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# From risk prevention to risk management. How risk transfer and risk financing can increase resilience



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## Objectives

- Introducing the Integrated Climate Risk Management (ICRM) framework
- Get a common understanding on the role of climate insurance
- Presentation of former studies and applications





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# Session #1: Common Understanding

# What is Integrated Climate Risk Management?


**Prevent**   
This phase comprises all the measures that help prevent or minimize possible damage from an event.

**Recover**   
After a natural extreme event hits, infrastructure and other parts of society must be rebuilt, so that people can resume their livelihoods as quickly as possible.

**Respond**   
This phase comprises all emergency measures aimed at saving human lives in the event of a natural disaster.

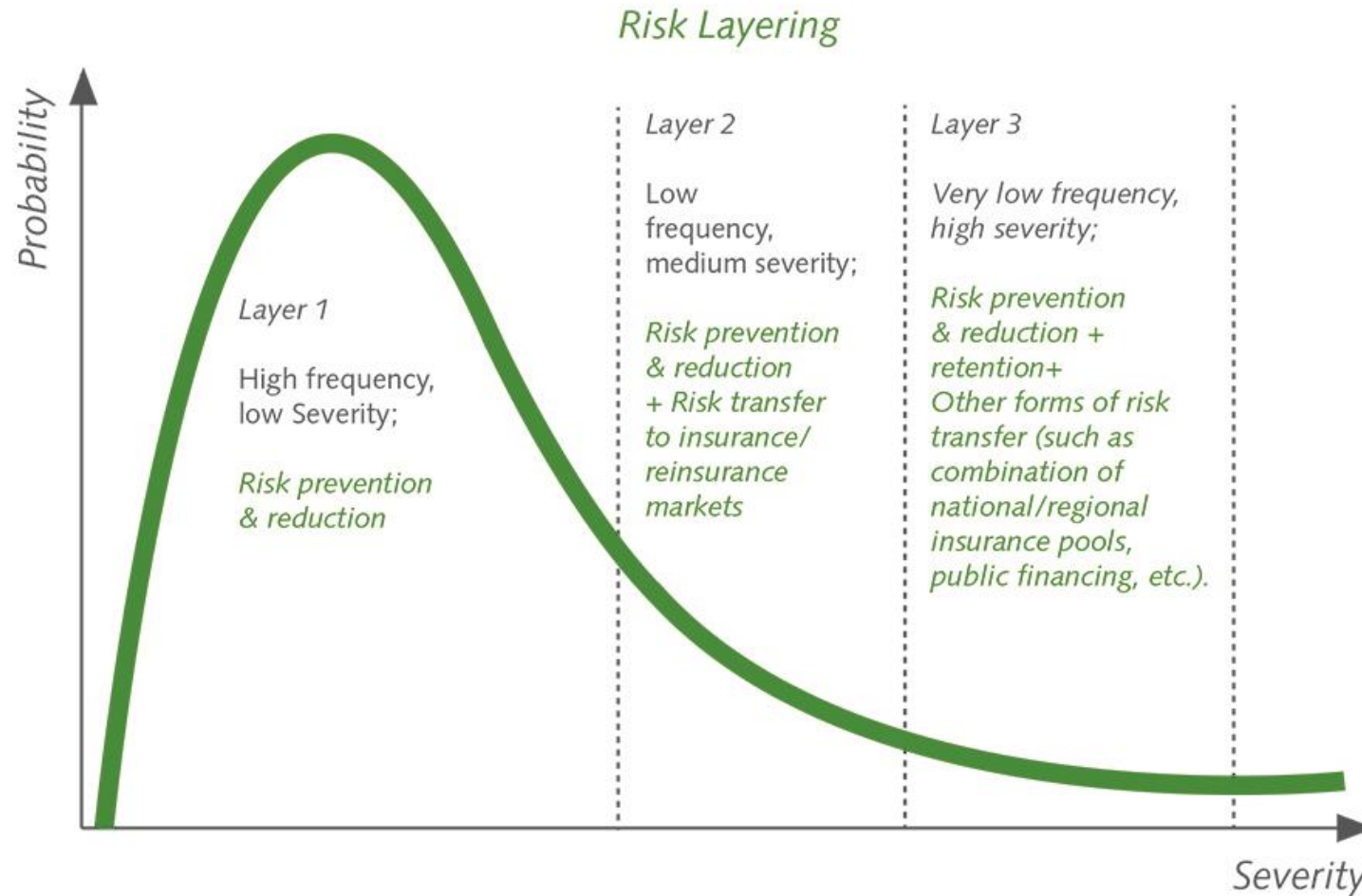


**Retention & Transfer**   
Even when preventative actions have been taken, some residual risk remains and can be transferred to third parties using financial instruments such as insurance.

**Prepare**   
Preparedness contains a complex set of activities such as setting up early warning systems, developing contingency plans, organising various activities such as stockpiling of equipment, and coordination and training as cross-cutting issues.

# What is the role of insurance for climate risk?

## Intensity and frequency





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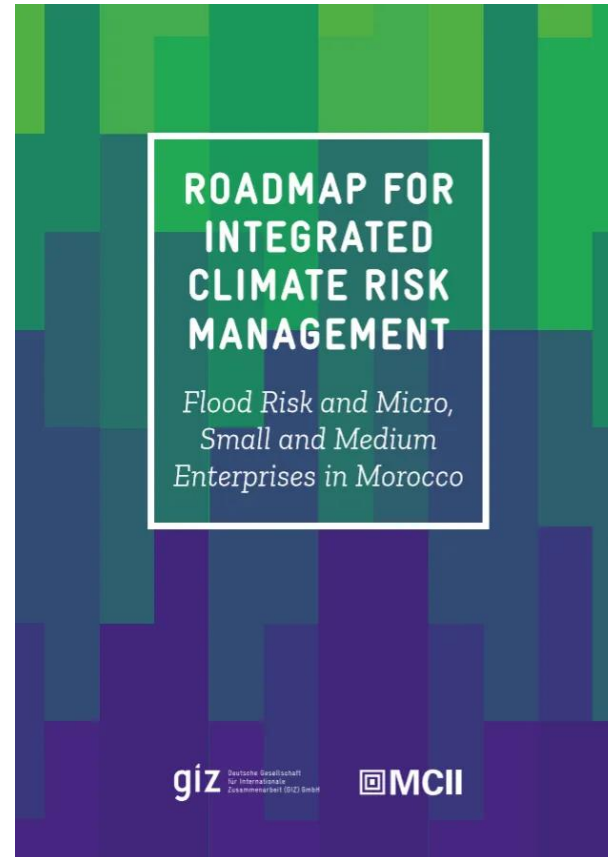
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## Session #2: Case Studies



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# ROADMAP FOR INTEGRATED CLIMATE RISK MANAGEMENT

*Flood Risk and Micro,  
Small and Medium  
Enterprises in Morocco*

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## Session #2.1: ICRM in Morocco

# Morocco – Industrial Zones (SMEs)

**Project Aim:** Increase resilience to extreme weather events for SMEs in the Industrial Zone Aït Melloul (Sous-Massa Region).



## Our Results:

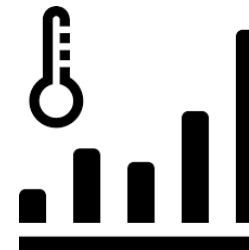
ICRM Roadmap



Value Chain  
Analysis



Exposure &  
Vulnerability  
Analysis



## Key Message:

- 1) SMEs face difficulties to apply preventive adaptation strategies due to the lack of financial capacities.
- 2) Risk transfer instruments such as insurance can play a valuable role in reducing losses resulting from extreme weather events
- 3) Risk transfer can increase SMEs credibility and makes access to adaption finance more feasible.



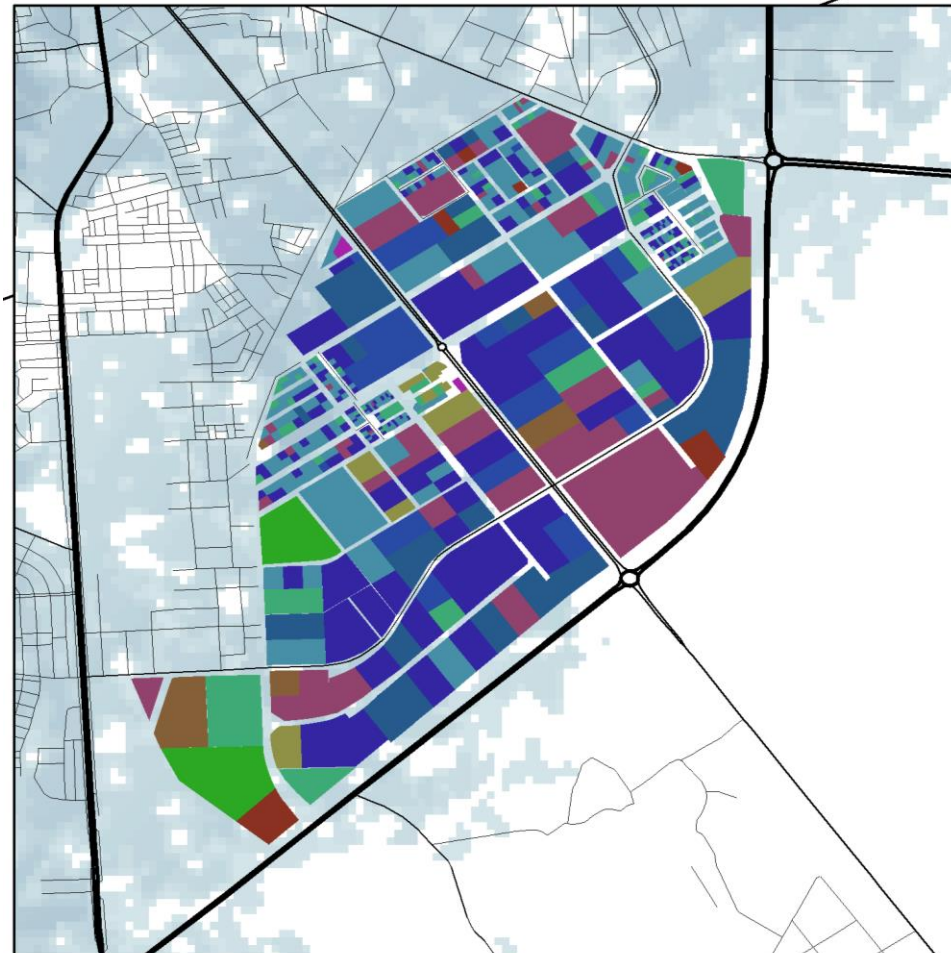
# The Concept:

## Showcasing ICRM within a “Smart-mix” approach

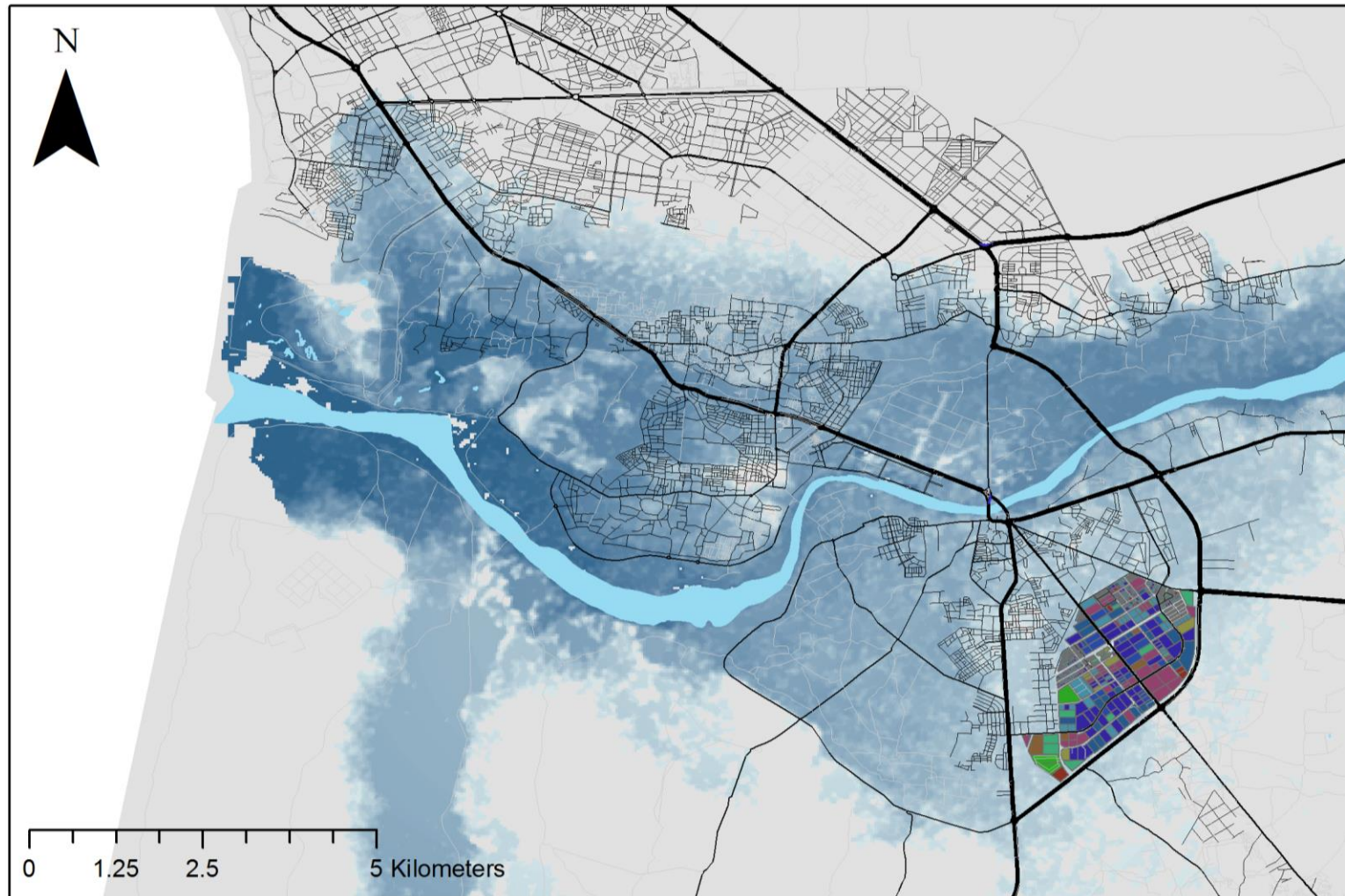


- **Quantifying Adaptation Measures benefits**
  - Based on the detailed **vulnerability assessment of the supply chain**, we make further recommendations for adaptation measures that can enhance the overall adaptation process
  - ACRI+ will build upon the PSACC project by providing additional guidance on which measures are most efficient economically
- **Climate insurance:**
  - For selected risks (low frequency/high intensity) ACRI+ will **showcase climate insurance** as an effective adaptation measures for SMEs
  - **Decreasing the SME’s vulnerability** to climate disasters
- **Financing:**
  - In order for SMEs and their employees to adapt to climate change, it is often important for them to acquire some financing
  - Insurance can play an important role in helping these SMEs acquire funding from financial institutions
  - **Increasing SMEs credibility**

# Quantifying risks at the SME level and its value chain



# Quantifying risks at the SME level and its value chain



# Outputs

## The roadmap identifies some of the major barriers to risk transfer

- 1) lack of detailed information about MSME needs
- 2) insurance market hesitation to enter the MSME market
- 3) financial issues including lack of awareness
- 4) high insurance price points and government engagement.

## The roadmap suggests actions and recommendations for ICRM integration

- 1) the development of a census of MSME needs
- 2) the creation of a climate risk exposure index
- 3) the establishment of awareness campaigns
- 4) financial literacy courses to improve MSME financial literacy.

The recommendations are intended as **first steps** that could be taken to scale up risk transfer through insurance within an integrated climate risk management framework.

Follow-up project with GIZ and AllianzRe



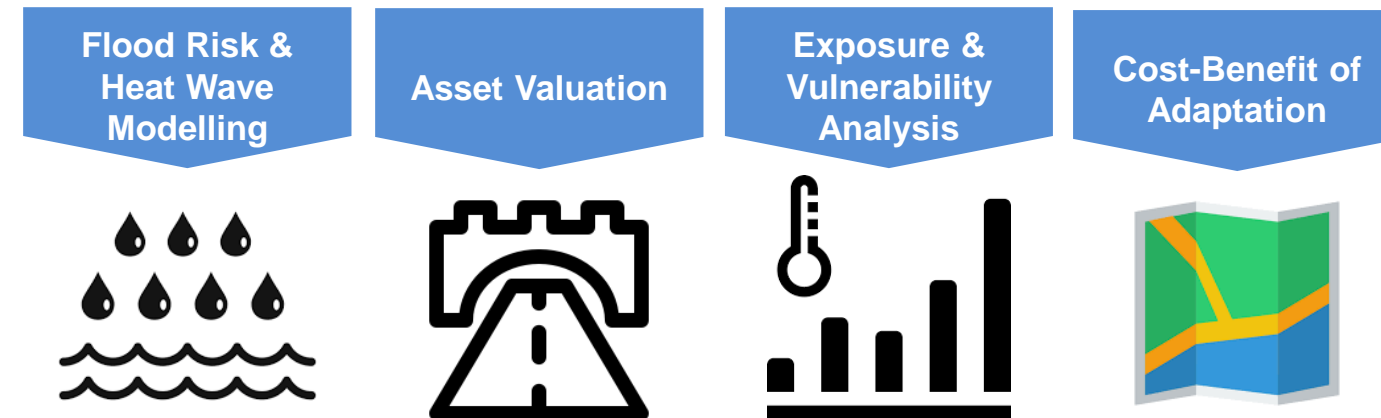
## Session #2.2: Can Tho, Vietnam

# Can Tho – Urban Flooding & Heat Waves

**Project Aim:** Increase urban resilience to compound flood risk and heat waves in Can Tho’s urban districts.



## Our Results:



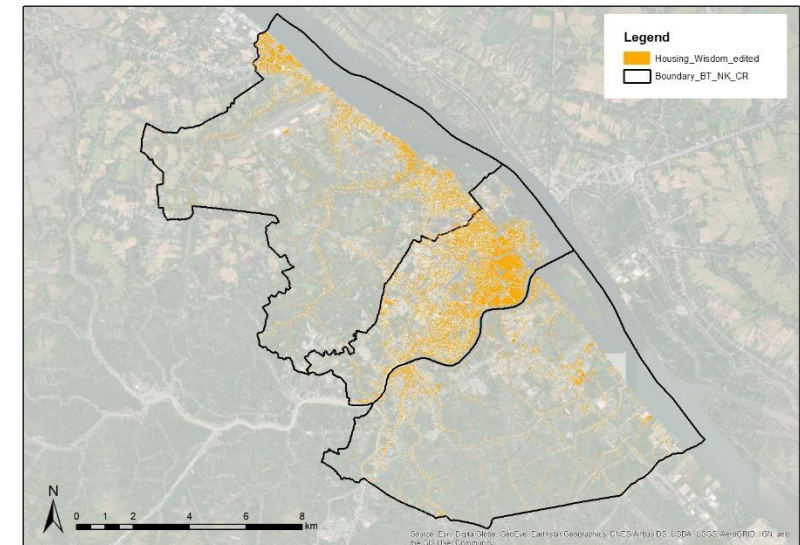
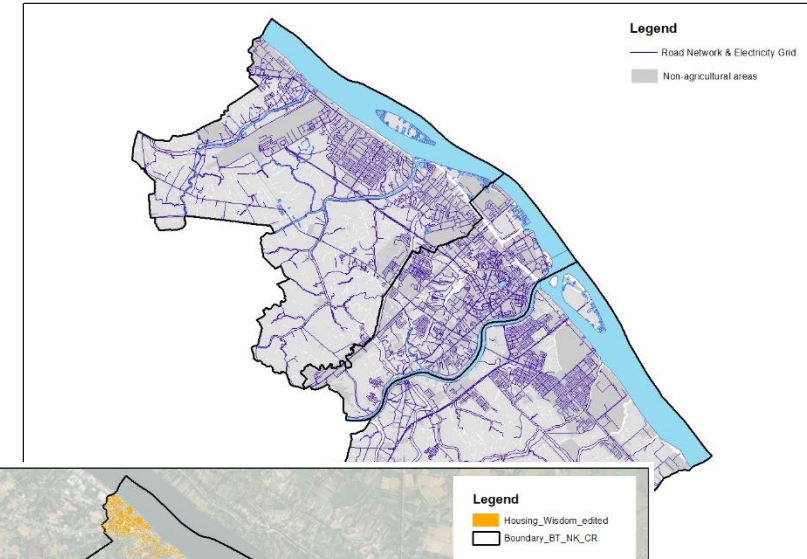
## Key Messages:

- (1) A key concern in Can Tho are the climate change impacts on existing flood regimes (fluvial, pluvial, tidal) and urban heat waves
- (2) Authorities face difficulties to take informed decisions on cost-effective adaptation measures
- (3) Risk transfer instruments, e.g. insurance can play a valuable role to address residual risks (protection gaps)

# Asset selection & valuation

**Table 1: Compilation of estimated values of assets**

	Heat Wave		Pluvial/ Fluvial Floods		Tidal Floods	
	Sample size	Total (m USD)	Sample size	Total (m USD)	No / area / length	Total (m USD)
People	551 912		167 557		80 220	
Houses	153 424	1 970.98	46 619	589.15	22 292	275.36
Schools	77	279.31	58	205.55	25	55.50
Medical Facilities	40	653.62	22	394.91	6	29.97
Adm. Buildings	51	22.52	47	21.95	12	6.19
Road network	1 097.4 km	937.66	1 086.2 km	930.11	731.0 km	604.36
Electricity grid	1 097.4 km	6.58	1 086.5 km	6.52	729.1 km	4.37
Nat. Resources	8 512 ha	113.61	8 551 ha	115.56	8 268 ha	111.84
<b>Total</b>		<b>1 051.75</b>		<b>2 263.76</b>		<b>1 087.61</b>



# Adaptation Measures

#	Name of Measure	Type of Measure	Hazard
1	Retention reservoirs	NbS	Flood
2	Detention swales along roads	NbS	Flood
3	Improved solid waste management	Systemic	Flood
4	Rehabilitation of existing drainage canals	Grey	Flood
5	Flood awareness campaign	Systemic	Flood
6	Road spillways as bio-retention systems	NbS	Flood
7	Rain collection tanks for existing buildings	Grey	Flood
8	Mobile flood embankments	Grey	Flood
9	Flood wall	Grey	Flood
10	Flood protection storage facilities (incl. sandbags)	Systemic	Flood
11	Flood index insurance	Insurance	Flood
12	Green roofs	Hybrid	Flood & Heat Wave
13	Green spaces (Urban forestry)	NbS	Flood & Heat Wave
14	White roofs	Grey	Heat Wave
15	Cooling centres	Systemic	Heat Wave
16	Climate smart agriculture	Hybrid	Heat Wave
17	Climate proofed road design	Grey	Heat Wave

Experiences of climate adaptation

A solid waste management program should involve the following activities:<sup>130</sup>

- Residents become more involved in maintaining their immediate surroundings.
  - Encouraging residents to maintain a clean environment or organizing clean-up events
  - Building a sense of common purpose and educating residents can build a sense of agency.
  - Establish means of communication and set common goals/slogans
  - Organize Public/Stakeholder Meetings
  - Over the long term, residents need to become more aware of the role waste management plays in their everyday lives and communities
- Clean riverbanks and canal systems and maintain drainage capacity
  - Organize and schedule yearly clean-up events and make its positive impacts public
  - Perform ad-hoc local drain cleanings before rain events
  - Provision of alternative waste dumping facilities

In comparison with local and regional community-based waste management schemes (Vietnam, Indonesia & the Philippines), an initial budget of USD 109 000 has been defined to build a foundation.<sup>131,132,133</sup> Further project management and capacity development costs amount to USD 50248 per annum. A community-based waste management system, with a running time until 2050, would therefore cost USD 1 566 192.

**Figure 86:** Examples of community-based waste management programs. *Source:* <https://vietnamnet.vn/en/sci-tech-environment/waste-management-projects-line-up-to-address-vietnam-s-white-pollution-647336.html> (12.03.2022)

<sup>130</sup> Ibid.

<sup>131</sup> UNDP Vietnam / Global Environmental Facility. Article: Waste management projects line up to address 10th Nam's white pollution. Retrieved from: <https://bit.ly/33j04RE> (31.03.2021).

<sup>132</sup> UNESCO-IHE. Institute for Water Education. Performance of Community Based Solid Waste Management for Integrated and Sustainable Solid Waste Management. The Case of Bogor City, Indonesia. April 2017. Retrieved from: <https://bit.ly/38t4c1c> (31.03.2021).

<sup>133</sup> UN-Habitat. The Community-based Solid Waste Management Project in SMO, San Nicolas, Philippines. Retrieved from: <https://bit.ly/3y5u1F> (31.03.2021).

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Experiences of climate adaptation

...nt systems. Protection of water along rivers and exposed residential buildings. <https://www.afd.com> (02.03.2022).

...ose dam segments. Lay out and position, inflate with air and fill with water. [www.afd.com](https://www.afd.com) (02.03.2022).

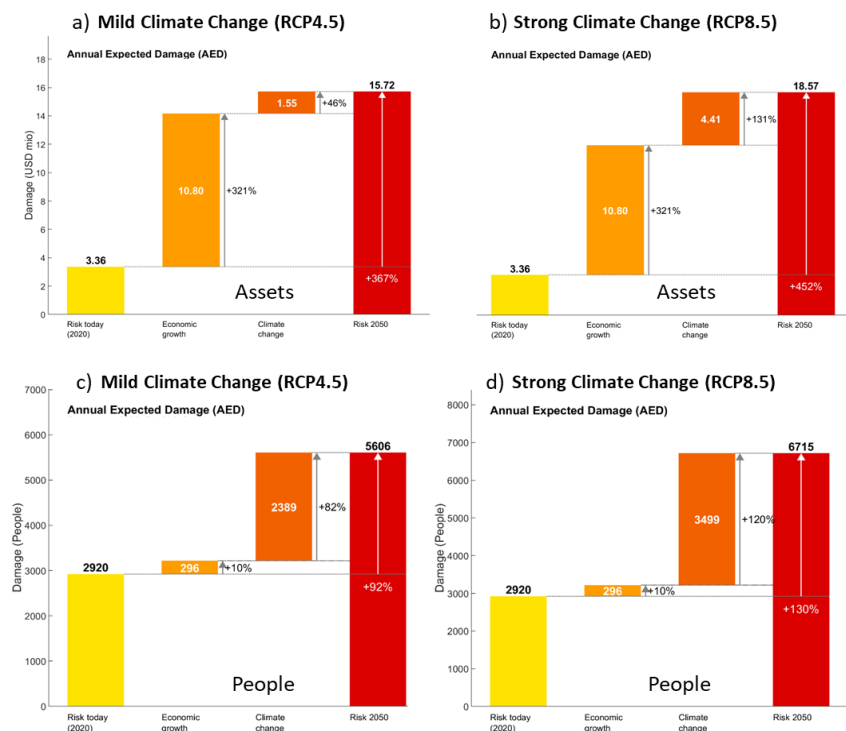
Innovative flood prevention Vietnam. NIOPEF. Retrieved from: [afinnovation-in-vietnam](https://www.afd.com) (02.03.2022).

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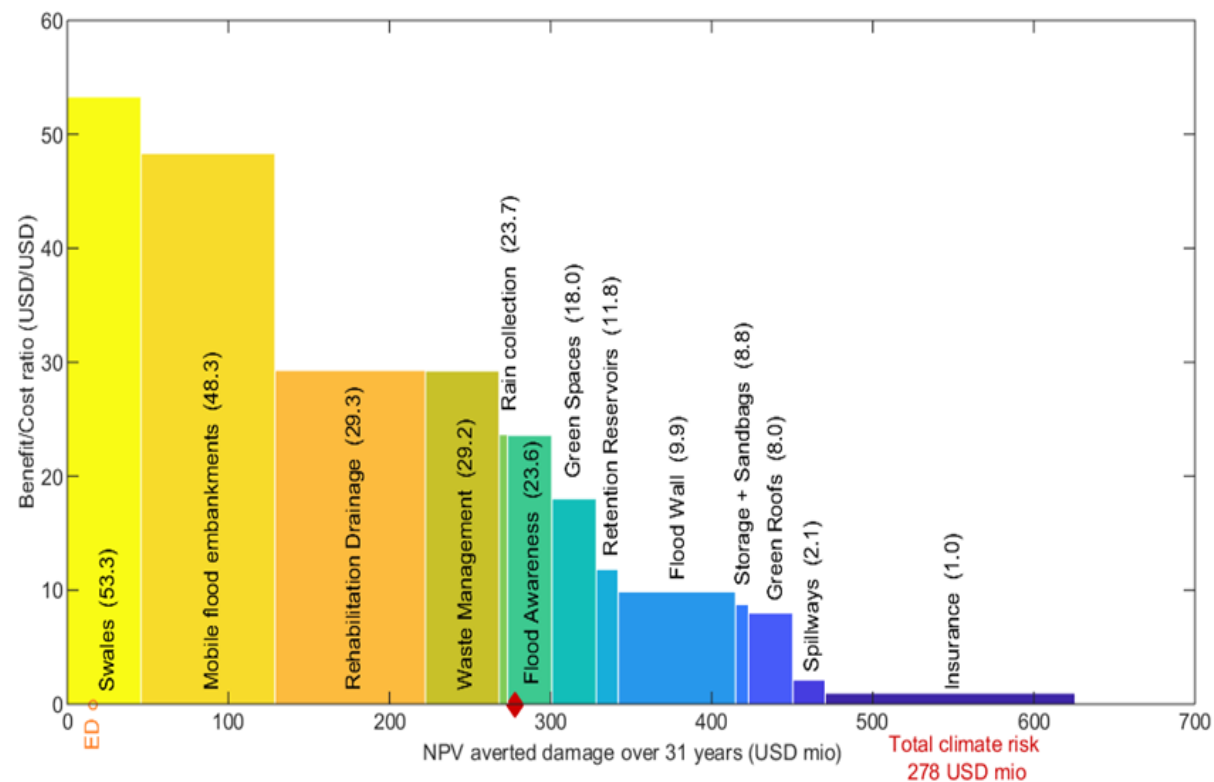


# CLIMADA: Results

## PLUVIAL/FLUVIAL FLOOD



## a) PLUVIAL/FLUVIAL FLOOD: USD Benefits for a Moderate Climate (RCP45)



# Conclusions

## COMPOUND FLOOD RISK (TIDAL & PLUVIAL-FLUVIAL FLOOD)

1. Current annual expected damage is a cumulated USD 4.3m, increasing to over USD 18m by 2050 (moderate climate change);
2. The top three cost-efficient measures are:
  - a) "Mobile flood embankments"
  - b) "Flood awareness campaigns"
  - c) "Rehabilitation of drainage systems"
3. For compound flood risk, with the top three cost-efficient measures, Can Tho will be able to avoid an estimated **USD 300 million in damages and protect around 15 000 people** over the next three decades **with an investment of under USD 5.8 million.**

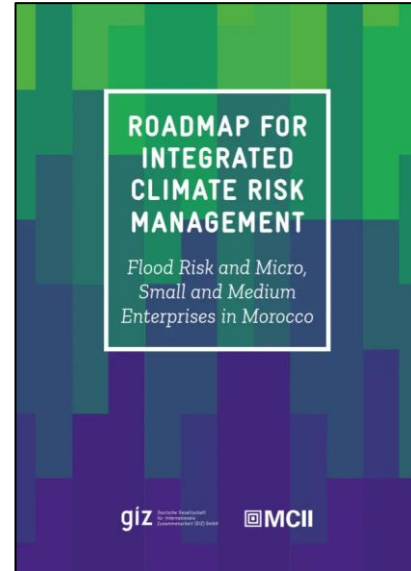
# Additional Material

## Reports



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Roadmap Morocco



Or click [here!](#)



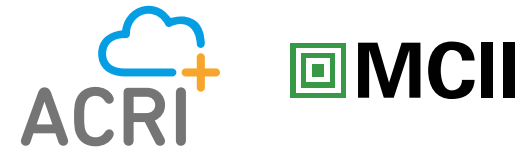
Can Tho Case Study



Or click [here!](#)

# Material

## Factsheets & Infographics



ICRM Factsheet



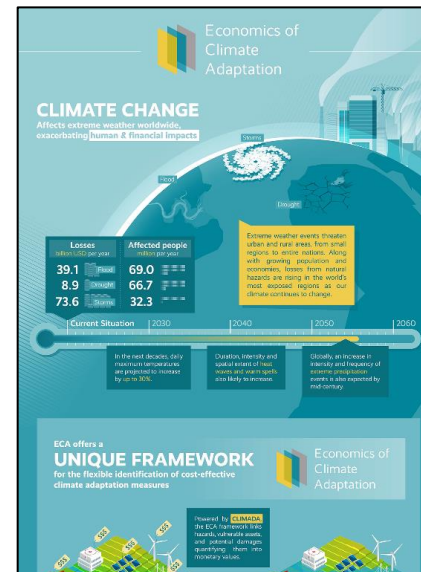
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Factsheet Morocco



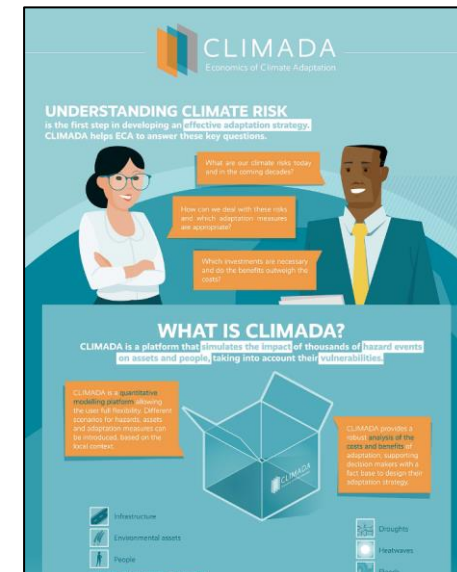
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ECA Framework



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