

WASH services and climate change

An overview



pS-Eau

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Why take action

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

Societies and ecosystems will feel most effects of climate change through water-related consequences.

Extrême climatic events such as floods, droughts and storms, that are already threats to the sustainability of WASH services, will increase in frequency and magnitude.

In addition to climate variability, WASH services will have to overcome the consequences of rising sea levels, melting glaciers and increasing peak temperatures. Events such as these will have major impacts on human development, the economy and the environment.




Understanding the impacts of climate change on water and sanitation services is therefore necessary to take action for greater sustainability of services.






*Rising sea level threatens infrastructures and housing in coastal cities
(Salvador de Bahia, Brazil)*

Climate change impacts on water will severely affect the lives of populations all around the world, especially the most vulnerable. However, it gives us the opportunity to re-think the way we need to work in order to achieve sustainable services.

Climate change will have major impacts...

Climate hazards	Impacts on demand	Impacts on the quality of service
 VARIABILITY OF SEASONAL RAINFALL PATTERNS		<ul style="list-style-type: none"> Disrupted or reduced services due to the scarcity of water resources
 DROUGHTS, WATER SCARCITY, HEATWAVES	<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 Increase in water needs and in volumes withdrawn for all uses (domestic, agricultural, industrial, etc.)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"> Disrupted or reduced services due to the scarcity of water resources Reduction of the quality of water as the concentrations of pollutants and pathogens rise
 FLOODS, HEAVY RAINS, STORMS		<ul style="list-style-type: none"> Contamination of water resources by polluted runoffs and floods Service disruption Water points are inaccessible (landslides – floods) Storage facilities are weakened by saturation

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services

Climate hazards	Impacts on service operation and the infrastructure
 DROUGHTS, WATER SCARCITY	
 HEATWAVES	<ul style="list-style-type: none"> Dysfunction of biological treatment processes as heat kills some bacteria Damaged or deteriorated infrastructures due to the heat
 FLOODS, HEAVY RAINS, STORMS	<ul style="list-style-type: none"> Pump and electrical systems breakdowns due to flooding Collapse of latrines Disruption of pit emptying services

Impacts on infrastructure and facilities	Social and health impacts
	<ul style="list-style-type: none"> • Chore of drawing water becomes more difficult for women and girls as the resources become scarce • Increase in waterborne diseases as the quality drops and water is less available • Increase of conflicts over resource use • Greater migration of people leaving as they have no water
<ul style="list-style-type: none"> • Damaged or weakened facilities due to overuse or dry pumping 	
<ul style="list-style-type: none"> • Damaged or weakened facilities coming along flooded wells, electrical equipment, etc. 	

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Impacts on the environment and water resources	Social and health impacts
<ul style="list-style-type: none"> • Drop in water quality due to lower dilution of pollutants 	
<ul style="list-style-type: none"> • Reduction of the quality of discharged water as wastewater treatments are less efficient 	<ul style="list-style-type: none"> • Increased health and safety risks for sanitation workers due to increased toxic gas emissions (eg. hydrogen sulfide) • Bad smells due to increased nitrous oxide emissions
<ul style="list-style-type: none"> • Increased discharge of untreated wastewater as sewers and latrines pits are overflowing and treatment capacities are exceeded • Failure of treatment processes 	<ul style="list-style-type: none"> • No access to working sanitation facilities for populations • Increase in waterbone diseases

How to take action

Mitigation and adaption measures for WASH services

Climate change is water change. Therefore, water issues need to be integrated into climate and environmental planning. Conversely, climate change should be considered systematically in the design of water policies. Mitigation and adaptation actions for water and sanitation services should take place at all levels, from building international climate and water strategies to implementing resilient water and sanitation services at regional levels.



Monitoring the treatment quality will be important to adapt to the variability of water resource.

ADAPTATION MEASURES

Within the WASH sector, adaption must be the primary focus of responses to climate change. Adaptation measures should consider water resource management, including integrated planning and implementation, monitoring quality and enhanced resource knowledge.

Water service performance can also be improved through better water demand management, demand and risk assessment. For sanitation services, adaptation measures should include improving service monitoring and developing resilient and scalable sanitation systems with efficient wastewater treatment. A particular consideration should be given to extreme events with adaptation measures including risks assessment plans, flood protection and adapting the design and size of infrastructures.

MITIGATION MEASURES

Mitigation relies mostly on reducing energy consumption, using cleaner sources of energy, such as solar or wind energy, or reducing methane emissions during sanitation treatment processes.

- **MITIGATION** refers to efforts to reduce emission of greenhouses gases.
- **ADAPTATION** involves anticipating the impact of climate change and reducing the vulnerability of natural and human systems.
- **RESILIENCE** is the capacity of social, economic and environmental systems to cope with a disturbance, transforming or reorganizing in order to maintain its essential function, structure and ability to adapt.

Who we are

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 offer our expertise to support organizations in water and sanitation service delivery.

pS-Eau is interested to further research the topic of WASH services and climate change. For that purpose, we've been bringing together climate experts and WASH actors to discuss these issues.

Find the outputs of this work on:

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

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