

# Roads for Water



MetaMeta was established in 2004 and is specialized in environmental management and water resources development. It is active in Asia, Africa, Europe and Latin America with recent projects in twenty-five countries globally. MetaMeta has registered offices in the Netherlands, Turkey, Ethiopia and Nepal.

MetaMeta wants to contribute to a fairer, better governed and more water secure world. It is for instance developing programs to promote groundwater management, the management of salinity, the beneficial use of floods, the protection of landscapes and the inclusion of vulnerable population. The beneficial use of roads for water and economic resilience is one of the flagship activities.

Our services concerns environmental management programs, productive and social water resource use, capacity building and training, research and communication, stakeholder engagement and support to implementation. We were honoured with the IRF Global Road Achievement Award 2015 for Environmental Mitigation.

Our approach is to work with a diversity of public, private and civil society partners and we are happy to engage with your organization.

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[www.roadsforwater.org](http://www.roadsforwater.org)  
[www.thewaterchannel.tv](http://www.thewaterchannel.tv)

**Water is short in many places but roads are everywhere. Globally at least 25 million kilometres of roads will be constructed by 2050, enough to circle the earth over 600 times. Roads are not just means to get from A to B.**

**Roads, especially highways, are massive structures and so become integral parts of their landscapes. They affect the landscapes' ecology in significant ways, especially the movement of surface water across the landscape. By 'harvesting' the water with these roads, water shortage can be overcome and climate change addressed.**

**Together with partners MetaMeta aims to have roads water buffered in at least half of the countries in Africa and a quarter of the countries in Asia by 2025.**

**Roads for Water**





# Roads for Water

Road construction can make a large contribution to water security. The potential to scale up the use of water with roads is enormous, especially with the ongoing investment in road building globally, with every area having its own specific best solutions.

At present, unfortunately the construction of roads often typically leads to local flooding, gully erosion, water logging, dust and sedimentation. Yet this can be turned around and roads and water, rather than being enemies, can be friends.

There is also a compelling economic case: harvesting water with roads greatly reduces water damage to roads. Road water harvesting can contribute to road longevity and safety and can make roads more resilient to climate change. Better basic drainage on unpaved feeder roads for example will not only reduce damage and improve all-weather accessibility but it is also the basis to divert water to adjacent farm land or storage reservoirs.

Another example is that culverts and river crossings often trigger the development of gullies because they concentrate run-off. Given time these gullies will undermine the road itself too.

There is a large range of options to collect water with roads: diverting water from culverts, using the springs that are opened up with road construction, developing small water bars for water harvesting on gravel roads, using road river crossings (so-called drifts) for water retention or reusing excavation pits as storage reservoirs.

In different areas different opportunities and solutions arise. In coastal areas and lowlands roads double up as flood embankments and functions can be optimized to double benefit. Road infrastructure can also be used for water control in lowlying areas and irrigation systems.

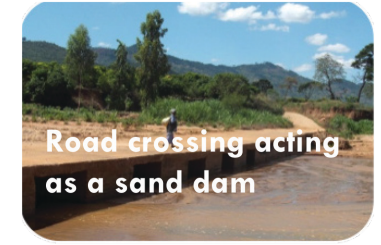
These interventions provide the following benefits:

- Moisture levels in soils along the road will increase
- Shallow groundwater levels will increase
- Gully expansion will be halted
- Reduction of road maintenance costs
- Reduction in flooding of dwelling houses and farmlands

[www.roadsforwater.org](http://www.roadsforwater.org)



**Roadside runoff  
directed to farmlands**



**Road crossing acting  
as a sand dam**



**Water from culverts  
channelled to borrow  
pits**



**Placing culverts in  
recharge areas**



**Road side ponds  
for irrigation**



**Stoplogs on culvert to  
create reservoir**



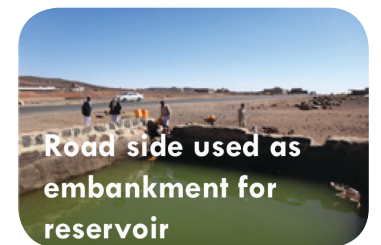
**Roadside ponds  
for groundwater  
recharge**



**Road crossings  
as flood water  
spreading weirs**



**Spring capture**



**Road side used as  
embankment for  
reservoir**