problems in the context of groups or clusters with little attempt to separate individual issues and problems and specify their related impacts. As may be seen from Table 2a and b most TDAs have

[9] Indeed, in the case of the South China Sea Project, the GEF Secretariat required that a preliminary or framework SAP be produced during the PDF-B, project development phase.

[10] When first established PDF grants were for a maximum of three hundred and fifty thousand US dollars ($350,000) clearly limiting the scope of what could be undertaken in a multi-country context.

Table 2a
Comparison of the contents of eight marine TDAs with the list of essential elements presented in Table 1.

	Benguela current, 1999	South China Sea 2000	Mediterranean 2005[a]	Guinea Current 2006	Canary Current 2007	Yellow Sea 2007[b]	Black Sea 2007[c]	Western Indian Ocean 2009[d]
Identification of regional/global significance	One of four oceanic upwelling ecosystems; High biodiversity in open ocean area.	Clear statements of the importance of the South China Sea as the global centre of shallow-water marine and coastal biodiversity and fisheries production.	Generalities such as hosts 7% of the world marine fauna and 18% of the worlds marine flora (*sic*); and Nos. of threatened spp.	No clear statement; Global significance suggested by data on endemic and threatened species.	No statement of the global significance of this LME.	No statement of the global significance of this LME.	No statement of the global significance of this LME.	No clear statement; global significance *presumed* based on the critical habitats of coral reefs, seagrass and mangroves.
Identification of Issues & problems	Seven transboundary "problems" identified.	Extensive discussion of issues and problems with analysis of causes; Four problem areas identified.	Problems identified as declines in fisheries biodiversity and seawater quality; and increasing human health risks.	Problem clusters identified as decline in marine resources; ecosystem change; habitat loss; declining water quality.	Problems identified as declining marine resources, habitat modification; declining water quality.	The basis for the identification of the four key issues appears to be the GEF Project itself.	Clear statement of issues and problems.	Extensive discussion of problems but not all areas (e.g., fisheries) covered.
Quantification of aquatic compromises	Quantification of the problems limited in scope.	Quantification of the extent of most; detailed for some.	Quantification of some problems such as BOD and heavy metals in hotspots, but mostly descriptive.	Little quantification of issues and problems.	No quantification provided.	Good quantification of state and, in some cases, trends.	Quantification of the four priority issues,	No quantification of the individual problems but economic valuation of habitats.
Initial prioritization of problems	Prioritization only on a scale of 1–3; most problems scaled as 1.	Initial prioritization based on a *Delphi* exercise among regional experts and Government representatives.	Neither problems nor impacts prioritized; Basis for priorities not provided.	Neither the problems nor the impacts are prioritized.	Justification for the selection of problems subjective. No prioritization provided.	Prioritization clearly stated in each key issue, but the basis for selection not clear.	Prioritization based on regional working group assignment	Issues and problems clustered into three groups without explanation of the basis for the groupings.
Identification and characterization of immediate causes of identified issues/problems	Causes listed but grouped; restricted to one level of causation.	Comprehensive: Included together with the description of issues and problems.	Causal chains included but are considered basin wide and hence are generic only.	Generic causes are grouped in clusters related to the specific issue.	Causes grouped as economic and governance factors.[e]	Causal chains provided for each key issue.	Causal chains constructed by sector to determine overarching causes.	Some but causes are described in generic terms.

[a] This document is an elaboration of the first TDA published in 1997 that included only a consideration of pollution issues in the Mediterranean Sea.
[b] An earlier version (draft 9) of the Yellow Sea TDA (2000) was made widely available via the project website.
[c] This represents an extensive revision and expansion of the first document agreed by all countries in 1996.
[d] The first draft (UNEP, 2008) was revised, expanded and formally published one year later (UNEP/Nairobi Convention Secretariat, 2009).
[e] The document notes that a fuller analysis would be undertaken in a revision of the TDA to be an activity within the framework of a full GEF project.

Table 2b
Comparison of the contents of seven marine TDAs with the list of essential elements presented in Table 1.

	Benguela Current, 1999	South China Sea 2000	Mediterranean 2005[a]	Guinea Current 2006	Canary Current 2007	Yellow Sea 2007[b]	Black Sea 2007[c]	Western Indian Ocean 2009
Identification and characterization of ultimate (root) causes of issues/problems	Not clearly articulated; Rather, generic root causes are identified for clusters of problem.	Partial, included in the discussion of each issue and problem; Good analysis of economic drivers.	Partial, included in the generic causal chains.	Partial, included in the generic causal chains.	Not included.	Root causes outlined together with a discussion of commonalities among them.	Root causes clearly stated and linked to socio-economic drivers.	Some but root causes are described in generic terms, unsuitable for identification of interventions.
Identification and characterization of options for intervention	Possible remedial actions identified at a generic level.	Not included.	Options broadly defined.	Partially defined as generic action areas related to clusters of problem.	Clear linkage provided between identified problems and potential interventions.	Identification and discussion of policy level interventions.	Not included.	Not included.
Analysis of options for intervention	Not included.	Not included.	Not included.	Not included.	Not included.	Descriptive analysis of options at different levels.	Not included.	Not included.
Determination of comparative net benefit of options for intervention.	Not included.	Not included.	Not included.	Not included.	Not included.	Not included.	Not included.	Not included.
Identification of priority options for intervention.	Implicit from the assigned priorities.	Implicit from the initial prioritization of problems and problem analysis.	No prioritization included.	Implicit in the selection of clusters of problems.	Not included.	Addressed in the analysis of options.	Not included.	Not included.
Additional items included	Institutional infrastructure.		Legal and institutional framework analysis.			Data and information gaps summarized.	Governance, legal and Institutional framework analysis.	Governance analysis.
	List of stakeholders.		Stakeholder analysis.				Stakeholder analysis.	Stakeholder analysis.
			Environmental quality objectives.	Ecological quality objectives.				

[a] This document is an elaboration of the first TDA published in 1997 that included only a consideration of pollution issues in the Mediterranean Sea.
[b] An earlier version (draft 9) of the Yellow Sea TDA (2000) was made widely available via the project website.
[c] This represents an extensive revision and expansion of the first document agreed by all countries in 1996.

consequently undertaken a rather generic analysis of the causes of perceived problems; in part a consequence of the clustering of issues and problems and dealing with them *en bloc*.

The methods of prioritizing issues in existing TDAs also differ significantly. That used in the Lake Tanganyika TDA (<http://www.iwlearn.net/iw-projects/iwproject.2007-01-25.0979063317/reports/transboundary-diagnostic-analysis-en.pdf>) assigns priorities to component problems within general categories and considers elements such as "feasibility" and "additional benefits" in the process of assigning priority. 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, involving seven countries and a suite of environmental compromises ranging from loss of coastal habitats (mangroves, seagrass and coral reefs in particular) and over-exploitation of marine resources (Talaue-McManus, 2000) incorporated a 'Delphi' type exercise in prioritizing problems and issues in four major categories. This TDA was perhaps unique in recognizing that the transboundary element of marine pollution was extremely limited in this marine basin and that with only a few exceptions the problems of marine pollution were largely national rather than regional in scope.

In preparing the second TDA for the Black Sea (Anon, 2007) 22 regional experts discussed the 23 identified issues of environmental concern and prioritized them by assigning scores to each problem of between: 0 (no importance), 1 (low importance), 2 (moderate importance) and 3 (high importance) to determine the relevance of each from the perspectives of the present day and 10–15 years in the future (Anon, 2007, page 12). The original Black Sea TDA had correctly identified the growing problem of bottom water anoxia as the number one priority water related environmental problem in this marine basin. This was found not to be the result from nutrient discharges from the participating countries (Bulgaria, Georgia, Romania, Russian Federation, Turkey and the Ukraine) but rather from discharges entering the Black Sea from the Danube River Basin. Remediation of this problem therefore required actions by countries other than those bordering the Black Sea.

Approaches to root cause analysis also differ substantially. The Bermejo River TDA (OAS, 2000) presents an interesting variant in that each problem is analyzed 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 has not been included in the TDA documents. In the case of the Preliminary Yellow Sea TDA (UNDP, 2000), for example, 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 a specific level), This problem has been addressed in the finalized version of the TDA available from the project website (GEF/UNDP, 2007) but the causal chain analysis remains weak because it lacks a rigorous quantitative analysis of the relative importance of the different causes to the impacts identified. 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.

In the case of the Canary Current (Cape Verde, Gambia, Guinea, Guinea-Bissau, Mauritania, Morocco and Senegal) implemented by FAO and UNEP, declining fisheries and changes in ecosystem together with declining water quality and habitat modification were recognized as the major classes of problem. The preliminary TDA consists of 8 pages of text and 35 pages of annexes, the bulk of which are tabular presentations of the preliminary TDA. The text lacks any details concerning the manner in which these conclusions regarding the classes of issue have been derived (http://iwlearn.net/iw-projects/Fsp_112955519998/reports/preliminary-tda-for-the-cclme.pdf). Regrettably, the factual and scientific bases for the detailed tabulations in the preliminary causal chain analysis are omitted from the document. Despite these obvious shortcomings, the extreme length of the process (1998–2007), and the absence of any formally published or approved TDA, the GEF provided in excess of eight million dollars of grant financing in April 2009 for implementation of a full scale project.

5. Discussion

While all the TDAs examined bring the process of SAP development to its starting point and serve as valuable examples of a logical sequence of activities leading to the formulation of an effective and credible SAP, the individual documents display such varied formats, levels of detail and content that any form of analytical comparison is difficult if not impossible. If one accepts that the real value of a transboundary diagnostic analysis is that it provides a reasoned, holistic and multi-sectorial consideration of the problems associated with the state of, and threats to, a shared water-body that forms the basis for a strategic action program, then a substantial number of the documents can be considered objectively to have failed to meet such a requirement. This is particularly true in instances where the issues have been pre-selected and the TDA focuses on only one of a very few issues such as biodiversity, or pollution or fisheries. In these instances, it is difficult to envisage the justification for the GEF providing funding because there is no objective way of "proving" that the issues selected are of any priority either from a global environmental perspective or from the perspective of the water body itself.

What is dramatically and surprisingly suggested by Table 2a and b (line 1) is the lack of attention paid in the marine TDAs to the global significance of the marine water basin under analysis. Only three of the TDAs published to date make comparisons of biodiversity and fisheries production between the marine basin concerned and the global situation. This is all the more surprising given the need to justify the global environmental benefits of actions when applying for GEF grant funds. While the South China Sea TDA compares species diversity in terms of numbers of species within the region with those in the Caribbean and other tropical seas, in two of these three cases (Benguela Current and Mediterranean) the comparisons are made in such a manner as to be of questionable value.

The Benguela TDA (UNDP, 1999) suggests that, as a centre of oceanic upwelling, productivity is high and consequently biodiversity is high. Both statements are correct when compared with the open ocean but the food webs of oceanic areas of upwelling are short and simple containing few species at each trophic level. They are considerably less species diverse when compared with the complex food webs of coastal ecosystems. Similarly, the Mediterranean TDA suggests that "*the Mediterranean account[s] for only 1.5% of the earth's surface hosts approximately 7% of the world's known marine fauna*". The implication here is that the Mediterranean is disproportionately diverse. However, this is clearly not the case because species are not uniformly distributed and the greatest productivity and most species are found in the *tropical coastal zone*. Without providing numerical comparisons with say the Red, Caribbean and South China Seas such a "statistic" is meaningless. A more salient point, namely that 20–30 percent of Mediterranean species are endemic is buried in later text.

Part of the obvious heterogeneity among the TDAs appears to be due to differences in the allocation of tasks among TDAs and SAPs. In a number of instances, the TDAs contain details and priorities concerning the issues and problems but include no consideration of alternative courses of action to address the problems, these being relegated to the SAP document. In five of the documents, some broad discussion of possible actions has been included in the TDA. In no case has an analysis of the net benefits of alternative actions been included.

A recent issue that has begun to appear in GEF projects and in more recently completed SAPs, is that of "*climate change impacts*". This is a consequence of the GEF demand for more cross-cutting activities within the interventions in its various portfolios. This is unfortunate as no TDA to date contains an adequate analysis of the potential impacts of sea level rise or, for example, changes in ocean temperature and acidification on the marine environment and its biota. In most instances, such potential impacts pose a long-term threat that cannot compare with the more obvious immediate threats posed by indiscriminate waste disposal, over-exploitation of marine living resources and the rapid pace of coastal habitat loss and degradation. The "signal" of most climate change impacts is currently masked by the "noise" of impacts from other anthropogenic sources of change. Whilst it might be argued that a consideration of longer term threats to coastal environments should be evaluated in the context of the future applications of the TDA process, or the revision of existing ones, this would necessitate a greater attention to the analysis of risk posed by all threats both existing and potential, than has characterized the TDA SAP process to date.

The GEF International Waters Program Evaluation (Bewers, and Uitto, 2002) found evidence that the use of the initial strategic projects involving development of a TDA had helped to build multi-country confidence in working together, to remove barriers to joint fact finding and to build capacity. Uitto and Duda (2002) also concluded that the TDA/SAP process could be usefully carried out as part of project preparation to build institutional capacity and set priorities. These conclusions seem at variance with the conclusions of the 2005 Program Study (GEF, 2005) that concluded that many IW projects have failed to conduct careful analyses of stakeholders, institutional capacities and responsibilities, with subsequent difficulties in strategic planning and effective implementation of projects at a later stage. However, this latter review failed to convincingly demonstrate either that such failures have in fact occurred or that they have caused difficulties subsequently to project implementation. Nonetheless, difficulties do occur in stakeholder involvement in large, complex, multi-sectoral, multi-country and multi-disciplinary projects spanning large geographic areas.

Part of the difficulty of conducting comprehensive stakeholder analyses, as advocated by the authors of the 2005 study, stems from the fact that the stakeholder groups involved differ significantly both horizontally and vertically within countries and across regions. Vertical problems reflect, for example, the need to involve different hierarchical levels of government from central, through provincial or state, down to municipal or local, and such problems may be aggravated by the involvement of many sectors. Civil society itself is stratified in many developing countries based on factors such as income and social status. Hence, a project that involves intergovernmental agreements, on the one hand, and on the ground conservation actions, on the other, will of necessity involve numerous stakeholder groups. Not only do such complexities present problems of analysis but also of involvement in different project activities and consequently project management. The outputs of the GEF international waters portfolio as a whole and the documented successes of many projects might suggest that the concerns expressed in the 2005 review have been overstated.

6. Conclusions

Where possible, pre-selection of issues and problems for inclusion in the TDA should be avoided because it can result in major problems being omitted or major causes of environmental compromise being missed with a consequent risk that the interventions of the SAP will be ineffective in mitigating serious unrecognized issues or risks of future damage.

There is clearly a need to strengthen the analysis of the global significance of each water body considered for GEF grant support if the GEF is to continue arguing for the achievement of global environmental benefits.

There remains considerable ambiguity in the existing GEF guidance as evidenced by the wide variance of content and detail among of documents purporting to constitute GEF transboundary diagnostic analyses. The training course on TDA-SAP preparation referred to previously, includes a document entitled "*The GEF IW TDA/SAP Process: A Proposed Best Practice Approach*" but the contents of this document have never been internationally peer reviewed nor formally adopted by the GEF as the basis for the preparation of TDAs and SAPs.

A contributing factor to the heterogeneity of the TDAs published to date is the absence of clear guidelines regarding what the GEF expects to see included in the TDA and the expected level of detail. It is not anticipated that such guidance should be either prescriptive or massively detailed but at the very least it should outline the principles and content of a TDA and provide some indication of possible ways of conducting such an analysis. Similar procedures to those incorporated into GEF TDAs should be equally applicable to other initiatives for developing interventions to address environmental problems in a wider range of marine, freshwater and groundwater bodies. Currently, GEF project proponents are subject to the problem of changing GEF expectations regarding the contents of a TDA as witnessed by the requirement for a consideration of: climate change impacts and adaptation, for governance analysis and for stakeholder analysis, each of which has been called for over the last five years. In no case has the GEF produced guidance regarding their expectations with respect to these additional elements.

For these reasons, it would be desirable for a set of guidelines, or more detailed instructions than currently exist, to be prepared that define the procedures for conducting a transboundary diagnostic analysis and formulating strategic action programmes within the GEF. Failing action within the GEF itself, it would be desirable for a more widely applicable and analogous procedure to the TDA-SAP process to be developed for wider application outside the GEF, especially within other multilateral organizations and conventions addressing environmental issues.

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