

Anticipated changes in climate: Diminished precipitation (often seasonal)			
Biophysical impacts	Socioeconomic impacts	Need for action	Options for adaptation to climate change
<ul style="list-style-type: none"> <li>• Declining discharge from watercourses</li> <li>• Phreatic decline</li> <li>• Declining standing water levels</li> <li>• Overall decline in availability of water and deterioration of water quality</li> <li>• Progressive desertification and land degradation</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficient drinking water and service water</li> <li>• Overuse of existing water resources</li> <li>• Decreasing food security due to lack of water and loss of cultivated land</li> <li>• Increasing water prices</li> <li>• Declining willingness to pay for deficient services</li> <li>• Water conflicts</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of know-how for developing additional water resources</li> <li>• Lack of knowledge about options for the technically and economically efficient use of water resources and/or insufficient capacities for implementing the requisite measures</li> <li>• Lack of political instruments, strategies and capacities for creating incentives to increase water productivity</li> <li>• Large proportion of water losses in technical and economic terms (non-revenue water), which results in expensive water</li> <li>• Lack of equal access to water for all sections of the population</li> <li>• Lack of contingency plans and capacities for reacting to drought</li> <li>• Lack of economic and social mechanisms for alleviating the detrimental effects of drought</li> <li>• Lack of hydrological observation networks and monitoring / early-warning systems</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Coordination and sector-policy planning</a></li> <li>• <a href="#">Knowledge management</a></li> <li>• <a href="#">Ecosystem-based adaptation</a></li> <li>• <a href="#">Adapted infrastructure</a></li> <li>• <a href="#">Diversification of water resources</a></li> <li>• <a href="#">Generation of added value from water resources</a></li> <li>• <a href="#">Stakeholder dialogue and conflict management</a></li> <li>• <a href="#">Proactive management of floods and droughts</a></li> </ul>

Anticipated changes in climate: Increase in heavy rains and in the intensity of tropical storms			
Biophysical impacts	Socio-economic impacts	Need for action	Options for adaptation to climate change
<ul style="list-style-type: none"> <li>• Flooding</li> <li>• Landslides</li> <li>• Overflowing cesspits and sewers, intrusion of wastewater into freshwater systems</li> <li>• Soil erosion (mainly on slopes, river banks and seashores)</li> <li>• Destruction of fish spawning grounds and other habitats</li> </ul>	<ul style="list-style-type: none"> <li>• Fatal casualties</li> <li>• Displacement of poor population groups (informal settlements)</li> <li>• Crop losses, less production and, hence, loss of income</li> <li>• Loss of cultivated land</li> <li>• Collapse of public water supply and infrastructure</li> <li>• Contamination of drinking water, with resultant damage to health</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of contingency plans</li> <li>• Lack of capacities for implementing contingency plans</li> <li>• Lack of flood forecasting and early warning systems</li> <li>• Disregard for building regulations</li> <li>• No climate-sensitive planning of infrastructure</li> <li>• Deficient wastewater disposal and treatment</li> <li>• Lack of insurance plans for income security</li> <li>• Lack of capacities for interpreting climate-change data and scenarios</li> <li>• Lack of hydrological observation networks and monitoring / early-warning systems</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Coordination and sector-policy planning</a></li> <li>• <a href="#">Knowledge management</a></li> <li>• <a href="#">Ecosystem-based adaptation</a></li> <li>• <a href="#">Appropriate infrastructure</a></li> <li>• <a href="#">Proactive management of floods and droughts</a></li> </ul>

Anticipated changes in climate: Rising sea level			
Biophysical impacts	Socio-economic impacts	Need for action	Options for adaptation to climate change
<ul style="list-style-type: none"> <li>• Altered coastlines and tidelines with associated flooding</li> <li>• Soil erosion along altered coastlines</li> <li>• Saltwater intrusion (groundwater, estuaries)</li> <li>• Soil salinisation</li> <li>• Rising water tables</li> </ul>	<ul style="list-style-type: none"> <li>• Deteriorating water quality with associated damage to health and increasing cost of water treatment</li> <li>• Lack of drinking water and service water</li> <li>• Crop loss, less production and, hence, loss of income</li> <li>• Loss of cultivated land</li> </ul>	<ul style="list-style-type: none"> <li>• No climate-sensitive planning of infrastructure</li> <li>• Lack of capacities for interpreting climate-change data and scenarios</li> <li>• Lack of infrastructure for protection of human life and capital goods</li> <li>• Deficient wastewater disposal and treatment</li> <li>• Lack of insurance plans for income security</li> <li>• No use of ecosystem services for better protection of coasts (mangroves)</li> <li>• Lack of hydrological observation networks and monitoring systems</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Coordination and sector-policy planning</a></li> <li>• <a href="#">Knowledge management</a></li> <li>• <a href="#">Ecosystem-based adaptation</a></li> <li>• <a href="#">Appropriate infrastructure</a></li> <li>• <a href="#">Proactive management of floods and droughts</a></li> </ul>

Anticipated changes in climate: Rising temperatures with more hot days and fewer cold days/nights			
Biophysical impacts	Socio-economic impacts	Need for action	Options for adaptation to climate change
<ul style="list-style-type: none"> <li>• Increasing evaporation from water bodies and reservoirs</li> <li>• Increasing evapotranspiration</li> <li>• Salinisation of near-surface groundwater</li> <li>• Higher pathogen counts in water</li> <li>• Melting glaciers</li> <li>• More erosive rain instead of snow and, hence, increasing soil erosion (primarily on slopes, river banks and seashores)</li> </ul>	<ul style="list-style-type: none"> <li>• Deteriorating water quality with associated damage to health and increased cost of water treatment</li> <li>• Lack of drinking water and service water</li> <li>• Overuse of existing water resources</li> <li>• Decreasing food security due to lack of water and loss of cultivated land</li> <li>• Increasing water prices</li> <li>• Declining willingness to pay for deficient services</li> <li>• Water conflicts</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of know-how and capacities for developing additional water resources</li> <li>• Lack of knowledge about options for the technically and economically efficient use of water resources and/or insufficient capacities for implementing the requisite measures</li> <li>• Lack of political instruments, strategies and capacities for creating incentives to increase water productivity</li> <li>• High water losses and high outlays for energy by water utilities, leading to expensive water</li> <li>• Unfairly allocated access to water</li> <li>• Lack of contingency plans and capacities for reacting to droughts</li> <li>• Lack of economic and social mechanisms for alleviating damage</li> <li>• Deficient disposal and treatment of wastewater</li> <li>• No use of ecosystem services for increasing natural water storage capacities</li> <li>• No climate-sensitive planning of infrastructure</li> <li>• Infrastructure not planned in a climate-sensitive manner</li> <li>• Deficient quality of (drinking) water treatment</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Coordination and sector-policy planning</a></li> <li>• <a href="#">Knowledge management</a></li> <li>• <a href="#">Ecosystem-based adaptation</a></li> <li>• <a href="#">Appropriate infrastructure</a></li> <li>• <a href="#">Diversification of water resources</a></li> <li>• <a href="#">Generation of added value from water resources</a></li> <li>• <a href="#">Stakeholder dialogue and conflict management</a></li> </ul>

Anticipated changes in climate: Overarching aspects			
Biophysical impacts	Socio-economic impacts	Need for action	Options for adaptation to climate change
<ul style="list-style-type: none"> <li>• Uncertainty regarding changes in stimuli and results</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of experience and adequate behaviour patterns</li> <li>• Difficult decision-making</li> <li>• Lack of calculation parameters for infrastructural planning</li> <li>• Difficult investment planning</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of capacities for interpreting climate-change data and scenarios</li> <li>• Lack of hydrological observation networks and monitoring systems</li> <li>• Insufficient incorporation of local know-how in adaptation strategies</li> <li>• Lack of information and education for decision-makers representing relevant institutions</li> <li>• Lack of public awareness-raising</li> <li>• Lack of capacities for dealing with uncertainty</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Coordination and sector-policy planning</a></li> <li>• <a href="#">Knowledge management</a></li> <li>• <a href="#">Ecosystem-based adaptation</a></li> <li>• <a href="#">Appropriate infrastructure</a></li> </ul>