

United Nations Environment Programme
Global Programme of Action for the Protection of the Marine
Environment from Land-Based Activities (GPA)

Technical Issues that could be Considered when Drafting
the Protocol for the Protection of the Caspian Sea from
Land-Based Sources and Activities

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1. Introduction

In order to identify technical issues that could be considered when drafting the Protocol for the Protection of the Caspian Sea from Land-Based Activities (Caspian LBS Protocol) the following four basic documents were thoroughly reviewed and the relevant issues identified (presented in *italics*):

- *The Framework Convention for the Protection of the Marine Environment of the Caspian Sea (2004);*
- *The Strategic Action Programme for the Caspian Sea (2003);*
- *The Transboundary Diagnostic Analysis for the Caspian Sea (2002); and*
- *The Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (1995).*

2. Framework Convention for the Protection of the Marine Environment of the Caspian Sea

2.1 Introduction

The Framework Convention for the Protection of the Marine Environment of the Caspian Sea (Caspian Sea Convention) was signed by four of the five Caspian Littoral States in November 2003 and will enter into force on the ninetieth day after the date of deposit of the instrument of ratification, acceptance, approval of accession by all Caspian littoral states (Article 33 of the Caspian Sea Convention). In its Article 7 the Caspian Sea Convention envisages development of protocols to the Caspian Sea Convention in order to cover the subject of land-based sources of pollution (Caspian LBS Protocol).

In the process of the drafting of the Caspian Sea Convention, the Caspian Strategic Action Programme (Caspian SAP) and the Caspian Transboundary Diagnostic Analysis (Caspian TDA) were used as a technical base for the identification of issues to be covered by the Caspian Sea Convention. The Caspian TDA also served as a technical base for the preparation of the Caspian SAP.

For the purpose of the preparation of the technical ground for the development of the Caspian LBS Protocol, the relevant parts of the text of the Caspian Sea Convention are presented below in order to analyse the text and select technical issues that could be considered when drafting the Caspian LBS Protocol (*selected technical issues are presented in italics*).

2.2 Parts Extracted from the Caspian Sea Convention Relevant to the Preparation of the Caspian LBS Protocol

Article 1. Use of Terms

"Pollution from land-based sources" - pollution of the sea from all kinds of point and non-point sources based on land reaching the marine environment, whether water-borne, air-borne or directly from the coast, or as a result of any disposal of pollutants from land to the sea by way of tunnel, pipeline or other means.

Article 5. Principles

The following principles are included: the *precautionary principle*; the *polluter pays principle*; and the *principle of accessibility of information*.

Article 7. Pollution from Land-Based Sources

Point 2. The Contracting Parties shall co-operate in the development of protocols to this Convention prescribing additional measures for prevention, reduction and control of pollution of the Caspian Sea from land-based sources. Such protocols may include, *inter alia*, the following measures:

- (a) The emission of pollutants is prevented, controlled and reduced at source through application, *inter alia*, of *low- and non-waste technology*;
- (b) The pollution from land-based point sources is prevented, reduced and controlled through *licensing of waste-water discharges* by competent national authorities of the Contracting Parties;
- (c) Licensing of waste-water discharges is based on promoting the *use of environmentally sound technology*;
- (d) *Requirements stricter than those provided* in sub-paragraphs (b) and (c) of this Article, are imposed according to *additional protocols to this Convention* when the quality of the receiving water or the affected ecosystem of the Caspian Sea so requires;
- (e) *Various treatments are to be applied to municipal waste water* and, where necessary, in a step-by-step approach;
- (f) In order to reduce organic substances inputs from industrial and municipal sources, the *best available environmentally sound technology is to be applied*;
- (g) *Appropriate measures based on best environmental practices* are to be developed and implemented for the reduction of inputs of organic substances and hazardous substances from non-point sources, including agriculture; and
- (h) *Measures on their conservation and full liquidation should be taken for some coastal sources* of pollution that continue to have negative impact on the Caspian Sea.

The Caspian Sea Convention envisages that other protocols should be developed in order to cover the following subjects:

- Pollution from seabed Activities (Article 8);
- Pollution from Vessels (Article 9);
- Pollution caused by Dumping (Article 10);
- Protection, preservation, restoration and rational use of marine living resources (Article 14);
- Caspian Sea Level Fluctuation (Article 16);
- Environmental Impact Assessment (Article 17); and
- Any other protocol proposed and adopted by the Contracting Parties (Article 24).

2.3 The Analysis of the Text of the Caspian Sea Convention Regarding the Selection of Technical Issues that could be Considered when Drafting the Caspian LBS Protocol

Issues that should not be covered in the Caspian LBS Protocol

The above list of the protocols, to be developed (Articles 8, 9, 10, 16, and 17 of the Caspian Sea Convention) clearly identifies which subjects should not be covered in the Caspian LBS Protocol:

- Pollution from Seabed Activities (Article 8);
- Pollution from Vessels (Article 9);
- Pollution Caused by Dumping (Article 10);

- Protection, Preservation, Restoration and Rational Use of Marine Living Resources (Article 14);
- Caspian sea Level Fluctuation (Article 16); and
- Environmental Impact Assessment (Article 17).

Issues that could be covered in the Caspian LBS Protocol

The analysis of the above text indicates that the following issues could be considered when drafting the Caspian LBS Protocol:

- *Pollution of the sea from all kinds of point and non-point sources based on land reaching the marine environment, whether water-borne, air-borne or directly from the coast, or as a result of any disposal of pollutants from land to the sea by way of tunnel, pipeline or other means;*
- *Principle of sustainable development;*
- *Precautionary principle;*
- *Polluter pays principle;*
- *Principle of anticipatory action;*
- *Principle of preventive action;*
- *Principle of accessibility of information;*
- *Application of low- and non-waste technology;*
- *Licensing of wastewater discharges;*
- *Use of environmentally sound technology;*
- *Requirements stricter than those provided in the LBS Protocol;*
- *Application of various treatments to municipal wastewater;*
- *Application of the best available environmentally sound technology;*
- *Appropriate measures based on best environmental practice; and*
- *Conservation and full liquidation of some coastal sources of pollution.*

3. Strategic Action Programme for the Caspian Sea

3.1 Introduction

The Caspian SAP identifies the national and regional interventions needed to address four priority regional environmental concern areas: *unsustainable use of bioresources; threats to biodiversity; pollution; and unsustainable coastal area development*. The Caspian SAP, which is a regional policy framework document, lays down the principles of environmental management and cooperation; notes the challenges to the sustainable integrated management of the Caspian Sea environment; sets the regionally agreed *Environmental Quality Objectives (EQOs)* for the four areas of environmental concern in a transboundary context and proceeds to define a set of targets and interventions to meet these objectives.

The Caspian SAP is the final output of a regional consultation process that started in July 2000 and was completed in November 2003, which has involved the littoral countries and the international partners. The National Caspian Action Plans (NCAPs) and the Caspian TDA, which are the major pillars of the Caspian SAP have been thoroughly studied and reviewed at a number of regional meetings leading to the draft, review and finalisation of the Caspian SAP. This process has included a

causal chain analysis, stakeholders analysis and gap analysis to help to sharpen and prioritise the Caspian SAP interventions.

The littoral states have considered and taken into account, where appropriate, the following principles and values when developing this document: the *principle of sustainable development*; the *precautionary principle*; the *polluter pays principle*; the *principle of anticipatory action*; the *principle of preventative action*; the *principle of accessibility of information*; and the *principle of public participation and transparency*.

In addition, the *environmental and health considerations* shall be included into all relevant policies and sectoral plans and programmes and the *use of clean technology* and *use of economic instruments* shall be promoted.

The Caspian TDA identified eight Major Perceived Problems and Issues. These were later refined through further regional consultation into four priority environmental regional concern areas, described above, requiring coordinated efforts by all littoral states. It was determined that these areas of concern, and their root causes, could be most effectively and appropriately addressed through the aims of the five EQOs. Four of these EQOs correlate to the four concern areas, plus one EQO addressing the cross-sectoral issue of strengthening the involvement of all stakeholders. The five EQOs are:

- Conservation and sustainable use of bioresources;
- Conservation of Caspian biodiversity;
- Improved water quality of the Caspian;
- Sustainable development of the coastal zones; and
- Strengthened stakeholder participation in Caspian environment stewardship.

Each EQO consists of a number of targets that are comprised of inter-related interventions that address the root causes of the concern areas. For the regional level interventions, the littoral states and the international partners shall work collectively to take the required steps to fulfil the intervention. The national level supporting interventions will be the responsibility of the littoral countries.

3.2 Technical Issues Selected from the Caspian SAP that could be Considered when Drafting the Caspian LBS Protocol

General Issues

On the basis of the above information it is proposed that the following technical issues (*presented in italics*), selected from the Caspian SAP and its EQOs, be considered when drafting the Caspian LBS Protocol:

- *Principle of sustainable development*;
- *Precautionary principle*;
- *Polluter pays principle*;
- *Principle of anticipatory action*;
- *Principle of preventive action*;
- *Principle of accessibility of information*;
- *Principle of public participation and transparency*;
- *Environmental and health considerations*;

- *Use of clean technology;*
- *Use of economic instruments; and*
- *Development of Environmental Quality Objectives (EQOs).*

Environmental Quality Objectives (EQOs)

All five EQOs were reviewed and targets relevant for the preparation of the Caspian LBS Protocol were selected and are presented in italics.

EQO I: Conservation and sustainable use of bioresources

None of the three issues listed below should be considered when drafting the Caspian LBS Protocol.

- Target 1: Sustainable use of commercial fisheries resources.
- Target 2: Rehabilitate stocks of migratory (sturgeon, inconnu, herring) commercially valuable fish species.
- Target 3: Improve livelihoods in coastal communities to reduce dependency on unsustainable fishing practices via pilot projects.

EQO II: Conservation of Biodiversity

None of the six issues listed below should be considered when drafting the Caspian LBS Protocol.

- Target 1: Increased regional collaboration to achieve maximum regional benefit for biodiversity.
- Target 2: Ensure all key species are maintained or restored to viable levels.
- Target 3: Control of introduction and invasion of non-native (alien) species and manage impact of existing introduced/invasive species.
- Target 4: Ensure all key coastal and marine habitats are represented in a regional system of protected areas.
- Target 5: Identify and restore priority sensitive coastal habitats.
- Target 6: Identify and restore priority marine habitats.

EQO III: *Improve the water quality of the Caspian*

Of the six issues listed below, all of them except issue 6 could be considered when drafting the Caspian LBS Protocol.

- Target 1: Strengthen environmental enforcement and management in the littoral states.*
- Target 2: Implement a regionally coordinated water quality monitoring programme.*
- Target 3: Development of regional strategies for pollution reduction.*
- Target 4: Develop and initiate implementation of a regional action plan for contaminated land.*
- Target 5: Promote environmentally sound agricultural practices in the Caspian region.*
- Target 6: Disaster prevention and response (should be subject of another Protocol).

EQO IV: Sustainable development of the coastal zones

Both issues listed below could be considered when drafting the Caspian LBS Protocol.

Target 1: Sustainable use and management of coastal areas through integrated coastal area management.

Target 2: Combat the desertification and deforestation process.

EQO V: Strengthen stakeholder participation in Caspian environmental stewardship

All three issues listed below could be considered when drafting the Caspian LBS Protocol.

Target 1: Increased coastal community involvement in managing the Caspian environment.

Target 2: Increase local and regional authorities' understanding of importance of environmental issues.

Target 3: Develop active partnerships between CEP and local and multinational enterprises.

4. Transboundary Diagnostic Analysis for the Caspian Sea

4.1 Introduction

According to the Global Environment Facility (GEF) guidance, the purpose of conducting a TDA is to scale the relative importance of sources and causes, both immediate and root, of transboundary waters problems and to identify potential preventive and remedial actions. The Caspian TDA has been treated as a process through which regional experts have passed and in so doing gained experience in evaluation and prioritisation of environmental problems and a deeper understanding of their underlying causes. These same regional experts worked on their NCAPs and the regional Caspian SAP. The Caspian TDA is the product of the regional experts and although the national governments were consulted at all stages they have not adopted or approved its content. The Caspian TDA provides the technical basis for development of both the NCAPs, which are to be endorsed and agreed by the national government, and the Caspian SAP.

This Caspian TDA, prepared in the period from 1997 to July 2002, summarizes information available from the region, gathered both as part of ongoing national activities within the littoral states, as well as information made available since the inception of the Caspian Environment Programme (CEP) in May 1998.

Decisions made by experts are included in the Caspian TDA, including Major Perceived Problems and Issues, Causal Chain Analysis (including root causes), and Environmental Quality Objectives with targets and interventions. The Caspian TDA, as the technical basis for the NCAPs and the Caspian SAP, provides expert opinion on the above matters. It ends with a list of actions that are recommended for consideration in the NCAPs and the Caspian SAP.

The first step in the Caspian TDA process was to identify the Major Perceived Problems and Issues (MPPI). This step was performed as part of the PDF-B activity in 1998, and then revisited in Caspian TDA meetings during the CEP. These MPPI then were the basis for the analysis activity, during which time the validity of the MPPI was investigated.

Causal chain analyses were then undertaken for each of the MPPI by regional experts drawn from the countries and the Caspian Regional Thematic Centres (CRTC's). Each MPPI was broken down to determine primary, secondary and root causes and the experts were asked to identify and prioritise interventions to target root causes.

These steps lead to investigation of the quantitative understanding of the environment, which is the Caspian TDA. By nature this quantitative understanding has uncertainties: The data are not perfect,

they are too infrequent, they are too sparsely located around the Caspian, the analytical methods are imperfect, etc. The Caspian TDA is therefore based on an expert judgment of the best available data and an analysis, the Causal Chain Analysis, of the underlying root causes.

This investigation then was followed by agreement of regional EQOs, which were subsequently used as a base for development of EQOs in the Caspian SAP. This Caspian TDA has therefore added an additional step to the general GEF TDA Guidelines for International Waters projects, the use of EQOs in order to facilitate consensus on the desired state of the Caspian Sea. The Caspian TDA Meetings identified five EQOs, which represent the regional perspective of major goals for the Caspian environment. The use of EQOs helps to refine the Caspian TDA process by achieving consensus on the desired status of the Caspian Sea. Each EQO is a broad policy-oriented statement. To move towards the EQOs, several specific, quantifiable, time-constrained targets were set. The activities or interventions that lead to the achievement of the targets are the main output of the Caspian TDA: They represent expert opinions about how best to achieve the EQOs given the existing conditions.

4.2 Major Perceived Problems and Issues

This section of the document presents all eight Major Perceived Problems and Issues (MPPIs) identified in the Caspian TDA. For each of the eight MPPIs are listed technical issues (*presented in italics*) that could be considered when drafting the Caspian LBS Protocol. These issues were selected on the basis of the TDA analysis of the MPPI and on the Causal Chain Analysis presented in the Caspian TDA. Whether an issue was identified as strongly or weakly or not transboundary was agreed upon by the participants in the exercise of identification of MPPIs.

(a) *Decline in certain commercial fish stocks, including sturgeon: strongly transboundary*

From the issues listed below the first four should not be considered and the last one could be considered when drafting the Caspian LBS Protocol.

- Decline in certain commercial fishing (not to be dealt with in the Caspian LBS Protocol).
- Link between poaching and decline in certain commercial fishing (not to be dealt with in the Caspian LBS Protocol).
- Link between effects of dams and decline in certain commercial fishing (not to be dealt with in the Caspian LBS Protocol).
- Link between loss of habitats and decline in certain commercial fishing (not to be dealt with in the Caspian LBS Protocol).
- *Link between pollution and decline in certain commercial fishing.*

(b) *Degradation of coastal landscapes and damage to coastal habitats: strongly transboundary*

All issues listed below could be considered when drafting the Caspian LBS Protocol.

- *Water level fluctuation.*
- *Earthquakes.*
- *Climate change.*
- *Desertification/deforestation.*
- *Regulation of rivers.*
- *Urbanisation/industrial development.*
- *Agriculture/aquaculture development.*
- *Coastal erosion.*

- *Recreational development.*
- *Land-based pollution.*

(c) Threats to biodiversity: strongly transboundary

From the issues listed below, all issues except second and third could be considered when drafting the Caspian LBS Protocol.

- *Industrial pollution.*
- *Overfishing (not to be dealt with in the Caspian LBS Protocol).*
- *Invasion of exotic species (not in the Caspian LBS Protocol).*
- *Link between the quality of the environment and the loss of the biodiversity.*
- *Water and sediment quality.*
- *Damming of rivers.*
- *Loss of habitats.*

(d) Overall decline in environmental quality: strongly transboundary

All issues listed below could be considered when drafting the Caspian LBS Protocol.

- *Water and sediment quality.*
- *Loss of aesthetic appeal.*
- *Natural disasters.*
- *Relation to oil and gas extraction from the sea or its coastal zone.*
- *Lack of systematic knowledge of pollution load.*
- *Lack of systematic knowledge of ambient contaminant levels.*
- *Lack of full quality assurance/quality control of data.*
- *Lack of systematic data on air, water and sediment quality.*
- *Lack of systematic knowledge on eutrophication.*
- *Identification and monitoring of hotspots of pollution.*
- *Selection of priority contaminants.*

(e) Decline in human health: weakly transboundary

All issues listed below could be considered when drafting the Caspian LBS Protocol.

- *Link between the quality of the Caspian environment and infant mortality.*
- *Link between quality of the Caspian environment and the short life span.*
- *Link between the quality of the Caspian environment and the incidence of certain types of diseases in certain areas.*

(f) Damage to coastal infrastructure and amenities: not transboundary

All issues listed below could be considered when drafting the Caspian LBS Protocol.

- *Water level fluctuation.*
- *Planning and improved intersectoral exchange at all levels that does not ignore water level fluctuation.*
- *Link of desertification with urbanisation.*

(g) *Introduced species: strongly transboundary*

Neither of the two issues listed below should be considered when drafting the Caspian LBS Protocol.

- Development of a regional mechanism to control future invasive species (not to be dealt with in the Caspian LBS Protocol).
- Issue of ballast waters (not in the Caspian LBS Protocol).

(h) *Contamination from offshore oil and gas activities: strongly transboundary*

From the four issues listed below the last two should not be considered when drafting the Caspian LBS Protocol and the first two could be considered.

- *Environmental impacts of oil and gas development.*
- *Oil refining, transport, and related topics.*
- Oil-spill response clean-up (not to be dealt with in the Caspian LBS Protocol).
- Contingency regional plan (not in the Caspian LBS Protocol).

4.3 Causal Chain Analysis

The following issues (some of the issues were mentioned in slightly different form in the section on MPPIs) of concern for the drafting of the Caspian LBS Protocol were identified in the Causal Chain Analysis:

- *Absence of Caspian legal framework;*
- *Poor law enforcement and compliance;*
- *Undeveloped civil society;*
- *Undeveloped public awareness;*
- *Inadequate financing;*
- *Lack of economic instruments to encourage polluters not to pollute;*
- *Role of private industry in pollution abatement;*
- *Inadequate industrialisation;*
- *Inadequate development planning;*
- *Inadequate spatial planning;*
- *Integrated Coastal Areas Management;*
- *Rapid urbanisation;*
- *Inadequate waste management;*
- *Uncontrolled discharge of mining waters;*
- *Heavy metals;*
- *POPs;*

- *Microbial pollution;*
- *Quality of bathing waters;*
- *Hotspots;*
- *Inadequate and obsolete treatment technologies;*
- *Damaging agricultural practices;*
- *Soil erosion;*
- *Chemical subsidies;*
- *Pesticides and fertilisers;*
- *Deforestation;*
- *Transfer of ballast waters; and*
- *Inadequate contaminants monitoring.*

4.4 Environmental Quality Objectives

EQOs are a means to develop broad stakeholder agreement on the major environmental objectives of the region. They represent consensus views of environmental priorities, or visions of what the environment should look like in the future. EQOs are visions, not simple, rapidly achievable actions.

EQO 1: Sustainable economic uses of the natural resources of the Caspian Sea

Points 1 and 3 below could be considered when drafting the Caspian LBS Protocol.

1. *Reduce the oil and gas related pollution of the Caspian.*
2. *Ensure safe transportation for hydrocarbons and other raw materials.*
3. *Abate the impact of agriculture on ecosystems of the Caspian Sea.*
4. *Ensure sustainable use of aquatic resources, with emphasis on fisheries.*
5. *Ensure sustainable use of rivers and freshwater.*

EQO 2: Balanced Caspian environment including biodiversity conservation

None of the five issues listed below should be considered when drafting the Caspian LBS Protocol.

1. *Development and implementation of a strategy for the protection of Caspian biodiversity.*
2. *Establish control system for the import and export of exotic species into and from the Caspian Sea.*
3. *A biodiversity monitoring system based on a set of regional monitoring protocols.*
4. *Increase public awareness of the value of the Caspian Sea biodiversity.*
5. *Establish inter-governmental mechanisms for rapid response to oil and non-oil emergency events affecting Caspian biodiversity (mass mortality events, etc.) by 2005.*

EQO 3: High quality of Caspian Sea, surface and groundwaters

All three points listed below could be considered when drafting the Caspian LBS Protocol.

1. *Develop, based on water use, a regional legal framework for protection of the Caspian from Pollution under the Framework of the Convention.*

2. *Prepare, agree to, and initiate the implementation of a regionally coordinated ambient monitoring program for trends in place.*
3. *Develop and begin implementation of a Regional Action Plan for land-based activities to meet defined Water Quality objectives.*

EQO 4: Sustainable multiple use of the Caspian coastal environment

Points 1, 3 and 4 listed below could be considered when drafting the Caspian LBS Protocol.

1. *Establish coastal planning zones (including spatial plans) in the five littoral states.*
2. *Establish an eco-tourism “green” belt around the entire Caspian Sea by 2007.*
3. *Net rate of loss of coastal forests to be reduced by 50% by 2007.*
4. *Reduce rate of loss of land due to technogenic desertification by 10% by the year 2008.*

EQO 5: Strengthened civil society for the purposes of environmentally sustainable development

Both points listed below could be considered when drafting the Caspian LBS Protocol.

1. *Integration of environmental considerations in local, national and regional development strategies, implementation to start by 2004.*
2. *Enhanced and informed stakeholders participation in the development process.*

5. Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities

5.1 Introduction

The intense pressures put on coastal systems require serious commitment and preventive action at all levels - local, national, regional and global. The major threats to the health, productivity and biodiversity of the world's oceans result from human activities on land - in coastal areas and further inland. Some 80 per cent of the pollution in the oceans originates from land-based activities. In response to these problems, 108 governments and the European Commission have committed themselves to protect and preserve the marine environment from the adverse environmental impacts of land-based activities by adopting the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA) and the Washington Declaration in 1995. In the Washington Declaration, the Governments declared their intention to cooperate on a regional basis to coordinate GPA implementation efforts.

As a non-binding global agreement, the GPA reflects the resolve of States to address the serious impacts of land-based sources of pollution and physical degradation of the coastal and marine environments. It is an action-oriented programme with an overarching goal to address the negative effects of land-based activities upon the coastal and marine environment that cause or exacerbate poor human health, poverty, economic losses and food insecurity.

The GPA is a comprehensive programme designed to be a source of conceptual and practical guidance. It assists States, individually or jointly, in taking concrete actions that give tangible results within their respective policies, priorities and resources. Implementing the GPA is, primarily, the task of national governments, supported in their efforts by regional and international organizations and other stakeholders. The GPA is intended to facilitate national action and regional cooperation in the identification of problem areas and issues, the setting of priorities, and the development of measures to prevent, reduce and control the degradation of the marine environment. The GPA emphasizes action at

the national level, cooperation at sub-regional and regional levels, and the strengthening of existing conventions and the negotiations of new regional conventions and programmes as appropriate.

The GPA is implemented through a comprehensive Programme of Work delivered through a flexible modular framework to allow partners to support specific components within the context of the approved work programme. This structure allows partners the flexibility to select components to support and to negotiate the scope of delivery. While the scope of the Programme of Work is global, it is focused on targeted delivery in prioritised programmatic areas in select geographic regions. The core components of the Programme of Work are: National Programmes of Action (NAPs); Strategic Action Plan on Municipal Wastewater (SAP Wastewater); Physical Alteration and Destruction of Habitats (PADH); Integrated Coastal Area and River Basin Management (ICARM); Public Awareness and Outreach including the GPA Clearing-House Mechanism; and Supportive Toolkits.

The fundamental aims of the *National Programmes of Action (NPAs)* are to:

- Develop ongoing programming activity with national governments to address the harmful effects of land-based activities; and
- Implement feasible and visible projects that mobilize stakeholders and resources and mainstream the projects into relevant institutional, budgetary and policy frameworks, incorporating lessons learned in the process.

The *main objective of the Strategic Action Plan (SAP) on Municipal Wastewater* is:

- To mainstream sustainable, innovative and alternative approaches and procedures to wastewater management.

The *Physical Alteration and Destruction of Habitat (PADH)* objectives are to:

- Build capacities within governments to address the urgent threats to coastal zones through, among other issues, strengthening legislation and regulatory capacity and facilitating multi-stakeholder/partnership for; and
- Promote effective action in specific locations to reduce and prevent the degradation of the coastal and marine environment caused by physical alteration and destruction of habitats.

The basic principles of *Integrated Coastal Area and River Basin Management (ICARM)* include:

- Respect for the integrity of river basin and coastal ecosystems also recognizing limits on the use of resources; and
- Multi-sectoral and multi-level integration in decision making linking broad scale management to local level interventions.

The component of *Public Awareness and Outreach* plays an important role in:

- Building stakeholder support in the delivery of the Programme of Work; and
- Building support and acceptance for new paradigms and approaches between and among relevant stakeholder groups and within the policy development and implementation processes.

The *Clearing-House Mechanism* is:

- One of the principle means by which decision makers at all levels can electronically access up-to-date, cutting-edge information relevant to their activities.

The main *Supportive Toolkits* are:

- Voluntary Agreements (VA) to enhance involvement of new stakeholders, particularly the private sector;
- Innovative Financial Arrangements (IFA); and
- Integrated Coastal Area Management (ICAM).

5.2 Technical Issues Selected from the GPA that could be Considered when Drafting the Caspian LBS Protocol

The GPA document was reviewed in detail and all issues that could be considered when drafting the Caspian LBS Protocol are presented below *in italics*.

Actions at the National Level

States should, in accordance with their policies, priorities and resources, develop or review national programmes of action (NPAs) and forward action to implement these programmes with the assistance of the international cooperation. NPAs should focus on sustainable, pragmatic and integrated environmental management approaches and processes such as integrated coastal area management, harmonized, as appropriate, with river basin management and land-use plans.

The National Programmes of Action should:

A. Identify and assess problems, caused by:

- Contaminants: (i) Sewage; (ii) Persistent organic pollutants; (iii) Radioactive substances; (iv) Heavy metals; (v) Oils (hydrocarbons); (vi) Nutrients; (vii) Sediment mobilization; and (viii) Litter;*
- Physical alteration, including habitat modification and destruction in areas of concern;*
- Sources of degradation: (i) Point sources (coastal and upstream), such as: a. Waste-water treatment facilities; b. Industrial facilities; c. Power plants; d. Military installations; e. Recreational / tourism facilities; f. Construction works; g. Coastal mining; h. Research centres; i. Aquaculture; j. Habitat modification; k. Introduction of invasive species; and (ii) Non-point (diffuse) sources (coastal and upstream), such as: a. Urban run-off; b. Agricultural and horticultural run-off; c. Forestry run-off; d. Mining waste run-off; e. Construction run-off; f. Landfills and hazardous waste sites; g. Erosion as a result of physical modification of coastal features; (iii) Atmospheric deposition caused by: a. Transportation; b. Power plants and industrial facilities; c. Incinerators; d. Agricultural operations; and*
- Areas of concern: (i) Critical habitats; (ii) Habitats of endangered species; (iii) Ecosystem components; (iv) Shorelines; (v) Coastal watersheds; (vi) Estuaries and their drainage basins; (vii) Specially protected marine and coastal areas; and (viii) Small islands.*

B. Establish priorities:

In the process of establishing priorities for action throughout all stages of developing and implementing of NPAs, States should:

- Apply integrated coastal area management approaches, including provision to involve stakeholders;*
- Recognize the basic linkages between the freshwater and marine environments through, inter alia, application of watershed management approaches;*
- Recognize the basic linkages between sustainable management of coastal and marine resources, poverty alleviation and protection of the marine environment;*

- (d) Apply *environmental impact assessment* procedures in assessing options;
- (e) Take into account the need to view such programmes as an *integrated part of existing or future comprehensive environmental programmes*;
- (f) Take steps to *protect*: (i) *critical habitats*, using community-based participatory approaches that are consistent with current approaches to conservation and uses compatible with sustainable development; and (ii) *endangered species*;
- (g) *Integrate national action with any relevant regional and global priorities, programmes and strategies*;
- (h) *Establish focal points to facilitate regional and international cooperation*; and
- (i) *Apply the precautionary approach and the principle of intergenerational equity*.

C. Set management objectives for priority problems

On the basis of the priorities established, States should:

- (a) Define *specific management objectives*, both with respect to source categories and areas affected. Such objectives should be set forth in terms of overall goals, targets and timetables, as well as specific targets and timetables for areas affected and for individual industrial, agricultural, urban and other sectors; and
- (b) *Take immediate preventive and remedial action*.

D. Identify, evaluate and select strategies and measures

Strategies and programmes to achieve management objectives should include a combination of:

- (a) *Specific measures, including, as appropriate*: (i) *Measures to promote sustainable use of coastal and marine resources and to prevent/reduce degradation of the marine environment, such as*: a. *Best available techniques and best environmental practices*; b. *Introduction of clean production practices*; c. *Application of best management practices*; d. *Use of appropriate, environmentally sound and efficient technologies*; e. *Product substitution*; (ii) *Measures to modify contaminants or other forms of degradation after generation, such as*: a. *Waste recovery*; b. *Recycling, including effluent reuse*; c. *Waste treatment*; (iii) *Measures to prevent, reduce or ameliorate degradation of affected areas, such as*: a. *Environmental quality criteria*; b. *Land-use planning requirements*; c. *Rehabilitation of degraded habitats*;
- (b) Requirements and incentives to *induce action to comply with measures*, such as: (i) *Economic instruments and incentives, taking into account the "polluter pays" principle and the internalization of environmental costs*; (ii) *Regulatory measures*; (iii) *Technical assistance/cooperation, including training of personnel*; (iv) *Education and public awareness*;
- (c) Identification/designation of the *institutional arrangement* with the authority and resources to carry out management tasks associated with the strategies and programmes, including implementation of compliance provisions;
- (d) Identification of short-term and long-term *data-collection and research needs*;
- (e) Development of a *monitoring and environmental-quality reporting system* to review and, if necessary, help adapt the strategies and programmes; and
- (f) *Identification of sources of finance* and mechanisms available to cover the costs of administering and managing the strategies and programmes.

E. Criteria for evaluating the effectiveness of strategies and measures

States should develop specific criteria to evaluate the effectiveness of strategies and programmes and they should address:

- (a) *Environmental effectiveness;*
- (b) *Economic costs and benefits;*
- (c) *Equity;*
- (d) *Flexibility in administration;*
- (e) *Effectiveness in administration; and*
- (f) *Timing.*

F. Programme support elements

The long-term objective of national programmes of action should be to develop *integrated strategies and programmes* to address all action priorities in relation to impacts upon the marine environment from land-based activities. In addition, the programmes of action must themselves be integrated with overall national objectives and other relevant programmes in relation to sustainable development. States therefore should seek to ensure that there are administrative and management structures necessary to support the national programmes of action. These include, as appropriate:

- (a) *Organizational arrangements to coordinate among sectors and sectoral institutions;*
- (b) *Legal and enforcement mechanisms;*
- (c) *Financial instruments and mechanisms;*
- (d) *Means of identifying and pursuing research and monitoring requirements in support of the programme;*
- (e) *Contingency planning;*
- (f) *Human resources development and education; and*
- (g) *Public participation and awareness.*

Regional Cooperation

Regional and subregional cooperation and arrangements are crucial for successful actions to protect the marine environment from land-based activities. This is particularly so where a number of countries have coasts in the same marine and coastal area, most notably in enclosed or semi-enclosed seas. Such cooperation also strengthens regional and national capacity building and offers an important avenue for harmonizing and adjusting measures to fit the particular environmental and socio-economic circumstances.

In order to benefit from regional cooperation countries should:

- (a) *Participate in regional and subregional arrangements; and*
- (b) *Make efforts to ensure effective functioning of regional and subregional arrangements.*