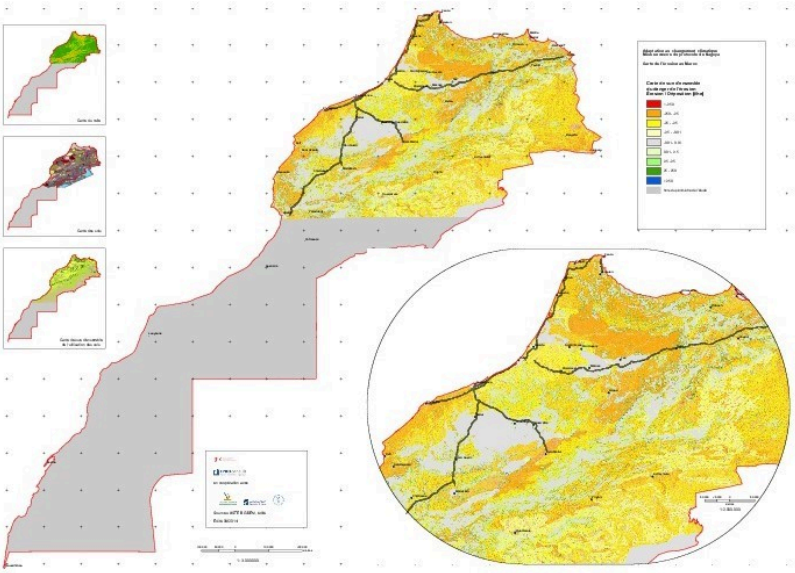
Erosion Project Morocco II:

Development of the Planning Instrument "Erosion Evaluation and Prognosis" for Road Infrastructure

IPROconsult



Client:
German Society for International Cooperation (GIZ)

Services provided:
Development of the Planning Instrument "Erosion Evaluation and Prognosis" for Road Infrastructure

Cooperation Partners:
National Agronomic Research Institute (INRA Morocco)
Moroccan department of motorways (ADM)

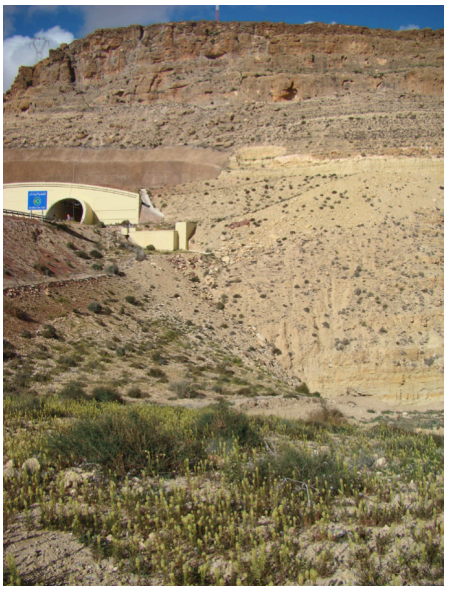
Execution period:
2015 - 2018

Context

The risk of flooding and soil erosion is rising because of the impacts of climate change: period of heat waves and drought are prolonged and extreme rainfall events are becoming more intense and frequent. This worsening of climate conditions increases the vulnerability of transport infrastructure, the risk of undesirable movements of land and soil and the risk of flooding.

Results of previous erosion project

With the research project conducted by ADM and carried out with GIZ, INRA and IPROconsult concerning the assessment and modeling of the risk of water erosion on highways in Morocco under the effect of climate change, an overall map of the risk of erosion in Morocco was developed. With this high-resolution modeling, the quantities of displaced materials (erosion / deposition) under the effect of precipitation specific to each region could be evaluated. The simulations were carried out using the physically based EROSION-3D computer model, which shows the process of runoff formation and erosion for each given precipitation event. Medium-scale simulations also took place in three potential-risk catchments. Consequently, the resilience of the drainage system of highway structures could be assessed and relevant recommendations could be made.



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Continuation and consolidation of previous erosion project

By strengthening the adaptation of infrastructures to future climatic conditions, this project responds directly to the overall objectives defined by the INDCs for Morocco: minimize the risk of the impacts of climate change and invest inadaptation to climate change. That is why this R &D project is set to continue.
For a reproducible evaluation of the risk of erosion, an interdisciplinary approach is needed, with the implementation of integrated water management and the fight against soil degradation and desertification in the catchments along highways.

This approach also aims to develop:

- New contributions for strategic environmental planning to predict the potential benefits from the adoption of sustainable land management (SLM) practices that will minimize social and environmental risks to both road infrastructure and affected populations in rural areas
- The economic evaluation of the feasibility of adaptation measures to climate change (technical construction costs and economic aspects of the impact on affected land in the catchment areas of road sectors)

The continuation of this project aims to:

- Set up a monitoring system for a proactive management of the risk of erosion and flooding (including measurements with sensors, data interpretation with adapted and optimized simulation tools, DSS and recommendations)
- Develop of a methodological manual to be used as a working tool for design engineers for a better management of the risk of flooding and water erosion in transport infrastructure projects

Capacity building is also part of the project, in order to qualify the engineers and street-infrastructure managers over the long-term and guarantee in this was a better monitoring and maintenance of the infrastructure including water erosion and flood risk assessment.

Diese Seite ist zu löschen!
Kontaktdaten Auftraggeber
German Society for International Cooperation (GIZ)

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