



Webinar

Flood Risk Management and Adaptation in Cities

16 September 2015, 11:00 UTC/GMT



Transformation - Urban Opportunities - Climate Change (TUrbOCliC)

Cross-sectoral group of the TUEWAS and SNGA network of GIZ





T-UrbO-CliC (Transformation - Urban Opportunities - Climate Change)

- cross-sectoral group between the sector networks SNGA and TUEWAS with the aim to exchange experience, share knowledge and improve cooperation
- Speakers: Vaishali Nandan (TUEWAS) and Eva Ringhof (SNGA)
Knowledge consultant: Luciana Maia



Current Programs

Bangladesh

- Resilient and Inclusive Urban Development (RIUD)
- Urban Management of Internal Migration due to Climate Change
- Adapting to Climate Change in National and Local Development Planning

Indonesia

Policy Advice for Environment and Climate Change (PAKLIM)

India

- Indo German Environmental Partnership (IGEP)
- Inclusive Cities Partnership Program (ICPP)

China

- Sino-German Climate Partnership
- Qualification of Key Actors on Energy Efficiency in the Building Sector
- Energy Efficiency and Climate-friendly Development in Jiangs and in Selected Cities

Regional

- Cities Development Initiative for Asia (CDIA)
- Urban NEXUS Asia

Global

- Urban Development Policy Advice
- Sustainable Development of Metropolitan Regions

Topics



Institutional Development

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Capacity development

Knowledge Management

Expert Dialogue

Training Series

Climate Finance Decentralized

Policy and regulations, guidelines, standards

Economic instruments

Cities and Climate Change

Mitigation

Climate Action Plan

Adaptation

Resilience

Governance linkages: national, provincial, local

Urban issues in general

Local Infrastructure

Stakeholder participation

Poverty/Slums/Gender

Inclusive Cities

Vulnerabilities

Sustainable Construction

Nexus

Good Governance

Environmental Services in Cities

Municipal Waste Management

Energy Efficiency in Buildings

Pilot Measures, Good Practices, Implementation Initiatives



Webinar

Flood Risk Management and Adaptation in Cities

16 September 2015, 11:00 UTC/GMT



Transformation - Urban Opportunities - Climate Change (TUrbOCliC)

Cross-sectoral group of the TUEWAS and SNGA network of GIZ





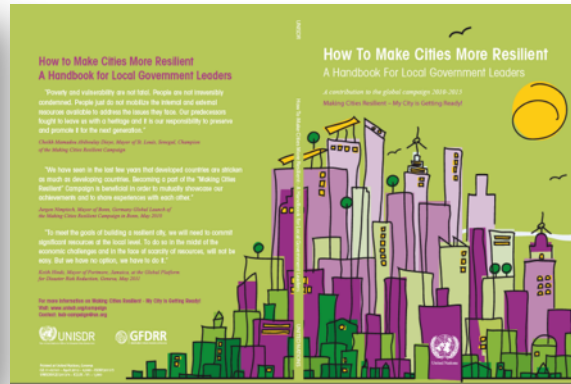
Programme

- **Welcome and Moderation**
Eva Ringhof, Co-Speaker of TUrbOcliC
- **Presentations:**
 - **Introductory Remarks – Flood Risk and Resilience in the Urban Setting**
Daniel Nordmann - Planning Officer in Water Section of GIZ Head Office
 - **Flood Risk Management as a contribution to Urban Resilience in Vietnam**
Eva Huebner - Project Advisor, Vietnam
 - **Understanding impacts of climate change and framing adaptation in Nouakchott, Mauritania**
Dr. Omnia Aboukorah-Voigt - Project Coordinator, Mauritania
- **Discussion and Wrap-up**



Urban Resilience: Flood Risk Management and Adaptation in Cities

Webinar, 16th September 2015

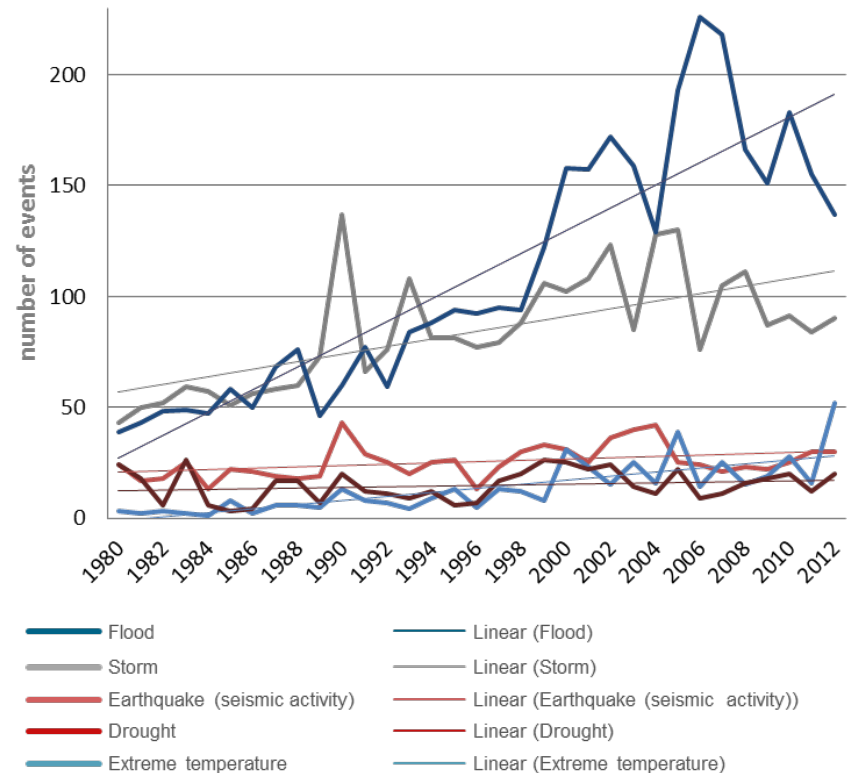




Extreme weather events, floods and droughts pose increasing risks to cities

- In 2030 40% of urban land will be located in high-frequency flood areas (2000: 30%)
- Economic exposure to flooding could increase from 27 trillion USD (2010) to 80 trillion USD (2030)
- In 2030 5 billion people live in urban areas → Increasing exposure of people & assets

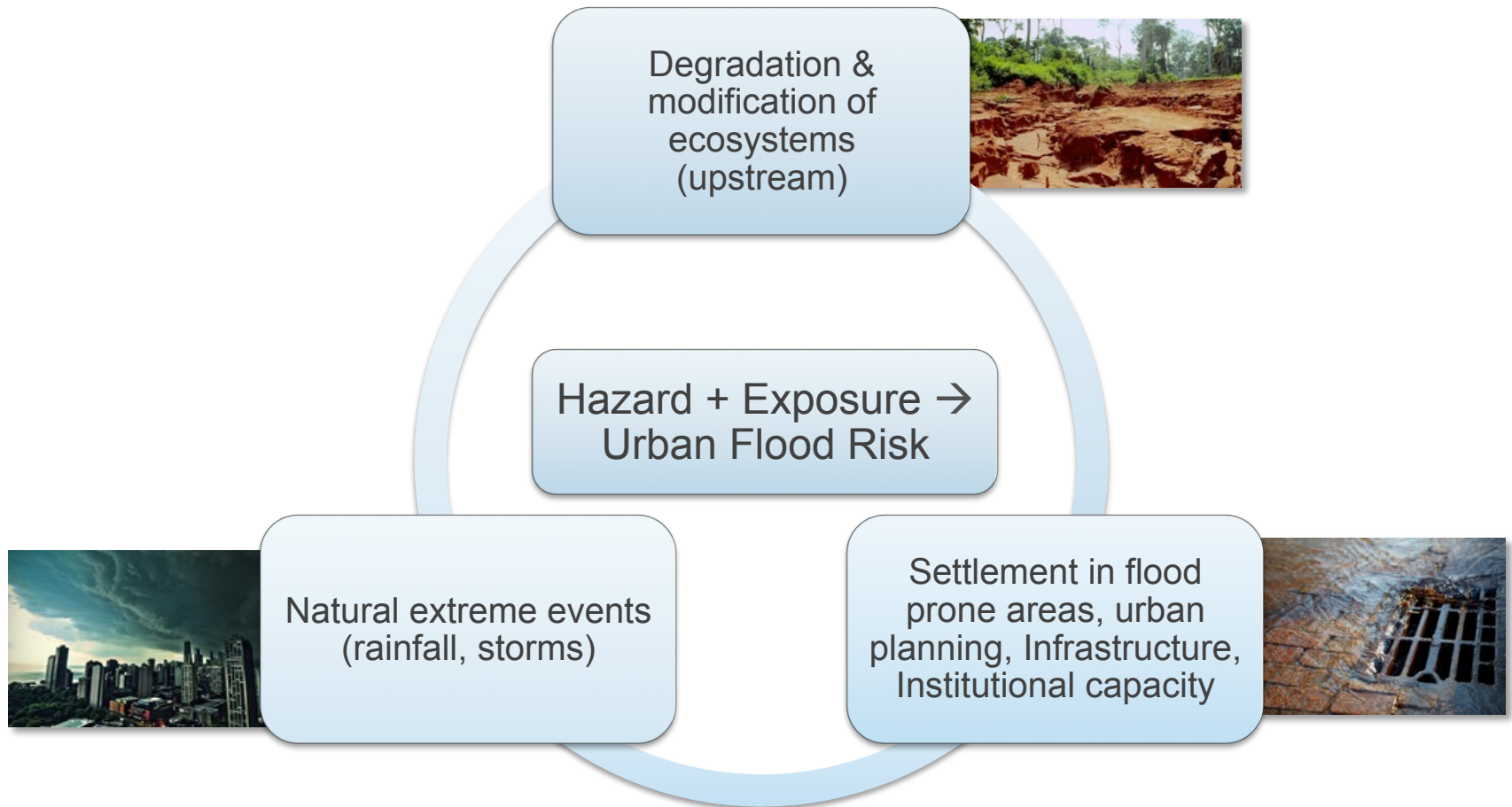
Source: Güneralp, Güneralü, Liu: Changing global patterns of urban exposure to flood and drought hazards, Global Environmental Change 31 (2015), 217-225



Data source: EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be, Université Catholique de Louvain, Brussels (Belgium)



A combination of natural and anthropogenic factors drives flood and drought risks in cities



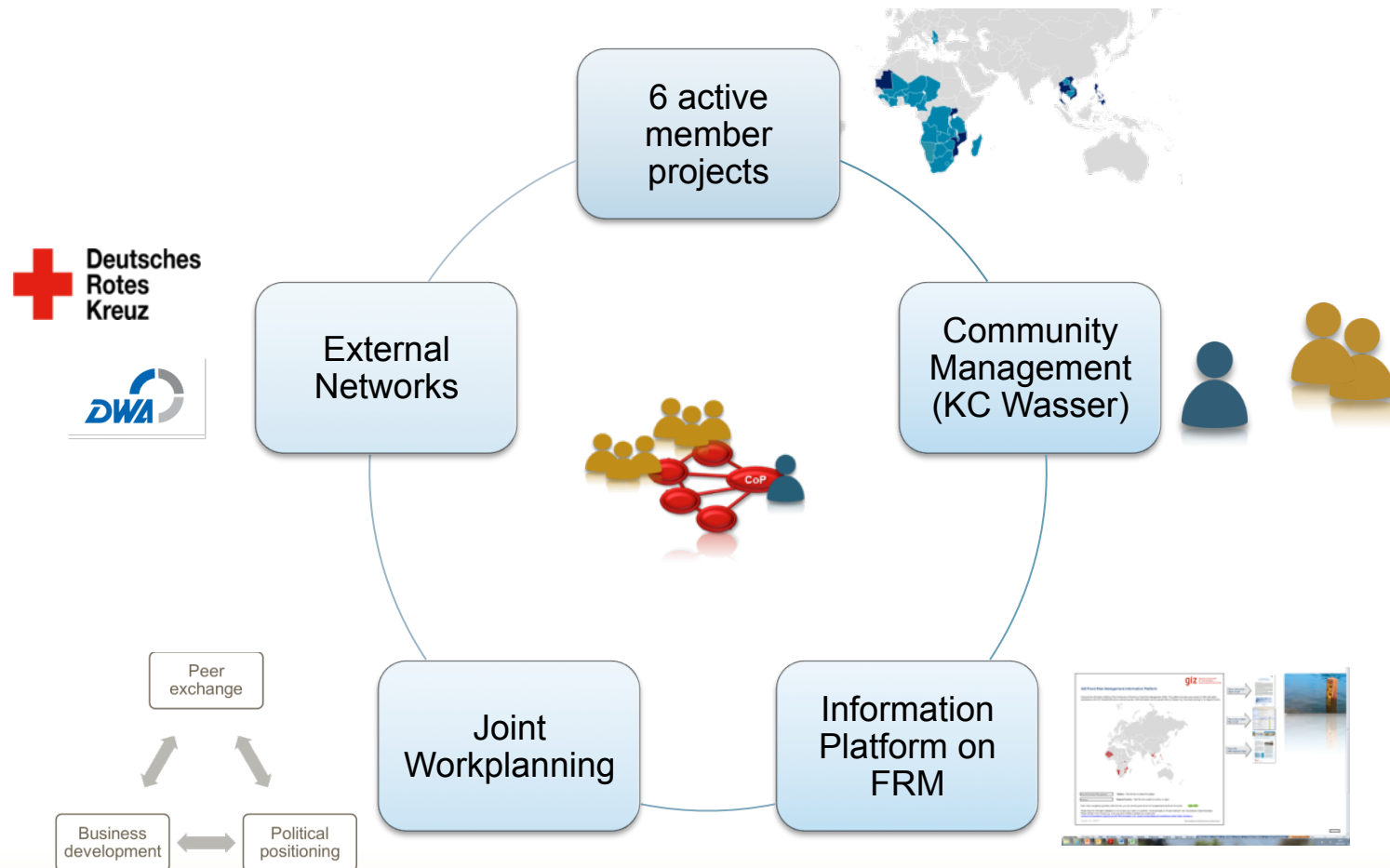


Management of flood risks and capacity to cope with flood / drought events are part of a resilient city





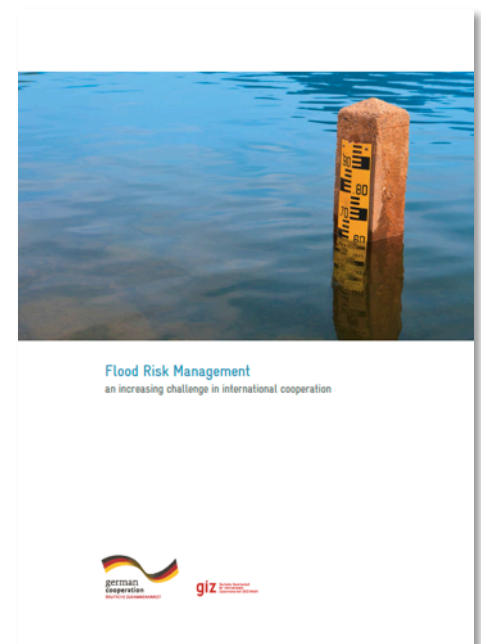
A global Community of Practice enables the exchange of GIZ projects working on flood/drought risk management





Further Information

- [Flood Risk Management Information Tool](#)
- [GIZ Publication on Flood Risk Management](#)
- Focal Point Resilient Cities: Martin Dirr / Eileen Frerking
- Focal Point CoP Flood Risk Management: Daniel Nordmann





Webinar Flood Risk Management and Adaptation in Cities

Flood Risk Management as a Contribution to Urban Resilience in Viet Nam

Eva Hübner, Project Advisor



In cooperation with the
Ministry of Construction of Viet Nam

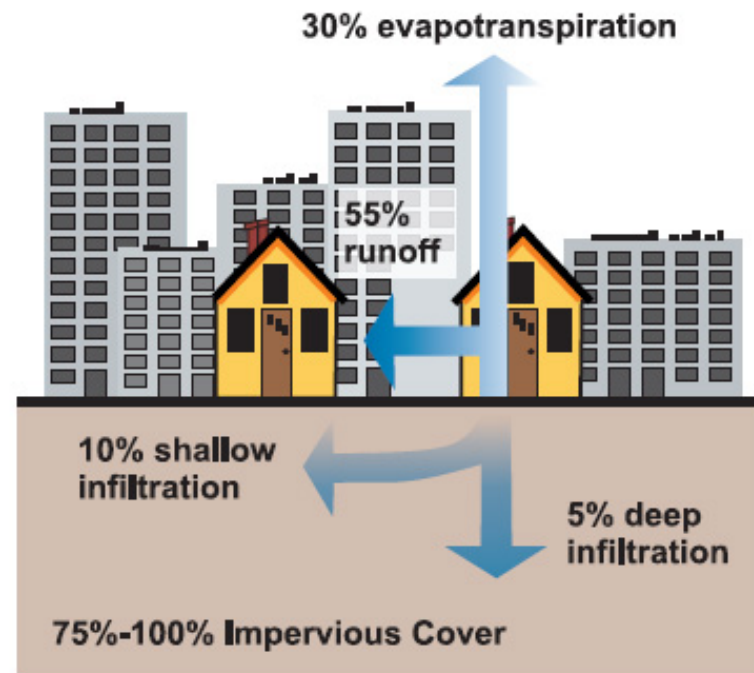
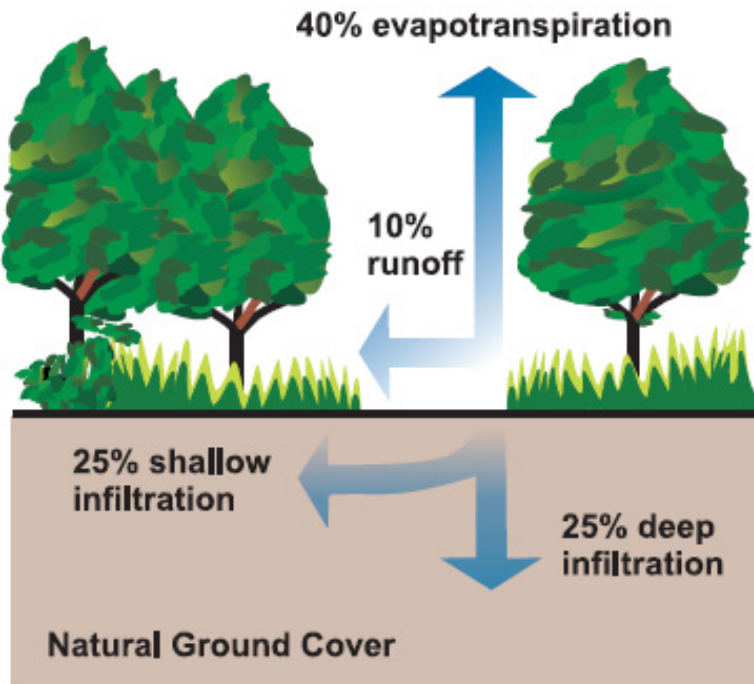


Focus: Urban Flooding



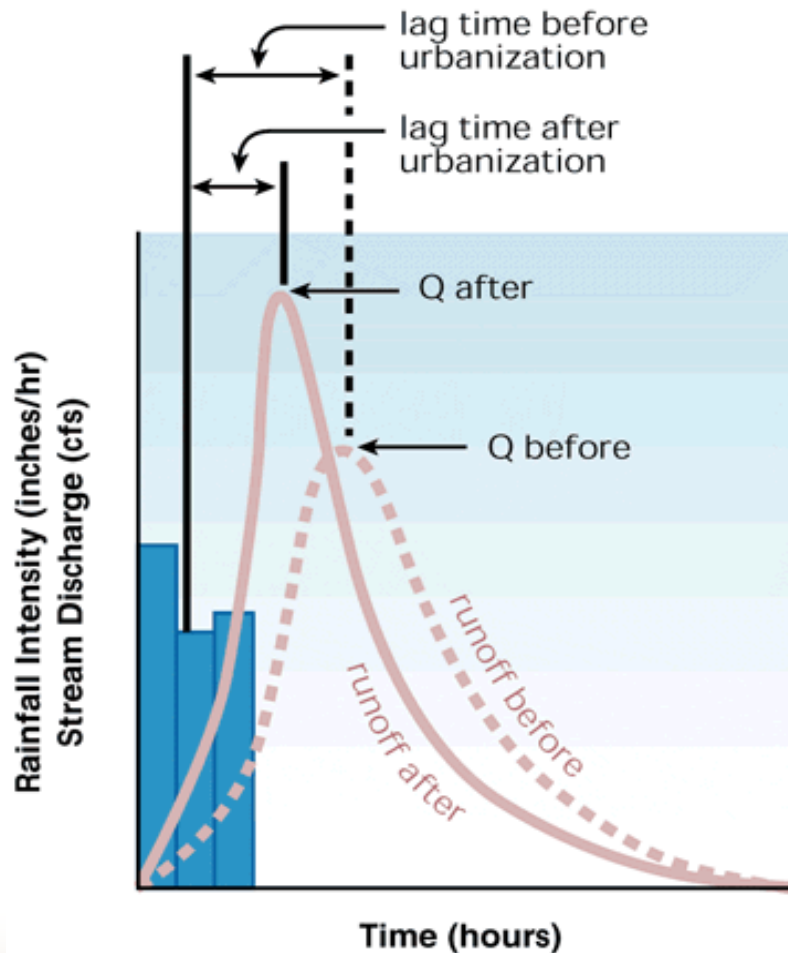


Urbanisation Increases Flood Risk





Stormwater peak flow before and after urbanization



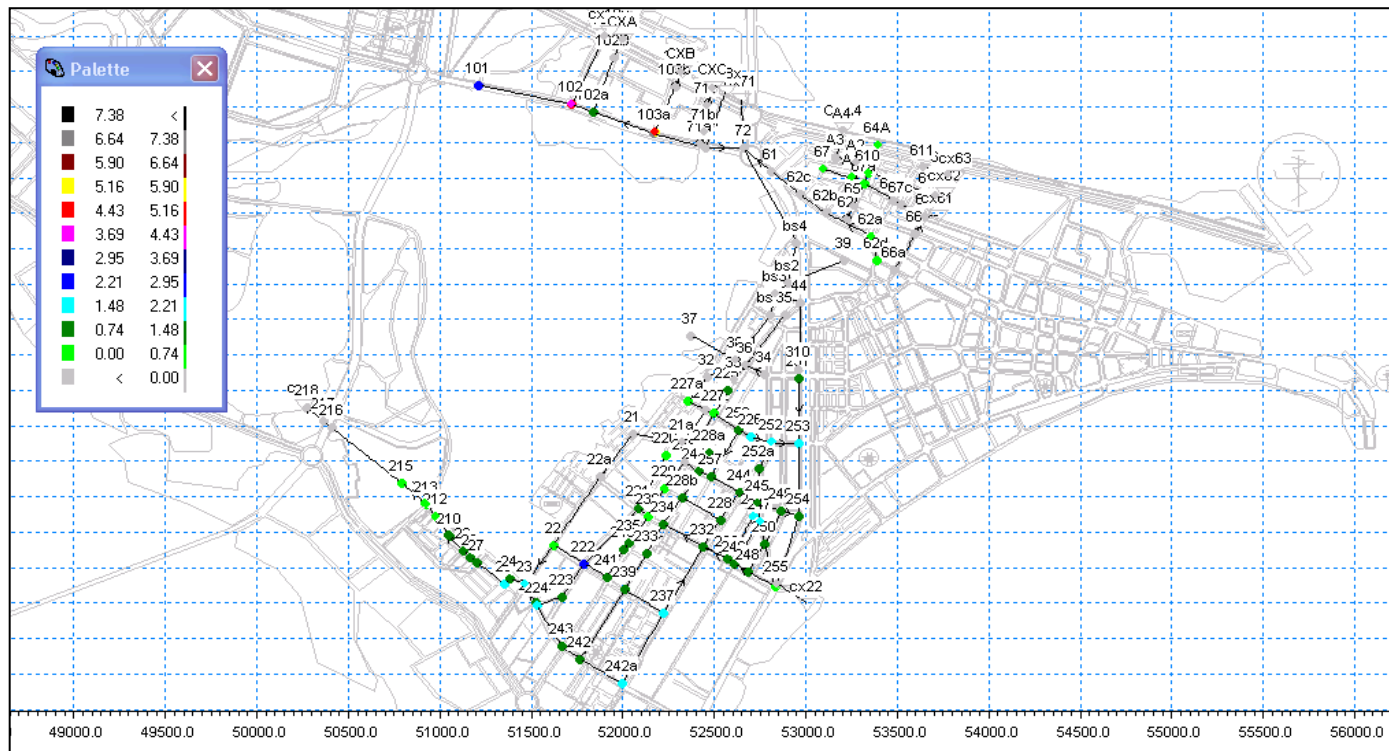
In cities*, more stormwater runs off in a shorter period of time

*Only little more than 1/3 of Viet Nam is urbanised today.



Drainage Systems in Viet Nam Insufficient

Current systems cannot prevent flooding even under historic rainfall





Build bigger sewers?

With **climate change**, cities need to be prepared for

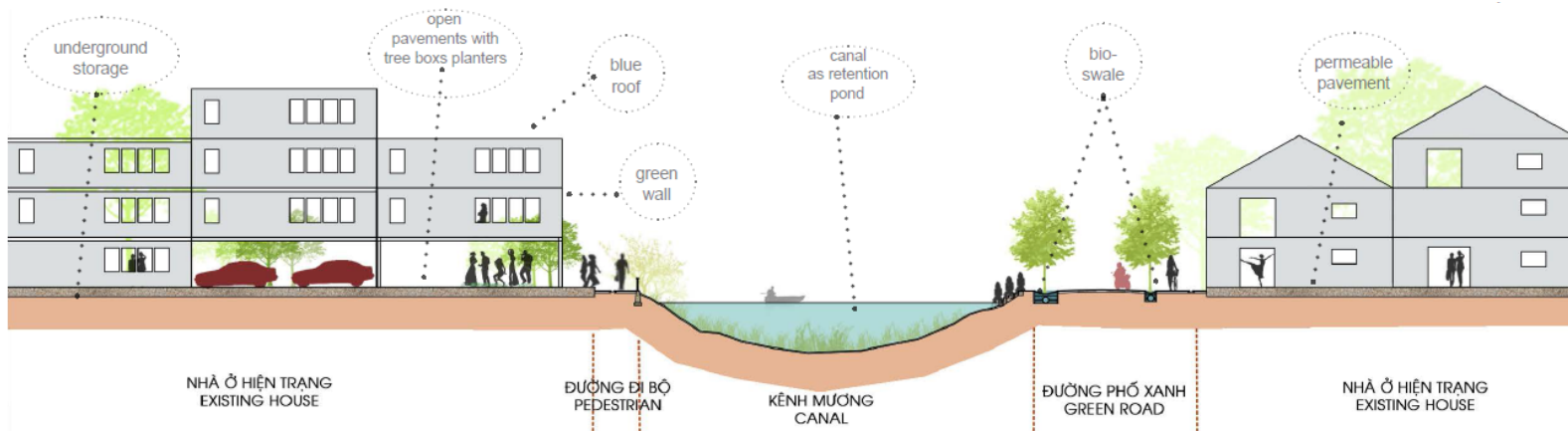
- ✓ More unpredictable weather events
- ✓ More intense precipitation
- ✓ Higher temperatures and longer periods of drought

No, but...



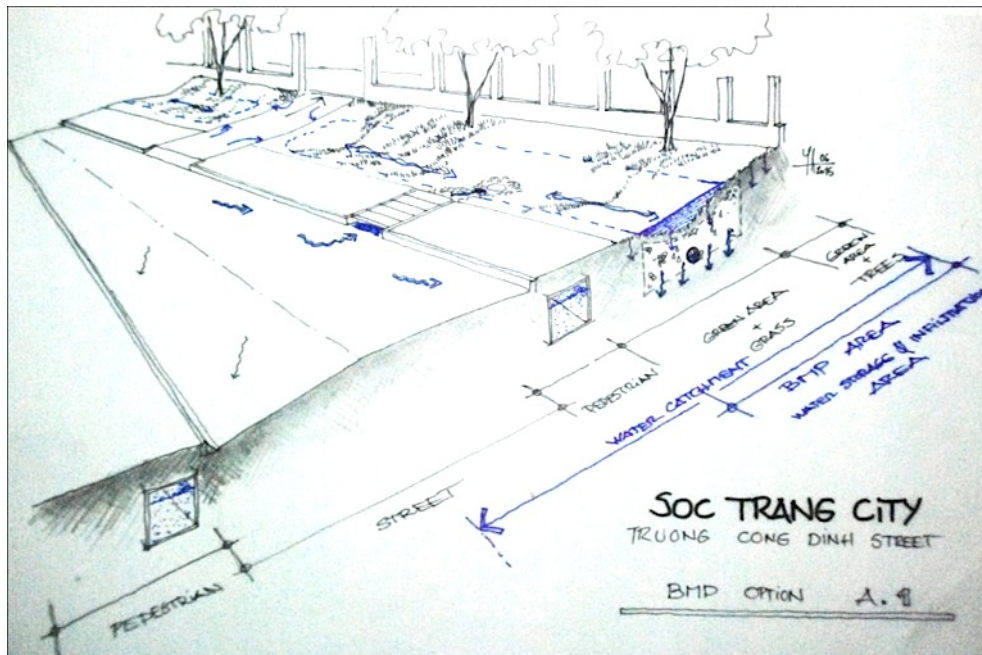
Sustainable Urban Drainage Systems

- ✓ Integrate water management into urban design
- ✓ Allow for flexibility
- ✓ More economical than conventional drainage systems
- ✓ Can be integrated into urban development projects (transport, housing,..)





Pilot Projects in Five Cities: Give Space to Water



Soc Trang – Truong Cong Dinh street

Quy Nhon – Xuan Dieu street



Project activities and outputs

- ✓ In-depth analysis and modelling of flood situation in three cities, applying a climate lens → drainage plan
- ✓ SUDS pilot projects in 5 cities to demonstrate procedures and benefits
- ✓ Support for a better policies at national level
- ✓ Support for capacity building:
 - Workshops and trainings with decision-makers;
 - Develop handbook & trainings



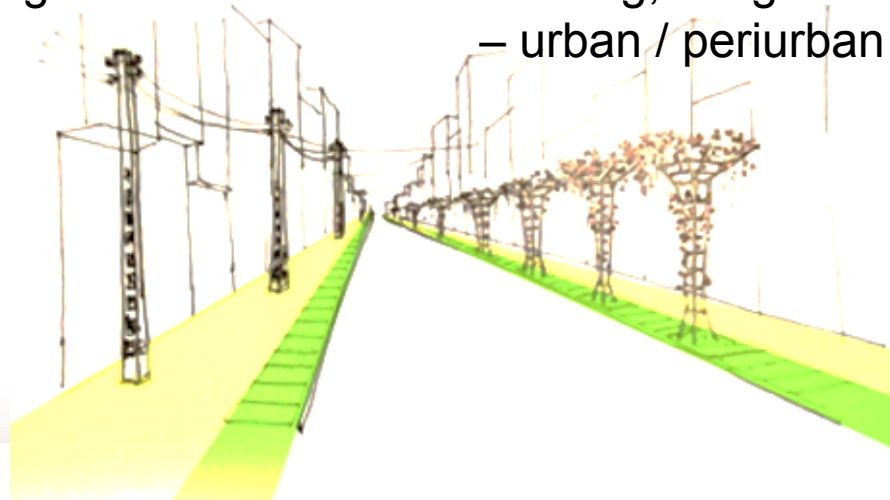


Lessons learned

- ✓ Pilot projects increase visibility and help to better understand the functioning of SUDS.
- ✓ Consider a broader platform of stakeholders to work with when setting up the project
- ✓ Develop a clear terminology at the start when introducing a new concept.

Challenges

- SUDS requires action from multiple stakeholders, and multiple changes in legislation.
- Few experiences in Viet Nam, little understanding of costs and benefits (highly context-specific).
- Linkages of different types of flooding, integrated approach rural – urban / periurban





Thank you for your attention!



Urban Resilience: Flood Risk Management and Adaptation in Cities

Webinar, 16th September 2015

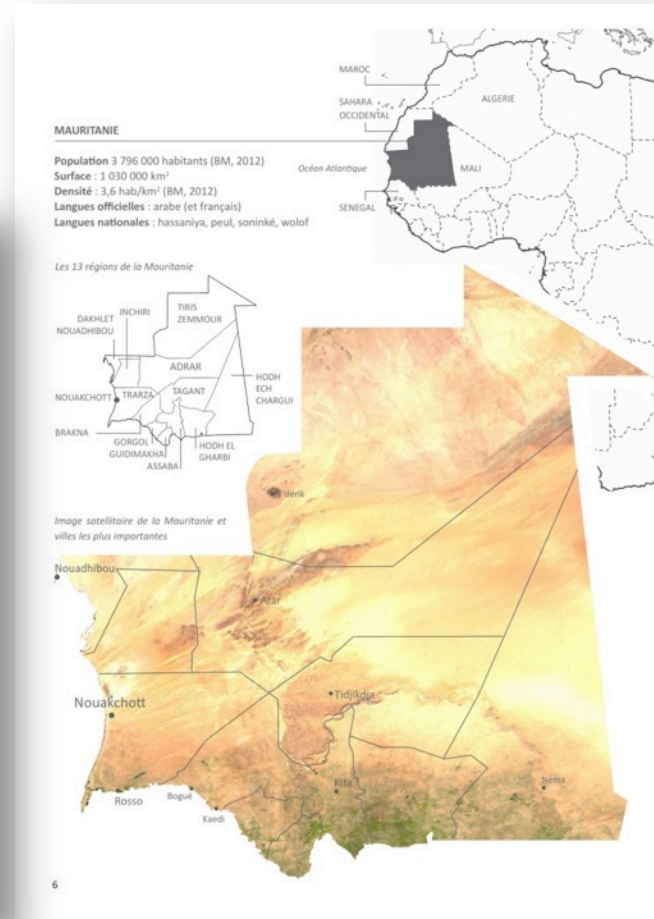
Adaptation to climate change in coastal cities Nouakchott, Mauretania



This is how Nouakchott looks like when it's rain



©enhaut.org





In Nouakchott the effects of climate change are perceptible through:

- **The increase of the frequency and intensity of rains**
- **A rapid coastal and dune belt erosion (partially) due to sea level rise**



The increase of the frequency and intensity of rains



Two third of the city are flooded during and after the rainy season (approx. 5 months).



The sea level rise



Coastal erosion at a rate of 2 to 3m/year.

Main economic infrastructure (industrial port and fishery) are endangered



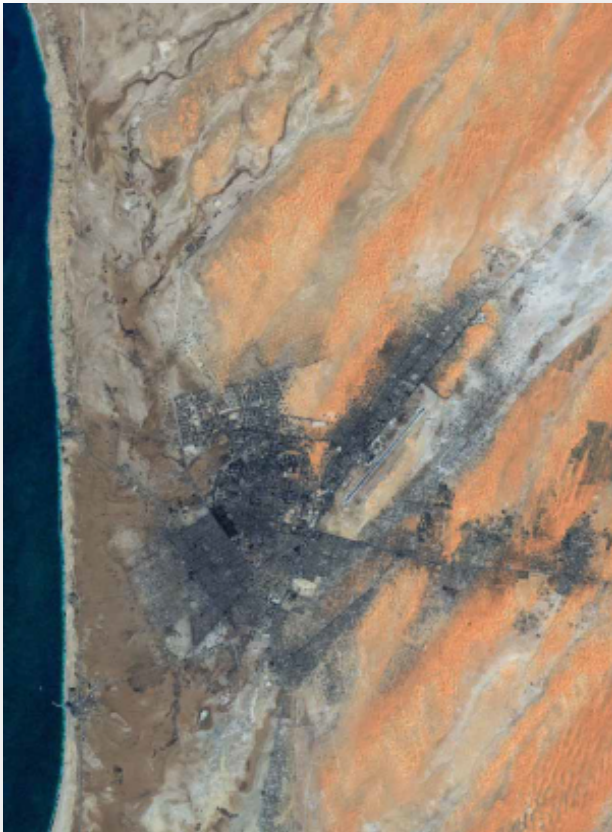
The sea level rise

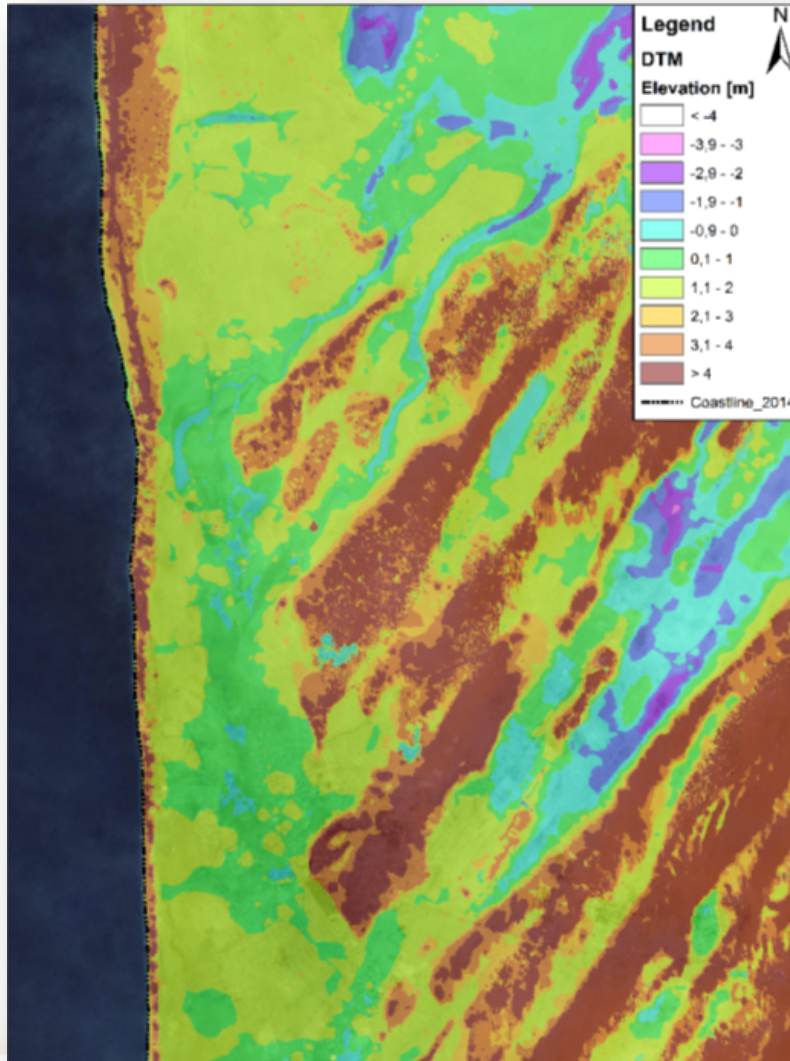


Coastal erosion attacks the only natural protection against marine incursion: the dune belt.

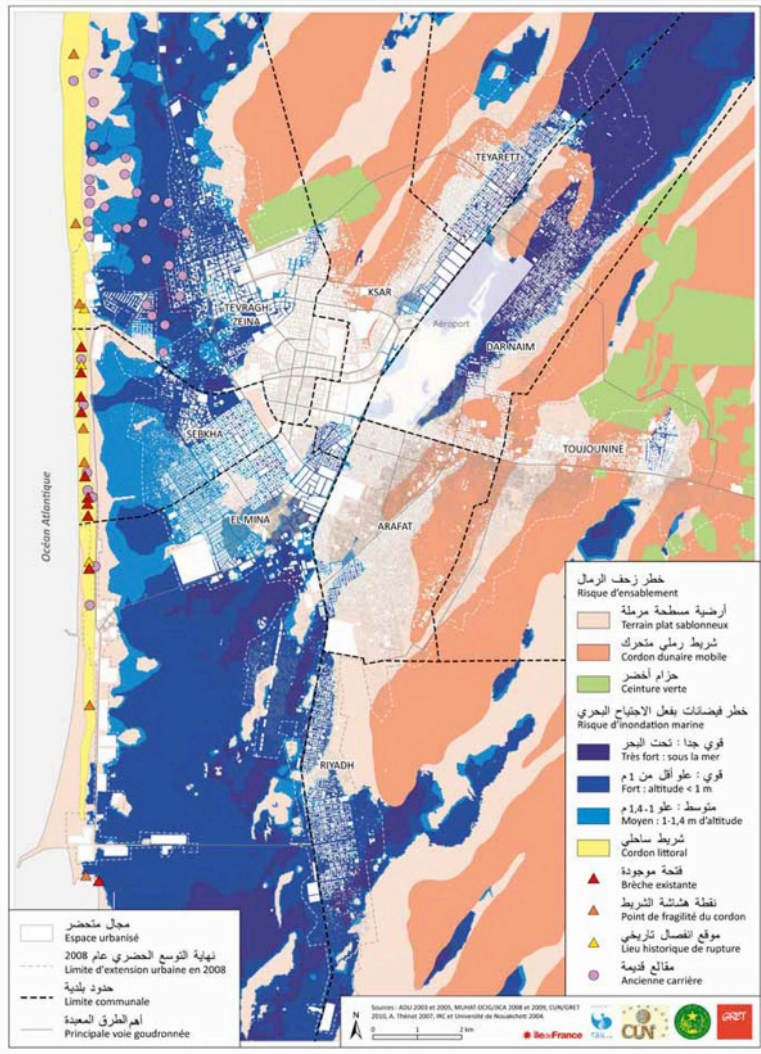


The city of Nouakchott is located behind this dune belt





- Major parts of urban areas are located in a depression with elevations between -2.0 m to +2.0 m below/above the sea.
- Only the coastal dune belt and some areas in the hinterland are located higher than 2.0m above the sea.
- The lowest areas are -4.0m below the sea.
- Two third of the city is built in prone to flood area. These zones are the ones which have the highest densities of population.
- Approximately half of the population of Nouakchott is exposed to flood risk.
- Only a small part of the town possesses a drainage system.
- Due to the low altitude and the proximity to the sea, the groundwater level is high.
- The lowest zones of the city are permanently inundated.



- Major parts of urban areas are located in a depression with elevations between -2.0 m to +2.0 m below/above the sea.
- Only the coastal dune belt and some areas in the hinterland are located higher than 2.0m above the sea.
- The lowest areas are -4.0m below the sea.
- **Two third of the city is built in prone to flood areas. These zones are the ones which have the highest densities of population.**
- **Approximately half of the population of Nouakchott is exposed to flood risk.**
- Only a small part of the town possesses a drainage system.
- Due to the low altitude and the proximity to the sea, the groundwater level is high.
- The lowest zones of the city are permanently inundated.



- Major parts of urban areas are located in a depression with elevations between -2.0 m to +2.0 m below/above the sea.
- Only the coastal dune belt and some areas in the hinterland are located higher than 2.0m above the sea.
- The lowest areas are -4.0m below the sea.
- Two third of the city is built in prone to flood area. These zones are the ones which have the highest densities of population.
- Approximately half of the population of Nouakchott is exposed to flood risk.
- **Only a small part of the town possesses a drainage system.**
- **Due to the low altitude and the proximity to the sea, the groundwater level is high.**
- **The lowest zones of the city are permanently inundated.**



What we do:

Understanding and planning for flood prevention

- **Analyse problems, provide and exchange information, develop scenarios**

Support decision makers from environment and urban sphere, at national and municipal level to adapt to climate change.

- **Create awareness and support a planning for adaptation to climate change**
- **Implement pilot projects and develop the partners' capacity to scale them up**

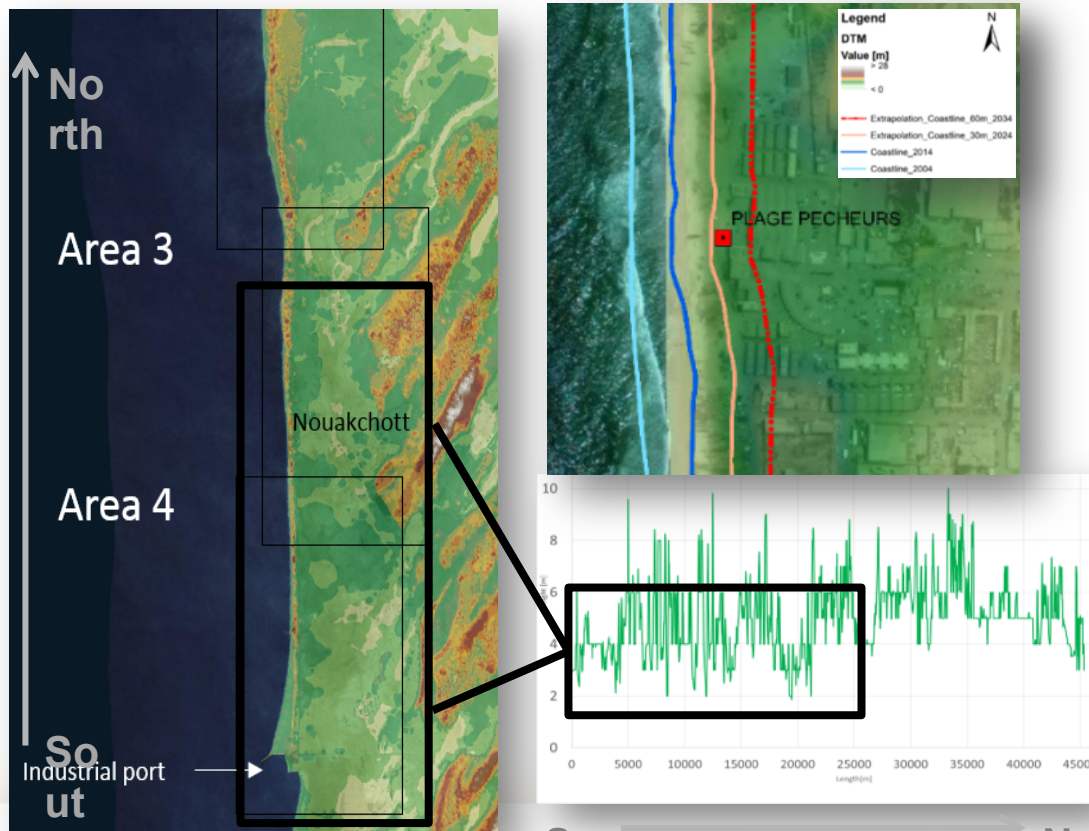


Marine Incursion



Understanding and planning for flood prevention

- **Analyse problems, provide and exchange information, develop scenarios**



- Excessive stress on dunes risk breaches → **Technical solutions developed,**
- 18 breaches in the coastal dune belt risk coastal flooding → **Technical solutions developed,**
- The coastal erosion risks the existence of the fish market → **Scenarios developed for protection and adaptation**



Support decision makers to adapt to climate change.

- **Implement pilot projects and develop the partners' capacity to scale them up**



- Excessive stress on dunes risk breaches → **Technical solutions developed, piloted and scaled-up → 10 km of dunes are stabilised (1/3 of endangered area)**
- 18 breaches in the coastal dune belt risk coastal flooding → **Technical solutions developed, piloted and scaled-up → 3 breaches are closed**
- The coastal erosion risks the existence of the fish market → **Scenarios developed for protection and adaptation → Financial Cooperation support**

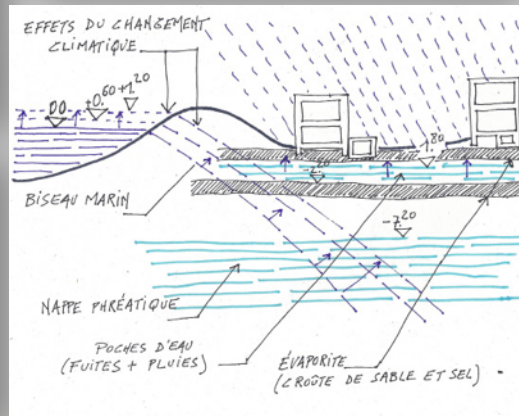


Urban flooding



Understanding and planning for flood prevention

- **Analyse problems, provide and exchange information, develop scenarios**



- Unplanned urbanisation into prone to flood areas → **proposals developed for mainstreaming of ACC into urban planning.**
- High level of groundwater and no sanitation system → **Several technical solutions developed.**
- No local consensus and understanding of impact of climate change → **Participatory vulnerability assessments map out flooding risks, other climate change impacts and possible solutions**

Support decision makers to adapt to climate change.

- **Implement pilot projects and develop the partners' capacity to scale them up**



- Unplanned urbanisation into prone to flood areas → **proposals developed for mainstreaming of ACC into urban planning** → **City funds dedicated specifically to projects on “environment, resilience and sustainable development” assure the replication and scaling-up.**
- High level of groundwater and no sanitation system → **Several technical solutions developed** → **Implementation of a pilot project provide experiences.** Other feasibility studies give ideas for sustainable small scale urban drainage systems.

Lessons learned


& Challenges



- Lack of experience with drainage systems **below the sea level**
- Lack of experience with drainage systems in **areas with a high ground water table**

Who should really be involved for:

1. Develop adaptation strategies
2. Take decisions et prioritize actions
3. Ensure coordination between sectors and levels (national, municipal, communal)
4. Implement decisions and ensure investment's sustainable



Thanks for your attention