



ADAPTS: Adaptive Water Management at a Local Scale Ghana case study

J. Groen¹, W.P. Pauw², B. Alfa³, M. Hoogland⁴, P. Agboso⁵

September 2009

1) ACACIA Water, 2) Institute for Environmental Studies (IVM), 3) Water Resources Commission (WRC), 4) Both ENDS, 5) Development Institute

GOAL OF ADAPTS

Climate change is expected to result in gradual changes in temperature, rainfall patterns and sea level, but also increased climate variability and extreme events, threatening water availability and food security for millions of people. Adaptation strategies to deal with these impacts are urgently needed from the level of communities to national governments.

In 2008, the Institute for Environmental Studies, ACACIA Water and Both ENDS started the ADAPTS project. The overall aim of ADAPTS is to increase developing countries' adaptive capacities by achieving the inclusion of climate change and adaptation considerations in water policies, local planning and investment decisions.



Fig. 1 The six case study areas.

To achieve this goal, ADAPTS focuses on:

- 1. Knowledge development:** developing climate change information and studying how local water management can be made climate-proof.
- 2. Local Action:** the identification, support, documentation, analysis and dissemination of innovative, locally-based interventions to ensure that local knowledge and visions are included in basin and national policy dialogues.
- 3. Dialogue:** Establishing policy dialogues between local and national stakeholders on the issues of sustainable water management and adaptation to climate change.

ADAPTS sets out to show that adaptation is already taking place at the local scale, and to provide practical experiences and lessons from various contexts that can feed into the discussions on climate-proofing water management from the local to the (inter)national level.

The project is being implemented in six river basins around the world. Projects with a three year duration are being carried out in Ethiopia, Ghana and Peru. Studies with a one year duration are being carried out in Botswana, Brazil and Vietnam. This fact sheet will provide an overview of the main challenges and activities in the Dayi River basin in Ghana

GHANA CASE STUDY

The Dayi River basin largely lies within the Hohoe Municipality in southeastern Ghana. This rural area has 144.000 inhabitants on 1200 km². The main economic activities are rain-fed subsistence farming and some cash crop farming. The basin is surrounded by forested mountain ranges in the northwest and east and the Volta Lake in the southwest. The aims of this case study are to support successful farmer initiatives in small-scale irrigated agriculture and to work towards climate proofing the basin's water management.

CLIMATE CHANGE AND VULNERABILITY

The Southern part of Ghana has a bimodal wet season with rainfall peaks in June and September. In the Dayi basin average annual rainfall decreased from 1700 mm/year in 1975 to 1400 mm/year at the present. This decline is most noticeable at the beginning and the end of the rainy season. The Dayi river average discharge dropped from 4-10 m³/s in the period before 1975 to 1-2 m³/s in the period after 1980. A recent regional projection indicates a further decline in rainfall and a shortening rainy season.

The decrease in the amount and reliability in rainfall has a negative impact on traditional rain-fed agricultural practices in the region. This amplifies the negative effects of shifting agricultural practices and of population growth that already led to deforestation. LANDSAT images show that deforestation intensified after 1987. Although deforestation does not seem to have had a large impact on river flows and climate, and although large scale erosion is not visible, both climate change projections and a local survey among farmers indicate that the subsistence farmers are threatened by the climate change effects as they aggravate existing problems.

LOCAL ADAPTATION

Farmers and NGOs experiment with more drought resistant crops, agroforestry and small-scale irrigation. Local ecotourism provides alternative livelihoods and conserves nature. Some people migrate in search for a better life elsewhere. ADAPTS supports the method of the NGO Development Institute (DI) of improving and up-scaling new farmer initiatives in small diesel pump-driven irrigation schemes along the Dayi River. Surface water based irrigation is obviously limited by the reduced runoff. Climate change and irrigation may lead to a further runoff reduction of the Dayi river and other Volta River tributaries. This may impair the management of the Volta Lake and hydropower generation.

DI also provides training in sustainable agricultural practices, e.g. with group formation and management, agronomic water use reduction, erosion prevention and agroforestry. As irrigation can conflict with other land and water functions now and in the future, the initiatives require government planning. Therefore, ADAPTS supports the Hohoe Municipality Council and the Water Resources Commission (WRC) in River Basin Management Planning (RBMP) and the realization of a Basin Board with a broad stakeholder representation. WRC is experienced in developing RBMPs, based on, *inter alia*, climate change, land use and socio-economic -scenarios.

DIALOGUE AND UP-SCALING

ADAPTS aims to realize three more small-scale irrigation schemes in other ecological zones in the river basin. In a second phase further dissemination will take place through agricultural extension officers and general publicity. A revolving fund could supply credits for farmers to realize irrigation schemes based on DI's model. In the Water Resources Commission Act (1996, Act 522), management and regulation of water resources are defined and mandated to WRC. As such, the conditions for up-scaling of irrigation schemes are set by the future RBMP and further dialogue in the Basin Board. This Basin Board will be created during a broad stakeholder consultation in October 2009, and will consist of 19 members representing all sectors. The board is responsible for drawing the broad outline of the RBMP. The Buffer Zone Policy will be an inherent part of the RBMP. It is developed by WRC in 2008 and meant to protect and restore degraded banks of rivers and other water bodies in Ghana. DI's model, the supported local action in ADAPTS, fully supports this policy, as reforestation of river banks, partly for agroforestry, is an essential element in this model.

PP1

FUTURE PLANS – THREE THEMES

Research

- projections of climate, de- and reforestation, and land use,
- behavior of rivers and groundwater and their response to climate change and land use change,
- Markets for the small scale irrigation schemes (vegetable and agroforestry products)

Local actions

- Implementation of four irrigation schemes with active involvement of ADAPTS through DI
- Dissemination of more schemes with passive ADAPTS involvement (by revolving fund)

Dialogue

- Raising awareness and interest among farmer organizations and local communities on adaptive measures within ADAPTS
- Stakeholder involvement, led by WRC for the development of the RBMP and the Basin Board
- Discussion with the Municipality Council and Ministry of Food and Agriculture regional office on their involvement in ADAPTS and the continuity of the project after ADAPTS.
- Symposium on a national level on potential of shifting from rain-fed to irrigated agriculture



PARTICIPATING INSTITUTES

Development Institute (DI), Ken Kinney
Water Resources Commission (WRC), Bob Alfa
IVM/VU University, Pieter Pauw
Both ENDS, Martien Hoogland
Acacia Water, Koos Groen

CONTACT

Koos Groen (team leader)
koos.groen@acaciawater.com

Ken Kinney (Ghanaian partner)
kkinney@th Devin.org

For more information visit: www.adaptation.nl

Slide 2

PP1 They support it, but do not act that way, as they have agricultural practices within the very buffer itself... Rephrase? Or leave out completely?

Pieter Pauw; 27-7-2009