



UNICEF's Climate Change Mitigation and Adaptation WASH interventions to improve the lives of children

# What is UNICEF?

- United Nations agency focussing on children
- Established in 1946
- Works in over **190 countries/territories** to save children's **lives**, to defend their **rights**, and to help them **fulfil** their **potential**, from early childhood continuing to adolescence

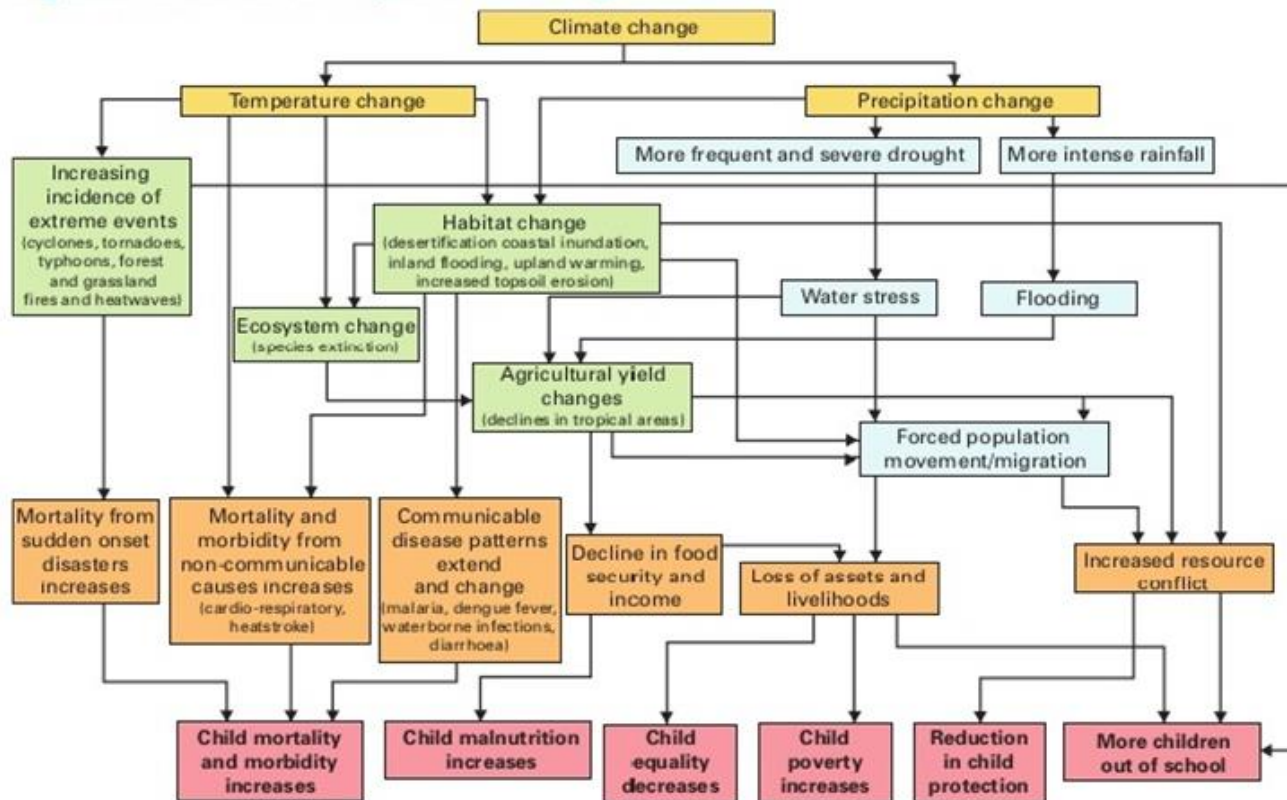


# Why is WASH important for children?

- Sustainable access to safe water and sanitation facilities and services, and the practice of key hygienic behaviours, are **critical** for the **sustained mental and physical development of children and their mothers**
- WASH can impact upon the **Education** of children
- WASH can affect the **Health** of children
- WASH can affect the **Nutritional status** of children
- WASH has an impact upon the **safety and security** of children



# Direct and Indirect impacts of Climate Change on children?



# How does Climate Change affect children's access to WASH?

Increased **water insecurity** affects:

- **Access** to water sources (**reduced water levels**, reduced **volumes** available, distances, **time** taken to collect water/**limited carrying capacity** with increased distances)
- Reduced **water quality** (desalinisation, increased mineralisation)
- Increased **costs** to obtain water (lower water levels)
- Inhibited **hygiene** practices

**Floods/extreme events:**

- Damage to WASH **infrastructure**
- Shallow latrines damaged and areas of open defecation flooded  
=> contamination of water sources
- Inhibited **sanitation** practices

**By 2040, 1 in 4  
children will live  
in areas of  
extremely high  
water stress**

# How does Climate Change affect children's Health?

- More prone to WASH related illnesses and diseases (reduced volume of water, limited hygiene practices) (8% increase each 1°C)
- Deteriorating air quality can increase the rates of respiratory illnesses (and can affect the health of unborn children)
- Extreme and prolonged heat events negatively impacts children
- Flooding can reduce the physical access to Health facilities
- Reduced livelihood opportunities negatively impacts the income level of the family (reduced ability to pay for medicines, education prioritisation)
- Health facilities can become overwhelmed during large scale outbreaks e.g. cholera, dengue, malaria
- Damage to Health facilities during storms as they become more frequent

# Climate Change and Cholera?

- Cholera is caused by the ingestion of **food or water contaminated** with the bacterium *Vibrio cholerae*
- 2.9 million cases and 95,000 related deaths annually worldwide (majority of the cases reported in Sub Saharan Africa)
- Increasing **evidence of linkages between changes in climate (temperature, precipitation) and the incidence rates of Cholera**
- The burden of cholera is disproportionately borne by the **young and most vulnerable people**



# Climate Change and Cholera?

- Increases in temperature can affect the incubation rate of the cholera vibrio bacterium
- Outbreaks can be the result of **either** heavy rainfall and subsequent **floods** (contamination of water sources) or by **drought** and **water-induced stress**
- Damaged sanitation (flooded latrines)
- **Migration** to camps/towns
- Distribution patterns affected by migration
- **Malnutrition**



## Climate Change and Malaria?

- The geographical limits of malaria are related to climate, and so can potentially be affected by changes in climate, but the relationship is complex

## Climate Change and Dengue Fever?

- Evidence to suggest that there is a demonstrable increase in dengue cases over the last few decades, linked to increasing temperature, increased precipitation however, other factors need also to be considered e.g. migration patterns

## Climate Change and Zika?

- Many variables (temperature appears to have greater impact than precipitation)

# How does Climate Change affect children's Nutritional status?

- Reduced volumes of water and poor water quality can lead to frequent bouts of illnesses and diseases which negatively impacts a child's mental and physical development (from which children can never fully recover)
- Reduced access to water negatively affects the family's ability to cultivate food (less animals, less crops) reducing the calorific intake of children and pregnant mothers
- Increased costs to abstract/collect water can reduce the variety and volume of foods consumed
- Nutrient content of food affected by climatic factors
- Abandonment of land and migration to cities

# How does Climate Change affect children's access to Education?

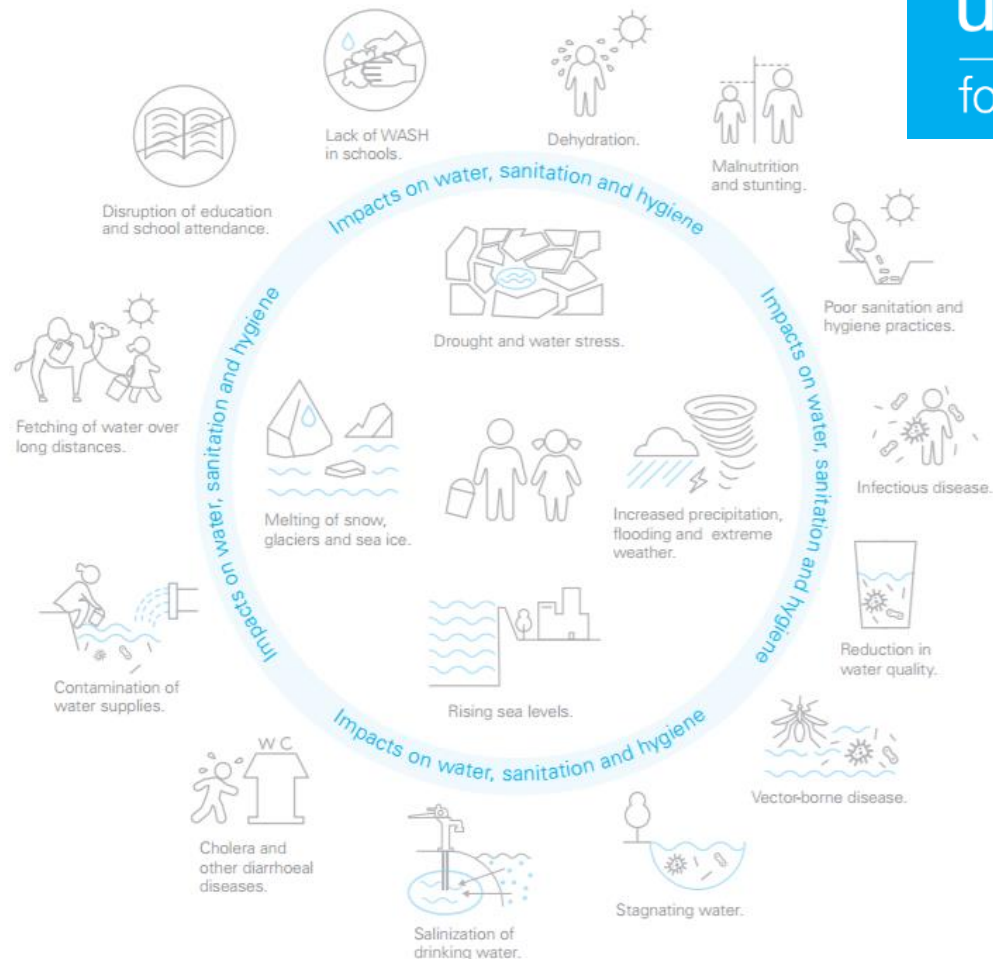
- Schools are often used as **shelters** during emergencies which can cause major disruptions to children's education
- Flooding impedes children's **access** to schools
- Increased migration **disrupts education**
- Reduced family income may mean children have to **drop out** of school to supplement family's income
- Reduced health status affects children's **attendance, attention and participation** in schools
- Increased distances for water collection reduces time for children for other **developmental activities**

# How does Climate Change affect children's safety and security?

- Increased distances to water sources can lead to **physical damage** (stunting)
- Increased distances can expose children to increased risk of **violence** (including GBV)
- Reduced family incomes can induce **negative coping mechanisms** (child marriage etc)



# A summary of how Climate Change affects the lives of children



# What is UNICEF doing in the area of WASH – Adaptation/*Mitigation*?

- i. Promoting **alternative water sources**
- ii. Supporting groundwater **resource investigation**
- iii. Supporting groundwater **monitoring and modelling**
- iv. Promoting **multi-use water sources** to support **livelihoods** as well as basic WASH access
- v. Development of **capacity tools** e.g. framework, **professional drilling** and O&M
- vi. **System strengthening** on Climate Change
- vii. **Vulnerability mapping**
- viii. Mobilisation on **Water Conservation**
- ix. **Private sector engagement**
- x. Integrating **DRR into Humanitarian interventions**
- xi. *Promoting use of alternative energy sources (including solar)*



# Examples of Water Projects

## Alternative Water Sources?

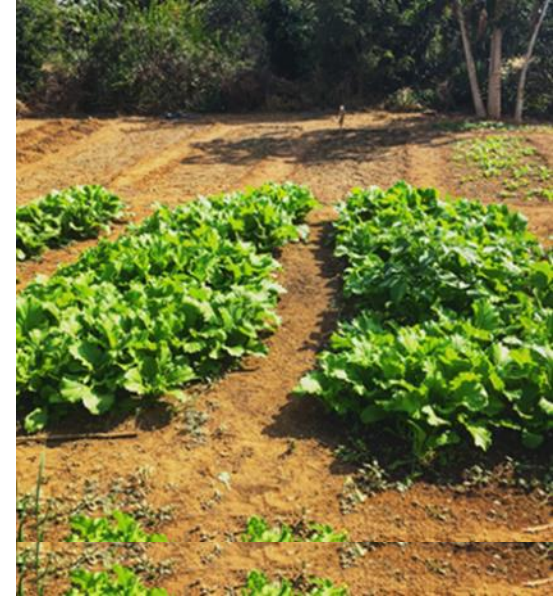
Promoting interventions to move away from shallow (ground) water or surface sources:

- deeper groundwater sources
- sand-dams
- artificial recharge
- Reuse

Supporting groundwater [resource investigation](#) to identify alternative more sustainable reserves:

- Satellite imagery
- Geophysical surveys
- Groundwater modelling

# Examples of Water Projects in Madagascar (Multiple Use Systems)



# Examples of Water Projects in Chad (Sand Dams)



# Examples of Solar Water Projects (Madagascar)



# Examples of Solar Water Projects in Myanmar

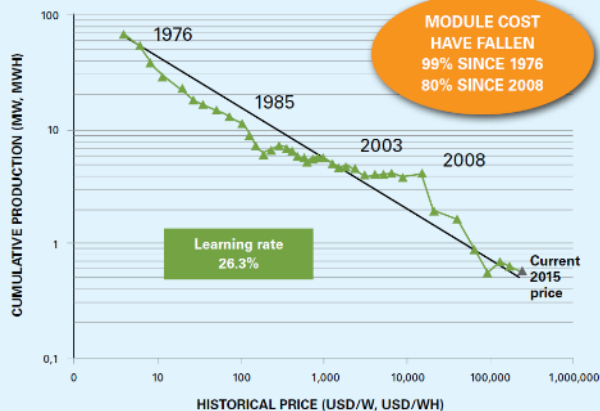


# Examples of Solar Water Projects



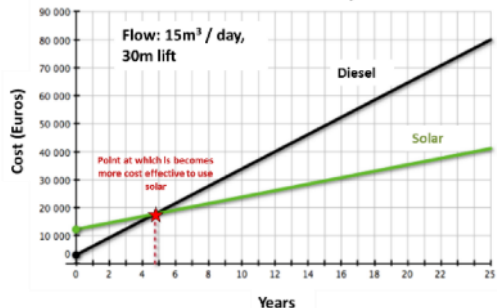
# Solar Water Projects

Every time the world's solar power doubles, the cost of panels falls 26%



- Price of solar powered systems, (especially solar panels) has decreased substantially in past 30 years.
- Solar system components, on average are still 10-15% more expensive than other mechanized systems (grid or diesel).
- However, over a 20 year period – a motorised pump costs around 5 times as much to maintain than a solar pump due to the cost of maintenance and fuel.

Fig.6 Proportional operating costs of operating a Solar Pump versus a Diesel Pump



(Source: Eau Solaire 2016)

# UNICEF's Global Solar Powered Water System Assessment 2017

- Solar powered systems perform well in terms of flow rate and durability, when boreholes are **well sited and systems are correctly dimensioned**
- The effective collection of **user fees** (including making provisions for the poorest) is vital in order to ensure the sustainability and equity of services.
- Systems help ensure improved climate resilience, leaving communities less dependent on expensive/unsustainable fuel supply and allow communities to access a **higher level of service**
- More investment is required in order to build capacity of UNICEF, partners and **private sector**

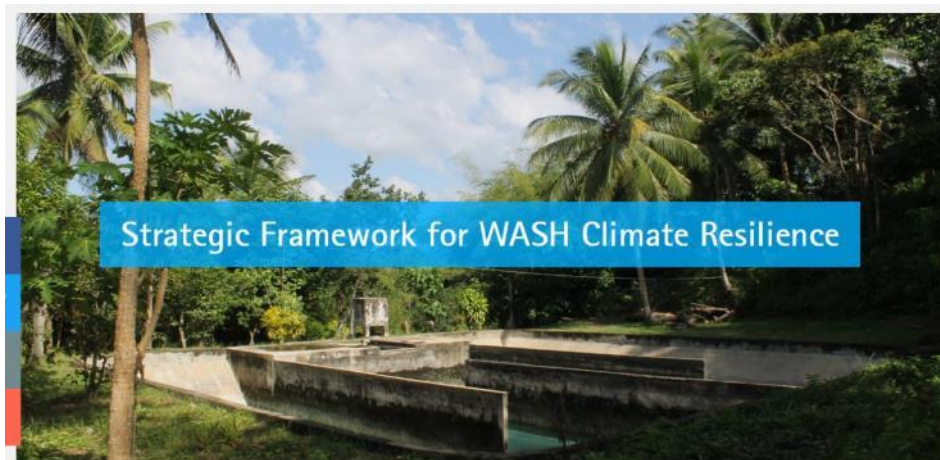
# Examples of Solar Water Projects

## - Gaza



# UNICEF/GWP on Strategic Framework on WASH Climate Resilience

<https://www.gwp.org/en/WashClimateResilience/>



## ► THE FRAMEWORK

The Strategic Framework consists of 4 quadrants which provide guidance on how to ensure resilient WASH services.

Resilient WASH programming helps ensure

## ► TECHNICAL BRIEFS

To support the implementation of the Strategic Framework, a number of Technical Briefs have also been developed. The briefs go into further detail on specific topics to support the implementation of the

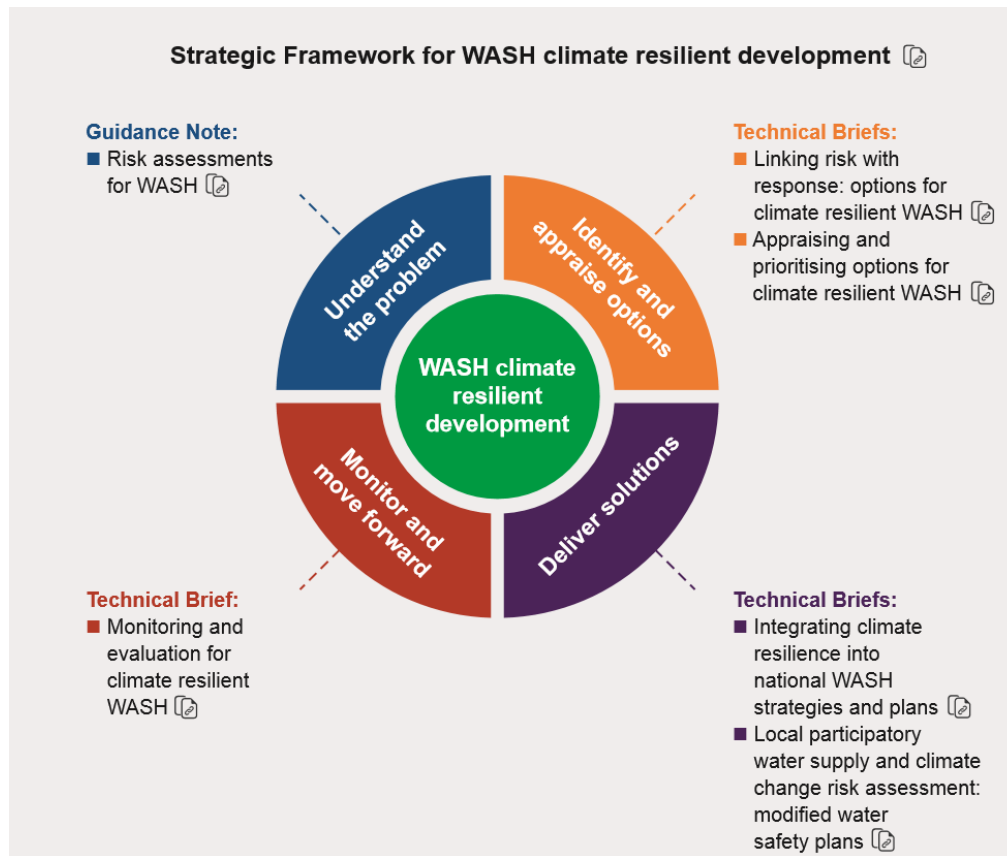
## ► LEARNING MODULES

The following Learning Modules have been developed in order to build the capacity of WASH practitioners to implement WASH climate resilience programming.



# UNICEF/GWP on Strategic Framework on WASH Climate Resilience

## Framework



# UNICEF/GWP on Strategic Framework on WASH Climate Resilience

## > THE FRAMEWORK

The Strategic Framework consists of 4 quadrants which provide guidance on how to ensure resilient WASH services.

Resilient WASH programming helps ensure that WASH infrastructure and services are sustainable and resilient to climate related risks; and WASH contributes to building community resilience to climate change.



## > TECHNICAL BRIEFS

To support the implementation of the Strategic Framework, a number of Technical Briefs have also been developed. The briefs go into further detail on specific topics to support the implementation of the Framework.

### 1. Understand the problem - Guidance Note

- [Risk assessments for WASH + Spread sheet tool](#)

### 2. Identify and appraise options - Technical Briefs

- [Linking risk with response: options for climate resilient WASH](#)
- [Appraising and prioritising options for climate resilient WASH](#)

## > LEARNING MODULES

The following Learning Modules have been developed in order to build the capacity of WASH practitioners to implement WASH climate resilience programming.

### 1. Understand the problem

- [Learning Module 1: Introduction](#)
- [Learning Module 2: WASH Climate Risk Assessments](#)

### 2. Identify and appraise options

- [Learning Module 3: Options to improve Climate Resilience](#)

### 3. Deliver solutions

- [Learning Module 4: Integrating Options into Strategies and Plans](#)

# UNICEF/GWP on Strategic Framework on WASH Climate Resilience

Read more and download the Strategic Framework Strategy here:



English, Spanish, French, Portuguese

## 3. Deliver solutions - Technical Briefs

- [Integrating climate resilience into national WASH strategies and plans](#)
- [Local participatory water supply and climate change risk assessment: modified water safety plans](#)

## 4. Monitor and move forward - Technical Brief

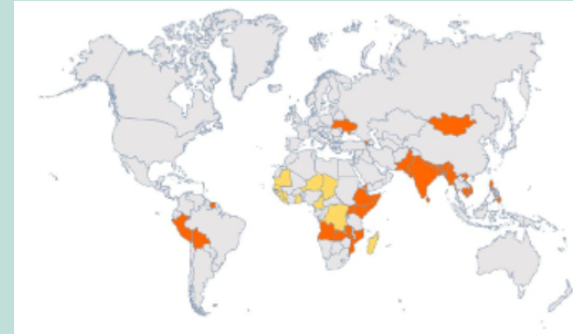
- [Monitoring and evaluation for climate resilient WASH](#)

[Additional references available here](#)

## 4. Monitor and move forward

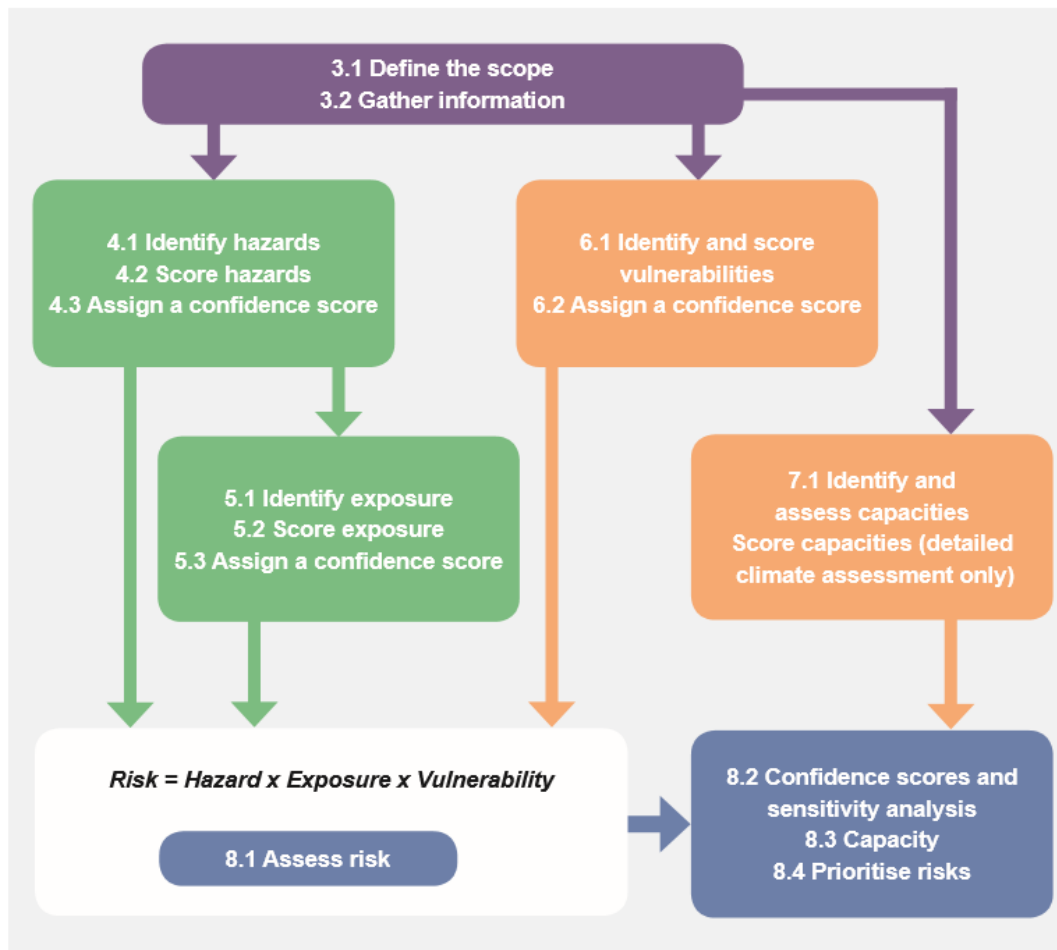
- [Learning Module 5: Monitoring Programmes and Systems](#)

## Country Initiatives



# Details of the Strategic Framework

## Guidance on Risk Assessments



# Questions?

unicef   
for every child

