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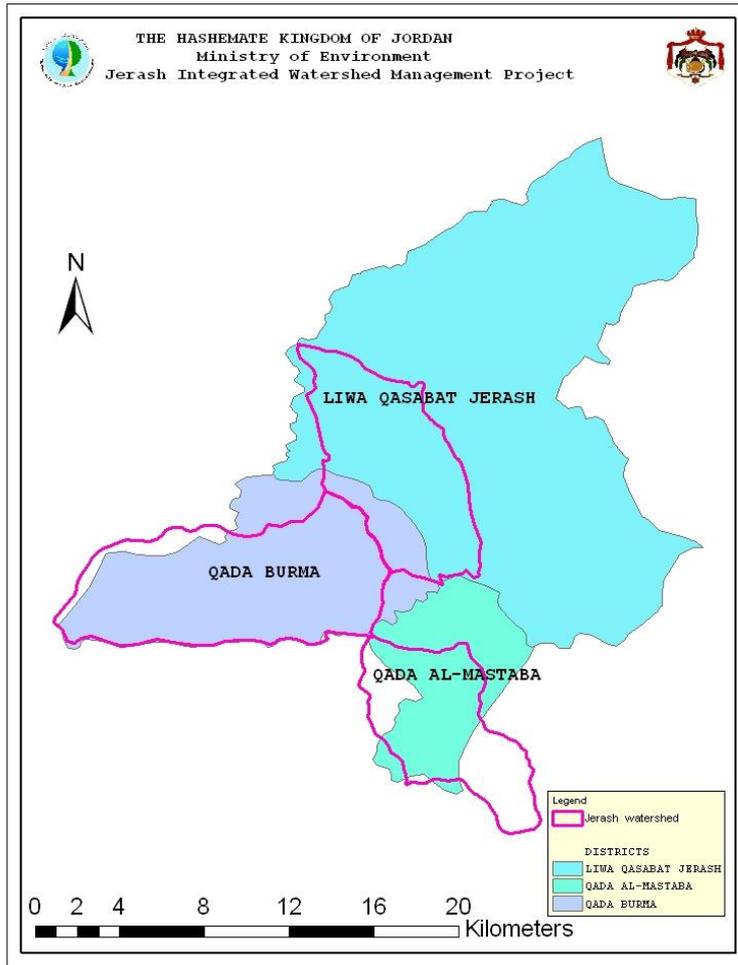
UNU-INWEH

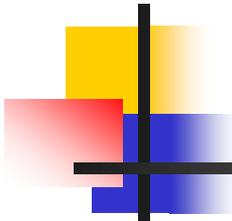
Towards Sustainable Management of Wadi Jarash; An Integrated Approach

Eight Gulf Water Conference
Manama, Kingdom of Bahrain
3-6 March 2008



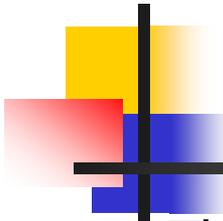
View of Jordan river Basin and pilot areas





EXECUTIVE SUMMARY

- The natural carrying capacity of the land and water resources has been heavily surpassed in the watersheds on both sides of the Jordan valley.
- This leads to limited economic perspectives for the involved population and, consequently, limited financial resources.
- The overall project objective is to create sustainable development conditions for the rural population in the project area.
- The most effective way to approach the environmental related problems is to operate geographically at watershed level and find solutions through an integrated view.
- The Approach is by developing an Integrated Watershed Management Plan, which can be implemented by decision makers to guarantee more sustainable interventions.



EXECUTIVE SUMMARY, *Continued*

The main outcome of the project will be:

- **Sustainable interventions/pilots in the selected watershed, and**
 - **Short and Medium Term Integrated Watershed Management Plans for wadi Jerash**
-
- The interventions will be selected in such a way that maximum sustainability is guaranteed (technical, financial, social, economical, institutional and environmental).
 - Stakeholder participation and creation of ownership are essential to assure sustainability.
 - Dissemination of the project results is an important aspect of the project.

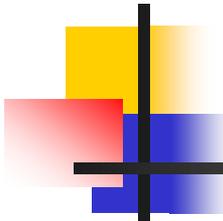
Background

- The Jordan Valley and its tributaries are the most potential areas for development, especially in agriculture, West Bank and Jordan
- However, the natural resources of the river basin of the Jordan river are threatened by **weak management** and **severe deterioration** of these resources is expected if no appropriate measures are taken.
- The threats are of different kind and **due to unsustainable economic developments, overexploitation of resources** (especially groundwater resources), **land tenure, insufficient regulations** and other measures concerning land and water use and **political instability**.

What is lacking are practical implementation plans

- Jerash integrated watershed management project wants to provide the Jordanian government with **tools/methodologies** for the selection and implementation of sustainable interventions.





Challenges

Key Challenges at Jerash Project area:

■ Deterioration of Groundwater Quality-Causes

- Deterioration of Surface water Quality
- Infiltration of Domestic and Industrial Waster Water
- Over Pumping
- Random Dumping of Solid Waste

■ Deterioration of Groundwater Quality-Effect

- Contamination of Drinking water supply
- Environmental Degradations
- Soil Stalination
- Deterioration of Irrigation water quality



Challenges

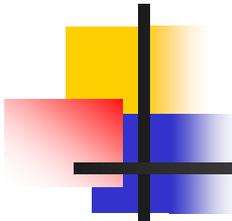
■ Deterioration of Surface Water Quality-Causes

- Untreated Domestic and Industrial Waster Water
- Soil erosion that increase TSS & Sediments in Water
- Agriculture return flow due to the access use of agrochemicals, flood irrigation etc.

■ Deterioration of Surface Water Quality-Effect

- Contamination of Drinking water supply
- Land Degradations
- Deterioration of Groundwater





Challenges

- 
- 
- Low productivity of rain fed agriculture-**Causes**
 - Plant selection
 - Scarcity of agriculture processing industry
 - High cost of agriculture in puts
 - Weak Institutions & regulations
 - Inadequate of mechanization
 - Land fragmentations
 - Low productivity of rain fed agriculture-**Effect**
 - Low economic yield income
 - Land Degradations
 - Unemployment



Project Partners and logo

WASMAP
Fara'a & Jerash



وزارة البيئة
المملكة الأردنية الهاشمية
Ministry of Environment
The Hashemite Kingdom of Jordan



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Netherlands Engineering Consultants





PROJECT APPROACH

BOTTOM UP → DEMAND DREVEN



Approach

- Two-way interaction should take place and interests and decisions at lower levels need to be carried upward to be taken into consideration at higher levels, particularly to the national level;
- An important element in this process is the *participation of stakeholders in decisions processes at all levels*; this requires a *demand driven* approach instead of supply driven;
- To include experiences from local level, our project approach will therefore be *bottom up* instead of *top down*.

The actions, proposed in the Plans have to be implemented by the various implementing agencies, for instance MoEnv, MoWI and MoA.

It is therefore essential that all potential implementing agencies will participate actively in the planning process.

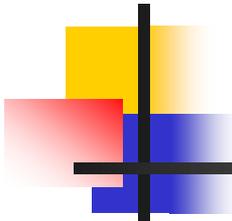




Integrated Water Shed management

***SUSTAINABILITY → STAKEHOLDER INVOLVEMENT
→ → → DEMAND DREVEN***





Integrated Watershed Management

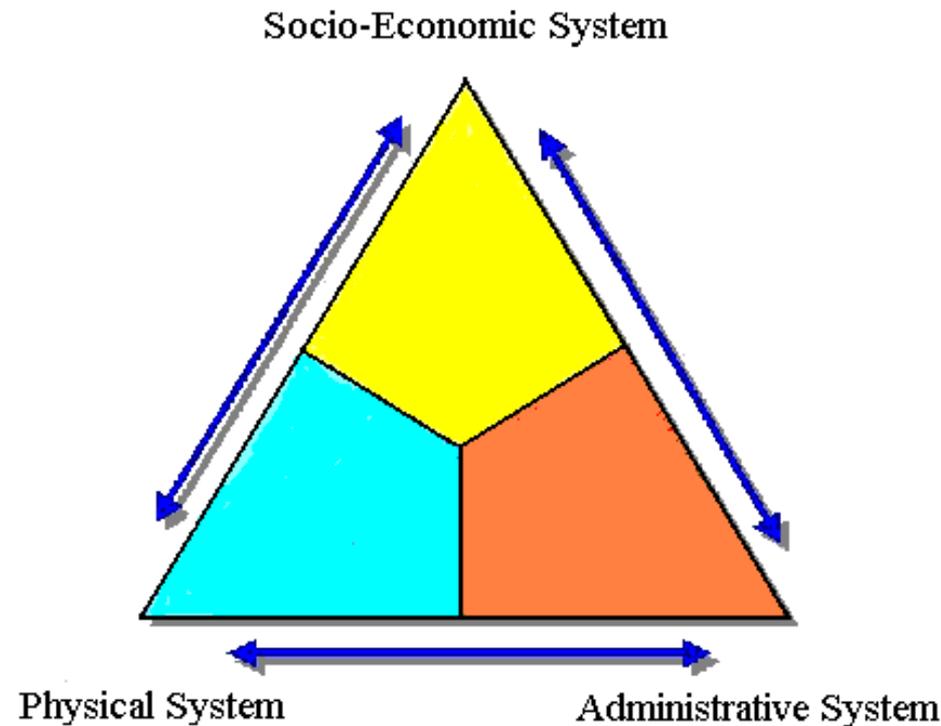
- For an *Ecologist* it means: deterioration of ecosystems, land degradation, pollution and destruction of wetlands;
- For the *Water Engineer*: dams, reservoirs, flood protection, diversions, water treatment;
- The *Lawyer* thinks about: ownership of water (common or private resource), system of water rights (ownership or licence to use), the priority of use, water legislation and international water law;
- And the *Economist*: economic efficiency, cost recovery and attainment of national objectives such as: stimulation of economic growth, poverty alleviation, employment generation and food security

Watershed Management is all that and hence multi-disciplinary.



Integrated Watershed Management

The *watershed system* as a whole can be seen to be composed of three components



Integrated Watershed Management

Integrated Watershed Management is about more than simply matching demand with resources. It entails a series of crosscutting policy issues that are an integral part of the decision-making process.

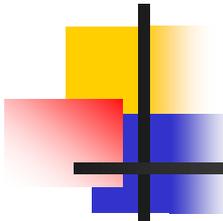
These issues relate to three core elements:

1. Sustainability: Sustainable development is a key concept in watershed management

The following aspects of sustainability are distinguished:

- Technical sustainability (balanced demand and supply, no mining)
- Financial sustainability (cost recovery)
- Social sustainability (stability of population, stability of demand, willingness to “pay”)
- Economic sustainability (sustaining economic development or welfare and production)
- Institutional sustainability (capacity to plan, manage and operate the system)
- Environmental sustainability (no long-term negative or irreversible effects)



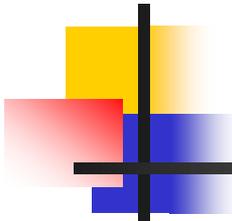


Integrated Watershed Management

2. Stakeholder involvement: taking account of public interest and sharing ownership.

Integrated Watershed Management takes account of:

- all natural aspects of the natural resources
- all sectoral interest of stakeholders (inter-sectoral approach)
- the spatial variation of resources and demands (upstream-downstream interaction, basin-wide analysis, inter-basin transfer).
- relevant policy frameworks (national objectives and constraints (social, legal, institutional, financial, environmental))
- all institutional levels (institutional framework and stakeholders (national, provincial, local))

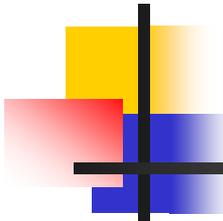


Integrated Watershed Management

3. Demand Management

- Demand management should be considered as one of the most important components of Integrated Watershed Management strategies (next to institutional arrangements and physical measures). **It entails a set of actions to be taken by the manager to reduce demand, which include:**
 - Awareness and promotion;
 - Education and training;
 - The formulation and application of incentives to influence the demand for water. Implementation incentives for demand management can be grouped in two main categories:
 - **Economic instruments, which include:** charges, subsidies, taxes, and regulations which create markets where water rights and emission rights can be traded;
 - **Legal instruments, including** for example general quota or individual licences for extraction or discharges and ambient water quality standards. Such regulations are often combined with financial enforcement incentives such as fines and penalties.





Integrated Watershed Management

Three activities are distinguished:

- **Resources Development:** actions, mostly physical, that lead to the beneficial use of land and water resources for single or multiple purposes

- **Resources Planning:** planning of the development,
 - conservation and allocation of a scarce resource
 - matching availability and demand, taking into account the full set of national objectives and constraints and the interests of stakeholders.
 - Planning is only effective if all interested parties during the planning and implementation stage (stakeholders) are – in one way or another – involved in the process of decision making and feel committed.

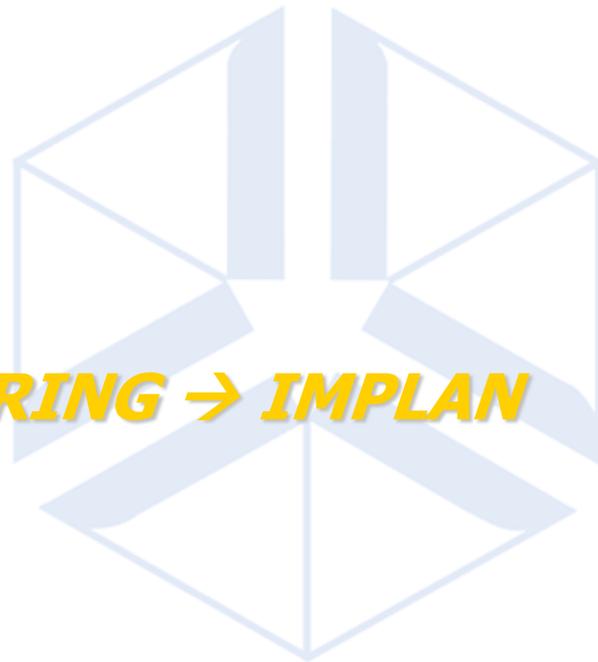
- **Resources Management:** the whole set of technical, institutional, managerial, legal and operational activities required to plan, develop, operate and manage resources for sustainable use.

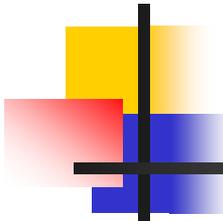




PROJECT ACTIVITIES

PLANNING → MONOTERING → IMPLAN





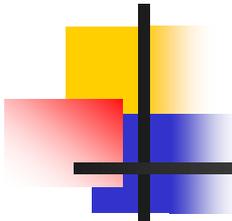
Description of Activities

Phase 1. Setting the Project Architecture

- Collection of existing information and experiences of similar projects
- Setting up a GIS/Database information System and Project Website
- Identification of Stakeholders (local and national) and involved authorities
- Setting up a national Steering Committee

Phase 2. Baseline Study

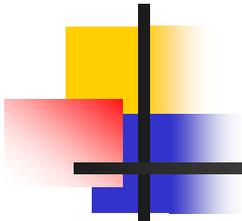
- Inventory and analysis of existing information
- Defining data gaps and program for collecting additional data through field surveys
- Workshop with local stakeholders for defining the main problems
- First Cause-Effect Assessment
- Final Reporting on collected data and assessments (baseline Study Report)



Description of Activities

Phase 3. Preparation of Pilot Projects (PP's)

- Elaboration of a tentative plan for pilot projects
- Elaboration of a Public Awareness Campaign
- Formulation of Selection Criteria and Performance Indicators for PP's
- Workshop with local stakeholders for discussing possible PP's
- Selection of sites and involved stakeholders
- Final Selection and Implementation Programme of the PP's & (writing report)
- Detailed Design of the PP's
- Seminar for dissemination of Project Results (elaboration of proceedings)
- Thematic Reporting



Description of Activities

Phase 4. Implementation and Monitoring of the Pilot Projects

Preparation of Tender Documents

Contracting of the PP's Works

Implementation/construction of the PP's

Monitoring of project results, based on performance indicators

Implementation of Public Awareness Campaigns

Updating the GIS/Database system with outcomes of the various PP's

Evaluation of PP's for planning purposes

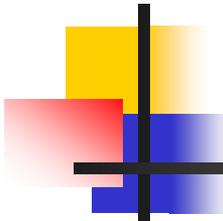
Seminar for dissemination of Project Results

Thematic Reporting

Phase 5. Integrated Assessment

Second Cause-Effect Assessment based on results of PP's

Elaboration and reporting on Integrated Assessment



Description of Activities

Phase 6. Formulation of a Mid-Term Integrated Watershed Management Plan

- Formulation of the Draft Watershed Management Plan
- Workshop to discuss the Draft Plan with the Stakeholders and Steering Committee
- Formulation of the Final Watershed Management Plan

Phase 7. Dissemination of the Project Results

- Preparation of a Programme for Public Information
- Writing articles for international renowned magazines
- International Seminar

National Steering Committee Meetings

International Steering Committee Meetings

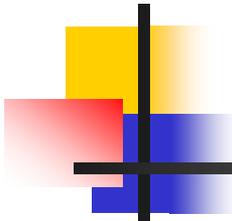




PROJECT REALIZATION

OBJECTIVES → INDICATORS → RESULTS





To create sustainable development conditions for the rural population in the project area

Objectives

To improve the living conditions of the population in the project area through implementation of sustainable interventions

Project Results

⇒ **Geographical Information System (GIS)** in place ⇒ **Database** in place ⇒ **Website** in place ⇒ Established **Steering Committees** ⇒ **Report for the Baseline Study** completed ⇒ **Report for the Selection of Pilots** completed ⇒ **Seminar** held ⇒ **Seminar proceedings** ⇒ **Thematic reports** written

Indicators

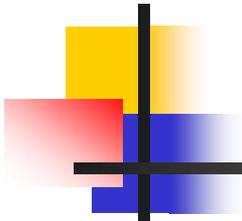
Local Stakeholders are managing the interventions (ownership)

Improved environment (e.g. water-conscious use; quality surface water improved; use of techniques to avoid soil degradation; water saving regulations introduced)

(Selection of pilots depends on sustainability. During selection, indicators and monitoring systems will be developed)

Improved living conditions (socio economic indicators)





To create sustainable development conditions for the rural population in the project area

Objectives

To develop Short-Medium Term Integrated Watershed Management Plans, based on methodology and experiences gained during implementation of the pilots.

Indicators

Population Aware of Environmental Issues

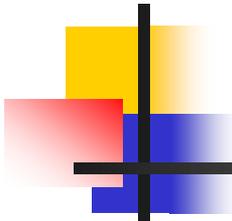
Strengthened Authorities, willing and capable of implementing the Watershed Management Plans (**ownership**)

Exchange of Experiences and response of third parties to the Watershed Management Plans
Dissemination of Project Results through Reports, Articles, Seminars, Web-site

Project Results

- ⇒ **Tender documents** available
- ⇒ **Sustainable pilots/interventions in the watersheds** in place
- ⇒ **Monitoring systems** in place ⇒ **Public Awareness Campaigns** executed
- ⇒ **Thematic reports** written ⇒ **Seminar** held ⇒ **Seminar proceedings**
- ⇒ **Report on the Integrated Assessment** ⇒ **Watershed Management Plan** developed
- ⇒ **Main Report** written ⇒ **Articles** submitted ⇒ Int. **Seminar** held ⇒ **Seminar proceedings**





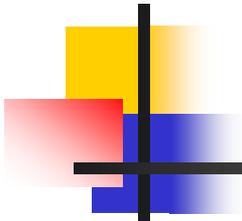
Consultation Process / Involvement of Stakeholders:

- Important aspect of Integrated Watershed Management and it is a condition to assure sustainable development (implementation of successful interventions)
- The programme for stakeholder participation taking into account gender issues.

The project will use different techniques to involve stakeholders:

- Steering Committee
- Stakeholder will participate in the Work Shops
- Draft of the Integrated Watershed Management Plan
- Special indicators to monitor the involvement of local stakeholders
- Seminars: for dissemination of information to national and local level
- Public Awareness Campaigns: to explain the purpose of the project and for environmental education.
- The Campaign will be held simultaneous with the implementation of the interventions





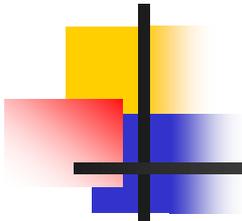
- **Problem analysis:** will analyse

- The data and information collected during the baseline study
- Results of the consultation process during workshops will be used to make an inventory of the relevant problems in relation to sustainable management of the watershed.

- **Choosing Criteria for Pilot Selection:**

Will depends on the results of the problem analysis, and will take into consideration all aspects in an integrated way (***cause –effect assessment***).

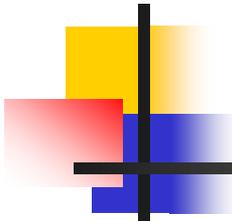
like technical, financial, social, economic, institutional and environmental aspects will be analysed and will determine which intervention will be most sustainable and contribute to an improvement of the living conditions of the population.

- 
- Selection of Indicators and developing monitoring systems:
 - Indicators have to be defined in order to measure and monitor the impact of the interventions on the environment, socio-economic situation or health of the rural population.
 - The type of indicators can only be determined after the selection of the pilots, measure the involvement of stakeholders,
 - The improvement of the quality of the water, the income of farmers,
 - The health condition of the population in project area.
 - Public Awareness Campaigns: Environmental education Program:
 1. Evaluating the significance of natural environment;
 2. Understanding the effect of human on environment and vice versa;
 3. Knowing how the personal choices and actions affect the natural environment.

methods/tools:

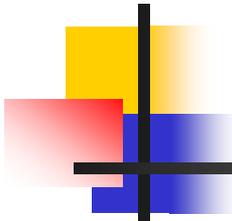
newsletter and newspaper articles, demonstration sites, signs, workshops, training (short courses) and field visits, on-site inspections, technical assistance.





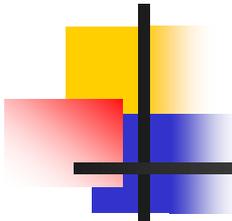
Integrated Assessment

- For a system to be viable and long lasting, or in other words 'sustainable', there are some fundamental requirements:
 - Efficiency in utilizing resources
 - Robustness and flexibility for short-term change
 - Adaptability and innovation for long-term change
 - Internal feedback and self-organization
 - Co-existence and inter-dependency with other systems both larger and smaller
- The watershed system has some basic characteristics, such as:
 - System drivers: generally human needs within the basin
 - System stocks: materials, goods, resources
 - System patterns: organization & structure
 - System flows: movement & activity
 - System products & impacts: results of system activity, both beneficial and harmful



On-the-job training

- The staff will gain experience by going through all the steps of the complex, real-life planning process.
- Training session, after completion of each session for involved governmental staff on the issues at stake.
- The output will be trained staff in both organisations, which have been fully involved in the project activities throughout the project cycle. They also have received training from the international project staff.



On-the-job training

- The diverse stakeholders have different and very likely conflicting interests. Working together:
 - Obtain insights in the realities and dynamics of project preparation.
 - Learn to use the logical framework approach.
 - They set up and use an analytical framework,
 - Identify and unravel problems,
 - Formulate objectives,
 - Define and develop a frame, and compare alternative solutions.
 - They collect, process and analyse information,
 - Find the best compromise solutions and work out the details of proposed interventions.
 - Use different tools in the process.
 - They also learn to work in teams,
 - to distribute and allocate tasks and responsibilities,
 - to rationally argue their opinions and solutions,
 - to manage conflicts and to present, discuss, and report findings.

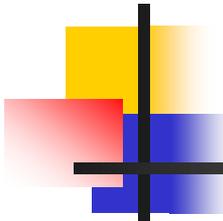




PROJECT ORGANIZATION

INTEGRATED → TEAM WORK

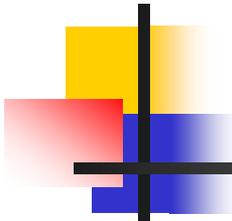




Responsibilities and obligations

MoEnv:

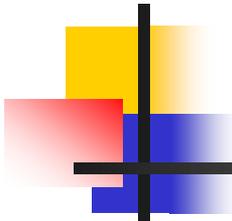
- setting up of a Steering Committee
- assignment of a project coordinator
- assignment of counterpart experts
- making available of office space
- procure vehicles, office equipment and materials
- making available existing data and information
- provision of various exemptions to the Consultant
- provide salary/per diem for local staff assigned to the study



Responsibilities and obligations

The Consultants:

- provision of expert staff
- Quality Control and be responsible that the project will meet international standards
- Assist the project teams in the implementation of the technical part of the project in accordance with the Inception Report
- Maintain contacts with EQA, MoEnv and UNU and to co-ordinate the exchange of experiences of both project components
- To be responsible for the dissemination of information
- Organise workshops involving all stakeholders
- Be responsible for strengthening of the involved authorities and promote the transfer of knowledge to the counterpart staff (on-the-job training)



The Project Team

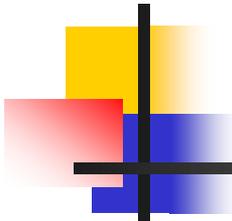
The general task division between the different team members is as follows:

- **Field Teams:**

The national field team experts are responsible for the daily implementation

of the project in the pilot areas.

- collect and process relevant data and information,
- report about their findings,
- maintain contacts with the major local stakeholders,
- be responsible for the public awareness campaign.
- prepare and supervise the implementation phase and monitor the outputs of the interventions.



The Project Team, International Consultants

UNU Team

- The UNU Team will support the Field Teams concerning water resources and agricultural aspects.
- The technical assistance of the UNU team will be:
 - more permanent and comprises the pilot preparation phases (1,2,3 and beginning of 4) and
 - formulation of the Mid-term Integrated Watershed Management Plan.
 - The UNU team will give special attention to stakeholder participation and dissemination of project results.
 - The UNU experts will work in close cooperation with the experts of the project field teams.



PROJECT STATUS

SLOWLEY → BUT SHURELY

