

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

Brief Background Document

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 and food are managed in these areas and explores options for sustainable and integrated management in the future together with stakeholders.

What is the 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.’¹

Who is involved in DAFNE?

DAFNE is a consortium project that involves 14 project partners these include: Swiss Federal Institute of Technology (ETHZ) as the project lead, African Collaborative Center for Earth System Science (ACCESS), Water and Land Resource Center (WLRC), University of Zambia (UNZA), Eduardo Mondlane University (EMU), Politecnico di Milano (POLIMI), International Center for Research on the Environment and the Economy (ICRE8), Katholieke Universiteit Leuven (KU LEUVEN), University of Aberdeen (UABDN), Osnabrueck University (UO), International Water Management Institute (IWMI), Vista Geowissenschaftliche Fernerkundung GmbH (VISTA-GEO), ATEC-3D Ltd (ATEC-3D), European Institute for Participatory Media (EIPCM).

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 (Water-Energy-Food) 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.

¹ p. 13. Hoff, H., 2011. Understanding the nexus: Background paper for the Bonn2011 Nexus Conference.

How is DAFNE organized?

DAFNE consists of various components that integrate the engineering, agricultural, ecological, economic, social and institutional and governance components of the project. The interaction is important because the core methodological approach is designed to explore management options which involve the analysis of their performance through stakeholder's feedback that will be accounted for to refine potential strategies.

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 management related issues in the Omo or Zambezi river basins
- contributing to the identification of indicators and potential pathways to sustainable resource exploitation, use and management
- exploring and discussing alternative pathways and solutions for the management of the river basin together with other stakeholders
- Supporting the identification of data sources for the project;
- support the dissemination of project results.

Why should I be involved in the DAFNE project?

- The project and your involvement in it as a stakeholder supports the planning and management of natural resources at the local and regional level in the river basin.
- Your involvement supports the development of a joint understanding of local and regional water-energy-food nexus issues and the identification of alternative and robust solutions for managing resources in the basin.
- You can benefit from and contribute to capacity development among local actors through knowledge transfer, the use and application of innovative technologies and tools, and summer schools and online courses
- The knowledge and expertise you provide contributes to the transfer of technological innovation and know-how to support resource planning using the WEF nexus approach.

What are some of DAFNE's expected impacts?

The following 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 management. 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.

Where can I find additional information on DAFNE?

The project website (under construction) is www.dafne.ethz.ch. The EU funding programme for DAFNE is described here: http://cordis.europa.eu/project/rcn/203272_en.html

DAFNE Zambezi Stakeholder Meeting

Lusaka, 2-3 February 2017

Hotel Cresta Golfview, Plot 10247, Great East Rd, Munali, Lusaka, Zambia

Goal of this workshop

The objective of this initial project workshop is to introduce the project to the representative organizations in the Zambezi basins, and explore how to establish a fruitful co-operation between stakeholders and the DAFNE project, which can generate improved knowledge and mutual benefits. The focus of the workshop is to invite stakeholder views and input on emerging issues in water resource management in the Zambezi Basin.

Expected Workshop Outcome

The expected outcome from the workshop is two-fold.

- To gain a deeper understanding of the local and regional WEF resources issues
- To understand the concerns, needs, expectations and knowledge of stakeholders related to water-energy-food related matters in the river basin.

Project partners and workshop facilitators

Organisation	Name of representatives
Swiss Federal Institute of Technology (ETH) [Project Coordinator]	Paolo Burlando Matteo Saletti Elisa Calamita Jaboury Ghazoul
Politecnico di Milano (POLIMI),	Andrea Castelletti Enrico Weber Federica Bertoni Marco Micotti
Katholieke Universiteit Leuven (KU LEUVEN)	Jos Van Orshoven
University of Aberdeen (UABDN)	Zeray Yihdego Stephanie Hawkins
Osnabrueck University (UO)	Caroline van Bers Caroline Lumosi
International Water Management Institute (IWMI)	Jonathan Lautze
University of Zambia (UNZA)	Imasiku Nyambe [Case study lead]
Eduardo Mondlane University (EMU)	Dinis Juizo [Case study deputy]
International Center for Research on the Environment and the Economy (ICRE8)	Ebun Akinsete Josef Adler
African Collaborative Center for Earth System Science (ACCESS)	Eric Odada Samuel Ochola
VISTA Geowissenschaftliche Fernerkundung GmbH (VISTA-Geo)	Fabian Niggermann
European Institute for Participatory Media (EIPCM)	Jasminko Novak Mark Melenhorst

For more information on the workshop contact: Matteo Saletti, email: saletti@ifu.baug.ethz.ch

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