Dutch approach to flood risk management for La Mojana in Colombia

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Abstract
La Mojana is an inner delta of the Río Cauca in Colombia. Upon presidential request to the Netherlands after extensive flooding in 2010, we reviewed the approach to flood risk management for the area from a Dutch perspective. This resulted in several findings, with most prominently the lack of a complete risk-based approach and the neglect of considering the hydrodynamic relations between La Mojana and upstream and downstream river reaches.

Figure 1 La Mojana in Colombia.

Introduction
La Mojana is a lowland area of 5600 km² in Colombia. As an inner delta of the Río Cauca, it has a topography that for about half of its area consists of a network of lakes, swamps and canals. The area is sparsely populated (440,000 inhabitants) but has nonetheless a complex socio-economic setting with considerable poverty, also when compared to other areas of Colombia, and the scars of violent conflict. The area suffers from frequent flooding and was hit hard in 2010 when extensive flooding occurred all over the country. The president of Colombia requested the Netherlands to assist in looking for “Dutch proof” solutions to water safety in a number of areas in the country, including La
Mojana. Against this background, Agentschap NL assigned us the mission to review the approach to flood risk management for La Mojana from a Dutch perspective.

Method
We reviewed study reports by Universidad Nacional, visited La Mojana, and discussed the problems with researchers of Universidad Nacional, staff at Fondo de Adaptación and the population of La Mojana, in close consultation with the Royal Dutch Embassy in Bogotá and the Dutch Ministry of Infrastructure and Environment (DG Ruimte en Water, Rijkswaterstaat Waterdienst). We compiled our findings in a report and used a second mission to Colombia to present the results to the Secretary-General of the Presidency of the Republic, the Minister of Environment and Sustainable Development, the Minister of Transport, and high officials of the government and the Fondo de Adadaptación.

Results
Our review resulted in several findings. The most important finding from a Dutch perspective is the absence of a complete risk-based approach, i.e. a definition of which level of protection (probability of flooding) is to be given to which areas, in accordance with a spatial vision or plan for the different uses of land in the area. Another important observation is that Universidad Nacional had analyzed the hydrodynamics of La Mojana without considering the relations with upstream and downstream river reaches.

![Figure 2 Dike breach along the Rio Cauca at Santa Anita.](image)

Conclusion
Despite good local expertise, flood risk management in Colombia can benefit from a distinct Dutch approach.