

WASH services and climate change



pS-Eau





programme
Solidarité-Eau

The impacts of climate change on Water, Sanitation and Hygiene (WASH) services

Societies and ecosystems will feel most effects of climate change through water-related consequences: whether through rising sea levels and melting glaciers; or an increase in temperatures, droughts or floods.

However, these climate hazards will also have major impacts on access to drinking water and sanitation and the viability and continuity of these services. These impacts can be both immediate, such as the destruction of infrastructure, and long-term, for example in the decrease of water availability.

THE MAIN CLIMATE HAZARDS

	VARIABILITY of seasonal rainfall patterns , leading to longer dry seasons and unpredictable rainfalls
	INCREASE of average temperature globally but also increase of peak temperatures and heatwaves
	DROUGHTS , causing water scarcity
	INCREASE of the frequency and intensity of extreme climate events , such as floods and storms

These hazards, combined with heavy demographic pressure and urbanization, will have **major impacts on human development, the economy and the environment**.

Understanding the impacts of climate change on WASH services is therefore necessary if we are to ensure that WASH services are sustainable in the future.



Violent rain in Haiti





Flood protections in arid zones in Niger



Floods in Madagascar

Water services

Climate Hazards	Impacts on demand	Impacts on service quality	Impacts on equipment and facilities	Social and health impacts
	<ul style="list-style-type: none">• Increase in water needs and in volumes withdrawn for all uses (domestic, agricultural, industrial, etc.)	<ul style="list-style-type: none">• Service disruptions due to the scarcity of water resources (episodic or chronic)• Degradation of distributed water quality as the concentrations of pollutants and pathogens rise	<ul style="list-style-type: none">• Weakened facilities as a result of their overuse during droughts to meet high demand, dry pumping that can damage pumps, or concrete cracks during heatwaves	<ul style="list-style-type: none">• A heavier burden for women and girls: greater distance to fetch water, harder pumping as the water table level drops, etc.• Increase in waterborne diseases due to a poor and non-controlled water quality
		<ul style="list-style-type: none">• Water points are inaccessible due to landslides or floods• Service interruptions due to damaged facilities, eg. flooded electrical equipment• Contamination of water resources by uncontrolled stormwater runoff and flooded pits containing pollutants	<ul style="list-style-type: none">• Facilities are weakened, less efficient or damaged due to flooded wells or electrical equipment, silting, water pipes burst or leakages, soil erosion, etc.• Weakened containment or storage infrastructures by hydraulic saturation	<ul style="list-style-type: none">• Increase in conflicts over water use during periods of water scarcity• Greater migrations or displacements as people leave water scarce areas





Flooded pumping equipment from Kayes water treatment station in Mali.

© Credit: O. Hane

Sanitation services



Dysfunctional treatment processes in a wastewater treatment plant in Lebanon.

Climate Hazards	Impact on service operations and infrastructures	Impact on the environment and the water resources	Social and health impacts
	<ul style="list-style-type: none">• Dysfunction of biological treatment processes where bacteria don't survive high temperatures• Damaged or deteriorated infrastructures due to the heat (cracking concrete, dilatation of materials, etc.)	<ul style="list-style-type: none">• Degradation of water resource quality due to a lower dilution of pollutants and less effective wastewater treatments	<ul style="list-style-type: none">• Lack of access to sanitation facilities where latrines have been damaged or destroyed by extreme events
	<ul style="list-style-type: none">• Collapse of poorly built latrines due to violent events• Breakdown of electrical equipment due to flooding• Disruption of desludging services as some areas become inaccessible and pits need more frequent emptying	<ul style="list-style-type: none">• Increase in the discharge of untreated wastewater into the environment as sewer systems and stormwater basins get saturated• Failure in wastewater treatments processes due to the hydraulic overload• More floods on public roads as the mix of wastewater and stormwater overflows, increasing health risks	<ul style="list-style-type: none">• Increase in waterborne diseases due to the higher risks of contact with or ingestion of polluted water• Increased odour nuisances and health risks due to a greater production of gas under high temperatures

Taking action for more resilient WASH services

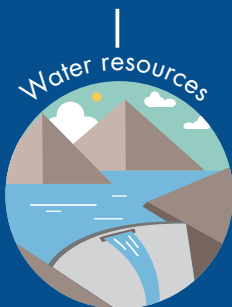
We must **act at all levels**: international, regional, national and local. The adaptation to climate change requires thinking globally, with **cross-sector approaches** questioning the links between WASH services and urban planning, rainwater management or agriculture.

Disaster risk reduction and mitigation strategies should be **integrated in all strategic planning**, whether it is for emergency situations such as floods or heatwaves, or for longer-term impacts such as the drop of groundwater levels or the increased pollution of water resources.

Adaptation to climate change can take various forms:

WATER SERVICES

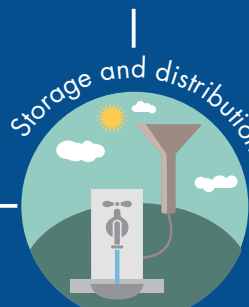
Strengthen groundwater monitoring in order to anticipate availability



Adjust the treatments in case of a more polluted resource



Interconnect the water network to manage and share at larger scale

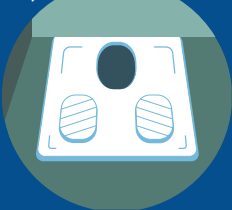


Improve demand management through specific tarification to limit water withdrawals

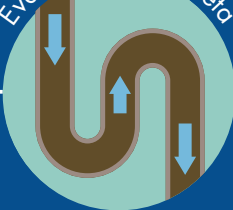


SANITATION SERVICES

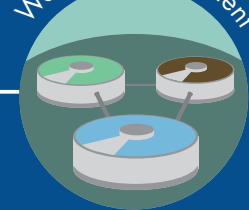
Access to toilets



Evacuation of excreta



Wastewater treatment



Reuse or disposal



Ensure access to basic sanitation services in emergencies

Build rainwater retention basins or buffers to avoid saturation of sewers

Increase wastewater treatment capacities

Support wastewater reuse

Although the water and sanitation sector is not considered to be a major emitter of greenhouse gases, being more a victim than a cause of global warming, **it is necessary to consider mitigation measures in the development of WASH services**, in order to limit the emission of greenhouse gases.

pS-Eau coordinates a network that fosters the sharing of experiences and information between all stakeholders working within the water, sanitation and cooperation sectors.

We are committed to increase access to drinking water and sanitation and sustainably improve these services, through the **support and mobilization** of all WASH and cooperation actors as well as **knowledge production** and **promotion** internationally.



Further information:

www.pseau.org/en/wash-climate-change

Contact: info@pseau.org



programme
Solidarité-Eau



**AGENCE FRANÇAISE
POUR LA BIODIVERSITÉ**
MINISTÈRE DE L'ENVIRONNEMENT