

DAFNE: A Decision-Analytic Framework to explore the water-energy-food NExus in complex and transboundary water resources systems of fast growing developing countries

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What is DAFNE?

DAFNE is a four-year project funded by the European Union under the Horizon 2020 Research and Innovation Action category. This project is being carried out in the **Zambezi** and the **Omo river basins** in Africa. It investigates how water, energy and food are managed in these areas and explores options for sustainable and integrated management in the future together with stakeholders.



What is the Water-Energy-Food (WEF) nexus approach?

'The nexus approach highlights the interdependence of water, energy and food security and the natural resources that underpin that security – water, soil and land. Based on a better understanding of the interdependence of water, energy and climate policy, this new approach identifies mutually beneficial responses and provides an informed and transparent framework for determining trade-offs and synergies that meet demand without compromising sustainability.'

Hoff, H., 2011. Understanding the nexus: Background paper for the Bonn 2011 Nexus Conference, page 13.

What are the goals of DAFNE?

DAFNE's central objective is to develop a Decision-Analytic Framework (DAF) that can be used to support the quantitative assessment of the social, economic and environmental impacts of expanding energy and food production in complex physical and political contexts where natural and social processes are strongly interconnected and the institutional setting involves multiple stakeholders and decision-makers.

Moreover, the DAF will integrate a novel participatory and multi-disciplinary perspective while working with private and public stakeholders in order to:

- develop a better understanding of the WEF nexus in the Omo and Zambezi river basins;

- generate and explore alternative planning and management solutions focused on the WEF nexus;
- contribute to solutions that foster profitable but equitable use of resources without infringing on environmental limits, and minimize and mitigate societal and stakeholder conflicts.

Zambezi River



Aerial view of the Zambezi River, Mosi-Oa-Tunya Waterfall, 2012.

What are DAFNE's most important expected impacts?

1. A better understanding of the riverine ecosystem and more informed decision making through the application of innovative technological approaches adapted to local conditions;
2. More effective, operational application of integrated water resources management (IWRM). By involving both grass root and institutional stakeholders the project will facilitate long-term collaboration and cooperation among stakeholders thus bridging the gap between prescriptive IWRM, adaptive management and the operational dimension of water management;
3. An improved approach for the identification of vulnerabilities within and among sectors to inform policy making.

Who is involved in DAFNE?

DAFNE is a consortium project that involves 13 project partners, these include:



An Ethiopian partner is expected to join in 2017.

What role do stakeholders play?

Stakeholders are key to the DAFNE project. Their involvement and participation in the project will revolve around several activities, in particular:

- Bringing in their perspective on water, energy and food issues in the Omo or Zambezi river basins,
- Contributing to the identification of indicators and potential pathways to sustainable resource use,
- Exploring and discussing alternative pathways and solutions for the management of the river basin together with other stakeholders,

- Validating and verifying model data input and outputs,
- Supporting the communication of project results.

Omo Valley, Ethiopia



Karo woman down to the river to take drinking water, Colcho, Omo Valley, Ethiopia, March 2012.