



# Adaptation in the Transport Sector – Overview and Early Lessons Learnt



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FUND**

- **Multilateral development finance institution owned by: Denmark, Finland, Iceland, Norway and Sweden**
- **Objective since 2009: to facilitate climate investments in low-income countries**
- **Subscribed Fund Capital by owners equivalent to EUR 1 billion**
- **Office located in Helsinki, Finland**

# NDF Transport Adaptation Projects



- ✓ **Cambodia: Adaptation Options for the Transport Sector**
- ✓ **Vietnam: Integrating Climate Change Adaptation to Transport**
- ✓ **Senegal: Integrating Climate Change Adaptation to Transport**
- ✓ **Zambia: Developing Climate Resilient Infrastructure Standards**
- ✓ **Nicaragua: Developing Adaptive Capacity for Climate Change**
- ✓ **Mozambique: Developing Capacity for a Climate Resilient Road Sector (under preparation)**

# Cambodia: Adaptation Options for the Transport Sector



## Key drivers for adaptation

- Overall increase in average total annual rainfall poorly distributed over seasons
- Increased floods and droughts impacting infrastructure

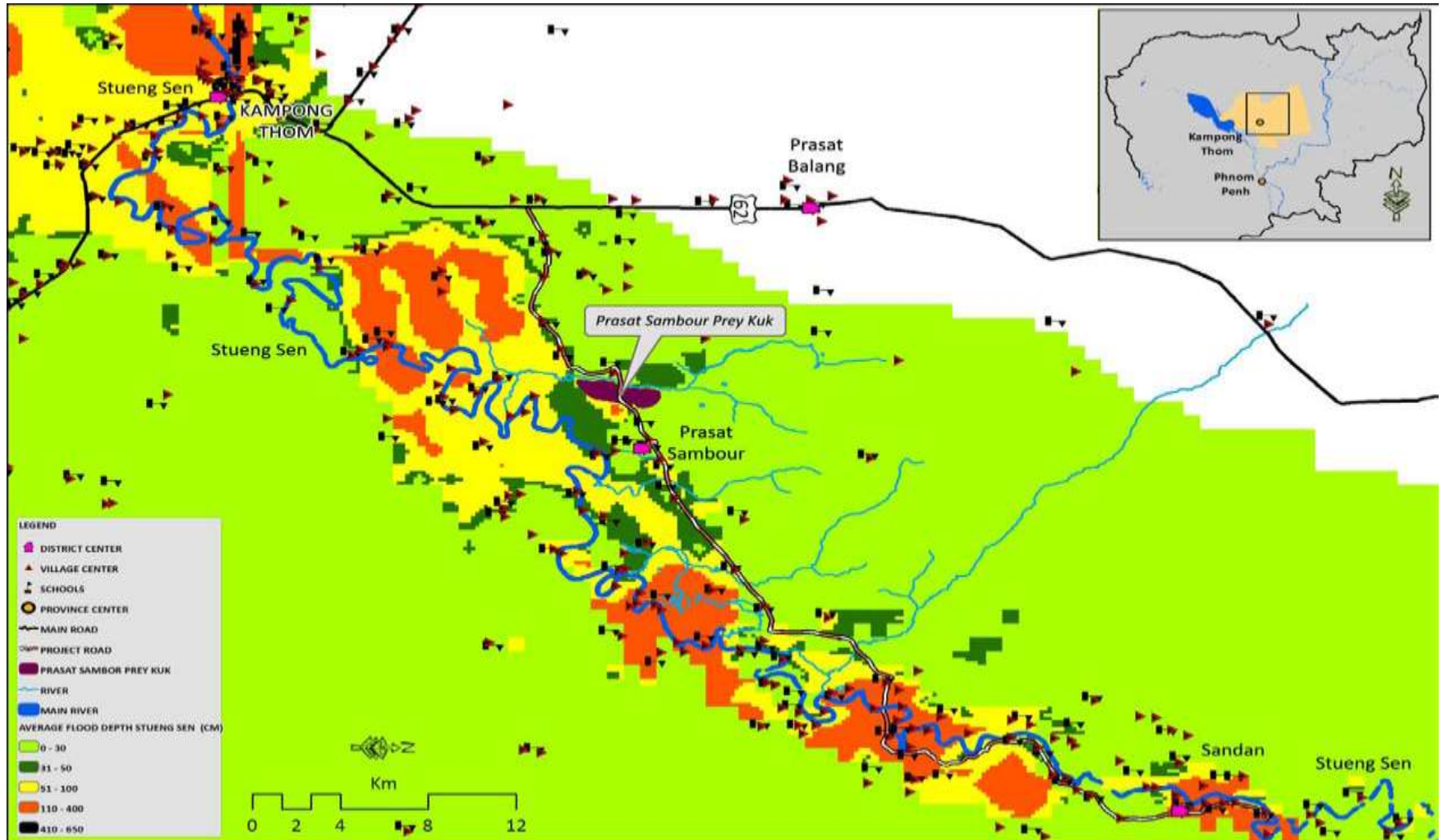
## Project designed to

- quantify climate change impacts to planned and existing transport infrastructure
- identify most vulnerable areas
- identify a range of adaptation strategies

# Cambodia: Adaptation Options for the Transport Sector

- **Local rainfall data collected**
- **Local catchment data collected**
- **Hydrographic modeling used to predict areas prone to flooding**
- **Downscaling of global data to local scale**
- **GIS system used to process data**
- **Vulnerability maps produced and used for planning**

# Cambodia: Adaptation Options for the Transport Sector

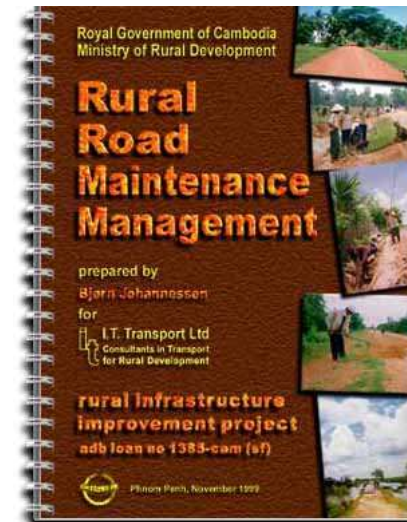


# Cambodia: Adaptation Options for the Transport Sector



## Climate change adaptation options

- Road specific engineering approaches – raising, sloping, paving
- Drainage
- Hydrology – retention ponds, irrigation dams
- Maintenance
- Policy development / planning: realignment, road management systems, pavement/bridge management systems, revised road design standards, green planning



# Cambodia: Adaptation Options for the Transport Sector

## Lessons learnt and opportunities

- **Lessons learnt collected quickly and fed into investment planning**
- **Economics of adaptation: cost benefit analysis, analysis of the cost for making new roads climate resilient in comparison with post damage rehabilitation**
- **Maintenance is one of the most effective adaptation measures**
- **Adaptation + mitigation strategies made possible**
- **Rural road strategies based on a multi-sectoral approach**





# Senegal-

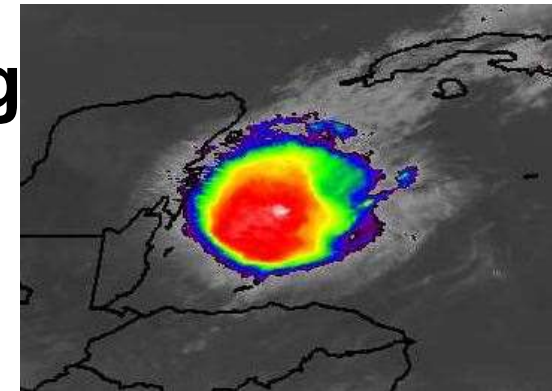
## Integrating Climate Change Adaptation to Transport

- **WB: Transport and Urban Mobility Project (STUMP)**
- **NDF financing is focused on:**
  - ✓ **Capacity development for transport professionals**
  - ✓ **Improving data and information base for decision making**
  - ✓ **Pilot projects for demonstration purposes**



# Nicaragua: Adaptive Capacity in Road Sector Support Program

- IDB & Ministry of Transport
- NDF EUR 4.4 million 2012-17
- ✓ Capacity assessment, training
- ✓ Revision of norms and technical standards
- ✓ Climate modeling, vulnerability;
- ✓ Develop priority/decision-making tool
- ✓ Implementation of pilot projects with demonstration value



# Thank You!



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