

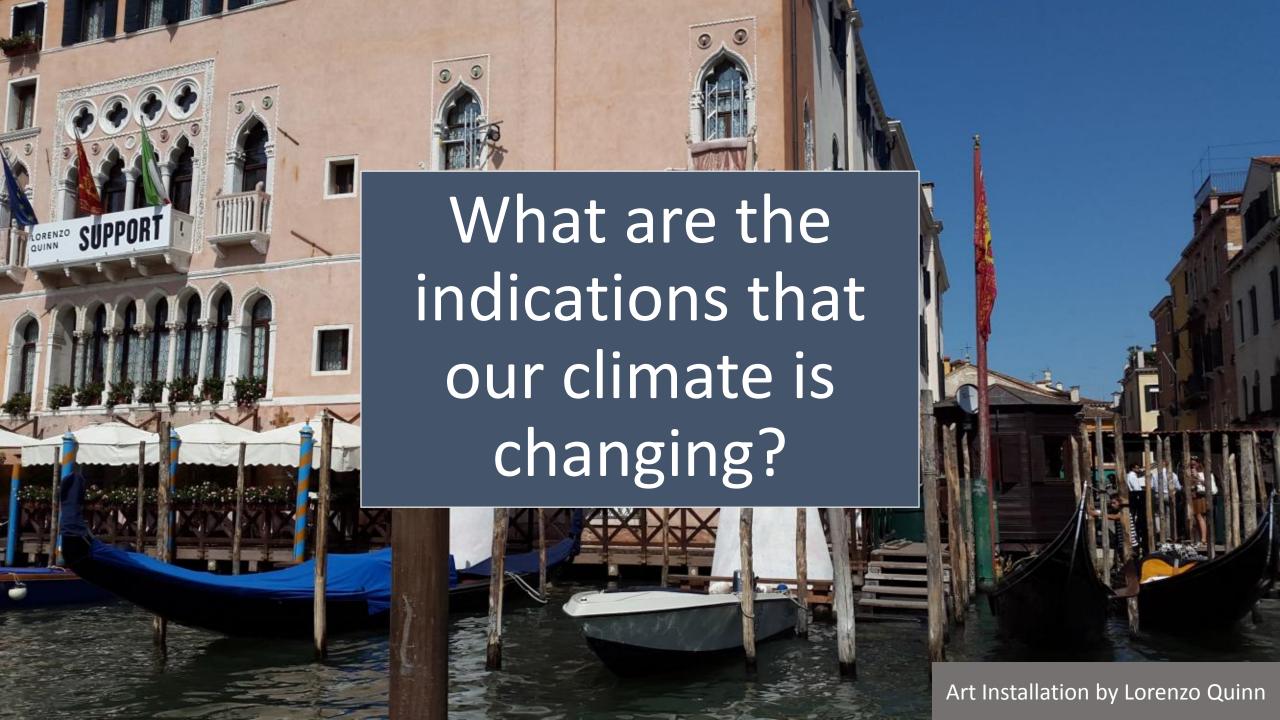
Planning for Climate Change Adaptation

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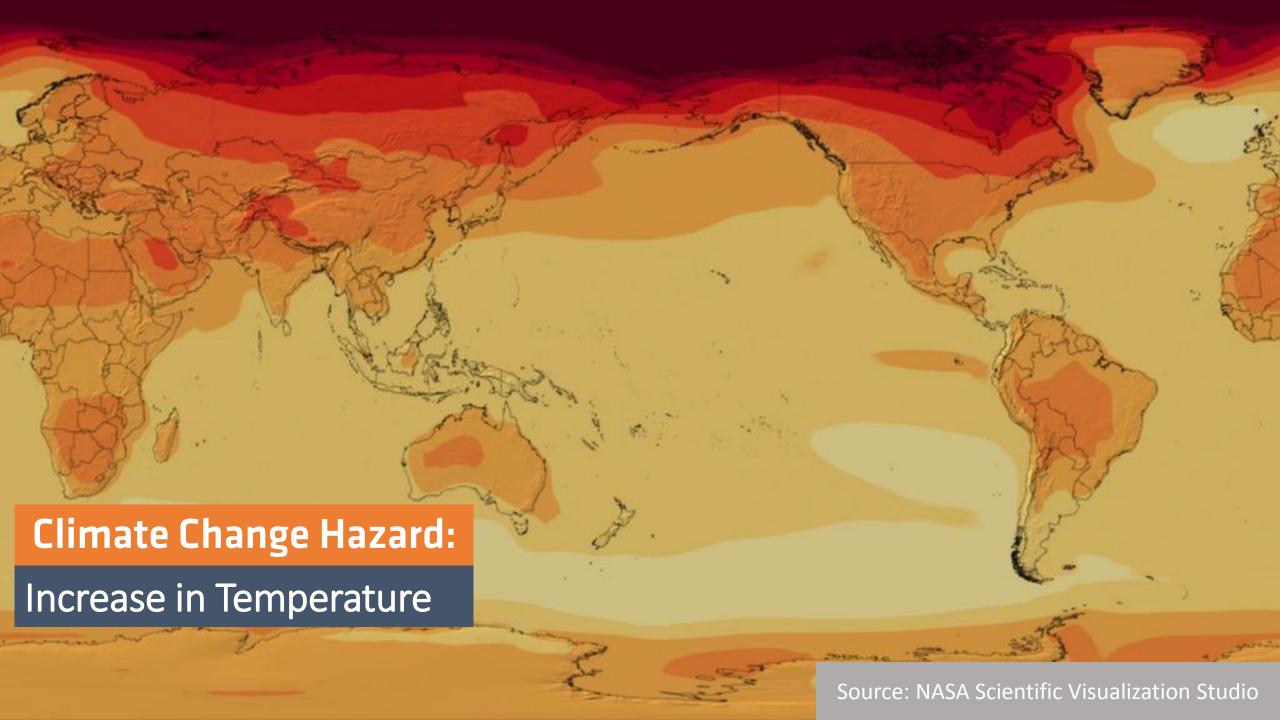
Session Outline

- What are the indications that our climate is changing?
- What are the responses to climate change and its impacts?
- What are the key dimensions of climate change adaptation?
- How is climate change adaptation different from climate change mitigation?
- What are the approaches for climate change adaptation planning?
- What are the steps for climate change adaptation planning?



Climate Change Hazards

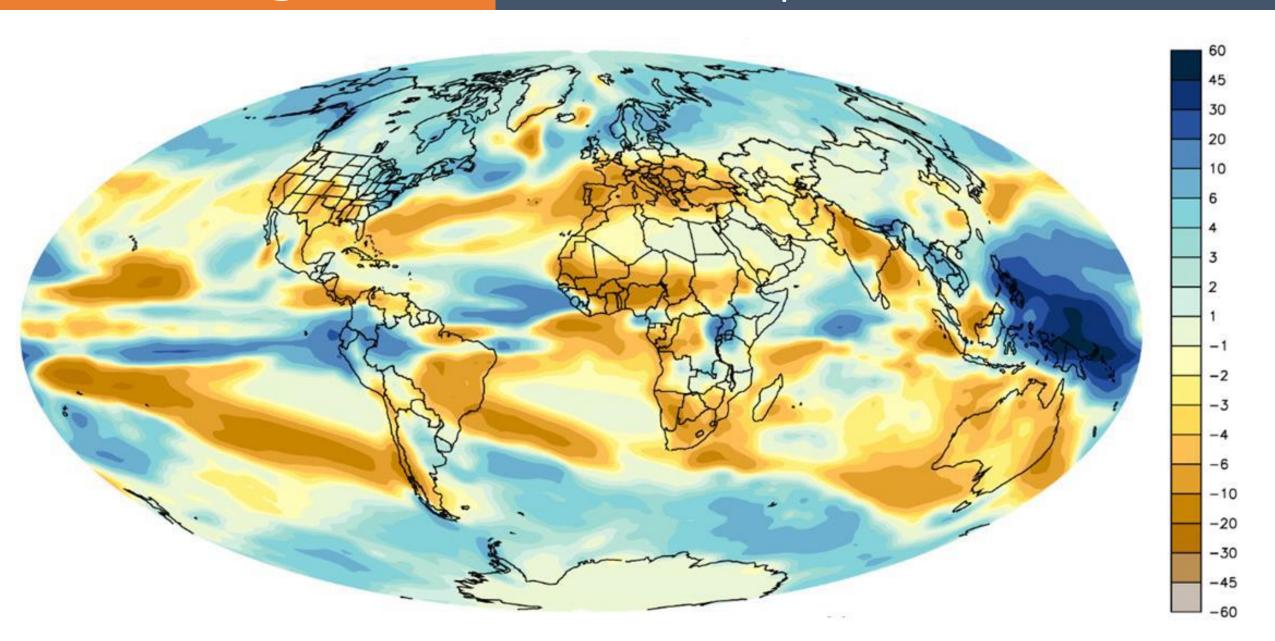
"The **potential occurrence** of a natural or human-induced physical event that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, and environmental resources."

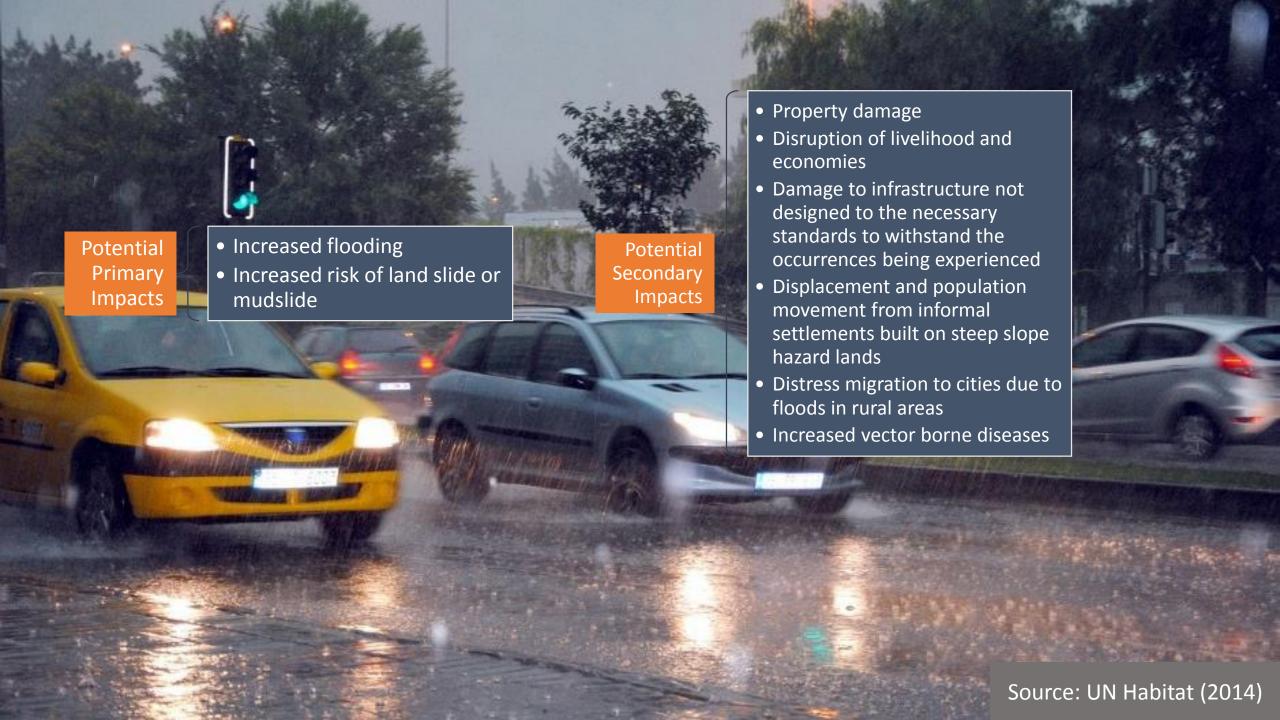


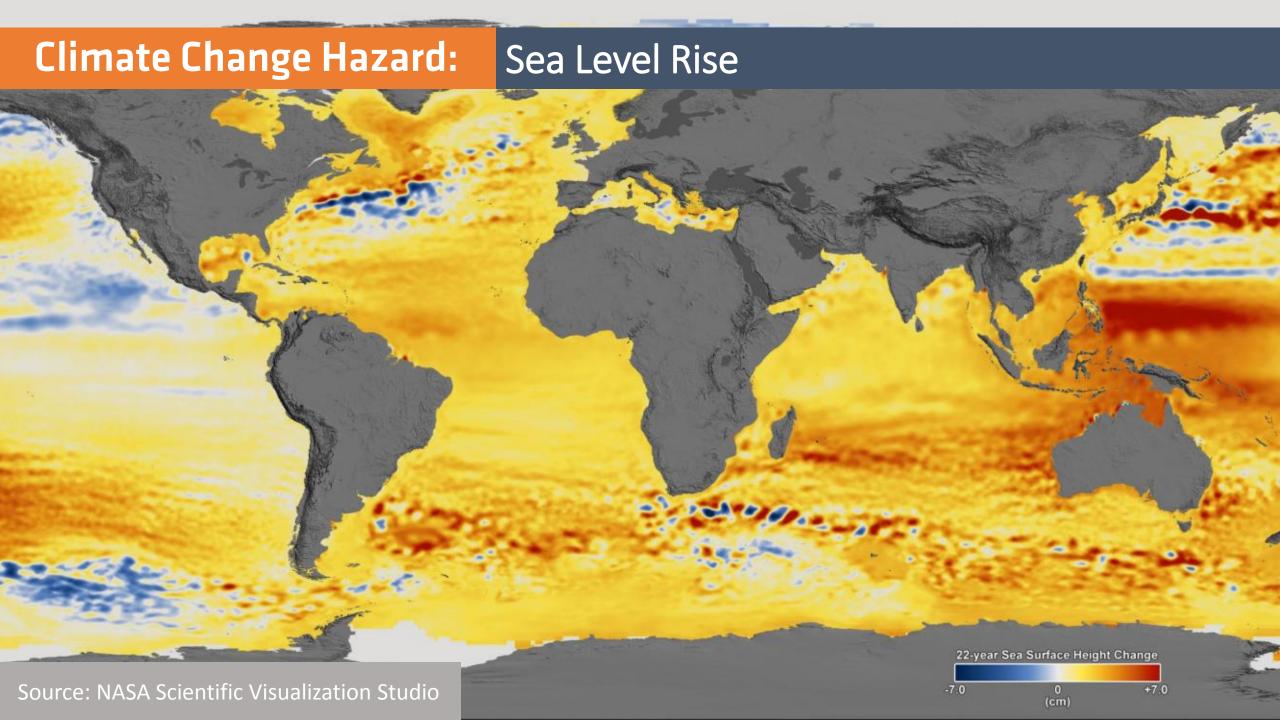


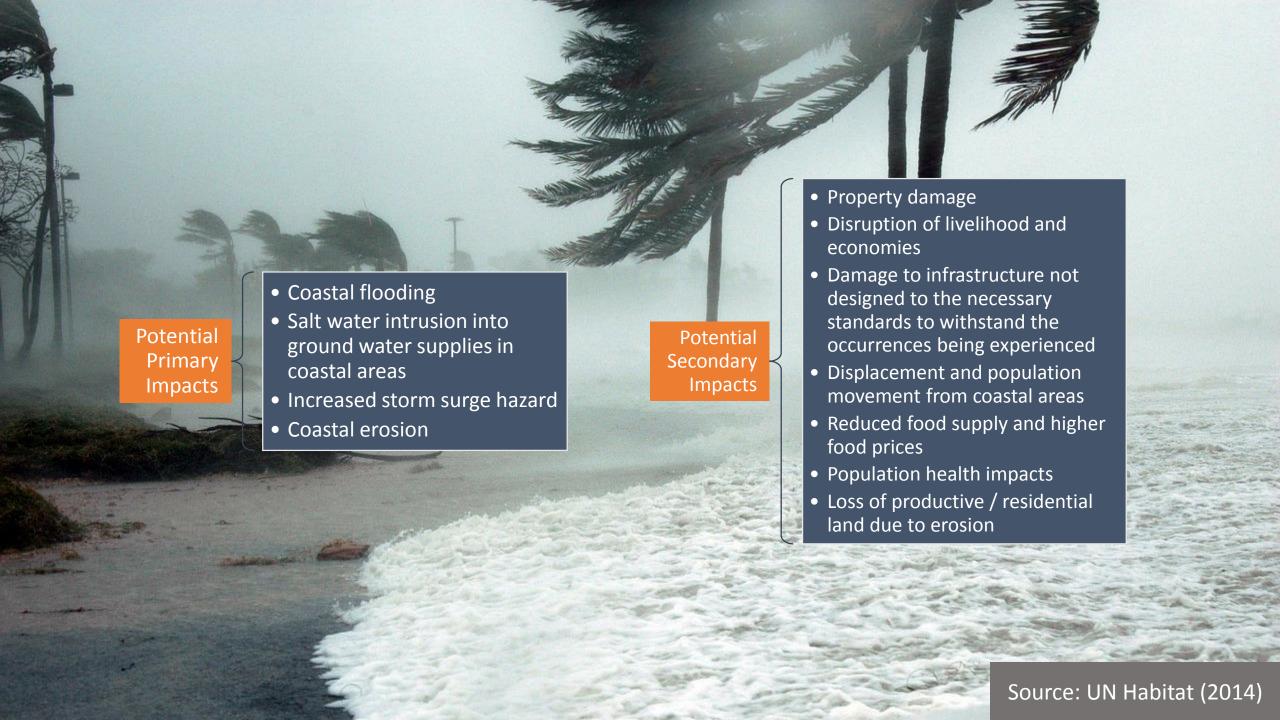
Climate Change Hazard:

Increase in Precipitation

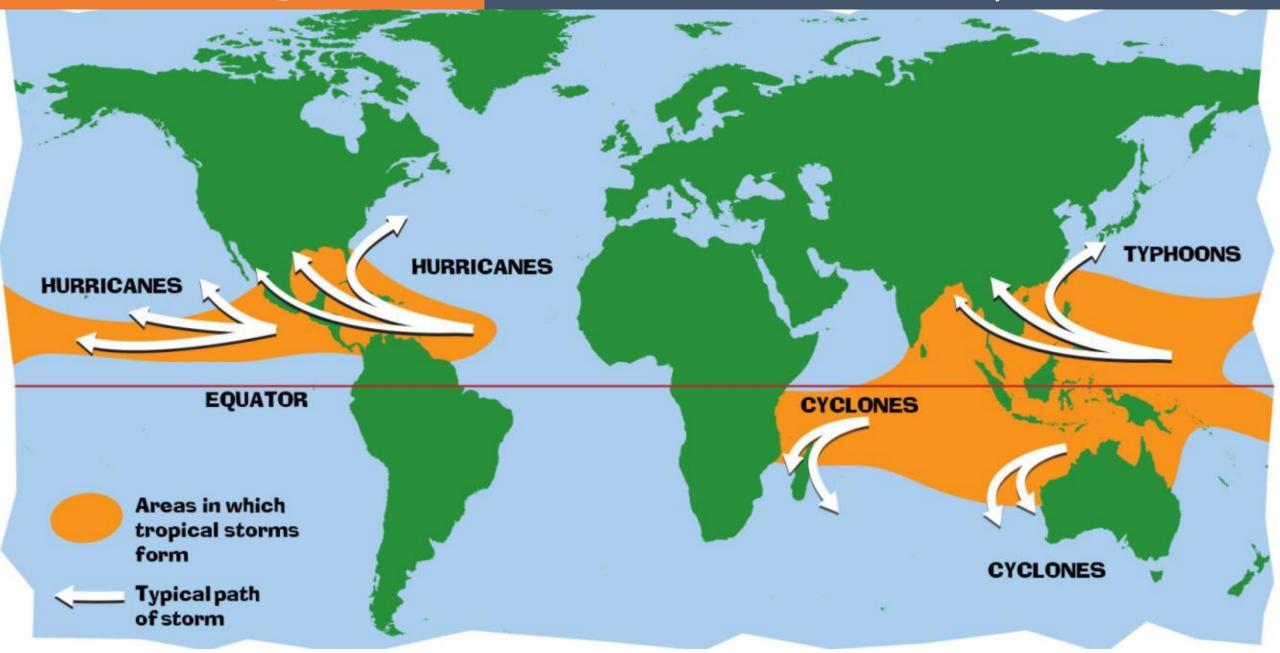


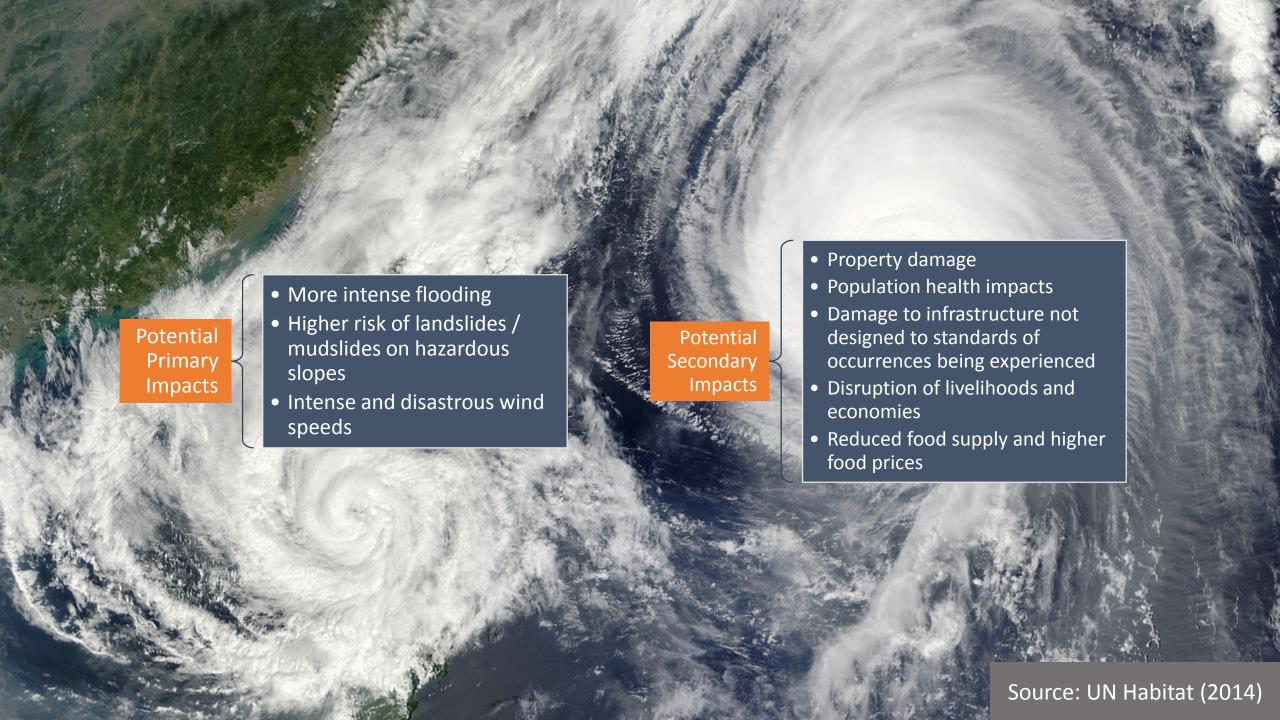






Climate Change Hazard: Increased Extreme Weather Episodes







Climate Change Mitigation

Activities that help to **reduce the rate or magnitude of climate change** by **human-generated greenhouse gas emissions** or **land use practices that contribute to climate change**, such as deforestation.

Source: UN HABITAT









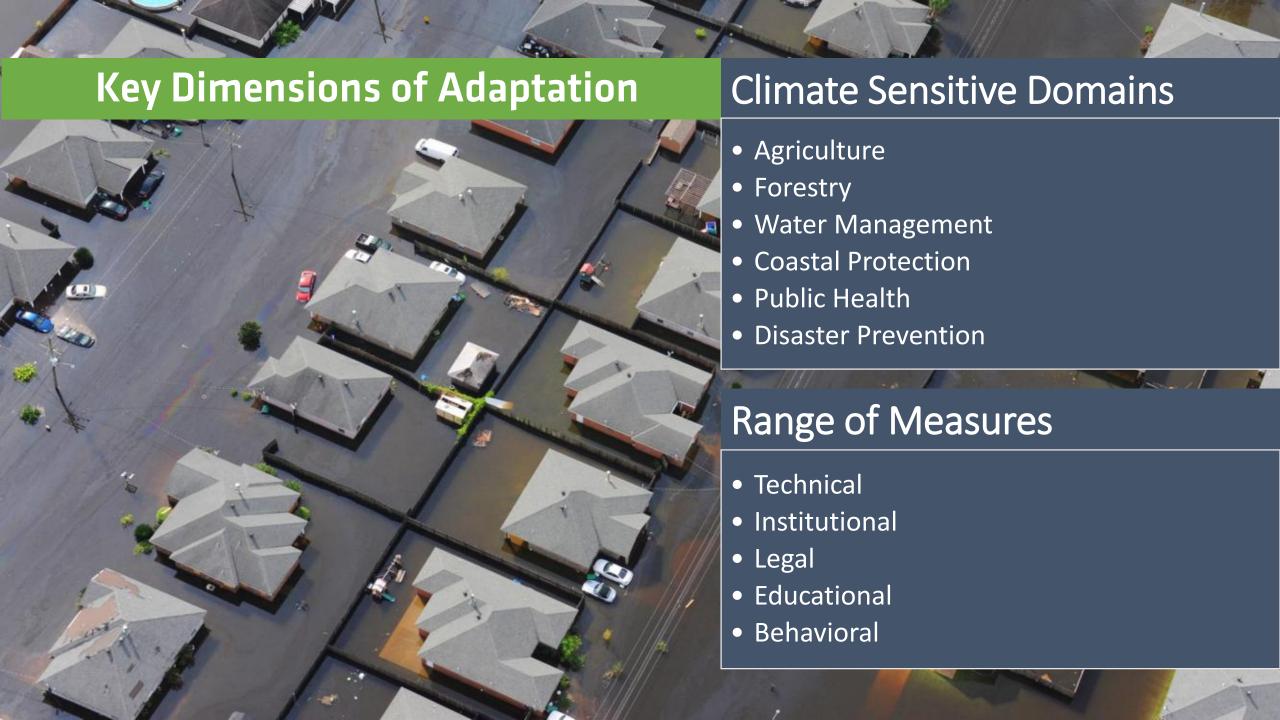






Climate Change Adaptation

Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.



Timing of Climate Change Adaptation: Anticipatory Adaptation

What is it?

- Taking action in preparation of climate change (i.e. before damage has occurred)
- "We can plan ahead to get where we want to go"

Advantages

- The result of a deliberative policy decision that is done based on the awareness that conditions have changed and are expected to change
- Often more effective and less costly than reactive planning







Local Adaptation Plans

Rotterdam

Climate Change Adaptation Strategy





The city and its inhabitants are protected from the rivers and the sea

It is vital that Rotterdam and its inhabitants remain protected from flooding and that investors retain their confidence in the city and region.



The city and its inhabitants experience minimal disruption from too much or too little rainfall

Rotterdam needs to be able to cope with extreme weather situations such as prolonged downpours, heat waves and periods of drought. To this end, we are already working together with the partners of the Rotterdam water plan and will continue to do so.



The Port of Rotterdam remains safe and accessible

Rotterdam needs to remain accessible to people, goods and services. It is crucial that the essential urban (public utilities) networks are robust and that weather conditions, no matter how extreme, do not lead to uncontrollable situations.



The inhabitants of Rotterdam are aware of the effects of climate change and know what they themselves can do

Inhabitants and businesses in Rotterdam need to be aware of the consequences of climate change, to become conscious of their own responsibilities and to know what action they themselves can take. The City of Rotterdam provides the framework within which they can assume their own responsibilities.



Climate change adaptation contributes to a comfortable, pleasant and attractive city in which to live and work

Rotterdam must continue to be a city in which it is pleasant to live and work and where climate change does not adversely affect the health and welfare of its inhabitants. The measures used to guarantee this will directly contribute to making the city more attractive and to improving the environment.



Climate change adaptation strengthens the economy of Rotterdam and its image

Making the city climate proof will benefit the economy of Rotterdam. Climate change adaptation will create new, economic impulses in the city and strengthen the international image of Rotterdam as an ambitious and progressive delta city. In this way Rotterdam will confirm its ability to take charge of a situation and promote itself as a role model for other cities.

Timing of Climate Change Adaptation: Reactive Adaptation

What is it?

- Taking action when climate change effects are experienced (i.e. after some impacts have been experienced)
- "We can incur damages, clean up the mess, and live with the consequences"

Disadvantages

- Reactive adaptation may be too little too late
- Reactive adaptation may cost more than anticipatory adaptation
- Reactive adaptation runs the risk of being short-sighted





Retreat



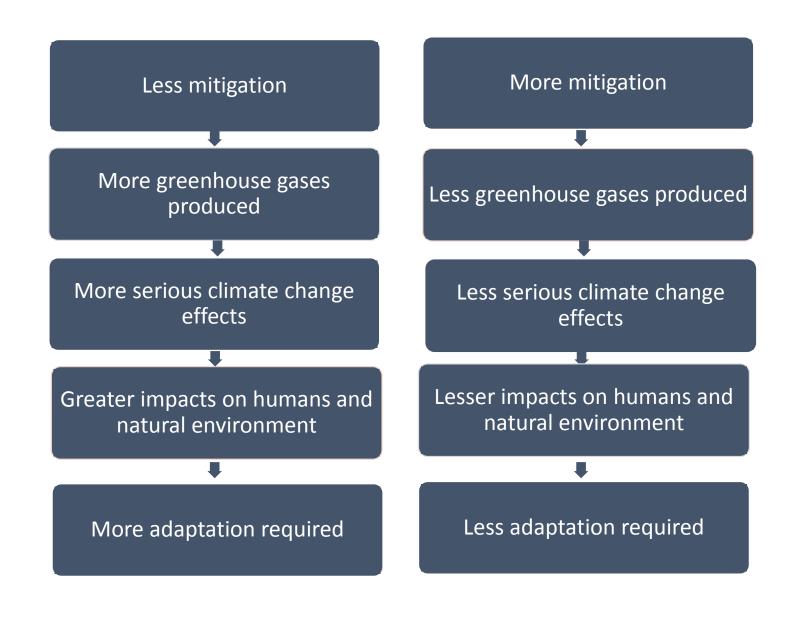




Mitigation	Adaptation
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Causes of Climate Change	Objectives	Effects of Climate Change
All systems	Target Systems	Selected systems
Global	Scale of effect	Local to regional
Centuries	Lifetime	Years to centuries
Decades	Lead time	Immediate to decades
Certain	Effectiveness	Generally less certain
Sometimes	Ancillary benefits	Often

Source: Fussel (2007)



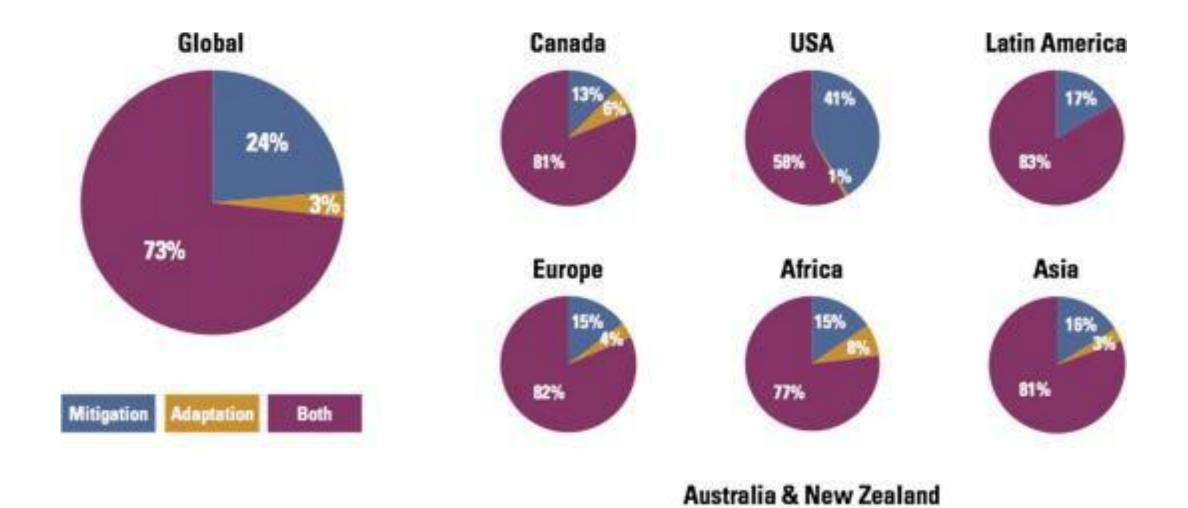
Entry Points: Climate Change Adaptation

Communitylevel City / Municipality level

Sub-National level

National Level

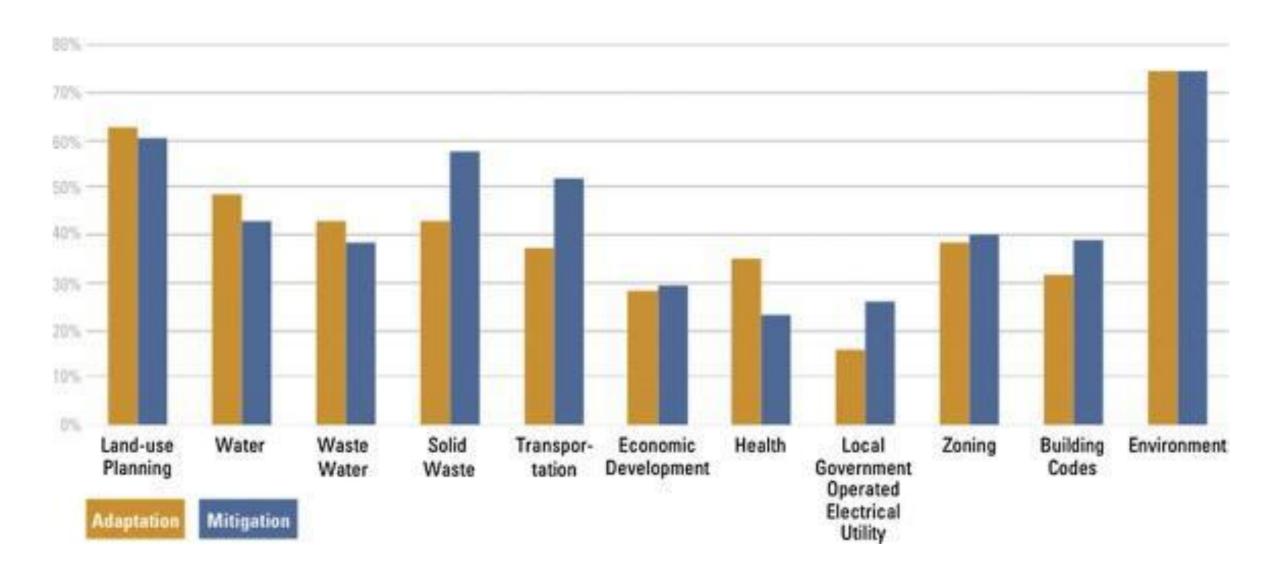
Transnational Level



91%

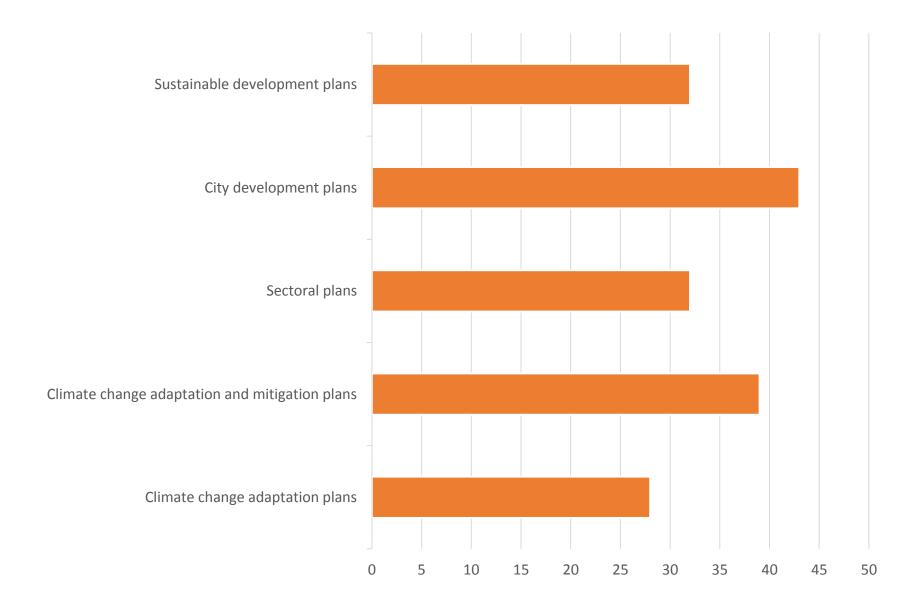
Focus of Climate Change Planning and Action

Source: Aylett (2015)



Integration of climate change planning within local government plans

Source: Aylett (2015)



Focus of Climate Change Planning and Action

Source: Aylett (2015)



Ad hoc

Strategic

Mainstreaming

What are Ad hoc Approaches?

Address one, specific opportunity

Case-by-case basis

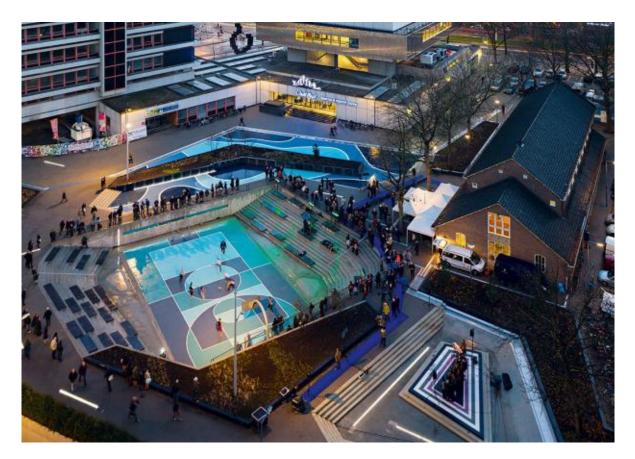
Only the most affected organizations are involved

Quick to undertake, but mostly reactive

Difficult to comprehensively address issues

Rarely use public participation







During dry weather, the **Benthemplien** square is a sports and recreation venue among kids and young adults. It also acts as a water storage facility.

What are Strategic Plans?

Comprehensive nature of the process

Identifies where policies will support each other

May end up as another silo

Provides clear path for implementation

Extensive stakeholder engagement possible

Opportunity to change planning approach

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Rotterdam has 100,000 m2 of green rooftops – and more!

The roof park lies on one of the dikes of the Delfland District Water Board.

Mainstreaming Approaches

Mainstreaming is the process and method of integrating climate change and disaster risk concerns in decision making, planning and implementing policies and programs. Mainstreaming assumes that other projects can be enhanced – e.g. poverty reduction, urban sustainability – and their benefits increased by integrating climate planning with existing plans and policy instruments (plans, strategies, programmes, and guidelines) (UN Habitat, 2014).

Climate is not the main goal. The main idea is to apply a climate lens.

What are Mainstreaming Approaches?

Can fit into set planning cycles, budgets, and hierarchies

Many opportunities to be included in existing plans and policies

Climate change may be overshadowed by other issues

Clear responsibilities, institutionally anchored

Existing planning framework may not work (not aligned with investment plans and budgeting)

May not necessarily lend itself for multisectoral coordination





Climate Change Planning Process

Mitigation

GHG Emissions
Assessment

Setting targets

Assessment and selection of measures

Implementation of measures

Monitoring and Evaluation of Measures

Adaptation

Vulnerability Assessment

Setting objectives

Assessment and selection of measures

Implementation of measures

Monitoring and Evaluation of measures

Source: UN Habitat

Mitigation

Adaptation

GHG Emissions Assessment

Vulnerability Assessment

Key Questions

Which sectors are the largest emitters of GHGs?

How is your city exposed to climate change today and in the future?

How sensitive are your city's people, places and institutions to this exposure?

Who is most vulnerable at least able to adapt?

What sectors are most important?

Mitigation

GHG Emissions Assessment

Setting targets

Adaptation

Vulnerability Assessment

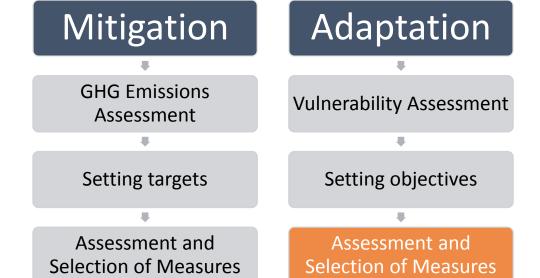
Setting objectives

Key Questions

How much GHG emissions reduction would you target?

Is this target for the city or municipality level or for a specific sector?

Would the objective be to increase adaptive capacity – or reduce sensitivity or exposure?



Key Questions

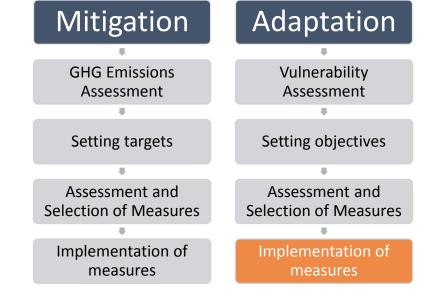
Which actions (policies, measures, initiatives) can you identify to achieve the set targets or objectives?

After identifying the actions, how do you select which ones to implement first?

Decision Support Methods

Cost Benefit
Analysis

Cost Effectiveness Analysis Multiple Criteria Analysis

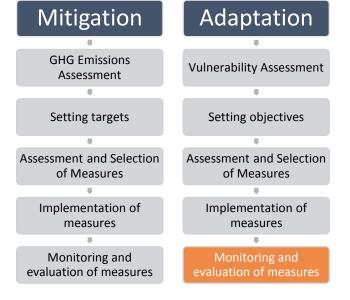


Key Questions

Who will be responsible for the implementation?

What is the timeline for the implementation?

What is the budget?



Key Questions

Did you achieve the target objectives?

What potential amendments can you consider from the assessment?

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