

Annexes

YELLOW SEA & BOHAI SEA

Annex I List of contributing authors and organisations

Yellow Sea

Name	Institutional affiliation	Country	Field of work
Mr. Ronald Bonifacio	Coastal Management Center, Manila	Philippines	Toxicology of marine fauna; technology development of seaweed culture and processing; Integrated coastal and marine management
Dr. Shang Chen	Key Laboratory for Science and Engineering of Ecological Environment, First Institute of Oceanography (FIO), State Oceanic Administration (SOA), Qingdao,	China	Marine ecosystems; Environmental modelling
Dr. Chung-Il Choi	Department of Earth and Marine Sciences, Hanyang University, Seoul	Korea	Ecology; Limnology; Conservation biology
Mr. Jingyao Deng	Yellow Sea Fisheries Research Institute, Qingdao	China	Fisheries stock assessment/ management
Dr. Rogelio O. Juliano	Coastal Management Center, Manila	Philippines	Aquaculture & Fisheries; Coastal Resource Management; Integrated Coastal and Marine Management
Dr. Daeseok Kang	Korea Maritime Institute, Seoul	Korea	Systems ecology; Coastal Management; Ecological Economics
Dr. Dong-Young Lee	China-Korea Joint Ocean Research Center, Qingdao	China	Coastal engineering, Marine meteorology
Dr. Daoji Li	Institute of Estuarine and Coastal Research, East China Normal University, Shanghai	China	Marine Environmental Science
Mr. Fengchao Liu	Dalian Polytechnical University, Dalian	China	Regional economics
Prof. Hongbin Liu	Shandong Marine Economics Research Institute, Qingdao,	China	Socio-economics
Mr. Qiming Ma	Qingdao Ocean University, Qingdao	China	Environmental engineering
Mr. Minghui Ma	NMEMC, Dalian	China	Marine ecology
Dr. Gyung-Soo Park	West Sea Fisheries Research Institute National Fisheries Research and Development Institute, Bupyeong-Gu	Korea	Marine ecosystem; Ecology; Marine pollution
Dr. Elina Rautalahti-Miettinen	GIWA Core Team, UNEP-GIWA Co-ordination Office	Sweden	Environmental management; Coastal and marine resources management
Prof. Yufang Song	Shenyang Applied Ecology Institute, Chinese Academy of Sciences	China	Ecology
Prof. Gongke Tan		China	Physical Oceanography
Prof. Yuxiang Tang	Physical Oceanography Division, First Institute Of Oceanography (FIO), State Oceanic Administration (SOA), Qingdao	China	Physical oceanography; Global climate change
Dr. Seng-Keh Teng	Coastal Management Center, Manila	Philippines	Aquaculture & Fisheries; Coastal Resource Management; Integrated Coastal and Marine Management
Prof. Ling Tong	Yellow Sea Fisheries Research Institute, Qingdao	China	Fisheries stock assessment/management
Mr. Baodong Wang	First Institute of Oceanography, Qingdao	China	Marine chemistry
Mr. Xiulin Wang	Qingdao Ocean University, Qingdao	China	Marine chemistry
Dr. Dong-Beom Yang	Marine Environment and Climate Change Laboratory, Korea Ocean Research & Development Institute	Korea	Environmental management (Yellow Sea); Marine chemistry and water quality
Prof. Chang-cheng Ye	Marine Fisheries Research Institute, Dalian	China	Fishery resource enhancement/ assessment

Prof. Chun Ye	Chinese Research Academy of Environmental Sciences, Beijing	China	Ecological engineering
Dr. Huming Yu	China Institute for Marine Affairs, Beijing	China	Coastal management; fisheries management
Prof. Qingdong Yu	Qingdao University, Qingdao	China	System engineering
Dr. Yueli Yuan	First Institute of Oceanography, Qingdao	China	Physical oceanography and modelling
Ms. Shu Zhang	Dalian Water Conservancy Bureau, Dalian	China	Fresh water resources assessment
Mr. Xuelei Zhang	First Institute of Oceanography, Qingdao	China	Marine ecosystems
Dr. Mingyuan Zhu	Key Laboratory for Science and Engineering of Marine Ecological Elements, First Institute of Oceanography, Qingdao	China	Coastal resource management; marine ecology
Prof. Kelin Zhuang	Qingdao Marine Geological Institute, Qingdao	China	Marine geology
Mr. Zhenyue Zhuang	Qingdao Ocean University, Qingdao,	China	Marine sedimentation and environment

Bohai Sea

Name	Institutional affiliation	Country	Field of work
Mr. Ronald Bonifacio	Coastal Management Center, Manila,	Philippines	Toxicology of marine fauna; technology development of seaweed culture and processing; Integrated coastal and marine management
Mr. Zhenxing Dou	National Marine Environmental Monitoring Center, Dalian	China	Physical oceanography; water quality modeller
Mr. Zhijie Fan	NMEMC, Dalian	China	Marine pollution monitoring
Dr. Rogelio O. Juliano	Coastal Management Center, Manila	Philippines	Aquaculture & Fisheries; Coastal Resource Management; Integrated Coastal and Marine Management
Mr. Jianguo Lin	College of Environmental Science and Engineering, Dalian Maritime University	China	Ocean dynamics, marine transportation
Ms. Xinzhen Lin	NMEMC, Dalian	China	Science and technology management
Mr. Fengchao Liu	Dalian Polytechnical University	China	Regional economics
Prof. Hongbin Liu	Shandong Marine Economics Research Institute, Qingdao,	China	Socio-economics
Prof. Guohai Liu	Liaoning Normal University, Dalian	China	Marine economics; Geography
Mr. Deyi Ma	NMEMC, Dalian	China	Marine chemistry; environmental impact assessment
Mr. Qiming Ma	Qingdao Ocean University, Qingdao	China	Environmental engineering
Mr. Minghui Ma	NMEMC, Dalian	China	Marine ecology
Dr. Elina Rautalahti-Miettinen	GIWA Core Team, UNEP-GIWA Co-ordination Office	Sweden	Environmental management; Coastal and marine resources management
Prof. Yufang Song	Shenyang Applied Ecology Institute, Chinese Academy of Sciences	China	Ecology
Prof. Yuxiang Tang	Physical Oceanography Division, First Institute of Oceanography, State Oceanic Administration, Qingdao	China	Physical oceanography; Global climate change
Dr. Seng-Keh Teng	Coastal Management Center, Manila	Philippines	Aquaculture & Fisheries; Coastal Resource Management; Integrated Coastal and Marine Management
Prof. Ling Tong	Yellow Sea Fisheries Research Institute, Qingdao	China	Fisheries stock assessment/management
Mr. Jin Xia	Dalian Environmental Science Institute, Dalian	China	Water environment and resources protection
Mr. Xueren Xu	NMEMC, Dalian	China	Oil pollution monitoring and assessment
Prof. Chang-cheng Ye	Marine Fisheries Research Institute, Dalian	China	Fishery resource enhancement/ assessment
Dr. Huming Yu	China Institute for Marine Affairs, Beijing	China	Coastal management; fisheries management
Ms. Shu Zhang	Dalian Water Conservancy Bureau, 32, Gorky Road, Xigang District, Dalian 116011, P. R. CHINA. Tel: +86 4113634098(O); +86 411 4216995(H).	China	Fresh water resources assessment
Dr. Mingyuan Zhu	Key Laboratory for Science and Engineering of Marine Ecological Elements, First Institute of Oceanography, Qingdao	China	Coastal resource management; marine ecology
Prof. Kelin Zhuang	Qingdao Marine Geological Institute, Qingdao	China	Marine geology
Mr. Zhenyue Zhuang	Qingdao Ocean University, Qingdao	China	Marine sedimentation and environment

Annex II

Detailed scoring tables: Yellow Sea

I: Freshwater shortage

Environmental issues	Score	Weight	Environmental concern	Weight averaged score
1. Modification of stream flow	3	40	Freshwater shortage	2.6
2. Pollution of existing supplies	3	20		
3. Changes in the water table	2	40		

Criteria for Economics impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small Very large	1	N/a
Degree of impact (cost, output changes etc.)	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Economic impacts		1	
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small Very large	1	N/a
Degree of severity	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Health impacts		1	
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small Very large	2	N/a
Degree of severity	Minimum Severe	2	N/a
Frequency/Duration	Occasion/Short Continuous	2	N/a
Weight average score for Other social and community impacts		2	

Note: N/a = Not applied.

II: Pollution

Environmental issues	Score	Weight	Environmental concern	Weight averaged score
4. Microbiological	2	10	Pollution	1.9
5. Eutrophication	3	35		
6. Chemical	1	10		
7. Suspended solids	1	20		
8. Solid wastes	2	10		
9. Thermal	1	5		
10. Radionuclides	N/a	N/a		
11. Spills	1	10		

Criteria for Economics impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small Very large	3	N/a
Degree of impact (cost, output changes etc.)	Minimum Severe	3	N/a
Frequency/Duration	Occasion/Short Continuous	3	N/a
Weight average score for Economic impacts		3	
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small Very large	1	N/a
Degree of severity	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Health impacts		1	
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small Very large	2	N/a
Degree of severity	Minimum Severe	2	N/a
Frequency/Duration	Occasion/Short Continuous	2	N/a
Weight average score for Other social and community impacts		2	

Note: N/a = Not applied.

III: Habitat and community modification

Environmental issues	Score	Weight	Environmental concern	Weight averaged score
12. Loss of ecosystems	3	50	Habitat and community modification	3.0
13. Modification of ecosystems or ecotones, including community structure and/or species composition	3	50		

Criteria for Economics impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small Very large	1	N/a
Degree of impact (cost, output changes etc.)	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Economic impacts			1
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small Very large	2	N/a
Degree of severity	Minimum Severe	2	N/a
Frequency/Duration	Occasion/Short Continuous	2	N/a
Weight average score for Health impacts			2
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small Very large	3	N/a
Degree of severity	Minimum Severe	3	N/a
Frequency/Duration	Occasion/Short Continuous	3	N/a
Weight average score for Other social and community impacts			3

Note: N/a = Not applied.

IV: Unsustainable exploitation of fish and other living resources

Environmental issues	Score	Weight %	Environmental concern	Weight averaged score
14. Overexploitation	3	50	Unsustainable exploitation of fish	2.6
15. Excessive by-catch and discards	1	5		
16. Destructive fishing practices	3	20		
17. Decreased viability of stock through pollution and disease	1	5		
18. Impact on biological and genetic diversity	2	20		

Criteria for Economics impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small Very large	1	N/a
Degree of impact (cost, output changes etc.)	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Economic impacts			1
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small Very large	3	N/a
Degree of severity	Minimum Severe	3	N/a
Frequency/Duration	Occasion/Short Continuous	3	N/a
Weight average score for Health impacts			3
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small Very large	2	N/a
Degree of severity	Minimum Severe	2	N/a
Frequency/Duration	Occasion/Short Continuous	2	N/a
Weight average score for Other social and community impacts			2

Note: N/a = Not applied.

V: Global change

Environmental issues	Score	Weight	Environmental concern	Weight averaged score
19. Changes in the hydrological cycle	2	40	Global change	1.4
20. Sea level change	1	60		
21. Increased UV-B radiation as a result of ozone depletion	N/a	N/a		
22. Changes in ocean CO ₂ source/sink function	N/a	N/a		

Criteria for Economics impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small Very large	1	N/a
Degree of impact (cost, output changes etc.)	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Economic impacts		1	
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small Very large	1	N/a
Degree of severity	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Health impacts		1	
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small Very large	2	N/a
Degree of severity	Minimum Severe	2	N/a
Frequency/Duration	Occasion/Short Continuous	2	N/a
Weight average score for Other social and community impacts		2	

Note: N/a = Not applied.

Comparative environmental and socio-economic impacts of each GIWA concern

Concern	Types of impacts								Overall score	Rank
	Environmental score		Economic score		Human health score		Social and community score			
	Present (a)	Future (b)	Present (a)	Future (b)	Present (a)	Future (b)	Present (a)	Future (b)		
Freshwater shortage	2.6	1	1	2	1	0	2	1	1.3	5
Pollution	1.9	2	3	2	1	1	2	2	1.9	3
Habitat and community modification	3.0	3	1	1	2	1	3	3	2.1	2
Unsustainable exploitation of fish and other living resources	2.6	2	1	2	3	2	2	3	2.2	1
Global change	1.4	2	1	2	1	1	2	2	1.6	4

Detailed scoring tables: Bohai Sea

I: Freshwater shortage

Environmental issues	Score	Weight	Environmental concern	Weight averaged score
1. Modification of stream flow	3	40	Freshwater shortage	3.0
2. Pollution of existing supplies	3	40		
3. Changes in the water table	3	20		

Criteria for Economics impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small Very large	1	N/a
Degree of impact (cost, output changes etc.)	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Economic impacts		1	
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small Very large	1	N/a
Degree of severity	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Health impacts		1	
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small Very large	1	N/a
Degree of severity	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Other social and community impacts		1	

Note: N/a = Not applied.

II: Pollution

Environmental issues	Score	Weight	Environmental concern	Weight averaged score
4. Microbiological	2	20	Pollution	2.3
5. Eutrophication	3	35		
6. Chemical	2	10		
7. Suspended solids	1	10		
8. Solid wastes	2	15		
9. Thermal	1	5		
10. Radionuclides	N/a	N/a		
11. Spills	3	5		

Criteria for Economics impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small Very large	2	N/a
Degree of impact (cost, output changes etc.)	Minimum Severe	2	N/a
Frequency/Duration	Occasion/Short Continuous	2	N/a
Weight average score for Economic impacts		2	
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small Very large	1	N/a
Degree of severity	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Health impacts		1	
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small Very large	2	N/a
Degree of severity	Minimum Severe	2	N/a
Frequency/Duration	Occasion/Short Continuous	2	N/a
Weight average score for Other social and community impacts		2	

Note: N/a = Not applied.

III: Habitat and community modification

Environmental issues	Score	Weight	Environmental concern	Weight averaged score
12. Loss of ecosystems	2	40	Habitat and community modification	2.6
13. Modification of ecosystems or ecotones, including community structure and/or species composition	3	60		

Criteria for Economics impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small Very large	3	N/a
Degree of impact (cost, output changes etc.)	Minimum Severe	3	N/a
Frequency/Duration	Occasion/Short Continuous	3	N/a
Weight average score for Economic impacts		3	
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small Very large	1	N/a
Degree of severity	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Health impacts		1	
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small Very large	3	N/a
Degree of severity	Minimum Severe	3	N/a
Frequency/Duration	Occasion/Short Continuous	3	N/a
Weight average score for Other social and community impacts		3	

Note: N/a = Not applied.

IV: Unsustainable exploitation of fish and other living resources

Environmental issues	Score	Weight %	Environmental concern	Weight averaged score
14. Overexploitation	3	45	Unsustainable exploitation of fish	2.6
15. Excessive by-catch and discards	1	5		
16. Destructive fishing practices	2	10		
17. Decreased viability of stock through pollution and disease	2	20		
18. Impact on biological and genetic diversity	3	20		

Criteria for Economics impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small Very large	3	N/a
Degree of impact (cost, output changes etc.)	Minimum Severe	3	N/a
Frequency/Duration	Occasion/Short Continuous	3	N/a
Weight average score for Economic impacts		3	
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small Very large	2	N/a
Degree of severity	Minimum Severe	2	N/a
Frequency/Duration	Occasion/Short Continuous	2	N/a
Weight average score for Health impacts		2	
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small Very large	3	N/a
Degree of severity	Minimum Severe	3	N/a
Frequency/Duration	Occasion/Short Continuous	3	N/a
Weight average score for Other social and community impacts		3	

Note: N/a = Not applied.

V: Global change

Environmental issues	Score	Weight	Environmental concern	Weight averaged score
19. Changes in the hydrological cycle	1	50	Global change	1.0
20. Sea level change	1	50		
21. Increased UV-B radiation as a result of ozone depletion	N/a	N/a		
22. Changes in ocean CO ₂ source/sink function	N/a	N/a		

Criteria for Economics impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small Very large	3	N/a
Degree of impact (cost, output changes etc.)	Minimum Severe	3	N/a
Frequency/Duration	Occasion/Short Continuous	3	N/a
Weight average score for Economic impacts		3	
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small Very large	1	N/a
Degree of severity	Minimum Severe	1	N/a
Frequency/Duration	Occasion/Short Continuous	1	N/a
Weight average score for Health impacts		1	
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small Very large	2	N/a
Degree of severity	Minimum Severe	2	N/a
Frequency/Duration	Occasion/Short Continuous	2	N/a
Weight average score for Other social and community impacts		2	

Note: N/a = Not applied.

Comparative environmental and socio-economic impacts of each GIWA concern

Concern	Types of impacts								Overall score	Rank
	Environmental score		Economic score		Human health score		Social and community score			
	Present (a)	Future (b)	Present (a)	Future (b)	Present (a)	Future (b)	Present (a)	Future (b)		
Freshwater shortage	3.0	3	1	1	1	1	1	1	1.5	3
Pollution	2.3	1	2	2	1	1	2	1	1.5	4
Habitat and community modification	2.6	2	3	3	1	2	3	3	2.5	2
Unsustainable exploitation of fish and other living resources	2.6	3	3	3	2	2	3	3	2.7	1
Global change	1.0	1	3	2	1	1	2	1	1.5	5

Annex III

List of important water-related programmes and assessments

North Pacific Marine Science Organisation (PICES)

PICES is an intergovernmental scientific organisation established in 1992 with Canada, People's Republic of China, Japan, Republic of Korea, the Russian Federation, and the United States of America as its participating members. PICES was established to promote and coordinate marine research in the North Pacific and adjacent seas at latitudes of 30 degrees north. Its activities are to advance scientific knowledge about the ocean environment, global weather and climate changes, living resources and their ecosystems, and the impacts of human activities as well as to promote the collection and rapid exchange of scientific information on these issues. Website: <http://pices.ios.bc.ca/>

UN Economic and Social Commission for Asia and the Pacific (ESCAP)

Water-related activities in Asia and the Pacific Region are carried out under ESCAP's "Water Resources Programme", Environment and Natural Resources Development Division. The UN ESCAP organises seminars and workshops in tackling various issues including those related to: (a) Water resources assessment; (b) Integrated water resources development and management; (c) Protection of water resources, water quality and aquatic ecosystems; (d) River basin development and management; (e) Promotion of infrastructure development and investment for drinking water supply and sanitation; (f) Water pricing and promotion of private investment in the water sector; (g) Water demand management, water saving and economic use of water; and (h) Mitigation of water-related natural disasters, particularly flood loss reduction. Website: <http://www.unescap.org/>

UNEP Regional Office for Asia and the Pacific (ROAP)

ROAP reports directly to the Division of Regional Co-operation and Representation of UNEP's headquarters in Nairobi. It was established to adopt global environmental policies to meet the regional priorities and needs, putting particular emphasis on building partnerships with regional and subregional and intergovernmental agencies, other UN agencies, national governments, NGOs, the private sector, academic and research institutions, civil society and the media. ROAP also acts as a catalyst, coordinator, facilitator and mobiliser of resources to support these activities. Website: <http://www.roap.unep.org/>

Northwest Pacific Action Plan (NOWPAP)

NOWPAP was initiated by UNEP through its regional seas programme to assist China, Japan, Russia and Korea to co-operatively manage

the ocean and sea environment shared by these four countries. The goal of NOWPAP is to achieve sustainable use, development and management of the coastal and marine environment so as to obtain the utmost long-term benefits for the human populations of the region, while protecting human health, ecological integrity and the region's sustainability for future generations. In order to enhance the execution and implementation of the action plan, a core center, the Northwest Pacific Region Environmental Cooperation Center (NPEC), was established in 1997 for initiating the cooperation among the countries and regions involved for the environmental protection in the Sea of Japan and Yellow Sea. The Center became a public service corporation under the Japanese Environment Agency in 1998 and was also designated to be one of the Regional Activity Centers of Northwest Pacific Action Plan in 1999. NPEC functions as a Special Monitoring and Coastal Environmental Assessment Centre for NOWPAP. Website: <http://www.npec.or.jp/english/index.htm>

Nautilus Institute for Security and Sustainable Development

The Nautilus Institute is a policy-oriented research and consulting organisation that promotes international cooperation for security and ecologically sustainable development. The Institute has programmes that address both global and regional issues on marine environment, sustainable development and environmental cooperation, focusing on those in the Northeast Asia and Asia-Pacific regions. Nautilus produces reports, organises seminars, and provides educational and training services for policymakers, media, researchers and community groups. Website: <http://www.nautilus.org/>

Partnership in Environmental Management for the Seas of East Asia (PEMSEA)

PEMSEA is a GEF project with goals of building partnership within and among governments as well as with the public and private sectors of the East Asian Seas region in the environmental management and in reducing or removing barriers to effective environmental management such as the inadequate or inappropriate policies, disparate institutional and technical capabilities and limited investment in environmental facilities and services. PEMSEA is working based on two management frameworks, namely, the integrated coastal management (ICM) framework for coastal area management and the risk assessment/management framework for assessing the impacts of human activities on marine ecosystems in sub-regional sea areas. Six ICM demonstration sites (one each in Vietnam, Cambodia, Indonesia, Thailand, DPR Korea and Malaysia) and two sub-regional sea environmental management demonstration sites, one each in the Gulf of Thailand and the Bohai Sea were established to test and validate the implementation of PEMSEA's environmental management frameworks. Website: <http://www.pemsea.org/>

UNEP Regional Seas Programme

The UNEP Regional Programme, established in 1974, is a global programme for sustainable management of the coastal and marine environment areas on a regional basis. The Programme includes 14 regional seas (Mediterranean, Red Sea and Gulf of Aden, ROPME Sea Area, Wider Caribbean, East Asian Seas, South-East Pacific, East Africa, West and Central Africa, South Pacific, Black Sea, North-West Pacific, South Asian Seas, North-East Pacific) and five partner seas (Baltic, North-East Atlantic, Arctic, Antarctic and Caspian) involving 140 coastal states worldwide. Each regional sea and partner sea may have a Regional Action Plan, which is formulated according to the needs and priorities of the region as perceived by the concerned governments. Regional Seas Conventions are in place for several regional sea areas. The Regional Seas Convention provides the legal framework for the Regional Action Plan. It expresses in clear terms the legal commitment and political will of governments to tackle their common environmental problems. Website: <http://www.unep.ch/seas/rshome.html>

Wetland Biodiversity Conservation and Sustainable Use Programme, China

The Programme and the National Wetland Conservation Action Plan provide the foundation for the conservation and better management of the wetland resources in China. The Programme aims to reduce the barriers that deter effective conservation of wetland biodiversity in China; these barriers include: i) a lack of integration of wetland management and biodiversity conservation into development planning; ii) no institutional mechanisms for multi-sectoral wetland management; iii) limited awareness of wetland values and functions at all levels; iv) lack of examples of sustainable development of wetland resources and involvement of local communities; and v) lack of technical capacity at national and local levels to manage and conserve wetlands and their biodiversity. The proposed project will remove these barriers at four demonstration project sites (Sanjiang Plain, Ruogai Marshes, Yancheng Coast and Dongting Lakes) with high global biodiversity importance. Each demonstration site represents a different ecosystem. A national coordination unit works to ensure that lessons learned from this project will be appropriately transferred to other wetlands throughout the country. Website: <http://edcnts2.cr.usgs.gov/gef/gef.asp?fipscode=623>

Large Marine Ecosystem Project

The Large Marine Ecosystem Project is a global effort initiated by the World Conservation Union (IUCN), the Intergovernmental Oceanographic Commission of UNESCO (IOC), other United Nations agencies, and the US National Oceanic and Atmospheric Administration (NOAA). The project aims to improve the long-term sustainability of

resources and environment of the Large Marine Ecosystems (LMEs) worldwide. The project provides scientific and technical assistance to developing countries committed to advancing new policies and actions for eliminating causes of trans-boundary environmental and resource-use practices leading to serious degradation of coastal environment, linked watersheds, and losses in biodiversity and food security from exploitation in LMEs located around the margins of the Pacific, Indian and Atlantic Oceans. The Yellow Sea has been studied by this project and designated as one of the global "Large Marine Ecosystems" (LME), the LME #48. Website: <http://na.nefsc.noaa.gov/lme/project.htm>

Yellow Sea LME Project

The Yellow Sea LME Project is a GEF project recently approved for implementation with the involvement of the People's Republic of China and the Republic of Korea. The project was developed as a comprehensive response to the key environmental problems facing the region with GEF helping to address the priority transboundary issues. The long-term objective of the project is: "Ecosystem-Based, Environmentally-Sustainable Management and Use of the YSLME and its Watershed: Reducing Development Stress and Promoting Sustainable Development of the Ecosystem from a Densely Populated, Heavily Urbanised, and Industrialised Semi-Enclosed Shelf Sea". In order to achieve its objective this project will prepare a Transboundary Diagnostic Analysis (TDA), National Yellow Sea Action Plans (NYSAPs), and a regional Strategic Action Programme (SAP). This project will also initiate and facilitate the implementation of the SAP. The SAP will consist of a series of legal, policy and institutional changes and investments to address the priority transboundary issues identified in the TDA/SAP formulation process. Website: <http://www.gefweb.org>

Green Vision 21 of Republic of Korea (1995 - 2005)

Green Vision 21 presents the policy approach to provide advanced environmental administrative services and make the environment of the land and waters in the Republic of Korea ecologically sound for future generations. The vision includes the idea of "Environmentally Sound and Sustainable Development (ESSD)", environmentally friendly consumption and business management.

Website: <http://www.me.go.kr:8080/me/environment/html/polices/president.htm#seoul>

Blue Sea Action Plan for Bohai Sea

The action plan was ratified by the State Council in 1999, when the comprehensive treatment project of Bohai Sea was kicked off. The project covers three provinces and one municipality surrounding Bohai Sea (Hebei, Liaoning and Shandong Provinces and Tianjin Municipality) and participated by the provinces and municipalities in the economic

zone surrounding Bohai Sea. The overall targets of the project are the natural resource exploration of Bohai Sea, sustainable development of ecological environment and sustainable, healthy development of the social economy in the economic zone surrounding the Bohai Sea. The main focuses are pollution control, environmental treatment, restoration of natural resource environment, ecological environmental remedy and disaster prevention and control. The key actions are estuary wetland protection and ecological remedy, pollution prevention in the bay, healthy aquatic farming, habitat remedy in the tidal areas and warning and prevention of red tides, oil spillage and marine ice. Website: <http://www.zhb.gov.cn/english/SOE/soechina1999/sea/seadown.htm>

Other water-related programmes

Other completed or on-going water-related programmes in the region include:

- Stock Monitoring in the Yellow Sea (1998-2000);
- Yellow Sea and East China Sea GLOBEC (1999-2004);
- Sino-Norway Joint "Bei Dou" Project (1998-2004);
- Water Circulation of China Seas and its Impacts on Environmental Resources (1999-2004);
- Marine Biodiversity Action Plan (1999-2004);
- Harmful Algal Bloom Monitoring Study (1999-2004);
- Blue Sky and Clean Sea Action Plan (1999-2004);
- Survey on the Marine Living Resources in the Yellow Sea (ongoing);
- Survey on the Oceanographic Conditions in the Yellow Sea (ongoing);
- Community Structure of the Fisheries Resources in the Yellow Sea (ongoing); and
- Changes in Oceanographic Conditions and Ecosystems in the Kusan Waters (ongoing).
- Bohai Sea GLOBEC (1997-2000);
- Fishery Biodiversity and its Conservation in the Bohai Sea (1997-2000);

Annex IV

List of conventions and specific laws that affect water use

People's Republic of China

Laws, regulations and rules

Administration Law on the Use of Ocean Space of the People's Republic of China, effective as of January 1, 2002

This Law seeks to use a property rights and quasi-exclusive ownership approach to manage the principal ocean uses and ocean resources present in the Chinese territorial sea. The Law sets out a framework for classifying uses of ocean space and granting licenses to use ocean space according to the functions classified. Persons who wish to use ocean space may apply for a license to use such space and may have their rights of use registered in a central registry. It seeks to promote the rational development and sustainable utilisation of ocean space by bringing the majority of ocean uses under one umbrella and employing an integrated approach to management. This is a new law with the objective of strengthening and preserving:

- Administration of the use of ocean space in China;
- Ownership of the country's ocean space;
- Lawful benefits of the users of ocean space.

Law of the People's Republic of China on the Territorial Sea and the Contiguous zone, effective as of 25 February 1992

This law fixes the breadth of the territorial sea of the People's Republic of China at 12 nautical miles as measured from the baseline of the territorial sea (Art. 3). It also establishes a contiguous zone adjacent to and beyond the territorial sea (Art. 4). Article 2 of the law lists all the archipelagos and islands over which the People's Republic of China exercises its sovereignty. Article 6 grants innocent passage to foreign civilian vessels. However, foreign military ships must seek permission from the Government of China before entering the territorial sea. All foreign ships passing through the territorial sea must comply with laws and regulations in force at the time. All international organisations, foreign organisations or individuals must also obtain approval from the Chinese government before carrying out scientific research or other activities in the territorial sea. Further provisions set out the enforcement powers of the Chinese authorities under this Law.

Decision of the Standing Committee of the National People's Congress on approval of the United Nations Convention on the Law of the Sea. Date of text: 15 May 1996

The Decision signifies the full adoption of UNCLOS treaty norms by China, including particularly the concept of the 200 nm EEZ and a

Continental Shelf generally limited to 200 nm. The statement declares that "in accordance with the provisions of the Convention, the People's Republic of China proclaims that it has sovereignty and jurisdiction over its exclusive economic zone and continental shelf of 200 nautical miles". Additionally, the Decision states that the People's Republic of China shall delimit a demarcation line between China's maritime jurisdiction and the maritime jurisdictions of China's neighbouring or facing countries, and shall have sovereignty over all archipelagos and islands listed in article 2 of China's Law on the Territorial Sea and the Contiguous Zone of 25 February 1992. This text is significant given the contested status of some of the islands off the coast of China.

People's Republic of China Exclusive Economic Zone and Continental Shelf Law of 26 June 1998

This Law contains 16 articles and demonstrates the further implementation of UNCLOS norms by China. It defines the EEZ and the continental shelf of PRC China and specifies the jurisdictional powers that China will exercise in these maritime areas. Article 5 states that foreign fishing in the EEZ requires the approval of responsible authorities. The responsible authorities also have the right to conserve and manage straddling fish stocks, highly migratory fish stocks and marine mammals in the EEZ. China also asserts rights over anadromous fish originating in rivers in China and catadromous species that spend the greater part of their life cycle in the waters of China: Article 6. Article 10 specifies the powers of the responsible authorities with respect to prevention and control of marine pollution.

Fisheries Law of the People's Republic of China

This Law came into effect on 1 July 1986 and was extensively amended in October 2000 (see below). It seeks to:

- Enhance the protection, proliferation, exploitation and rational utilisation of fishery resources,;
- Develop artificial cultivation;
- Ensure the lawful rights and interests of fishery workers; and
- Boost fishery production to meet the needs of the country and the people.

Decision amending the Fisheries Law of the People's Republic of China of December 2000

This Decision consists of 25 amendments to the Fisheries Law of the People's Republic of China. A key amendment is in Article 9 which limits the commercial role of the State as follows: "the Department of Fishery Administration or superintendence department or any members of the Department of Fishery Administration or superintendence shall not be engaged in any fishery production or marketing activities". Other amendments seek to modernise the rules relating to fishing methods,

fishing licenses, fishing areas, and vessels. More extensive offences and penalties reflecting concepts of responsible fishing are also provided for.

Regulations on fishing licence management, 1989

These Regulations aim to protect and rationally utilise fishery resources, regulate fishing intensity, maintain production order and safeguard the legitimate rights and interests of fishing operators whilst promoting fishery development. Three types of licences are provided for: fishing licences (including licences for fishing in coastal waters, high seas and inland waters); special fishing licences and; temporary fishing licences. Licensing authorities, procedures and conditions attached to each type of licence are defined. It still remains to be fully worked out how the licensing system under these Regulations relates to the Law on Use of Ocean Space.

Regulations of the People's Republic of China for the implementation of wild aquatic animal protection of October 1993

These Regulations aim at the management and conservation of wild aquatic animal resources. The responsible Departments of Fishery Administration at the central and local level are required to carry out surveys of wild aquatic animals on a regular basis, to support preparation and revision of lists of wild aquatic animals that require special protection by the State or local authorities. The catching or killing of all wild aquatic animals under special protection is prohibited by this Law. The Law states that the catching of wild aquatic animals may only be allowed under license and for the following purposes: scientific research or production of medicines; education or exhibitions; domestication or breeding of wild aquatic animals; other special reasons. Other provisions cover inter alia: (a) applications for special licences for catching wild aquatic animals; (b) obligations of licence holders; (c) the sale, purchase or utilisation of wild aquatic animals under special State protection; (e) a supervision and inspection system; (f) the transport or carrying of wild aquatic animal or products thereof to be effected out of the county; (g) the export of wild aquatic animals under special protection; (h) awards and penalties.

Law of the People's Republic of China on the Protection of Wildlife 1988

The purpose of this Law is to lay down the general principles of wildlife protection and administration of wildlife in the PRC, and to provide for the protection of species of wildlife that are rare or near extinction; the protection, development and rational use of wildlife resources and the maintaining of ecological balances. The basic principle is that wildlife resources are owned by the State (art. 3).

Mineral Resources Law of the People's Republic of China

This Law covers the development of the mining industry and promotes the exploration, development, utilisation and protection of mineral

resources in the present and the long term. Offshore oil and gas licenses are granted under this Law and more detailed and specific production contracts are authorised. Environmental control issues are addressed under the Marine Environment Protection Law. It remains to be seen how the new law on Use of Sea Areas will be integrated with this Law.

The Environmental Protection Law of the People's Republic of China of 26th December 1989

The Environmental Protection Law of the People's Republic of China came into effect on 26 December 1989. This Law is a general environmental protection statute but has implications for marine environmental protection in that it was formulated to protect and improve the environment, prevent and control pollution, safeguard human health and facilitate development and modernisation. The objectives of this Law are to protect and improve the environment, to prevent and remedy pollution, to safeguard human health, and to promote modern development. The Law provides for: (i) the integration of environmental protection into development planning; (ii) the promotion of environmental education; (iii) the obligation of individuals and units to protect the environment; (iv) the responsibilities of government bodies, at the central, provincial, regional and municipal levels, in respect of supervision and administration of environmental protection activities.

The Marine Environment Protection Law of the People's Republic of China 1983 (revised December 25, 1999; revision effective from 1st April 2000)

The Marine Environment Protection Law of the People's Republic of China first came into effect in 1983. This Law applies to all zones under Chinese jurisdiction: internal waters, the territorial sea, the exclusive economic zone and the continental shelf and any other sea areas under the jurisdiction of China. The Law also extends to any areas beyond the jurisdiction of China where activities cause pollution in areas within China's jurisdiction. The law establishes a coordinated system of pollution management between the various government ministries charged with controlling pollution. Its overall purpose is to protect and improve the marine environment, conserve marine resources, prevent pollution damage, maintain the ecological balance, safeguard human health and promote sustainable economic and social development. The Law also formally establishes an EIA system.

Regulations of the People's Republic of China on the prevention of vessel-induced sea pollution of 1983

These Regulations implement provisions of the Marine Environmental Protection Law. The text consists of 56 articles divided into 12 Chapters: General provisions (I); General stipulations (II); Documents and equipment (III); Oil operations and discharge of oil-polluted water by

vessels (IV); Dangerous goods carried by vessels (V); Other polluted water from vessels (VI); Garbage from vessels (VII); Use of vessels to dump waste (VIII); Surface and submerged projects of ship repair, ship building, ship salvage and ship scrapping (IX); Compensation for harm from pollution accidents caused by vessels (X); Supplementary provisions (XII). These Regulations are applicable to all Chinese and foreign vessels, ship owners and other individuals within the sea areas and harbours under the jurisdiction of the PRC (art. 2). The State fishing administrations and organs of supervision and control of fishing harbours shall exercise the functions and powers of the organs in charge as stipulated in these Regulations in fishing harbour water areas (art. 54).

Regulations of the People's Republic of China on control over dumping of wastes in seawater of 06 March 1985

The term "dumping" as used in these Regulations refers to discharging wastes and other substances into the ocean by means of vessels, aircraft, platforms, and other manmade structures used on the sea. In addition it also refers to the discharge of wastes and other substances caused by submarine exploration and exploitation of mineral resources and related maritime processing (art. 2). These Regulations apply to: (a) dumping of wastes into the sea areas under jurisdiction of the PRC; (b) loading of wastes on land or in harbours of the PRC for the purpose of dumping; (c) transport and burning of wastes in sea areas under jurisdiction of the PRC (art. 3). The areas of dumping shall be designated by the National Oceanographic Bureau (art. 5). Units that wish to dump waste into the ocean shall apply for permission with the Bureau or one of its agencies (art. 6). Bringing waste from foreign countries into the sea areas under the jurisdiction of the PRC shall be prohibited (art. 7). Waste matters fall into three categories in view of their toxicity, content of harmful elements and impact upon the marine environment (art. 11). Dumping of wastes listed in Annex I is prohibited; dumping of wastes as listed in Annex II shall require a special permit; wastes other than listed in Annex I or II require an ordinary permit. The remaining provisions deal with procedures of dumping, monitoring and testing in dumping areas, and offences and penalties. (24 articles and 2 Annexes)

Regulations of the People's Republic of China on the prevention of pollution damage to the marine environment by land-sourced pollutants: 22 June 1990

These Regulations further implement the Marine Environment Protection Law. They focus on strengthening the supervision and administration of land pollution sources and preventing pollution damage to the marine environment by land-sourced pollutants. They require that the discharge of land-sourced pollutants into the sea by any organisation or individual be conducted in compliance with the standards for discharge of pollutants and the relevant regulations promulgated by the State or the relevant locality. The control of pollutants discharging and treating

facilities is entrusted to the environmental protection department in the place where the organisation or individual concerned is located.

Seawater Quality Standard of the People's Republic of China – entry into force on July 01, 1998

This Standard classifies seawater quality into four grades, and gives quality standards for each grade of seawater. It implements the relevant provisions of the Environment Protection Law and the Marine Environment Protection Law. It provides guidance on standards to be used to prevent and control seawater pollution, protect marine biological resources and other marine resources, and preserve the marine ecosystem generally.

Law of the People's Republic of China on Prevention and Control of Water Pollution of 1984

This Law aims at the prevention and control of pollution of rivers, lakes, canals, irrigation channels, reservoirs and other surface water bodies and groundwater. As such it is crucial to control of pollution in the marine zone. It has seven Chapters as follows:

- Chapter I - General Provisions;
- Chapter II - Establishment of Water Environment Quality Standards and Pollutant Discharge Standards;
- Chapter III - Supervision and Management of the Prevention and Control of Water Pollution;
- Chapter IV - Prevention of Surface Water Pollution;
- Chapter V - Prevention of Groundwater Pollution;
- Chapter VI - Legal Liability;
- Chapter VII - Supplementary provisions.

Rules for implementation of the Law of the People's Republic of China on the prevention and control of water pollution (2000)

These Rules implement article 61 of the Law on the Prevention and Control of Water Pollution. Article 2 establishes the content of unified plans based on river basins or regions, in line with Article 10 of the Law. Further provisions concern the supervision and management of the prevention and control of water pollution (a) when projecting the minimum discharge of a dam on large or medium-sized reservoirs; (b) with regard to the planning and adjustment of various water body reserves; (c) with regard to construction projects using imported technologies or equipment and discharging pollutants into water bodies; (d) in the case of discharge of pollutants in excess of the national or local pollutant discharge standards.

Decision of the State Council on several issues concerning environmental protection of 3 August 1996

The Decision aims at strengthening the prevention and control of water pollution in rivers, lakes, reservoirs and coastal waters. It deals with those

situations where attempts to control discharged water pollutants within prescribed standards still fail to meet national prescribed standards for water environment quality. It establishes a system of control over maximum quantities major pollutants that can be discharged into water as well as a verification procedure.

Law of the People's Republic of China on Water and Soil Conservation Date of 29 June 1991

This Law supports the decrease of land-based pollution of the marine zone. It addresses a broad spectrum of concerns such as the prevention and control of soil erosion, the protection and rational utilisation of water and soil resources, the mitigation of disasters from floods, drought and sandstorms, the improvement of the ecological environment and the development of production. This statute has six chapters as follows:

- Chapter I - General Provisions;
- Chapter II - Prevention of erosion and other forms of damage;
- Chapter III - Rehabilitation;

- Chapter IV - Supervision and administration;
- Chapter V - Legal Responsibility, offences and penalties.
- Chapter VI - Supplementary Provisions.

Maritime Code of the People's Republic of China of 7 November 1992

This Code governs commercial transactions to do with shipping and navigation. It aims to regulate relations arising from maritime transport and those pertaining to ships, to secure and protect the legitimate rights and interests of the parties concerned, and to promote the development of maritime transport, economy and trade (art. 1).

Rules of the People's Republic of China governing vessels of foreign nationality 18 September 1979

These Rules are formulated in order to safeguard ports and coastal waters, ensure the safety of navigation and prevent the pollution of waters.

Conventions and treaties

Name of Convention/Treaty	Conclusion	Entry into Force	Ratification	Accession
Convention on the Liability of Operators of Nuclear Ships	25/05/1962		25/05/1962	
Convention concerning the Protection of the World Cultural and Natural Heritage	16/11/1972	12/03/1986		12/12/1985
International Convention for the Safety of Life at Sea (SOLAS)	01/11/1974	25/05/1980	20/06/1975	07/01/1980
United Nations Convention on the Law of the Sea	10/12/1982	07/07/1996	10/12/1982	07/06/1996
Protocol to amend the International Convention on Civil Liability for Oil Pollution Damage	25/05/1984		25/05/1984	
Protocol relating to the International Convention for the Safety of Life at Sea (SOLAS PROT 1988)	11/11/1988	03/02/2000	11/11/1988	
Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	22/03/1989	05/05/1992	22/03/1990	17/12/1991
Convention for establishing a marine scientific organisation for the North Pacific Region (PICES)	12/12/1990	30/10/1992	22/10/1991	31/08/1992
Protocol to the Antarctic Treaty on Environmental Protection	04/10/1991	14/01/1998	04/10/1991	02/08/1994
Convention on Biological Diversity	05/06/1992	29/12/1993	11/06/1992	05/01/1993
Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982	28/07/1994	07/07/1996	29/07/1994	07/06/1996
Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks	04/08/1995		06/11/1996	
Amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	22/09/1995			01/05/2001
Comprehensive Nuclear Test - Ban Treaty	10/09/1996		24/09/1996	
Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972	07/11/1996		23/03/1998	
Kyoto Protocol to the United Nations Framework Convention on Climate Change	11/12/1997		29/05/1998	
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	10/09/1998		24/08/1999	
Cartagena Protocol on Biosafety to the Convention on Biological Diversity	29/01/2000		08/08/2000	
Stockholm Convention on Persistent Organic Pollutants	22/05/2001		23/05/2001	

Republik of Korea

Laws, regulations and rules

Law, Regulations and Rules	Date of enactment
Water Supply Act	1961.12.31
Sewerage System Act	1966. 8. 3
Act Relating to Protection of Birds, Mammals and Hunting('67. 3.30)	1983.12.30
Waste Clean Act ('61.12.30) – Waste Management Act ('86.12.31)	1991. 3. 8
Act relating to toxic and Hazardous Substance('63.12.13) - Toxic Chemical Control Act	1996. 8. 1
Natural Park Act	1980. 1. 4
Compound Waste Treatment Corporation Act	1979.12.28
Korea Resource Recovery and Reutilisation Corporation Act	1993.12.27
Environmental Pollution Prevention Corporation Act	1983. 5.21
Environmental Management Corporation Act	1993.12.27
Social Pollution Prevention Act	1963.11.5
Environment Preservation Act	1977.12.31
Basic Environmental Policy Act	1990.8.1
Air Quality Preservation Act	1990.8.1
Water Quality Preservation Act	1990.8.1
Act Relating to Water Resources in Han River and Community Support	1999.2.8
Special Act on Nakdong River's Watershed Management	2002. 1.14
Special Act on Geum River's Watershed Management	2002. 1.14
Special Act on Yeongsan and Seomjin River's Watershed Management	2002. 1.14
Indoor Air Qualities Management Act	1996.12.30
Noise and Vibration Control Act	1990. 8. 1
Environmental Dispute and Settlement Act	1990. 8. 1
Acts Relating to Punishment for Environmental Crime	1991. 5.31
Natural Environment Preservation Act	1991.12.31
Act Relating to the Special Accounting for Environmental Improvement	1994. 1. 5
Act Relating to Environmental Technology Support and Development	1994.12.22
Special Act on the Ecosystem Preservation of Islands such as Dokdo Island	1995. 1. 5
Wetland Preservation Act	1997.12.13
Environmental Impact Assessment Act on Environment, Transportation and Natural Disaster	1999. 2. 8
Soil Environment Preservation Act	1991.12.31
Act Relating to the Treatment of Sewage, Night Soil and Livestock Wastewater	1999.12.31
Act Relating to Promotion of Resources Saving and Reutilisation	1995. 1. 5
Act Relating to Transboundary Movement of Waste and Their Disposal	1991. 3. 8
Act Promotion of Waste Treatment Facilities and Local Community	1992.12. 8
Act Relating to the Establishment and Operation of Sudokwon Landfill Site Management Corporation	1992.12. 8

Conventions and treaties

Conventions and Treaties	Date of Signature	Date of ratification/ accession(a)	Date of entry into force
International Convention for the Prevention of Pollution of the Sea by Oil, 1954(as amended in 1962 and in 1969)	-	31 07 78(a)	31 10 78
International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 relating thereto	-	23 07 84(a)	23 10 84
International Regulations for Preventing Collisions at Sea,1960	-	-	-
1972 Amendments to the 1960 International Regulations for Preventing Collisions at Sea	-	29 07 77(a)	29 07 77
International Convention for the Safety of Life at Sea, London, 1974	-	31 12 80(a)	31 03 81
International Convention on Civil Liability for Oil Pollution Damage, 1969, Brussels	-	18 12 78(a)	18 03 79
International Convention on the Establishment of an International Fund for Compensation of Oil Pollution Damage, 1971, Brussels	-	08 12 92(a)	08 03 93
Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matters, 1972, London	-	21 12 93(a)	20 01 94
Convention on International Trade in Endangered Species of Wild Flora and Fauna, 1973, Washington	-	07 09 93(a)	07 10 93
United Nations Convention on the Law of the Sea, 1982, Montego Bay	14 03 83	29 01 96	28 02 96
United Nations Framework Convention on Climate Change, 1992, New York	13 06 92	14 12 93	21 03 94
Convention on Biological Diversity, 1992, Rio de Janeiro	-	03 10 94(a)	01 01 95

Annex V

WHO Guidelines for drinking-water quality or standards

Drinking-water quality

Element/substance		Normally found in fresh water/ surface water/ground water	Health guideline
Aluminium	Al		0.2 mg/l
Ammonia	NH ₄	< 0.2 mg/l (up to 0.3 mg/l in anaerobic waters)	No guideline
Antimony	Sb	< 4 µg/l	0.005 mg/l
Arsenic	As		0.01 mg/l
Asbestos			No guideline
Barium	Ba		0.3 mg/l
Beryllium	Be	< 1 µg/l	No guideline
Boron	B	< 1 mg/l	0.3 mg/l
Cadmium	Cd	< 1 µg/l	0.003 mg/l
Chloride	Cl		250 mg/l
Chromium	Cr ⁺³ , Cr ⁺⁶	< 2 µg/l	0.05 mg/l
Colour			Not mentioned
Copper	Cu		2 mg/l
Cyanide	CN ⁻		0.07 mg/l
Dissolved oxygen	O ₂		No guideline
Fluoride	F	< 1.5 mg/l (up to 10)	1.5 mg/l
Hardness	mg/l CaCO ₃		No guideline
Hydrogen sulphide	H ₂ S		No guideline
Iron	Fe	0.5 - 50 mg/l	No guideline
Lead	Pb		0.01 mg/l
Manganese	Mn		0.5 mg/l
Mercury	Hg	< 0.5 µg/l	0.001 mg/l
Molybdenum	Mb	< 0.01 mg/l	0.07 mg/l
Nickel	Ni	< 0.02 mg/l	0.02 mg/l
Nitrate and nitrite	NO ₃ , NO ₂		50 mg/l total nitrogen
Turbidity			Not mentioned
pH			No guideline
Selenium	Se	< 0.01 mg/l	0.01 mg/l
Silver	Ag	5 - 50 µg/l	No guideline
Sodium	Na	< 20 mg/l	200 mg/l
Sulphate	SO ₄		500 mg/l
Inorganic tin	Sn		No guideline
TDS			No guideline
Uranium	U		1.4 mg/l
Zinc	Zn		3 mg/l

(Note: Are set up in Geneva, 1993 and are the international reference point for standard setting and drinking-water safety)

Organic compounds

Group	Substance		Health guideline	
Chlorinated alkanes	Carbon tetrachloride	C Cl ₄	2 µg/l	
	Dichloromethane	C H ₂ Cl ₂	20 µg/l	
	1,1-Dichloroethane	C ₂ H ₄ Cl ₂	No guideline	
	1,2-Dichloroethane	Cl CH ₂ CH ₂ Cl	30 µg/l	
	1,1,1-Trichloroethane	CH ₃ C Cl ₃	2000 µg/l	
Chlorinated ethenes	1,1-Dichloroethene	C ₂ H ₂ Cl ₂	30 µg/l	
	1,2-Dichloroethene	C ₂ H ₂ Cl ₂	50 µg/l	
	Trichloroethene	C ₂ H Cl ₃	70 µg/l	
	Tetrachloroethene	C ₂ Cl ₄	40 µg/l	
Aromatic hydrocarbons	Benzene	C ₆ H ₆	10 µg/l	
	Toluene	C ₇ H ₈	700 µg/l	
	Xylenes	C ₈ H ₁₀	500 µg/l	
	Ethylbenzene	C ₈ H ₁₀	300 µg/l	
	Styrene	C ₈ H ₈	20 µg/l	
	Polynuclear Aromatic Hydrocarbons (PAHs)	C ₁₀₋₁₇ H ₁₀₋₁₄ N ₁ O ₁₋₃ P ₁₋₃	0.7 µg/l	
Chlorinated benzenes	Monochlorobenzene (MCB)	C ₆ H ₅ Cl	300 µg/l	
	Dichlorobenzenes (DCBs)	1,2-Dichlorobenzene (1,2-DCB)	C ₆ H ₄ Cl ₂	1000 µg/l
		1,3-Dichlorobenzene (1,3-DCB)	C ₆ H ₄ Cl ₂	No guideline
		1,4-Dichlorobenzene (1,4-DCB)	C ₆ H ₄ Cl ₂	300 µg/l
Trichlorobenzenes (TCBs)	C ₆ H ₃ Cl ₃	20 µg/l		
Miscellaneous organic constituents	Di(2-ethylhexyl)adipate (DEHA)	C ₂₂ H ₄₂ O ₄	80 µg/l	
	Di(2-ethylhexyl)phthalate (DEHP)	C ₂₄ H ₃₈ O ₄	8 µg/l	
	Acrylamide	C ₃ H ₅ N O	0.5 µg/l	
	Epichlorohydrin (ECH)	C ₃ H ₅ Cl O	0.4 µg/l	
	Hexachlorobutadiene (HCBD)	C ₄ Cl ₆	0.6 µg/l	
	Ethylenediaminetetraacetic acid (EDTA)	C ₁₀ H ₁₂ N ₂ O ₈	200 µg/l	
	Nitritotriacetic acid (NTA)	N(CH ₂ COOH) ₃	200 µg/l	
	Organotin	Dialkyltins	R ₂ Sn X ₂	No guideline
		Tributyl oxide (TBTO)	C ₂₇ H ₅₄ O Sn ₂	2 µg/l

Pesticides

Substance	Chemical formula	Health guideline	
Alachlor	$C_{11}H_{20}ClNO_2$	20 µg/l	
Aldicarb	$C_8H_{14}N_2O_3S$	10 µg/l	
Aldrin and dieldrin	$C_{12}H_{18}Cl_2/C_{12}H_{18}Cl_6O$	0.03 µg/l	
Atrazine	$C_8H_{14}ClN_5$	2 µg/l	
Bentazone	$C_{10}H_{12}N_2O_3S$	30 µg/l	
Carbofuran	$C_{12}H_{15}NO_3$	5 µg/l	
Chlordane	$C_{10}H_6Cl_8$	0.2 µg/l	
Chlorotoluron	$C_{10}H_9ClN_2O$	30 µg/l	
DDT	$C_{14}H_9Cl_5$	2 µg/l	
1,2-Dibromo-3-chloropropane	$C_3H_4Br_2Cl$	1 µg/l	
2,4-Dichlorophenoxyacetic acid (2,4-D)	$C_6H_4Cl_2O_3$	30 µg/l	
1,2-Dichloropropane	$C_3H_6Cl_2$	No guideline	
1,3-Dichloropropane	$C_3H_6Cl_2$	20 µg/l	
1,3-Dichloropropene	$CH_3CHClCH_2Cl$	No guideline	
Ethylene dibromide (EDB)	$BrCH_2CH_2Br$	No guideline	
Heptachlor and heptachlor epoxide	$C_{10}H_5Cl_7$	0.03 µg/l	
Hexachlorobenzene (HCB)	$C_6H_5Cl_7O$	1 µg/l	
Isoproturon	$C_{10}H_{18}N_2O$	9 µg/l	
Lindane	$C_6H_6Cl_6$	2 µg/l	
MCPA	$C_8H_7ClO_3$	2 µg/l	
Methoxychlor	$(C_6H_4OCH_3)_2CHCl$	20 µg/l	
Metolachlor	$C_{15}H_{22}ClNO_2$	10 µg/l	
Molinate	$C_8H_{17}NOS$	6 µg/l	
Pendimethalin	$C_{13}H_{19}O_4N_3$	20 µg/l	
Pentachlorophenol (PCP)	C_6HCl_5O	9 µg/l	
Permethrin	$C_{21}H_{29}Cl_2O_3$	20 µg/l	
Propanil	$C_7H_7Cl_2NO$	20 µg/l	
Pyridate	$C_{10}H_{12}ClNO_3S$	100 µg/l	
Simazine	$C_7H_{12}ClN_5$	2 µg/l	
Trifluralin	$C_{13}H_{16}F_3N_3O_4$	20 µg/l	
Chlorophenoxy herbicides (excluding 2,4-D and MCPA)	2,4-DB	$C_{10}H_{10}Cl_2O_3$	90 µg/l
	Dichlorprop	$C_9H_8Cl_2O_3$	100 µg/l
	Fenoprop	$C_9H_7ClO_3$	9 µg/l
	MCPB	$C_{11}H_{13}ClO_3$	No guideline
	Mecoprop	$C_{10}H_{11}ClO_3$	10 µg/l
2,4,5-T	$C_8H_5Cl_3O_3$	9 µg/l	

Disinfectants and disinfectant by-products

Group	Substance	Chemical formula	Health guideline	
Disinfectants	Chloramines	$NH_2Cl^{(3-n)}$	3 mg/l	
	Chlorine	Cl_2	5 mg/l	
	Chlorine dioxide	ClO_2	No guideline	
	Iodine	I_2	No guideline	
Disinfectant by-products	Bromate	BrO_3^-	25 µg/l	
	Chlorate	ClO_3^-	No guideline	
	Chlorite	ClO_2^-	200 µg/l	
	Chlorophenols	2-Chlorophenol (2-CP)	C_6H_5ClO	No guideline
		2,4-Dichlorophenol (2,4-DCP)	$C_6H_4Cl_2O$	No guideline
		2,4,6-Trichlorophenol (2,4,6-TCP)	$C_6H_3Cl_3O$	200 µg/l
	Formaldehyde	HCHO	900 µg/l	
	MX (3-Chloro-4-dichloromethyl-5-hydroxy-2(SH)-furanone)	$C_5H_3Cl_3O_3$	No guideline	
	Trihalomethanes	Bromoform	$CHBr_3$	100 µg/l
		Dibromochloromethane	$CHBr_2Cl$	100 µg/l
		Bromodichloromethane	$CHBrCl_2$	60 µg/l
		Chloroform	$CHCl_3$	200 µg/l
	Chlorinated acetic acids	Monochloroacetic acid	$C_2H_3ClO_2$	No guideline
		Dichloroacetic acid	$C_2H_2Cl_2O_2$	50 µg/l
		Trichloroacetic acid	$C_2HCl_3O_2$	100 µg/l
	Chloral hydrate (trichloroacetaldehyde)	$CCl_3CH(OH)_2$	10 µg/l	
	Chloroacetones	C_3H_5OCl	No guideline	
	Halogenated acetonitriles	Dichloroacetonitrile	C_2HCl_2N	90 µg/l
		Dibromoacetonitrile	C_2HBr_2N	100 µg/l
		Bromochloroacetonitrile	$CHCl_2CN$	No guideline
Trichloroacetonitrile		C_2Cl_3N	1 µg/l	
Cyanogen chloride	$ClCN$	70 µg/l		
Chloropicrin	CCl_3NO_2	No guideline		