

# **Novel Approach to Climate change Adaptation in Rural Roads Improvement in Cambodia**

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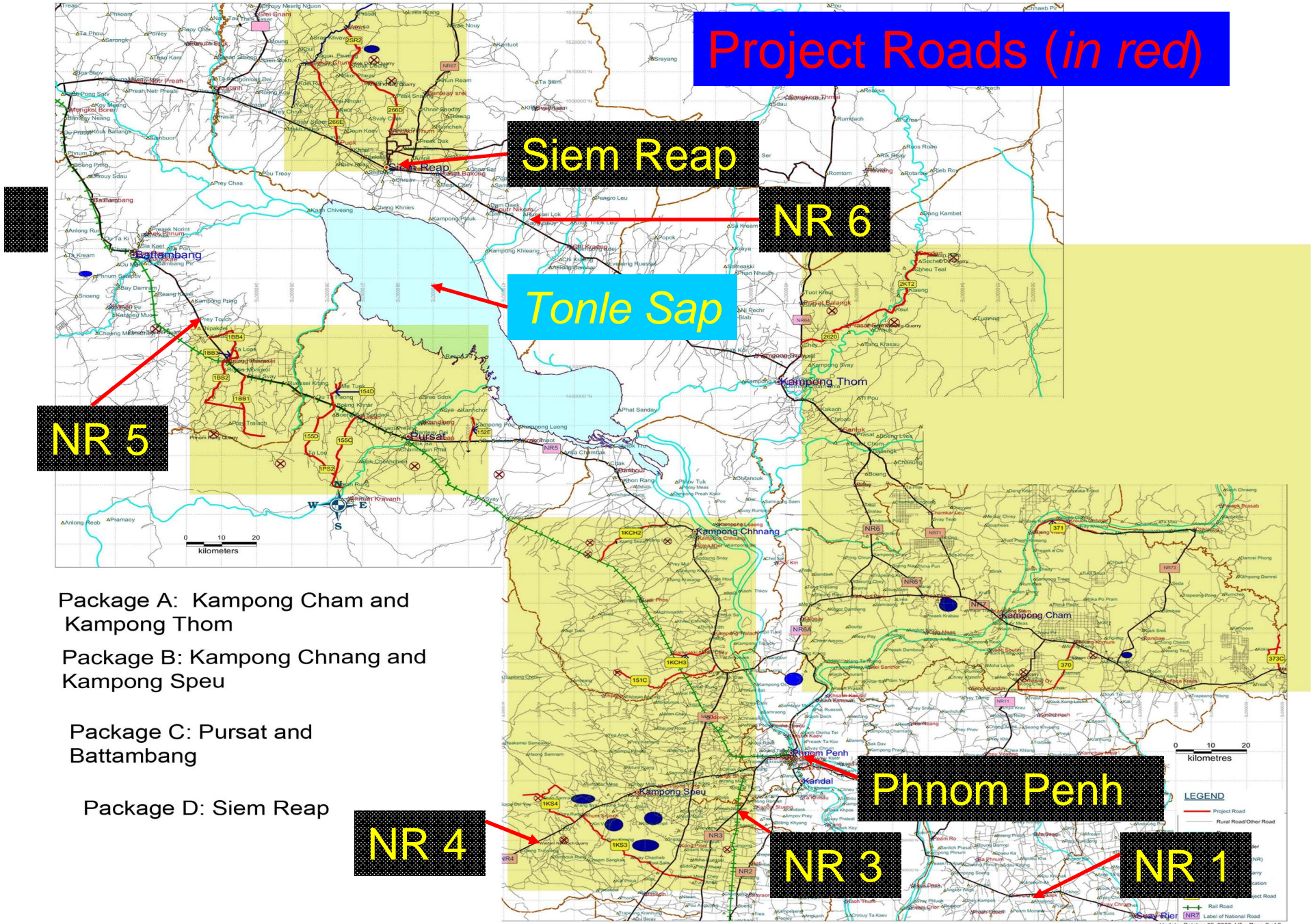
**Southeast Asia Department, ADB**

# Proposed Rural Roads Improvement Project

## Project Data:

- a) Improvement of 505 km of rural roads to paved condition, from laterite surface
- b) Project areas in 7 provinces mostly around Tonle Sap
- c) Some roads are very vulnerable to floods, with sections destroyed by 2009 typhoon *Ketzana*
- d) Project has 4 major outputs, apart from a) above, and one is Climate Change Adaptation Component
- e) This component has structural or *hardware* measures as well as *software* measures

Map of Target Road Project in the Selected 7-Province  
 ADB-TA-7199-CAM: Provincial/Rural Road Asset Management Project



**Project Roads (in red)**

**Siem Reap**

**NR 6**

**Tonle Sap**

**NR 5**

**Phnom Penh**

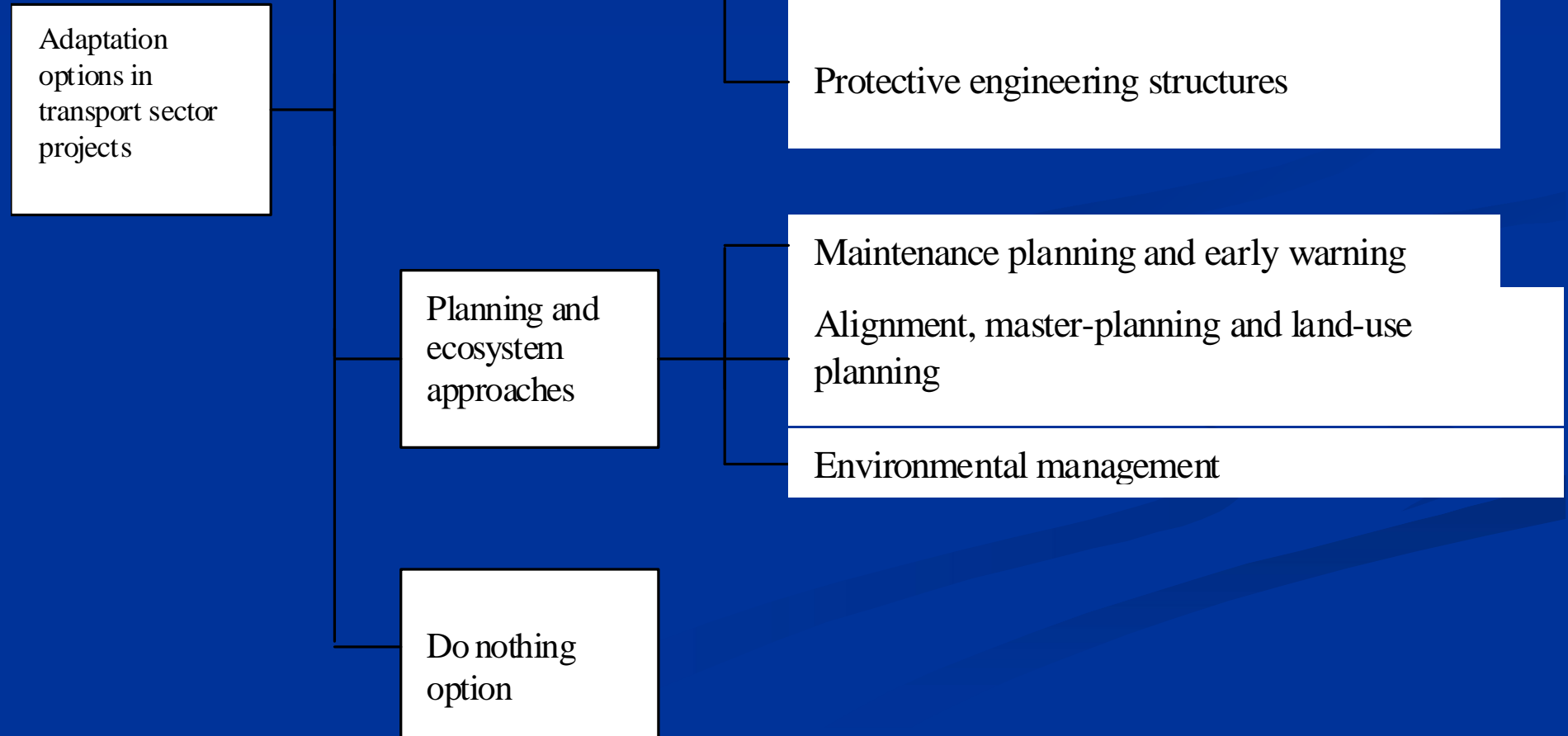
**NR 4**

**NR 3**

**NR 1**

- Package A: Kampong Cham and Kampong Thom
- Package B: Kampong Chhnang and Kampong Speu
- Package C: Pursat and Battambang
- Package D: Siem Reap

# Adaptation options in the transport sector



# The Project's approach for climate change adaptation

- Protecting the road infrastructure from the impacts of climate change
- Ensuring that the road infrastructure does not increase the vulnerability of the surrounding area to climate change
- Providing early warnings and emergency management measures

*Two outcomes...the first:*

## **Improved planning for rural roads to accommodate climate changes**

- **Prepare vulnerability maps for rural roads:**
  - *due to climate change*
  - *to improve planning for climate changes*
  - *include potential climate change down scaling*
  
- **Identify potential adaptation options:**
  - *prioritize them*
  - *use an economic analysis of climate-proofing measures*
  - *to support the decision making process*

## Continuing the first outcome...

- **Review the sustainability and capacity:**
  - of current engineering designs, standards and guidelines to withstand climate changes
- **Develop and implement training and curriculums:**
  - Ministry of Rural Development (MRD)
  - university level for engineering students
- **Help MRD to establish a climate change adaptation office:**
  - *with adequate staff*
  - *to be trained under the Project*

**the second outcome:**

## **Increased resilience of road infrastructure to climate changes**

### ■ **Green planning:**

- design and implement ecosystem-based adaptation strategies
- focus on environmental/green planning for project roads
- plant climate change resilient trees along Project road embankments
- select grass and biomaterials



*improve flood and drought management  
(i.e. increasing ground cover and infiltration of floods and  
water retention during droughts)*

the second outcome continues...

## Pilot programs:

- local early warning system
- emergency management



- \* *fully equipped emergency management center including a back up mobile unit*
- \* *early warning systems installed in key locations*
- \* *emergency management system*
  - *appropriate communication*
  - *emergency and rescue equipment and vehicles*
  - *trained personnel to manage the center*  
(*response teams, medical teams etc*)

**Thank You!**