

# Annexes

## Annex I List of contributing authors and organisations

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# Annex II

## Detailed scoring tables

### I: Freshwater shortage

Environmental issues	Score	Weight %	Environmental concerns	Weight averaged score
1. Modification of stream flow	1	20	Freshwater shortage	1.50
2. Pollution of existing supplies	2	50		
3. Changes in the water table	1	30		

Criteria for Economic impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small  Very large	2	50
Degree of impact (cost, output changes etc.)	Minimum  Severe	2	30
Frequency/Duration	Occasion/Short  Continuous	2	20
<b>Weight average score for Economic impacts</b>			<b>2.00</b>

Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small  Very large	1	40
Degree of severity	Minimum  Severe	2	30
Frequency/Duration	Occasion/Short  Continuous	1	20
<b>Weight average score for Health impacts</b>			<b>1.20</b>

Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small  Very large	1	40
Degree of severity	Minimum  Severe	2	40
Frequency/Duration	Occasion/Short  Continuous	2	20
<b>Weight average score for Other social and community impacts</b>			<b>1.40</b>

### II: Pollution

Environmental issues	Score	Weight %	Environmental concerns	Weight averaged score
4. Microbiological	1	10	Pollution	1.65
5. Eutrophication	2	20		
6. Chemical	1	5		
7. Suspended solids	1	20		
8. Solid wastes	2	25		
9. Thermal	0	0		
10. Radionuclide	0	0		
11. Spills	2	20		

Criteria for Economic impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small  Very large	2	30
Degree of impact (cost, output changes etc.)	Minimum  Severe	3	40
Frequency/Duration	Occasion/Short  Continuous	2	30
<b>Weight average score for Economic impacts</b>			<b>2.40</b>

Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small  Very large	2	30
Degree of severity	Minimum  Severe	3	40
Frequency/Duration	Occasion/Short  Continuous	2	30
<b>Weight average score for Health impacts</b>			<b>2.40</b>

Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small  Very large	2	30
Degree of severity	Minimum  Severe	1	30
Frequency/Duration	Occasion/Short  Continuous	2	40
<b>Weight average score for Other social and community impacts</b>			<b>1.70</b>

### III: Habitat and community modification

Environmental issues	Score	Weight %	Environmental concerns	Weight averaged score
12. Loss of ecosystems	1.25	60	Habitat and Community Modification	1.45
13. Modification of ecosystems or ecotones, including community structure and/or species composition	1.75	40		

Criteria for Economic impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small  Very large	3	40
Degree of impact (cost, output changes etc.)	Minimum  Severe	2	30
Frequency/Duration	Occasion/Short  Continuous	2	30
<b>Weight average score for Economic impacts</b>		<b>2.40</b>	
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small  Very large	2	40
Degree of severity	Minimum  Severe	1	30
Frequency/Duration	Occasion/Short  Continuous	2	30
<b>Weight average score for Health impacts</b>		<b>1.70</b>	
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small  Very large	3	40
Degree of severity	Minimum  Severe	2	30
Frequency/Duration	Occasion/Short  Continuous	2	30
<b>Weight average score for Other social and community impacts</b>		<b>2.40</b>	

### IV: Unsustainable exploitation of fish

Environmental issues	Score	Weight %	Environmental concerns	Weight averaged score
14. Overexploitation	2.5	25	Unsustainable exploitation of fish	1.59
15. Excessive by-catch and discards	0.75	5		
16. Destructive fishing practices	1.75	30		
17. Decreased viability of stock through pollution and disease	0.75	20		
18. Impact on biological and genetic diversity	1.25	20		

Criteria for Economic impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small  Very large	2	40
Degree of impact (cost, output changes etc.)	Minimum  Severe	2	40
Frequency/Duration	Occasion/Short  Continuous	2	20
<b>Weight average score for Economic impacts</b>		<b>2.00</b>	
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small  Very large	1	30
Degree of severity	Minimum  Severe	1	40
Frequency/Duration	Occasion/Short  Continuous	1	30
<b>Weight average score for Health impacts</b>		<b>1.00</b>	
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small  Very large	1	30
Degree of severity	Minimum  Severe	1	40
Frequency/Duration	Occasion/Short  Continuous	1	30
<b>Weight average score for Other social and community impacts</b>		<b>1.00</b>	

## V: Global change

Environmental issues	Score	Weight %	Environmental concerns	Weight averaged score
19. Changes in the hydrological cycle	1	20	Global Change	1.20
20. Sea level change	2	40		
21. Increase UV-B radiation as a result of ozone depletion	0	20		
22. Changes in ocean CO <sub>2</sub> source/sink function	1	20		

Criteria for Economic impacts	Raw score	Score	Weight %
Size of economic or public sectors affected	Very small  Very large 0 1 2 3	3	50
Degree of impact (cost, output changes etc.)	Minimum  Severe 0 1 2 3	2	30
Frequency/Duration	Occasion/Short  Continuous 0 1 2 3	1	20
<b>Weight average score for Economic impacts</b>		<b>2.30</b>	
Criteria for Health impacts	Raw score	Score	Weight %
Number of people affected	Very small  Very large 0 1 2 3	1	50
Degree of severity	Minimum  Severe 0 1 2 3	0	30
Frequency/Duration	Occasion/Short  Continuous 0 1 2 3	1	20
<b>Weight average score for Health impacts</b>		<b>0.70</b>	
Criteria for Other social and community impacts	Raw score	Score	Weight %
Number and/or size of community affected	Very small  Very large 0 1 2 3	2	30
Degree of severity	Minimum  Severe 0 1 2 3	2	50
Frequency/Duration	Occasion/Short  Continuous 0 1 2 3	1	20
<b>Weight average score for Other social and community impacts</b>		<b>1.80</b>	

## Comparative environmental and socio-economic impacts of each GIWA concern

Types of impacts									
Concern	Environmental score		Economic score		Human health score		Social and community score		Overall score
	Present (a)	Future (b)	Present (c)	Future (d)	Present (e)	Future (f)	Present (g)	Future (h)	
Freshwater shortage	1.5	2	2	2	1.2	1	1.4	2	1.6
Pollution	1.7	2	2.4	2	2.4	2	1.7	1	1.9
Habitat and community modification	1.5	2	2.4	2	1.7	1	2.4	2	1.9
Unsustainable exploitation of fish and other living resources	1.6	3	2	2	1	2	1	1	1.7
Global change	1.2	3	2.3	3	0.7	1	1.8	3	2

If the results in this table were not giving a clear prioritisation, the scores were weighted by assigning different relative importance to present/future and environmental/socio-economic impacts in the following way:

## Weight averaged environmental and socio-economic impacts of each GIWA concern

Present (%) (i)	Future (%) (j)	Total (%)
60	40	100

Environmental (k)	Economic (l)	Health (m)	Other social and community impacts (n)	Total (%)
40	20	20	20	100

Types of impacts						
Concern	Time weight averaged Environmental score (o)	Time weight averaged Economic score (p)	Time weight averaged Human health score (q)	Time weight averaged Social and community score (r)	Time weight averaged overall score	Rank
	$(a)x(i)+(b)x(j)$	$(c)x(i)+(d)x(j)$	$(e)x(i)+(f)x(j)$	$(g)x(i)+(h)x(j)$	$(o)x(k)+(p)x(l)+(q)x(m)+(r)x(n)$	
Freshwater shortage	1.7	2	1.12	1.64	1.63	5
Pollution	1.82	2.24	2.24	1.42	1.91	1
Habitat and community modification	1.7	2.24	1.42	2.24	1.86	3
Unsustainable exploitation of fish and other living resources	2.16	2	1.4	1	1.74	4
Global change	1.92	2.58	0.82	2.28	1.90	2

## Annex III

### List of important water-related programmes and assessments in the region

Country	Project Name	Region	Focal Area	Agency	Project Type	Cost (million USD)	Donor
Regional	Addressing Land-based Activities in the Western Indian Ocean (WIO-LaB)	AFR	International Waters	UNEP	Full Size Project	4.511	GEF
Regional	Coral Reef Monitoring Network in Member States of the Indian Ocean Commission (COI), within the Global Reef Monitoring Network (GCRMN)	AFR	Biodiversity	IBRD/COI	Medium Size Project	0.737	GEF
Regional	Western Indian Ocean Islands Oil Spill Contingency Planning	AFR	International Waters	IBRD/COI	Full Size Project	3.164	GEF
Regional (Excluding Madagascar)	Development and Protection of the Coastal and Marine Environment in Sub-Saharan Africa	AFR	International Waters	UNEP/ACOPS	Medium Size Project	0.750	GEF
Regional (Excl. Madagascar, Comoros)	Reduction of Environmental Impact from Coastal Tourism through Introduction of Policy Changes and Strengthening Public-Private Partnerships	AFR	International Waters	UNEP	Full Size Project	5.000	GEF (in pipeline)
Regional (excluding Mauritius & Seychelles)	Southwest Indian Ocean Fisheries Project (SIOFP)	AFR	International Waters	IBRD	Full Size Project	6.350	GEF (drafting)
Regional (Excl. Seychelles, Comoros, Mauritius)	Institutional Strengthening and Resource Mobilization for Mainstreaming Integrated Land and Water Management Approaches into Development Programs in Africa	AFR	Multiple Focal Areas	IBRD	Medium Size Project	1.000	GEF
Global (Excl. Seychelles, Comoros, Mauritius)	Biodiversity Country Studies - Phase II	CEX	Biodiversity	UNEP	Enabling Activity	2.000	GEF

(Source: <http://www.gefonline.org/projectList.cfm>)

## Annex IV

### List of conventions that affect water use in the region

No.	Convention	Comoros	Madagascar	Mauritius	Seychelles
1.	The Nairobi Convention 1985 and Protocols	✓	✓	✓	✓
2.	The Arusha Resolution 1993		✓	✓	✓
3.	Convention on Biological Diversity	✓	✓	✓	✓
4.	UN Framework Convention on Climate change.	✓	✓	✓	✓
5.	UN Law of the Sea Convention	✓	✓	✓	✓
6.	The Ramsar Convention on Wetlands	✓	✓	✓	
7.	International Convention for the Prevention of Pollution from Ship (MARPOL)			✓	✓
9.	The Bamako Convention on the Ban of the import into Africa and the control of Transboundary movement and Management of Hazardous Waste within Africa.			✓	
10.	Basel Convention on the control of Transboundary movement of hazardous wastes and their disposal.	✓			✓

(Note: Data as at 1<sup>st</sup> March 1999)

