



ESaTDOR European Seas and Territorial Development, Opportunities and Risks

ANNEX 11 to the Draft Final Report

Governance Case Studies: Black Sea

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ANNEX 11: Black Sea Governance Case Studies

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The purpose of the maritime governance case studies within the ESaTDOR project is to provide a more in depth assessment of the governance experience of different maritime and coastal regions. More specifically, case studies have been chosen on the basis that they are examples of transnational governance (either bilateral or multilateral arrangements) in order to investigate the following issues:

- Management of conflicts in relation to the uses of maritime space,
- The integration of terrestrial (land-based) and marine or maritime spatial planning, and
- The contribution that existing transnational governance arrangements can make to territorial cohesion.

In addition, the evaluation of governance arrangements in each of the case studies is intended to highlight examples of good practice in maritime governance, and provide evidence for further recommendations as to how governance arrangements in different maritime regions can be strengthened, through, for example, Integrated Maritime Policy or the development of further transnational cooperation initiatives.

The case studies were undertaken using a mixture of documentary reviews and interviews with a limited number of key stakeholders. A synthesis of the case study findings for all the regional seas considered in the ESaTDOR project (the Arctic and Atlantic Oceans, and the Baltic, Black, Mediterranean and North Seas) is contained within the Draft Scientific Report.

Black Sea Case Study 1: the Black Sea Regional Energy Centre

Introduction

The Black Sea Regional Energy Centre (BSREC) was inaugurated in 1995 following the Chalkidiki Ministerial Meeting, held in 1994 in Greece.

The establishment of the Centre was a joint initiative of the European Commission, under its SYNERGY Programme, and the countries of the Black Sea region: Albania, Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Moldova, Romania, Russia, Turkey, Ukraine, since 1999, the Former Yugoslav Republic of Macedonia, since 2001, Serbia have become members of the BSREC as well.

BSREC was registered in Sofia, Bulgaria, according to the legislation of its host country.

The Black Sea Regional Energy Centre (BSREC) acts as a focal point for energy related activities, aimed at developing co-operation between the Black Sea region countries and the EU in the energy field.

The Center's core activity is targeted to promote the development and implementation of market oriented energy policy, encourage restructuring of the monopoly structures, encouraging the energy efficiency and renewable energy projects, assist investment and funding, and allow the collection and dissemination of energy sector related information at a regional level.

Apart from its international activities, the BSREC is actively involved in the Bulgarian energy issues, acting as a Bulgarian energy society.

Areas of expertise of BSREC include:

- Harmonization of countries' energy legislation with the EU one;
- Energy market reform;
- Security of energy supply and promotion of utilization of renewable energy sources (RES);
- Energy efficiency and rational use of energy (RUE);
- Networking, exchange of experience and dissemination of information.

The Black Sea Regional Energy Centre audience target is given by: international organizations, ministries, regional authorities, public and private enterprises and individuals.

The Legal and Policy Framework for Management

Presented as a Communication of the European Commission to the European Council and to the European Parliament, and made public on the 11th of April 2007, the Black Sea Synergy synthesizes the point of view of the European Union on the cooperation with the countries around the Black Sea. Its subtitle – a new regional cooperation initiative – is somewhat deceiving because, in reality, the Black Sea Synergy is not an independent strategy of the European Union, because the European policy in the region is already well defined in three well-delineated and different dimensions: Turkey's pre-accession strategy, the European Neighborhood Policy (mainly for the Eastern European new independent western states); and the strategic partnership with Russia.

It would rather be seen as a complementary initiative related to the policies that focus on the regional level, which, up until now, the mostly two-sided European Neighborhood Policy has been lacking, in order to quicken the cooperation not only around the Black Sea region, but also between the Black Sea region and the European Union. Also, considering the strategy of the European Union for Central Asia, the Black Sea Synergy has got some important inter-regional components.

Governance Partnership

The BSREC objective is to promote the role of regional authorities in a Black Sea multi-level governance framework through: coordinated effort of Black Sea regional authorities, cooperation between regional authorities with national and European institutions, cooperation with different stakeholders as civil society organizations and enterprises.

The European Council and the Organization for Security and Cooperation in Europe settled rules considering the human rights and democracy which apply to all Black Sea countries. This way, the actions of the European Union are mainly two-sided. However, the actions done at a regional level can play an important role in consolidating and stimulating the national measures.

For the past few years, the regional organizations of the Black Sea have taken the commitment to create efficient democratic institutions, to promote the good governance and the rule of law. The European Union should support these regional initiatives by sharing the experience acquired through the measures for promoting and defending the human rights and the democracy, through submitting training and exchange programs and through stimulating the regional dialogue with the civil society.

Structure and Activities

The program consisted of the thirteen involved countries and a number of institutes and organizations.

The main objectives are as follows:

- promotion of energy policy application and market reform, with reference to EU Directives on electricity and gas, the European Energy Charter and the world-wide accepted restructuring process;
- encouragement of investment and funding opportunities in the energy sector of the Black Sea Region;
- easy access to foreign and international institutions and companies to the Black Sea region energy sector;
- facilitation of Black Sea Region initiatives for social partners who wish to link with international counterparts;
- information exchange on energy policy issues, including creation of a common information data bank;
- provision of co-ordination services for international and bilaterally funded projects addressed to the region.

Harmonization of the Black Sea Region Countries' Energy Legislation with the EU Legislation

BSREC has been actively working on the harmonization of the energy legislation of the Black Sea countries with the EU one, targeting to improve the investment climate and to encourage foreign investments in the energy sector.

The Centre drafted and assisted the energy authorities of Bulgaria in the elaboration of the Energy Act, Energy Efficiency Act, Energy Strategy, National Renewable Energy Action Plan of Bulgaria, and various secondary legislative documents. Expertise services have also been provided to the Bulgarian State Energy and Water Regulatory Commission on the *Energy Services Quality Regulation* and on *Development of Electricity Network and Metering Codes* for the future liberalization of the electricity market.

Energy Market Reform

BSREC has used various means to provide information on energy market reform and the experience of other countries where this process had started earlier. The Centre has organized a number of workshops on power, heating and gas sectors restructuring, seminars and conferences, targeted to promote knowledge related to the electricity and gas internal market, liberalization, pricing and tariffs. The provisions of the EU electricity and gas directives, as well as information about the experiences of power markets in the Nord Pool, USA, Australia, UK and other Western and Eastern countries have been disseminated through the Centre's regular publications.

BSREC took an active part in several projects with regional coverage through providing consultancy and support services. The Centre has enhanced its capabilities in the Balkans, coordinating and/or

being involved in projects that helped ensuring the efficiency of electricity, gas and oil interconnection investment initiatives in this region (*Balkans Energy Interconnection Task Force, Energy Interconnections in South-Eastern Europe*) in view to creation of a Regional Electricity Market (REM).

BSREC, together with its Greek partners, initiated and launched for discussion among the Black Sea countries in 1996 the idea of establishment of REM. The project was accepted for funding by the EC. The REM project grew subsequently into the Athens Process.

Security of the Energy Supply and Promotion of Renewable Energy Sources (RES)

The BSREC has undertaken a number of initiatives and studies dedicated to the diversification of gas supply and enhancement of the interconnection of electricity grids.

Additionally, many projects devoted to renewable energy have been carried out, focusing on:

- Transfer of RES-utilization technologies;
- Evaluation of the economic, environmental, social, and policy aspects;
- Financing sources and schemes;
- Technical complications related to the integration of RES installations to the grid;
- Legislation and regulations;
- RES deployment strategies and research priorities;
- Training, promotion and dissemination of information and findings.

Energy Efficiency (EE) and Rational Use of Energy (RUE)

Energy efficiency is vital for the Black Sea countries' economies. Since 1998, the BSREC has devoted significant part of its activities to work within the network of the Organization for Promotion of Energy Technologies (OPET), covering the Black Sea Region, and co-operating with a continuously increasing number of OPET partner-organizations across Europe and beyond. Considerable experience and expertise have been gained in performing energy audits in the industry and building sector, assessing the EE potential, in working with municipalities and SMEs, in dissemination of EU best practices.

RUE in buildings and industry is in the scope of the priority activities of BSREC and numerous projects have been implemented so far. The Centre has been working together with experts from the World Bank and the Black Sea Trade and Development Bank to identify and substantiate projects for rational use of energy in industry and building sectors of Bulgaria.

In order to enhance its capacity, the Centre is actively co-operating with high-level experts from the Technical Universities of Sofia and Varna. Together with them, the BSREC has successfully performed a number of projects on RUE in the field of industry and buildings.

At the legislative level, the BSREC has been working on the development of Energy Efficiency Strategy and Action Plan of Bulgaria. The Centre contributed considerably to the development of the Bulgarian Energy Efficiency Act as well.

Dissemination of Information

The dissemination of information is one of the BSREC's priorities, implemented through organization and running of workshops, conferences, seminars, publication of Newsletters, etc. It is aimed at transferring of information about policies, technologies, organizational structures, key persons, and experience in energy activities.

During its operation, the BSREC has gained significant experience in organizing high-level Energy Conferences (Ministerial Conferences in Bucharest, 1997; Thessaloniki, 1999; Athens, 2000). Additionally, BSREC has organized more than 50 seminars, workshops, training sessions, forums and other events throughout the Black Sea region.

Key Events in Management

Outputs and evaluation of governance arrangements

Experience of the first year has proven the validity of the principles contained in the 2007 Communication. The initiative's main goal remains to invigorate action at regional level promoting stability and prosperity in the Black Sea area. It is a flexible, inclusive and transparent framework, based on the common interests of the EU and of all Black Sea states.

The Commission welcomed the fact that Black Sea Synergy participants envisage continuing the present pragmatic and project-oriented approach. Consequently, work should proceed to accomplish the tasks set by the 2007 Communication and the Kyiv Joint Statement. Interaction with the BSEC and other regional bodies providing added value should continue.

During the Foreign Ministers' meeting in Kyiv and the months thereafter, EU Member States and Black Sea Synergy partners have made suggestions as to how the Black Sea Synergy cooperation process can be firmly rooted as a long-term endeavour. These proposals can provide new impetus to regional cooperation with our partners to the east of the European Union. The Commission intends to explore and actively take them forward to promote more effective and ambitious action:

- *Long-term, measurable objectives* in fields like transport, environment, energy or maritime safety should be set to spur more concerted action. These would require the support of all BSS members. In each case a *lead country and/or organization* should be identified to ensure coordination of activities which might be undertaken at national or regional level to achieve the objectives set.
- To facilitate the realization of projects, *sectoral partnerships* could be established to provide a framework for co-financing and a basis for the involvement of IFIs. These partnerships might bring together all or some of the Black Sea Synergy participants to cooperate on a series of projects. The successful experience of the Northern Dimension¹⁴ provides a useful example of how this could work.

- The frequency of *ministers' meetings* should reflect concrete needs. In some cases they could take place in the existing sectoral frameworks (such as TRACECA or the Baku Initiative) or could follow the Kyiv model (back-to-back with BSEC meetings, with full EU participation or involving an open troika). Foreign ministers could meet as required to mark the major milestones of the process.

There have been a number of other proposals that also deserve further study:

- involvement of Belarus in some of the sectoral activities, related to the Synergy;
- creation of a Black Sea Civil Society Forum;
- strengthening of academic and student networks;
- establishment of an Institute of European Studies in the Black Sea Region.

The Commission stands ready to work with Member States and all stakeholders on these and other new ideas, strengthening Black Sea regional co-operation that:

- complement the bilateral, tailor-made cooperation we have with our partners under the ENP and other policies applying in the region;
- are inclusive, involve all Member States and Black Sea countries;
- provide added value.

The Role of the European Union in Management

The Centre, together with EU and local consultants, has performed projects directed to implementation of requirements and conditions of the main EU political and legislative documents.

The idea of the European Commission is to complete the existing policies, to give a bigger visibility to this area and to contribute to the stimulation of the actual process of regional cooperation through an intensified dialogue, which would increase the trust between the concerned countries. Due to the fact that the activities of the Black Sea Synergy are highly related to the neighboring regions, especially the Caspian Sea, Central Asia, and the South-Eastern Europe, its radius could be extended beyond the Black Sea region.

This initiative comes from knowing that the Black Sea Region is a developing market, a turntable for the energetic streams and for the transportation tracks, which has got serious challenges, such as frozen conflicts, illegal migration, organized crime and environmental issues.

Lessons for Marine Planning

The Black Sea Synergy offers a dialogue opportunity concerning the emerging maritime policy within the Union, with the aim of maximizing the abiding growth and the aim of creating work places within the branches connected to the sea and within the coastal regions. This means to create not only a network of inter-sectoral maritime cooperation between services, enterprises and science institutions, but also to improve the cooperation and the integration concerning maritime surveillance in order to make sure of the safety and the security of the maritime transport and of environment protection.

Conclusions

The fundamental mission of the Black Sea Synergy is to develop the cooperation within the Black Sea region and between the whole region and the European Union as well.

To conclude, in order for the original geophysical platform to achieve security, stability and prosperity, the harmonization and the enlargement of the European, Asian and African efforts to create a new and lasting relation for the Black Sea and the Mediterranean Sea, are necessary. Black Sea Synergy considers that it is time to prepare a new future in which synergizing spaces of contact, of confluence and of connection at a Euro-Afro-Asian level has its place.

Black Sea Regional Energy Centre – Annex***National stakeholders of BSREC*****Albania**

- Albania- EU Energy Efficiency Centre
- Albanian Power Corporation (KESH)
- Energy Regulatory Entity
- Ministry of Economy, Trade and Energy
- National Agency of Natural Resources

Armenia

- Armenia Renewable Resources and Energy Efficiency Fund
- Armenian Nuclear Regulatory Authority (ANRA)
- ARTSAKH HEK OJSC
- Association of Energy Service Companies of Armenia
- CJSC Electric Networks of Armenia
- Hrazdan Energy Company (HrazTES OJSC)
- Ministry of Energy and Natural Resources
- Public Services Regulatory Commission
- ZAO ArmRusGazprom

Azerbaijan

- JSC Azerenerji
- JSC Azerigas
- Ministry of Industry and Energy
- State Oil Company (SOCAR)
- State Oil Fund of Azerbaijan

Bulgaria

- Brikel EAD
- BULGARGAZ
- Bulgarian Energy Efficiency Fund
- Bulgarian Energy Holding
- Bulgarian Nuclear Regulatory Agency
- Bulgarian WEC Committee
- Burgas DHC
- CEZ Distribution Bulgaria
- Dalkia (Varna DHC)
- E.ON Bulgaria
- Electricity System Operator
- Energy Efficiency Agency
- EVN Electricity Distribution Bulgaria
- EVN Electricity Supply Bulgaria
- Kozloduy NPP
- Mini Maritsa Iztok EAD
- Ministry of Economy, Energy and Tourism
- Minproekt JSC
- National Electricity Company
- Overgas
- Pernik DHC
- Pleven DHC
- Pravets DHC

- Ruse DHC
- Sliven DHC
- Sofia DHC
- State Energy and Water Regulatory Commission
- TPP Maritsa Iztok 2
- Vratsa DHC

Georgia

- British Petroleum in Georgia
- Electricity System Commercial Operator
- Energo-Pro JSC
- Energy Efficiency Centre
- Frontera
- Georgian National Energy and Water Supply Regulatory Commission
- Georgian Oil and Gas Corporation
- Georgian State Electrosystem
- Georgian Wholesale Electricity Market
- Ministry of Energy
- Rural Energy Program
- SOCAR Energy Georgia Ltd.
- Telasi JSC

Greece

- Asprofos Engineering
- Athens Oil S.A.
- Center for Renewable Energy Sources and Saving (CRES)
- Centre for Research and Technology Hellas
- ELPET Balkaniki S.A.
- Energotech S.A.
- Energy Policy and Development Centre, NKUA
- Energy Policy Unit, NTUA
- Exergia S.A.
- Greek Association of RES Electricity Producers
- Greek Solar Industry Association
- Hellenic Association of Photovoltaic Companies
- Hellenic Gas Transmission System Operator S.A.
- Hellenic Petroleum
- Hellenic Transmission System Operator S.A.
- Hellenic Wind Energy Association
- Institute for Solid Fuels Technology and Applications
- Institute of Geology and Mineral Exploration
- LDK Consultants
- Ministry of Development
- Motor Oil Hellas
- Public Gas Corporation S.A.
- Public Power Corporation S.A.
- Regulatory Authority for Energy

Moldova

- Ministry of Economy and Commerce
- Ministry of Industry and Infrastructure
- Moldova Energy Project Implementation Unit
- National Agency for Energy Regulation
- State Enterprise "Moldelectrica"

Romania

- Energy Research and Modernizing Institute ICEMENERG
- Institute for Studies and Power Engineering (ISPE)
- Ministry of Economy, Commerce and Business Environment
- National Company of Lignite Oltenia S.A. Targu-Jiu
- Nuclearelectrica S.A.
- Romanian Energy Regulatory Authority (ANRE)
- Romanian National Committee to WEC
- Romanian National Institute for Energy Development Studies
- Romanian Power Grid Company TRANSELECTRICA
- Romanian Power Market Operator (OPCOM)
- Romanian Wind Energy Association
- Romgaz S.A.
- SC Electrica SA
- SC HIDROELECTRICA S.A.

Russia

- Energy Strategy Institute
- Federal Grid Company of Unified Energy System (JSC FGC UES)
- Interregional Distribution Grid Companies (IDGC Holding)
- JSC "TGC-1"
- Ministry of Energy
- Moscow Power Engineering Institute
- Moscow United Electric Grid Company
- Mosenergo
- OAO Gazprom
- OAO Lenenergo
- OAO Lukoil
- Rosneft
- Tatneft

Serbia

- Copper Mining and Smelting Complex Bor
- Electric power industry of Serbia (EPS)
- Energy Agency of the Republic of Serbia
- Energy Efficiency Agency
- JP "Srbijagaz"
- Ministry of Infrastructure and Energy
- Petroleum Industry of Serbia (NIS a. d.)
- Provincial Secretariat for Energy and Mineral Resources
- Serbian Transmission System and Market Operator (EMS)
- Transnafta

The Former Yugoslav Republic of Macedonia

- Electricity Transmission System Operator (MEPSO A.D.)
- Energy Agency
- Energy Regulatory Commission
- EVN Macedonia
- Macedonian Power Plants (AD ELEM)
- Ministry of Economy
- Toplifikacija AD Skopje

Turkey

- Electrical Power Resources Survey and Development Administration
- General Directorate of Petroleum Affairs
- Ministry of Energy and Natural Resources
- Turkish Electricity Transmission Company (TEIAS)

Ukraine

- Ministry of Energy and Coal Industry
- National Nuclear Energy Generation Company “Energoatom”
- National Power Company “UKRENERGO”
- State Energy Generation Company “Centrenergo”

Black Sea Case Study 2: the Commission of the Protection of Black Sea against Pollution

Background

The roughly oval-shaped Black Sea occupies a large basin strategically situated at the southeastern extremity of Europe. The Black Sea is the largest, low tide, brackish-water intercontinental sea, bounded by Europe, Anatolia and the Caucasus, the most isolated from the World Ocean - connected to the Oceans via the Mediterranean Sea. The Bosphorus strait (which emerges from the sea's southwestern corner) connects it to the Sea of Marmara, and the strait of the Dardanelles connects Marmara Sea to Mediterranean Sea. The renowned Crimean Peninsula thrusts into the Black Sea from the north, and just to its east the narrow Kerch Strait links the sea to the smaller Sea of Azov (the Sea of Azov is not in the EU space). The Black Sea is very vulnerable to pressure from land based human activity and its health is equally dependent from the coastal and non-coastal states of its basin.



Map 2.1: the Black Sea Region

Source: Institute for Applied Science. http://www.iapscience.com/img/Black_Sea_map.png

The Black Sea in Figures:

Geographical Coordinates:	46°33' - 40°56'N and 27°27' - 41°42' E	
Drainage area	2 000 000	km ²
<i>Total shoreline (without Sea of Azov shoreline)</i>	4 340	Km
Bulgaria	300	Km
Georgia	310	Km
Romania	225	Km
The Russian Federation	475	Km
Turkey	1 400	Km
Ukraine	1 628	Km
Area of Water Surface	432 000	km ²
River inflow	340,6	km ³
Water volume	547 000	km ³
Maximal depth	2 212	M
Salinity	18 - 22	pro mil
Average fresh water balance	3.7 - 441	km ³
<i>Black Sea biological species</i>		
Fungi, algae, higher plants	1 619	
Invertebrates	1 983	
Fishes	168	
Marine mammals	4	

http://www.blacksea-commission.org/_geography.asp

The large European rivers Danube, Dnieper and Don (via the Sea of Azov), flow into this sea together with other important rivers such as Rioni, Kodori and Inguri Chorokh, Kyzyl-Irmak, Eshil-Irmak, Sakarya, Southern Bug and Dnister.

The seabed is divided into the shelf, the continental slope and the deep-sea depression. The shelf occupies a large area in the north-western part of the Black Sea, where it is over 200 km wide and has a depth ranging from 0 to 160 meters. In other parts of the sea it has a depth of less than 100 m and a width of 2.2 to 15 km. Near the Caucasian and Anatolian coasts the shelf is only a narrow intermittent strip.

The Black Sea forms in an east-west trending elliptical depression which lies between Bulgaria, Romania, Ukraine, Russia, Georgia and Turkey. Only 2 neighbouring countries belong to the EU, namely Romania and Bulgaria. The Black Sea coastline is otherwise fairly regular. The maximum east-

west extent of the sea is about 730 miles (1,175 km), and the shortest distance between the tip of the Crimea and the Cape Kerempe to the south is about 160 miles (260 km).

Important cities along the coast include Batumi, Burgas, Constanța, Giresun, Hopa, Istanbul, Kerch, Kherson, Mangalia, Năvodari, Novorossiysk, Odessa, Ordu, Poti, Rize, Samsun, Sevastopol, Sochi, Sukhumi, Trabzon, Varna, Yalta and Zonguldak.

The Commission on the Protection of the Black Sea against Pollution

The Commission on the Protection of the Black Sea Against Pollution (also known as the Black Sea Commission, is sometimes also referred to as the Istanbul Commission) via its Permanent Secretariat is the intergovernmental body established in implementation of the Convention on the Protection of the Black Sea Against Pollution (Bucharest Convention), on April 1992. (as defined in Article XVII).

The main objectives are: combating pollution from land-based sources and maritime transport; achieving sustainable management of marine living resources; pursuing sustainable human development.

The main policy measures are: pollution reduction from rivers, priority pollution sources, vessels; regulatory and legal tools; conservation of biological diversity, expansion of protected territories, promotion of responsible fisheries; introduction of ICZM, promotion of EIA environmental audit, ecologically sound technologies and public involvement in environmental decision making, green tourism and sustainable livelihood.

In The Black Sea Commission each of the contracting parties (Bulgaria, Georgia, Romania, Russian Federation, Turkey and Ukraine) to the Convention on the Protection of the Black Sea against Pollution has a representative. It is chaired on a rotation principle and during his term the chairman cannot act in the capacity of Representative of his country. The Black Sea Commission meets at least once a year and at request of any one of the contracting parties at any time. (See Article 17) Since December 2000, Turkey has been hosting the Secretariat of the Black Sea Commission in Istanbul.

The main functions of the Commission according to Article 18 of the Convention are:

- 1. Promote the implementation of this Convention and inform the Contracting Parties of its work.*
- 2. Make recommendations on measures necessary for achieving the aims of this Convention.*
- 3. Consider questions relating to the implementation of this Convention and recommend such amendments to the Convention and to the Protocols as may be required, including amendments to Annexes of this Convention and the Protocols.*
- 4. Elaborate criteria pertaining to the prevention, reduction and control of pollution of the marine environment of the Black Sea and to the elimination of the effects of pollution, as well as recommendations on measures to this effect.*

5. *Promote the adoption by the Contracting Parties of additional measures needed to protect the marine environment of the Black Sea, and to that end receive, process and disseminate to the Contracting Parties relevant scientific, technical and statistical information and promote scientific and technical research.*
6. *Cooperate with competent international organizations, especially with a view to developing appropriate programmes or obtaining assistance in order to achieve the purposes of this Convention.*
7. *Consider any questions raised by the Contracting Parties.*
8. *Perform other functions as foreseen in other provisions of this Convention or assigned unanimously to the Commission by the Contracting Parties.*

The concrete activities of The Commission are based on the Convention on the Protection of the Black Sea Against Pollution, The Black Sea Strategic Action Plan, coordinated with national and regional projects/activities, International Financing Agencies, and national and regional policy measures and overall efforts of the countries to restore and preserve the environment of the Black Sea, and a detailed work-programme, reflecting these is drawn up on an annual basis.

The Protocols of the Bucharest Convention to which Turkey is Party, are listed below:

- Protocol on Protection of the Black Sea Marine Environment Against Pollution from Land Based Sources,
- Protocol on Cooperation in Combating Pollution of the Black Sea Marine Environment by Oil and Other Harmful Substances,
- Protocol on the Protection of the Black Sea Marine Environment Against Pollution by Dumping,
- The Black Sea Biodiversity and Landscape Conservation Protocol.

The Commission on the Protection of the Black Sea Against Pollution (the Black Sea Commission) implements the provisions of the Convention and the Black Sea Strategic Action Plan.

Strategic Action Plan for the Rehabilitation and Protection of the Black Sea

The Strategic Action Plan for the Rehabilitation and Protection of the Black Sea first was signed at Istanbul, Turkey in 30 - 31 October 1996, and it was amended in June 22-26 2002, Sofia, Bulgaria.

Because of the continuing degradation of its ecosystem and the unsustainable use of its natural resources the state of Black Sea environment continues to be a matter of concern. The Transboundary Diagnostic Analysis (TDA), which is a technical annex to this Strategic Action Plan, leads to a number of conclusions.

The Black Sea ecosystem continues to be threatened by inputs of certain pollutants and notably nutrients. Nutrients enter the Black Sea from land based sources, and in particular through rivers.

It's noticed the presence of microbiological contaminants due to the inputs of insufficiently treated sewage. This constitutes a threat to public health and in some cases a barrier to the development of sustainable tourism and aquaculture.

The inputs of other harmful substances, and especially oil, continue to threaten the Black Sea ecosystem. Oil enters the environment as a result of accidental and operational discharges from vessels, as well as through land based sources. Almost half of the inputs of oil from land based activities are brought to the Black Sea via the Danube river.

In addition, the exotic species introduced through the deballasting of vessels, has seriously damaged the Black Sea ecosystem.

There is a serious risk of losing valuable habitats and landscape and ultimately, the biological diversity and productivity of the Black Sea ecosystem. This is happening due to overfishing, pollution and the deterioration of many coastal areas as a result of erosion and uncontrolled urban and industrial development, including the resultant construction activities.

These conclusions suggest that the process of degradation of the Black Sea is irreversible. Although, the environmental monitoring done in the last 4-5 years reflects perceptible and continued improvements in the state of the Black Sea ecosystem. These improvements appear to be the indirect result of reduced economic activity in the region, and to a certain degree of protective measures taken by governments.

The main objectives of this strategic plan are to enable the population of the Black Sea region to enjoy a healthy living environment in both urban and rural areas, and to attain a biologically diverse Black Sea ecosystem with viable natural populations of higher organisms, including marine mammals and sturgeons, and which will support livelihoods based on sustainable activities such as fishing, aquaculture and tourism in all Black Sea countries.

The most important principles for cooperative action, according to Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea (1996) are:

- The **concept of sustainable development** shall be applied, by virtue of which the carrying capacity of the Black Sea ecosystem is not exceeded nor the interests of future generations prejudiced.
- The **precautionary principle** shall be applied, by virtue of which preventative measures are to be taken when there are reasonable grounds for concern that an activity may increase the risk of presenting hazards to human health, harm living resources and marine ecosystems, damage amenities or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the activity and the effects and by virtue of which greater caution is required when information is uncertain, unreliable or inadequate.

- **Anticipatory actions**, such as contingency planning, environmental impact assessment and strategic environmental assessment (involving the assessment of the environmental consequences of governmental policies, programmes and plans), shall be taken.
- The **use of clean technologies** shall be stimulated, which require the replacement or phasing-out of high waste and waste generating technologies that remain in use.
- The **use of economic instruments** that foster sustainable development shall be promoted through, amongst other things, the implementation of economic incentives for introducing environmentally friendly technologies and activities; the phasing-out of subsidies which encourage the continuation of non-environmentally friendly technologies and activities; the introduction of user fees and the polluter pays principle; as well as the application of natural resources and environmental accounting.
- **Environmental and health** considerations shall be included into all relevant policies and sectoral plans, such as those concerning tourism, urban planning, agriculture, industrial development, fisheries and aquaculture.
- Pending the resolution of ocean boundary matters in the region, **close cooperation among Black Sea coastal states**, in adopting interim arrangements which facilitate the rehabilitation of and protection of the Black Sea ecosystem and the sustainable management of its resources shall be pursued.
- **Cooperation among all Black Sea basin states**, and, in particular, between the Black Sea coastal states and the states of the Danube river basin, shall be promoted.
- The involvement of **stakeholders** in the implementation of this Strategic Action Plan, through, amongst other things, the determination of user and property rights shall be promoted.
- **Transparency and public participation**, shall be fostered through the wide dissemination of information on the work undertaken to rehabilitate and protect the Black Sea and through the recognition and the exercise of the right of participation of the public, including stakeholders, in the decision making and implementation of this Strategic Action Plan.

<http://www.blacksea-commission.org/ bssap2009.asp>

All Black Sea countries should have a good coordination between the regional bodies (such bodies include the Istanbul Commission and its subsidiary bodies, the Black Sea Economic Cooperation (BSEC), the Parliamentary Assembly for the Black Sea Economic Cooperation (PABSEC), the future Black Sea Fisheries Commission, and the NGO Forum). Also, there should be a close cooperation between the regional governmental bodies and the NGO Forum through transparency of the negotiating process, widespread availability of information and documents, and, where appropriate, open access to meetings; with relevant international organisations, including UN Agencies and international non-governmental organisations in implementing this Strategic Action Plan and with multilateral financial institutions, the European Union, bilateral aid agencies and private foundations, in their aim to secure funding for projects and policies identified in this Strategic Action Plan and to be further developed in the National Black Sea Strategic Action Plans.

A few years later another Strategic Action Plan was signed to assist in the continued recovery of the Black Sea. This document describes the current status of the sea, based largely on information contained within the 2007 Black Sea Transboundary Diagnostic Analysis, and taking into account

progress with achieving the aims of the original (1996) Black Sea Strategic Action Plan (BS SAP). This Strategic Plan is build upon the plan signed in 1996 (updated in 2002), by reorganising the priorities and actions of the previous plan. This updated (2009) version of the BS SAP describes the policy actions required to meet the major environmental challenges now facing the Black Sea, and includes a series of management targets.

The SAP was elaborated from consensus reached at a multinational level in relation to a series of proposals that include: Ecosystem Quality Objectives (EcoQOs); short, medium and long term targets; and legal and institutional reforms and investments necessary to solve main environmental problems identified within the 2007 BS TDA. The process of elaboration of the SAP was characterized by the participation and commitment of the main social stakeholders and key institutions of the Black Sea countries.

The geographical scope of the Convention on the Protection of the Black Sea against Pollution is applied to the Black Sea proper, with the Southern boundary constituted, for the purposes of this Convention, by a line running between Capes Kelagra and Dalyan. In addition the SAP will cover pollution sources from coastal area. In addition, Black Sea coastal states shall make effort to implement relevant provisions of the SAP at the Black Sea basin level.

The most important principles for cooperative action, according to Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea (2009) are:

- The principle of **sustainability** shall be applied such that there is a prudent and rational utilization of living resources and the preservation of the rights of future generations to a viable environment.
- The **precautionary principle** shall be applied, such that measures shall be taken when there are reasonable grounds for concern that any activity may increase the potential hazards to human health, harm living resources or ecosystems, damage amenities, or interfere with other legitimate uses of the Black Sea, even when there is no conclusive evidence of a causal relationship between the activity and the effects; and by virtue of which, greater caution is required when information, including scientific information, is uncertain, unreliable or inadequate.
- The **polluter pays principle** shall be applied, such that the cost of preventing and eliminating pollution, including clean-up costs, shall be paid by the polluter.
- The principle of **anticipatory action** shall be applied, such that contingency planning, environmental impact assessment and strategic impact assessment (involving the assessment of the environmental and social consequences of governmental policies, programmes and plans) shall be undertaken in the future development in the region.
- The principle of **preventative action** shall be applied, such that timely action shall be taken to alert the responsible and relevant authorities of likely impacts and to address the actual or potential causes of adverse impacts on the environment, before they occur.
- **Environmental and health considerations** shall be included into all relevant policies and sectoral plans and programmes, including, *inter alia*, urban planning, industrial development, fisheries, aquaculture and tourism.

- Use of **clean technology** shall be promoted when replacing or phasing-out high waste and waste-generating technologies, including the use of BAT and BEP.
- Use of **Sustainable Agriculture** including the use of Good Agricultural Practices (GAP) shall be promoted in order to replace or phase-out unsustainable agricultural practices.
- Development planning and environmental planning processes should be integrated to the maximum extent. The use of **economic instruments** that foster sustainable development shall be promoted through, *inter alia*, the implementation of economic incentives for introducing environmentally friendly technologies, activities and practices; the phasing-out of subsidies which encourage the continuation of non-environmentally friendly technologies, activities and practices; and the introduction of user fees.
- The principle of **accessibility of information** shall be applied, such that information on the pollution of the environment of the Black Sea held by a littoral state shall be provided by that state to all littoral states, where relevant and in the maximum possible amount.
- The principles of **public participation and transparency** shall be applied, such that all stakeholders, including communities, individuals and concerned organizations shall be given the opportunity to participate, at the appropriate level, in decision-making and management processes that affect the Black Sea. This includes providing access to information concerning the environment that is held by public authorities, together with effective access to judicial and administrative proceedings to enable all stakeholders to exercise their rights effectively. Public authorities shall widely disseminate information on the work proposed and undertaken to monitor, protect and improve the state of Black Sea.

The Black Sea TDA-2007 reconfirmed four priority transboundary problems expressed in the BS SAP 1996, amended 2002. These are: eutrophication/nutrient enrichment; changes in marine living resources; chemical pollution (including oil); and biodiversity/habitat changes, including alien species introduction.

Convention on the Protection of the Black Sea Against Pollution (Bucharest Convention)

As being one of the most contaminated seas in the world, the Black Sea is polluted by the six coastal states (Russian Federation, Ukraine, Romania, Bulgaria, Georgia, and Turkey) and the ten riparian states of major European rivers that flow into the Black Sea.

The Black Sea basin is home to some 160 million people which make up approximately half of Europe's population. The Danube River, main source of pollution for the Black Sea, pours domestic and industrial wastes into the waters of the Black Sea.

The natural ecological situation of the Black Sea deteriorated rapidly in the last 30 years. Over-fishing added to the environmental factors that lead to the breaking of the food chain in the Black Sea.

The transboundary nature of the environmental problems of the Black Sea has deemed international cooperation in the field absolutely necessary.

In this context, the Convention on the Protection of the Black Sea Against Pollution (Bucharest Convention), was signed by Turkey, Romania, Ukraine, Bulgaria, Georgia and the Russian Federation

in Bucharest on 21 April 1992. The convention was ratified by the legislative assemblies of all six Black Sea nations, and the convention was entered into force in 1994. The Convention is the basic framework of agreement on three specific Protocols, which are: Land-Based Sources Protocol; Dumping Protocol and Emergency Response Protocol.

Signing and ratification of the Convention for the Protection of the Black Sea Against Pollution:

	Country	Signed	Ratified	Entry into force
1	Bulgaria	21-04-1992	23-02-1993	15-01-1994
2	Georgia	21-04-1992	01-09-1993	15-01-1994
3	Romania	21-04-1992	10-11-1993	15-01-1994
4	Russian Federation	21-04-1992	16-11-1993	15-01-1994
5	Turkey	21-04-1992	29-03-1994	29-03-1994
6	Ukraine	21-04-1992	14-04-1994	14-04-1994

To substantiate the general obligation of the Contracting Parties to prevent, reduce and control the pollution in the Black Sea in order to protect and preserve the marine environment and to provide legal framework for co-operation and concerted actions to fulfil this obligation.

In particular:

- To prevent pollution by hazardous substances or matter; Annex to the Convention
- To prevent, reduce and control the pollution from land-based sources; Protocol to the Convention
- To prevent, reduce and control the pollution of the marine environment from vessels in accordance with the generally accepted rules and standards;
- To prevent, reduce and control the pollution of the marine environment resulting from emergency situations; Protocol to the Convention
- To prevent, reduce and control the pollution by dumping; Protocol to the Convention
- To prevent, reduce and control the pollution caused by or connected with activities on the continental shelf, including exploration and exploitation of natural resources;
- To prevent, reduce and control the pollution from or through the atmosphere;
- To protect the biodiversity and the marine living resources; Draft Protocol on the biodiversity
- To prevent the pollution from hazardous wastes in transboundary movement and the illegal traffic thereof; Draft Protocol to the Convention
- To provide framework for scientific and technical co-operation and monitoring activities.

BSC Cooperation with Other Intergovernmental Organizations

- United Nations Environmental Program (UNEP);
- International Maritime Organizations (IMO);
- Global Environmental Facility (GEF);
- International Commission for the Protection of Danube River (ICPDR);
- Agreement on Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS);
- Organization of the Black Sea Economic Cooperation (BSEC);
- European Environmental Agency (EEA);
- Other EU institutions and organizations.

Lessons for Marine Planning

The common interest in the conservation, exploitation and development of the bioproductive potential of the Black Sea and taking into account that the Black Sea coast is a major international resort area where Black Sea Countries have made large investments in public health and tourism, led to a deal between the countries bordering the Black Sea.

It is important to balance the different economic, social and ecological interests in the area. The important topics on environmental improvement and cross border issues related to marine spatial planning are: international cooperation and agreements for sustainable development and protection of the Black Sea ecosystem and assessment of establishment of a cross border Network of marine protected areas to represent the Black Sea Basin, as well as actions to manage and plan human use and activities.

The convention respects the relevant provisions of the Convention on Prevention of Marine Pollution by Dumping of Wastes and Other Matter of 1972 as amended; the International Convention on Prevention of Pollution from Ships of 1973 as modified by the Protocol of 1978 relating thereto as amended; the Convention on Control of Transboundary Movement of Hazardous Wastes and Their Disposal of 1989 and the International Convention on Oil Pollution Preparedness, Response and Cooperation of 1990, and the significance of the principles adopted by the Conference on Security and Cooperation in Europe.

A holistic approach it was required for monitoring, assessment and management of the Black Sea ecosystem. This holistic approach was used by the Black Sea network of institutions for the development of the Black Sea Integrated Monitoring and Assessment Programme (BSIMAP: 2001, see <http://www.blacksea-commission.org/main.htm>, Information & Resources).

The main activities for the implementation of the BSIMAP carried will be:

1. reaching consensus on common principles for regional monitoring and assessment programmes
2. establishment of an initial affordable program to harmonize assessment methodologies, analytical techniques, reporting formats, etc.
3. harmonization of assessment methodologies on a regional level
4. elaboration of environmental quality criteria/objectives
5. development and establishment of mechanisms of integration scientific results into the assessment process
6. elaboration of mechanisms and procedures for quality assurance quality control
7. elaboration and maintenance of the Black Sea Information System for supporting decision making process of the Black Sea Commission.

The main goal of BSIS (Black Sea Information System) and BSIMAP (Black Sea Integrated Monitoring and Assessment Program) is to provide accurate data for "state of the environment" reporting, "impact assessments" of major pollutant sources, "transboundary diagnostic analysis" and SAP implementation reports (BSSAP process) in view of decision-making needs in the Black Sea region. The sites, parameters and monitoring frequencies also reflect data requirements for compliance with relevant national and international legislation and agreements.

Ongoing Projects

[Baltic2Black*](#) - "Environmental monitoring of the Black Sea for nutrients" (2011-2013).

[PEGASO*](#) - "People for Ecosystem Based Governance in Assessing Sustainable Development of Ocean and Coast" (2010-2014).

[EnviroGRIDS*](#) - "Building Capacity for a Black Sea Catchment Observation and Assessment System supporting Sustainable Development" (2009-2013).

[PERSEUS**](#) - "Policy-oriented marine Environmental Research in the Southern EUropean Seas" (2012-2015).

[CoCoNET**](#) - "Towards COast to COast NETworks of marine protected areas (from the shore to the high and deep sea), coupled with sea-based wind energy potential" (2012-2016).

MISIS** - "MSFD guiding improvements in the Black Sea integrated monitoring system" (2012-2014).

[CREAM**](#) - "Coordinating research in support to application of EAF (Ecosystem Approach to Fisheries) and management advice in the Mediterranean and Black Seas" (2011-2014).

[SEAS-ERA](#) - "Towards Integrated Marine Research Strategy and Programmes" (2010-2014).

[HYPOX](#) - "Oxygen Monitoring in Aquatic Ecosystems" (2009-2012).

[KnowSeas](#) - "Knowledge-based Sustainable Management for Europe's Seas" (2009-2013).

[ODEMM](#) - "Options for Delivering Ecosystem-Based Marine Management" (2010-2013).

[MEECE](#) - "Marine Ecosystem Evolution in a Changing Environment" (2008-2012).

[NATO Sfp Project #982678](#) - NATO Science for Peace Project "Bio-Optical Characterization of the Black Sea for Remote Sensing Applications" (2009-2012).

Completed Projects

[MONINFO*](#) - "Environmental Monitoring of the Black Sea Basin: Monitoring and Information Systems for Reducing Oil Pollution" (2009-2011). [[MONINFO System](#)]

[UP-GRADE BS-SCENE*](#) - "Up-grade Black Sea Scientific Network" (2009-2011).

[CASPINFO*](#) - "Caspian environmental and industrial data and information service (2008-2011). [[CASPINFO - Poster](#)] [[CASPINFO - Poster, Russian](#)]

[SESAME**](#) - "Southern European Seas : Assessing and Modelling Ecosystem changes" (2006-2011).

ECBSEA** - EC Supported "Environmental Collaboration for the Black Sea" (2007-2009).

[GEF BSERP**](#) - The Black Sea Ecosystems Recovery Project (Completed in April 2008)

* - *Projects participated or implemented by BSC*

** - *BSC is either End User or member of Advisory Board of project*

http://www.blacksea-commission.org/_projects_observers_partners.asp

Examples of National and Regional Projects/Activities

On the August 26th 2009, two major events for the human lives search and rescue activity on the sea, as well as for the response and cooperation in cases of marine oil pollution at sea took place, i.e. the National SAR Simulation exercise (human lives search and rescue) and the second Regional Operational Simulation exercise for response to marine oil pollution at the Black Sea – under the designation of RODELTA 2009.

The simulation exercise took place on the sea, ashore and in the air, in the Midia Harbour area, being hosted by the Rompetrol Group, through Rompetrol Rafinare Constanța and Midia Marine Terminal. The simulation exercise started with the simulation of a collision between two ships: an oil tanker UTOPIA, under Panama pavilion, which was under unloading at the SPM operational buoy belonging to Midia Marine Terminal, member of the Rompetrol Group, was subject to a collision with the Ovidius cargo ship, under Cambodia pavilion, which completely lost its maneuver capacity due to certain steering equipment problems.

The exercise of the largest pollution simulation ever carried out at the Black Sea was efficiently managed by the Operative Commandment for Marine De-pollution. 250 specialists from Romania and the countries neighbouring the Black Sea took part in the Rodelta simulation exercise.

The Regional Operational Simulation exercise for response to marine oil pollution at the Black Sea successfully achieved its main goal of testing the level of cooperation both between the Romanian institutions and companies, and between those neighbouring the Black Sea.

Training course on port biological baseline survey, held between 20 - 22 July 2011, in Batumi-Georgia, organised by IMO in the programme „International Technical Cooperation – GloBallast Partnerships Programme “

The main subject of the course was to train the Black Sea and Caspian Sea countries on practical methods of identification, verification and monitoring of vessels which are carrying ballast water from one place on Earth to another or from one marine region to another and the measures to be taken by ship owners or ship operators before and after entry into force of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM)- 2004, taking account both safety and protection of global marine environment during ship's operations.

The Ballast Water Management Convention, adopted in 2004, aims to prevent the spread of harmful aquatic organisms from one region to another, by establishing standards and procedures for the management and control of ships' ballast water and sediments.

Under the Convention, all ships in international traffic are required to manage their ballast water and sediments to a certain standard, according to a ship-specific ballast water management plan. All ships will also have to carry a ballast water record book and an international ballast water management certificate. The ballast water management standards will be phased in over a period of time. As an intermediate solution, ships should exchange ballast water mid-ocean. However, eventually most ships will need to install an on-board ballast water treatment system.

Regional Training course on Liability and Compensation for oil pollution incidents, held between 28 – 30 May 2012, in Varna-Bulgaria. The main purpose of this course is continuously improving and increasing the level of training and improving performance of persons with direct responsibilities in training, prevention and response to marine pollution and also to raise awareness of development issues in technical maritime safety and security in Black Sea countries, in accordance with IMO conventions.

References

<http://www.blacksea-commission.org/main.asp>

http://www.mfa.gov.tr/convention-on-the-protection-of-the-black-sea-against-pollution-bucharest-convention_en.mfa

http://www.blacksea-commission.org/_convention-fulltext.asp

http://www.blacksea-commission.org/_bssap1996.asp

http://www.blacksea-commission.org/_bssap2009.asp

[http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships'-Ballast-Water-and-Sediments-\(BWM\).aspx](http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships'-Ballast-Water-and-Sediments-(BWM).aspx)

http://www.blacksea-commission.org/_rodelta.asp

Annex I Convention on the Protection of the Black Sea Against Pollution

Article XVII

The Commission

1. In order to achieve the purposes of this Convention, the Contracting Parties shall establish a Commission on the Protection of the Black Sea Against Pollution, hereinafter referred to as “the Commission”.
2. Each Contracting Party shall be represented in the Commission by one Representative who may be accompanied by Alternate Representatives, Advisers and Experts.
3. The Chairmanship of the Commission shall be assumed by each Contracting Party, in turn, in the alphabetical order of the English language. The first Chairman of the Commission shall be the Representative of the Republic of Bulgaria.

The Chairman shall serve for one year, and during his term he cannot act in the capacity of Representative of his country. Should the Chairmanship fall vacant, the Contracting Party chairing the Commission shall appoint a successor to remain in office until the term of its Chairmanship expires.

4. The Commission shall meet at least once a year. The Chairman shall convene extraordinary meetings upon the request of any Contracting Party.
5. Decisions and recommendations of the Commission shall be adopted unanimously by the Black Sea States.
6. The Commission shall be assisted in its activities by a permanent Secretariat. The Commission shall nominate the Executive Director and other officials of the Secretariat. The Executive Director shall appoint the technical staff in accordance with the rules to be established by the Commission. The Secretariat shall be composed of nationals of all Black Sea States.

The Commission and the Secretariat shall have their headquarters in Istanbul. The location of the headquarters may be changed by the Contracting Parties by consensus.

7. The Commission shall adopt its Rules of Procedure for carrying out its functions, decide upon the organization of its activities and establish subsidiary bodies in accordance with the provisions of this Convention.
8. Representatives, Alternate Representatives, Advisers and Experts of the Contracting Parties shall enjoy in the territory of the respective Contracting Party diplomatic privileges and immunities in accordance with international law.
9. The privileges and immunities of the officials of the Secretariat shall be determined by agreement among the Contracting Parties.
10. The Commission shall have such legal capacity as may be necessary for the exercise of its functions.
11. The Commission shall conclude a Headquarters Agreement with the host Contracting Party.

Article XVIII**Functions of the Commission**

The Commission shall:

1. Promote the implementation of this Convention and inform the Contracting Parties of its work.
2. Make recommendations on measures necessary for achieving the aims of this Convention.
3. Consider questions relating to the implementation of this Convention and recommend such amendments to the Convention and to the Protocols as may be required, including amendments to Annexes of this Convention and the Protocols.
4. Elaborate criteria pertaining to the prevention, reduction and control of pollution of the marine environment of the Black Sea and to the elimination of the effects of pollution, as well as recommendations on measures to this effect.
5. Promote the adoption by the Contracting Parties of additional measures needed to protect the marine environment of the Black Sea, and to that end receive, process and disseminate to the Contracting Parties relevant scientific, technical and statistical information and promote scientific and technical research.
6. Cooperate with competent international organizations, especially with a view to developing appropriate programmes or obtaining assistance in order to achieve the purposes of this Convention.
7. Consider any questions raised by the Contracting Parties.
8. Perform other functions as foreseen in other provisions of this Convention or assigned unanimously to the Commission by the Contracting Parties.

Black Sea Case Study 3: Global Ocean Observing System (GOOS) in the Black Sea Area

1. Introduction

The Global Ocean Observing System (**GOOS**) is a permanent global system for observations, modeling and analysis of marine and ocean variables to support operational ocean services worldwide. GOOS provides accurate descriptions of the present state of the oceans, including living resources; continuous forecasts of the future conditions of the sea for as far ahead as possible, and the basis for forecasts of climate change. GOOS is designed to: Monitor, understand and predict weather and climate; Describe and forecast the state of the ocean, including living resources; Improve management of marine and coastal ecosystems and resources; Mitigate damage from natural hazards and pollution; Protect life and property on coasts and at sea; Enable scientific research.

The GOOS is comprised of several UNESCO/IOC/WMO/ICSU/UNEP sanctioned bodies which coordinate together to advance the GOOS objectives of a comprehensive, sustained, operational and international ocean observing system.

- I-GOOS (Intergovernmental Committee for GOOS) is the intergovernmental body responsible for strategic direction and encouraging it's member states to commit to sustainable support.
- PICO (Panel for Integrated Coastal Observations), GSSC (GOOS Scientific Steering Committee) and OOPC (Ocean Observations Panel for Climate) are advisory bodies which supply the I-GOOS with scientific studies and expertise underpinning the strategic goals of GOOS.
- GRAs (GOOS Regional Alliances), GPO (GOOS Programme Office), and JCOMM (Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology).

2. Actions Leading to Black Sea GOOS MoU

The Co-operative Marine Science Programme for the Black Sea (CoMSBlack) (1991) was the first multinational program implemented in the Black Sea. It was recognized and supported by the Intergovernmental Oceanographic Commission (IOC) and UNESCO. The participating countries in CoMSBlack were Bulgaria, Romania, Ukraine, the Russian Federation, Turkey and the USA.

In September 1994 a Regional Black Sea Workshop was held in Varna (Bulgaria). The important consequence of the Varna meeting was the agreement for the formation of an IOC Regional Committee and a Regional Programme consisting of two pilot projects (i) Black Sea Fluxes and (ii) Marine Services. On the Eighteenth Session of the IOC, the Assembly adopted a resolution (Resolution XVIII-17, UNESCO, Paris, 7-9 June 1995) which established the IOC Black Sea Regional Committee (BSRC). The resolution established the Terms of References (ToRs) for the BSRC and the resolution also defined the initial tasks of the BSRC for the period 1996-1997.

The First Session of the BSRC was held in Varna, Bulgaria, (10-13 September 1996). Two Pilot Projects "The Assessment of Sediment Fluxes in the Black Sea" and "The Black Sea GOOS" (named PP1 and PP2 in the following) were discussed extensively and programs were developed.

The first workshop of PP1 was held in Istanbul, Turkey (May 1997) which was followed by the International Conference "Black Sea 1997" in Varna, Bulgaria (May 1997).

At the first meeting of the IOC BSRC (Paris November 1998) a decision was made to organize the IOC BSRC Second Session which was held in Istanbul, Turkey (5-6 May 1999). This meeting defined four important items:

- The structure and Responsibilities of the Black Sea Regional Committee (ToRs).
- The ToRs for the BSRC Chairman and the ToRs for the BSRC Vice-Chairman.
- The ToRs for the Executive Secretary of the BSRC.
- Co-ordinators.

The activities and the decisions of the BSRC at the Istanbul meeting were approved by the Twentieth Session of the IOC Assembly (29 June- 9 July, 1999, Paris) and it adopted Resolution XX-18 for this purpose.

The first session of Pilot Project 2 was held in Albena (Bulgaria) in November 1999. This meeting defined the concepts, goals and objectives of the operational marine services for the Black Sea. The meeting also defined the main aims and objective of the Black Sea GOOS.

The second session of Pilot Project 2 (Black Sea GOOS) was held in Poti (Georgia) in May 2001 with the participation of all Black Sea Riparian Countries. Delegations from the IOC, the EuroGOOS, the Black Sea Committee and the Black Sea Environmental Programme. The meeting besides the other objectives adopted the Memorandum of Understanding (MoU) of the Black Sea GOOS and elected the Black Sea Ad Hoc Steering Committee.

The Black Sea GOOS MoU was signed by five Black Sea countries, namely Bulgaria, Georgia, the Russian Federation, Turkey and the Ukraine on July 6, 2001 in Paris. Romania followed the others and signed the the MoU on October 22, 2001 at the IOC headquarters in Paris.

3. The Aims and Objectives of the Black Sea GOOS

Major topics of Black Sea GOOS are coastal observations, sea level measurements, remote sensing, buoy measurements of basin circulation, regional weather forecasting and improved ecosystem modelling. The first EU funded Black Sea GOOS Project ARENA has been launched in 2003. ARENA is a regional capacity building and networking program to upgrade monitoring and forecasting activity in the Black Sea basin. ARENA aims a networking and capacity building for the development of the regional GOOS.

An important topic for the wider Black Sea area is potential impacts from earthquakes, landslides and floods. There is still controversial evidence for the biblical Black Sea flooding event 7000 years ago, but certainly did floods play an important role in the history of human settlements around the Black Sea. Northern Turkey lies on the Anatolian Fault, where earthquakes have been reshaping the land for millions of years. Other regions of seismotectonic concern are the Kaliakra or Shabla seismic zones. The seismic and differentiating character of earthquakes in this region is closely related to the deep fracture and the block construction of the crust. Some of the coastal mountains rise to over 3000 m attitude within 50 km from the sea. Steep slopes, agricultural land use and heavy rainfalls contribute to an increasing risk of landslides in the coastal areas of the Black Sea. The role of seafloor instabilities in the Black Sea is not well known. It hosts steep canyon systems, where bottom sediments of the shelf zone are removed to the continental slope region and finally to the abyssal part of the sea. Benthic turbidity storms due to bottom erosion, landslides and local submarine earthquakes have been observed occasionally. Furthermore, the recently recognized widespread occurrence of subsurface fluid flow, gas seeps, mud volcanism and gas hydrate deposits indicates an important role of these phenomena in seafloor stability, and a potential for catastrophic interactions between gas release and earthquakes and landslides.

The main aims and objectives of the Black sea GOOS are:

- To contribute to international planning and implementation of the GOOS and to promote it globally.
- To identify regional priorities for the use of operational oceanography.
- To co-operate with the Black Sea Environmental Programme (BSEP), the Permanent Secretariat of the Black Sea Commission (Secretariat for the Bucharest Convention) and other relevant bodies, to harmonise oceanographic activities in the region.
- To develop capacity of the regional countries and promote the level to sustain GOOS activities.
- To promote the development of technology and computer systems for operational oceanography.
- To facilitate a network for real and/or near time data exchange by the members.
- To provide high quality data and time series for a better understanding of and improving of the Black Sea ecosystem.
- To find means to ensure the most effective use of existing technologies related to operational oceanography and marine meteorology.
- To assess the economic and social benefits from operational oceanography.

In conformity with GOOS principles, the Black Sea GOOS observations should be:

- **Long-term;** i.e. measurements once begun should continue, with improvement of their quality and with more effective methods as they become available;
- **Systematic;** i.e. measurements should be made in a rational fashion, with the spatial and temporal sampling as well as the precision and accuracy tuned to address specific aspects of GOOS;
- **Relevant to the overall objectives;** i.e. measurements should be made with a view to producing user-oriented end-products;

- **Cost-effective;** i.e. effort should be made to maximize the return on available resources (financial and manpower) by applying observational methods that are economical and efficient;
- **Routine;** i.e. the observations should be conducted regularly to allow periodical dissemination of the products.

The elements of the Black Sea GOOS need to be closely linked with ocean and/or coupled ocean–atmosphere models. The Black Sea GOOS intends to utilize remote sensing of the marine environment from satellites (some satellite observations are already available in all national meteorological centres in the area) and *in situ* measurements using ship-borne observations, towed and anchored instrument systems, drifting buoys and subsurface floats.

The Black Sea GOOS data and analysis products must be efficiently disseminated to the public for information, advice and prediction within a few hours or days.

Much of the data collected for local, national or regional interests in the Black Sea will not form part of the Black Sea GOOS. Data will only be acceptable for Black Sea GOOS if they are provided in accordance with the GOOS data policy and standards, are long-term, systematic, and relevant to the overall objectives of GOOS.

4. The Black Sea GOOS Activities

Black Sea GOOS activities are designed to foster operational oceanography in the Black Sea basin. To collaborate with and to maximise the benefits from existing activities of the EuroGOOS and the Med-GOOS, promoting the integration of these activities within the framework of the GOOS.

Members of the Black Sea GOOS will collaborate and support the following groups of activities:

4.1. Policy in Promoting GOOS

- To develop policies for the enhancement of GOOS and co-ordinating the best Black Sea participation in GOOS, identifying where greatest value is added by collaboration.
- To promote collaboration between the existing regional multi-national agencies and organisations, having expertise in oceanography, operational systems, and remote sensing of the ocean.
- To promote the collaboration with EuroGOOS through bilateral concurrence.
- To promote collaboration with the EuroGOOS and the Med-GOOS through joint projects and activities.
- To promote capacity building and exchange of know-how and personnel to the IOC.
- To promote studies and evaluation of the economic and social benefits produced by operational oceanography.
 - To co-operate as appropriate with organisations concerned with rapid assessment of climate change, global environmental research and the impacts of climate variability and climate change.

- To provide as appropriate, expertise, WGs, consultants, etc., to the IOC, the SC GOOS, the I-GOOS and other relevant organisations.
- To provide as appropriate, expertise, WGs, consultants, etc., to the Black Sea Environmental Programme (BSEP) and the Permanent Secretariat of the Black Sea Commission.
- To publish the findings of meetings, workshops, studies, and other documents commissioned by the Black Sea GOOS members, joint representation at and to submit of documents to international meetings related to GOOS, and collective representation of GOOS to regional and national Agencies, when requested by members.
- To co-ordinate the GOOS data acquisition with existing regional and national data gathering under agreements and conventions.
- To promote consulting to regional personnel.

4.2. Advancing Black Sea operational oceanography

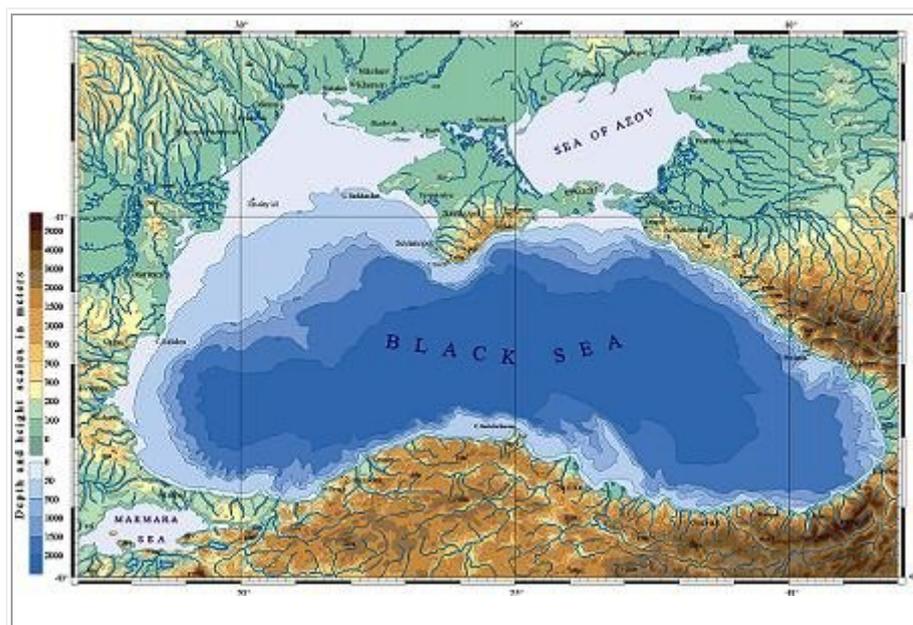
- Promoting development of regional operational oceanography in the Black Sea, taking into account the following Modules of the GOOS: (1) The Ocean Observations Panel for Climate (OOPC); and (2) The Coastal Ocean Observations Panel (COOP).
- Promoting development of common operational data procedures and services, including data quality control and quality assurance, and data management for operational oceanography.
- Promoting research and pre-operational research that will solve problems relating to operational oceanography.
- Promoting the development of common infrastructure to implement operational Oceanography in the Black Sea.
- Promoting global Pilot Studies of GOOS operations.
- Promoting the development of common Black Sea operational oceanographic services and products to the Black Sea countries to attain sustainable development.

4.3. Promotion of Instrumentation and Technology

- To promote the development of low cost enhanced operational instrumentation, observing systems, data acquisition and data management systems, processing and interpretation systems, as well as data exchange.
- To support operational oceanography and services in collaboration with public and private sector organisations, NGOs and programmes concerned with oceanographic technology in the Black Sea.

4.4. Aid and Capacity building

- To promote aid, technology transfer, and collaboration among the Black Sea Countries within the framework of the GOOS.
- To strengthen collaboration with the EuroGOOS working group, on capacity building and with similar work stimulated through the Med-GOOS.



5. The Benefit to the Black Sea Countries

To assess the economic and social benefits from operational oceanography, Black Sea GOOS activities have been designed to foster operational oceanography in the Black Sea basin, to collaborate with, and maximize the benefits from, EuroGOOS and MedGOOS, and to promote the integration of these activities into the framework of GOOS.

Black Sea GOOS aims to promote studies and evaluation of the economic and social benefits produced by operational oceanography. Black Sea GOOS is a joint effort of all bordering countries, which will set the basis for the monitoring, modelling and forecasting.

The collaboration of the other Black Sea countries will have an impact on marine-related industries and services, such as coastal recreation, transportation and fisheries. Among the riparian countries, Bulgaria, Romania, Ukraine and Georgia can have access to the world's oceans only through the Black Sea. Thus the Black Sea is one of the important socioeconomic links for these countries. Black Sea GOOS will play an important role in the sustainable use of this sea and improve the quality of its environment. Russia has a coast on several seas, but the Black Sea is the only sea that is warm enough to allow recreational activities. Improving the water quality of Black Sea through Black Sea GOOS will increase the quality of life in this country. Turkey has a coast on the Mediterranean Sea, the Aegean Sea, the Sea of Marmara and the Black Sea, but over 80% of the fish catch of Turkey is from the Black Sea. Typically, the marine industries and services contribute between 3% and 5% of GNP for a developing coastal state (EuroGOOS, 1996). Black Sea GOOS can add significantly to the efficiency, safety and productivity of these activities. Additional benefits arise from the use of marine forecasts and data to improve and extend seasonal and interannual forecasts of weather and climate over the adjacent landmasses. Accurate estimates of the GNPs of most of the Black Sea coastal states are not available simply because, for some, they have not been estimated at all. As a result, a cost-benefit analysis involving all the six Black Sea states is improbable at the outset. For Turkey alone, the contribution of the Black Sea is estimated to be 0.6–1.0 billion USD. If the benefits gained by a predictive system are taken to be 0.1% of this amount, it would imply benefits of 0.6–1.0 million

USD. This can be extrapolated to the other Black Sea countries, yielding 2–3 billion USD for the region.

6. Projects Developed to Support Black Sea GOOS

The Black Sea GOOS consortium was formed by the Black Sea countries, namely Bulgaria, Georgia, Romania, the Russian Federation, Turkey and Ukraine in 2001. The principles were fixed in a Memorandum of Understanding with the following aims and objectives:

1. To contribute to international planning and implementation of the GOOS and to promote it at national, regional and global level
2. To identify regional priorities for operational oceanography
3. To develop capacity of the regional countries and promote the level to sustain GOOS activities
4. To provide high quality data and time-series for a better understanding of the Black Sea ecosystem
5. To assess the economic and social benefits achieved by operational oceanography

The development of the Black Sea GOOS was originally supported by the EC FP5 project “A Regional Capacity Building and Networking Programme to Upgrade Monitoring and Forecasting Activity in the Black Sea Basin” (ARENA). ARENA is an operational oceanography oriented project aimed at regional capacity building in close collaboration with the regional and other relevant organisations in the Black Sea region.

ARENA aimed to:

1. identify the gaps, needs, resources and existing capacities of the Black Sea countries, identify the needs of the end users and foster an adequate capacity building through training and networking to improve the ongoing basin wide activities,
2. monitor and assess the changes of the ecosystem characteristics of the Black Sea,
3. formulate a Data-Base Management System and explore, quantify and initiate a preliminary prediction system and set up a network among the Black Sea Institutions and establish links for the regional information and dissemination for marine data and services,
4. set up links and collaborate with the other ongoing international programmes,
5. raise awareness and build up an efficient dissemination system and disseminate information and the basin wide activities to all community,
6. improve the regional capacity to serve Black Sea GOOS, EuroGOOS and GOOS.

The successor project to ARENA is called ASCABOS (A Supporting programme for CApacity building in the Black sea region towards operational status of Oceanographic Services) which is funded by EC FP6 and is currently ongoing. ASCABOS’s main objectives are:

- Coordination of a flexible and operative infrastructure for data and information exchange between key Black Sea scientific institutions to serve reliably observing and predicting the sea state and the ecosystem state
- Build the scientific capacity of human resources in the Black Sea region aimed at further development, maintenance and improvement of an operational observing and forecasting system through especially designed educational and training programme
- Continuously collecting and updating of the historical databases and metadata bases and extending the access of the end-users to these information sources by development of a Black Sea information system, that will contain all available metadata, compiled in the past (after validation), and efficient updating mechanisms by the Internet
- To organise a cost-effective VOS pilot programme, applying modern technologies and developments for data collection, transmission, storage, use and dissemination

BLACK SEA GOOS data exchange

The Black Sea GOOS data exchange is done via the Global Telecommunication System (GTS) using the code forms SYNOP, TEMP, PILOT, SHIP, BATHY, TESAC, BUOY, etc. In 2005, a Pilot experiment on operational functioning of the Black Sea nowcasting/forecasting system within the ARENA project was carried out. The pilot project demonstrated the exchange of data in real-time for target areas in the Black Sea. Only model data was exchanged in this pilot.

BLACK SEA GOOS data formats

A brief description is available of the Black Sea real-time database from the Hydrometeorological Centre of Russia. No information of database type and system is mentioned. This system might be viewed as a segment of the distributed Black Sea database management system.

BLACK SEA GOOS metadata practices

The ARENA homepage (<http://www.arena-blacksea.net>) is presenting a metadata service from the Institute of Marine Sciences, Middle East Technical University. These metadata describe the information on cruises and time-series from 1985-2001. Additional Black Sea metadata is on-hand at the European Directory of Marine Environmental Data (EDMED) database, hosted and maintained at the British Oceanographic Data Centre (BODC). This metadata database is used in the SeaDataNet project. Metadata information is unique to station, cruise information, and measurements. The metadata does not deal with the datum itself. In addition, the EDMED database is currently being updated through the ASCABOS project. The outcome of this update will be an upgraded version of EDIOS-Black Sea that directs the end-user to online viewable station information.

BLACK SEA GOOS quality control practices

All data quality control checks are done within the originating institutes. There is no further information on basin wide checks using climatological datasets.

It is further improved in the FP6 ASCABOS project (A Supporting Programme for Capacity Building in the Black Sea Region towards Operational Status of Oceanographic Services) and transformed into a real-time mode operational system in the ECOOP projects (European Coastalshelf sea Operational observing and forecasting system) during the second half of the 2000s. The overall goal of ECOOP was to consolidate, integrate and further develop existing European coastal and regional seas operational observing and forecasting systems into an integrated pan-European system.

Different basin-scale models mainly resulted from MERSEA system provided initial and boundary conditions for the coastal forecasting. The Black Sea community nowcasting and forecasting system was essential part of the ECOOP.

The development and operation system involved a partnership and collaborative efforts of various institutions from the Black Sea riparian states as they joined together in different groups for modelling, observations, data assimilation, data management and serving with limited financial resources. The present form of the Black Sea nowcasting and forecasting system offers a suite of interdisciplinary models and data assimilation schemes that are linked to regional atmospheric¹

The Ocean Data and Information Network for the Black Sea (ODINBLACKSEA) Pilot Project was established formally during the Nineteenth Session of the IODE Committee (Trieste, Italy, March 2007) through the Recommendation IODE-XIX/10 with the following objectives:

- Provide assistance in the development, operation and strengthening of National Oceanographic Data (and Information) Centres to advance the level of less experienced data centres and to establish their networking in the region;
- Enhance national and regional awareness for Marine Data and Information Management;
- Assist in the development and maintenance of national and regional marine data, metadata and information databases;
- Assist in the development and dissemination of marine data, information products and services, meeting the needs of user communities at the national and regional levels, and responding to national and regional priorities;
- Undertake the activities needed for applying modern technologies for data collection, processing, storing and dissemination.
- Undertake the ODINBLACKSEA activities in close collaboration and networking with other relevant organizations, programmes and projects operating in the region.

One of the important outputs of the Black Sea WP of SEAS-ERA Project in to develop a Strategic Research Agenda (SRA) for the Black Sea. This document is the output of a long process which

¹ Development of Black Sea nowcasting and forecasting system G. K. Korotaev1, T. Oguz2, V. L. Dorofeyev1, S. G. Demyshev1, A. I. Kubryakov1, and Yu. B. Ratner <http://www.ocean-sci.net/7/629/2011/os-7-629-2011.pdf>

includes consultations with the partner institutions, regional experts and two Strategic Analysis Workshops.

Specific objectives of the SRA are:

- *Supporting the needs of Black Sea states stemming from international policy/legislation*
- *Dealing with regional ecosystem problems*
- *Strengthening international cooperation of the coastal states with ongoing and new actions and tools*
- *Prioritising new topics and approaches at regional level*
- *Supporting to multi-disciplinary marine and maritime research in support of good (holistic) governance of environmental protection with human capacity building component at the national and regional level*
- *Providing scientific and management tools*
- *Identifying crosscutting issues to support research and their realization*

It is also supposed to contribute to the Pan-European Strategic Research Agenda which will be one of the important outcomes of the SEAS-ERA Project.

Up-Grade Bs-Scene intended to initiate a concerted effort to use science and information technology to understand and deal with the environment problems of the Black Sea, to strengthen science/policy interface and regional cooperation towards better governance of environment protection to preserve the Black Sea ecosystem as a valuable natural endowment of the region, while ensuring the sustainable use of its marine and coastal resources for the economic development, well-being, health and security of the population of the Black Sea coastal States.

Objectives:

- Update the knowledge on the Black Sea, following the model DPSIRR, finding the gaps in data/information/perception of the Black Sea ecosystem evolution - past, present and future.
- Overview technologies and decision-support tools available for the Black Sea region, give recommendations for further developments.
- Revisit environment priorities, develop an outlook for advancing the Black Sea protection through an ecosystem-based management of living and non-living resources.
- Continue the integration of science in decision-making in the field of environment protection.

7. Potential developments of GOOS

Data Archeology and Rescue

- Continuation of efforts on data archeology and rescue
- Involving of additional hydrophysical, hydrochemical, hydrobiological, geophysical and other parameters into international oceanographic data and information exchange.

Data management

- Simultaneous development of decentralized data centers network available via Internet.
- The development and use of up-to-date information technologies for data management and distribution.

Education and training

- Organization of training courses in the region to provide skill personnel for development of up-to-date information technologies of data management and distribution.
- Conducting of the working meetings of experts in various oceanographic specialties to elaborate common approaches and criteria of the Black Sea data quality

Collaboration

- Support and promotion of collaboration between Data Centers of the Black Sea region countries in framework of both two- and many-sided international projects.

8. Problems with Coastal Zone Management in the Black Sea Area

The coastal zone is an area where great numbers of human activities demand use of the coastal space and therefore it has a special role in protecting the sea. The sea has a profound influence on the coastal environment and its use by the people. But human use also has a profound influence on the environmental state of the coastal waters. The habitats of many plant and animal species in the coastal zone are more numerous than other places in the sea. For the people the coast is the area where they come into contact with the sea.

The environmental health of the coast has a direct influence on the health of the local population and the tourists. The coastal zone is particularly vulnerable to pollution and damage, both direct and indirect, from human activity. The destruction or pollution of habitats there can destroy or drive away dependent species thus influencing the entire food chain all the way up to humans. Insufficiently treated wastewaters may contain pathogens, as for example the microbiological contaminants causing hepatitis-A or meningitis. The poor quality of coastal waters has a negative influence not only on life in the sea but also on tourism and the whole coastal economy.

The economic activity of municipalities along the Black Sea is of particular significance for protecting the sea. The future of many plant and animal populations as well as human welfare depends on the wise decision-making for the future made in those municipalities. It is a pity that the Black Sea coast provides plenty of evidence for unwise planning. One economic use of the coastal zone quite often denies opportunities to other activities. The construction of coastal highways limits the development of coastal tourism and wildlife reserves. The construction of hotels on the beach and in the immediate vicinity of the shore puts a burden of waste from human activities on the environment and the quality of the beach and the coastal waters deteriorate.

The growth of beach resorts is a reason for concern. In many places the restrictions on construction are not observed. Powerful interest groups are trying to take entire sections of the coast that contain the most significant biodiversity. Many hotels, both new and old discharge much of their waste straight into the waterways without treatment. Even this changing of the local environment can have huge effects. Industrial enterprises also contribute to the coastal pollution. Farming can cause nutrients and pesticides, harmful to the marine environment and human health, to be washed into the water through runoff. The felling of trees can lead to unstable topsoil, leading to erosion, which has become a very serious problem for the Bulgarian coast. Even dams and dikes can stop the flow of important sediments into the sea, thus weakening beaches that act as normal storm breakers.

One of the reasons for the chaotic development of our coast is the fact that so far the interests of all legitimate users have not been recognized. All too often the various administrations and businesses pursue their narrow interests without much communication between each other and without discussing their future plans. To protect the coast however we need to make long term integrated planning and to recognize the legitimate interests of all users that may be affected by a certain change.

The process is well known as Integrated Coastal Zone Management. It involves compromise and insurance of strict environmental standards. The construction of an industrial complex or a port on the coast would be incompatible with the development of tourism and may also destroy some valuable protected territory. It is difficult to take into account everybody's demands, though it is of particular importance for powerful business interests to realize that the cheapest option may not always be the most sustainable.

The instruments for implementation of the Integrated Coastal Zone Management is the effective enforcement of regulations and environmental impact assessment, which is a method of consideration of all possible environmental effects resulting from a given project or policy.

9. Marine Strategy Directive and GOOS

The aim of the European Union's ambitious Marine Strategy Framework Directive (adopted in June 2008) is to protect more effectively the marine environment across Europe. It aims to achieve good environmental status of the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend. The Marine Strategy Framework Directive constitutes the vital environmental component of the Union's future maritime policy,

designed to achieve the full economic potential of oceans and seas in harmony with the marine environment.

The Marine Strategy Framework Directive establishes European Marine Regions on the basis of geographical and environmental criteria. Each Member State - cooperating with other Member States and non-EU countries within a marine region - are required to develop strategies for their marine waters.

The marine strategies to be developed by each Member State must contain a detailed assessment of the state of the environment, a definition of "good environmental status" at regional level and the establishment of clear environmental targets and monitoring programmes.

Each Member State must draw up a programme of cost-effective measures. Prior to any new measure an impact assessment which contains a detailed cost-benefit analysis of the proposed measures is required.

Where Member States cannot reach the environmental targets specific measures tailored to the particular context of the area and situation will be drawn up.

The goal of the Marine Strategy Framework Directive is in line with the objectives of the 2000 Water Framework Directive 2000 which requires surface freshwater and ground water bodies - such as lakes, streams, rivers, estuaries, and coastal waters - to be ecologically sound by 2015 and that the first review of the River Basin Management Plans should take place in 2020.

In respect of each marine region or subregion, Member States shall make an initial assessment of their marine waters, taking account of existing data where available and comprising the following:

- (a) an analysis of the essential features and characteristics, and current environmental status of those waters, based on the indicative lists of elements set out in Table 1 of Annex III, and covering the physical and chemical features, the habitat types, the biological features and the hydro-morphology;
- (b) an analysis of the predominant pressures and impacts, including human activity, on the environmental status of those waters which:
 - (i) is based on the indicative lists of elements set out in Table 2 of Annex III, and covers the qualitative and quantitative mix of the various pressures, as well as discernible trends;
 - (ii) covers the main cumulative and synergetic effects; and
 - (iii) takes account of the relevant assessments which have been made pursuant to existing Community legislation;
- (c) an economic and social analysis of the use of those waters and of the cost of degradation of the marine environment.

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