



MAKING ROADS WORK WITH WATER AND CLIMATE CHANGE: INTERNATIONAL EXPERIENCES

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The Road for Water Initiative

- To have roads systematically used for water management in 25% of countries in ASIA and 50% on Africa by 2025 and create win-wins between road and water practices
- Working with partners
 - Global Resilience Partnership
 - World Bank
 - International Roads Federation
- Global Road Achievement Award
- Active in 9 countries



Why? Water damage triggered by roads can be huge – changing the landscape



Why? Gentle run-off is forced into floods..



Why? Urgent need to turn things around



Triple Win

REDUCED WATER
DAMAGE
TO ROADS
(-35%, -80%)
AND MORE RELIABLE
ROADS



WATER MANAGED
FOR PRODUCTIVE USE

RISING GROUNDWATER
LEVELS AND BETTER SOIL
MOISTURE

WATER RETENTION

EROSION CONTROL

FLOOD MANAGEMENT

REDUCED
DAMAGE FROM ROADS
THROUGH FLOODING,
EROSION AND SEDIMENT
DEPOSITION

Started with Road Water Harvesting in Ethiopia in 2014

- Storing high rainfall for dry period as groundwater, soil moisture or surface water
- Adequately dealing with 2015 El Nino (droughts and floods)
- Engaged > 2.25 M people in 2015/7 campaigns
- Benefitted 1.1 M people



Making Roads Work for Water – opportunities to reach scale

Big scale and impact

Roads are major investment globally

- 1-2 Tr USD/year

Roads one of the major impact on (surface and subsurface) hydrology and flood patterns

Impact now often negative

High benefit, relatively low additional cost

Measures are low cost in comparison to total road investment (<5%)

Investment in Ethiopia USD 1800/km – **benefit USD 14000/km**

In fact, compensated by reduced costs of maintenance and in some cases savings on investment

THREE APPROACHES

1. Making use of the road as it is for water management
2. Modifying design of the road
3. Additional measures



ETHIOPIA: ROAD SIDE INFILTRATION TRENCHES



CHINA: ROAD SIDE PONDS



MOZAMBIQUE: CONVERTED BORROW PIT



NETHERLANDS: DEPRESSION for RECHARGE



PORTUGAL: MANAGING WETLANDS WITH ROADS



MALI/ PORTUGAL: ROAD EMBANKMENT = RESERVOIR



Why Tajikistan?

- Even though there are more than 947 rivers longer than 10 km, there is still **shortage of water** during the dry season in some areas (ICIMOD)
- Main risks to water quality and availability, soil quality, human health and development are **droughts, floods and landslides** (USAID 2016)
- The annual average population affected by **flooding** in Tajikistan is about 100,000 people (World Bank 2015)
- 82.3% of all land and 97.9% of agricultural land in Tajikistan suffers some level of erosion (UNDP 2011)



Why Tajikistan?

- **Low regional and international connectivity** with 14,000 km of roads (62% local, 23% national, 15% international) (ADB 2009)
- 36% of Tajikistan's surface exposed to landslides, more than 50,000 landslide sites registered. Of these, 1,200 put human settlements, **roads**, irrigation, and other facilities at risk (UNDP 2010)
- Road maintenance is a challenge due to disasters, topography and funding

