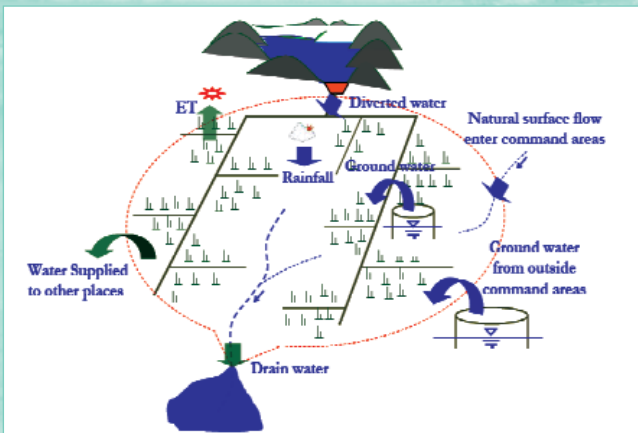


## Methodology

### Water Balance Analysis

If we are to improve irrigation efficiency, it is very important to keep track of where the water is flowing within the command area. For this purpose, this project applies water balance analysis within a closed command area with some simplified concepts as shown the figure below.



Inflow and outflow within the command areas will be measured and recorded. The inflow includes water diverted to command areas, precipitation, natural flow entering the command areas, ground water circulated within and delivered from outside the command areas. Outflow includes evapo-transpiration (ET), committed water and water drainage. Water balance analysis will be conducted within the closed boundary of the command area, and then used to calculate the irrigation efficiency of the scheme.

### Rapid Appraisal Process (RAP)

The RAP is a simple but strong and systematic tool to assess irrigation scheme performance which has been used successfully by FAO and the World Bank in various Asian countries to appraise several irrigation projects. The RAP allows water managers to systematically and quickly determine key indicators of irrigation projects and provides initial indicators that can be used as benchmarks



to compare improvements in system performance. The RAP can also be used to compare performances of different projects.

The information produced using the RAP will complement the data collection and measurement work of the project. The project has already conducted a RAP training workshop and undertaken the first of two RAPs in each selected pilot site. One RAP was undertaken at the beginning of the project, before the field data measurement work started and the second will be undertaken when field data measurement work ends.

### Project outputs

The main output of the Improvement of Irrigation Efficiency in Paddy Fields on the Lower Mekong Basin Project will be a published set of guidelines on how to improve water efficiency. The guidelines will provide methods and information to enable water managers to operate their schemes more appropriately and use water more effectively.

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*Mekong River Commission*

*Improvement of Irrigation  
Efficiency on Paddy Fields  
in the Lower Mekong Basin Project*



*Agriculture,  
Irrigation and  
Forestry Programme*

## Background to the project

The water and related resources of the Mekong River Basin are used for a variety of purposes, including: agriculture, hydropower generation, navigation, fisheries, industry, tourism and domestic use. These resources also make a big contribution to the economic development and well-being of the population in the region, but there is still a huge potential for more sustainable development within the basin.

The agricultural sector is the predominant economic force in the Lower Mekong Basin, employing 60% to 85% of the population in the MRC Member States of Cambodia, Lao PDR, Thailand and Viet Nam and producing 20% to 50% of gross domestic product.

The population of the basin is growing rapidly. It is estimated at around 60 million today and is expected to reach 100 million by 2020 and more agricultural development is essential if these people are to be fed.

Today rice is the dominant crop, but it is also the single biggest consumptive user of fresh water in the region. However water productivity in paddy fields remains low in both rain-fed and irrigated rice and if there is to be further development of water resources in the region and more investments in irrigation, it is important to increase the efficiency of water use in paddy fields.



Improvements in irrigation efficiency will lead to equitable water distribution; minimise the gap between crop water requirements and water use and improve water productivity. One effective approach to achieve these improvements is by providing good institutional, managerial and technical guidance for the operation of irrigation facilities. This guidance will be of benefit to farmers, other water users and irrigation scheme managers.

If we can achieve more efficient and equitable water use, it will make a positive impact on water resources management from sub-basin to national to basinwide level and, ultimately, this will also benefit the environmental health of the basin.

The Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin Project, which is being implemented by the Mekong River Commission's Agriculture, Irrigation and Forestry Programme, aims to provide this guidance. The project has identified four irrigation schemes to operate as pilot sites in each of the Member States which it will study and use as testing grounds to identify better methods of irrigation and more efficient water use.

## Project objectives

### Overall objective:

To improve irrigation efficiency on paddy fields in the Lower Mekong Basin

### Immediate objectives:

1. To appraise irrigation efficiency and irrigation systems based on modern water accounting concepts in the selected irrigation schemes
2. To enhance capacity of all the stakeholders in using modern concepts of irrigation efficiencies and water balance and modern tools and procedures for their assessment
3. To produce guidelines for improving irrigation efficiency in paddy fields based on actual water use conditions in the Member States

## Planned Activities

### 1st year

1. Series of discussions and national consultation meetings with National Mekong Committees and line agencies
2. Discussion with Food and Agriculture Organisation (FAO) to agree on collaboration
3. Revision of the project document
4. Regional workshop to inaugurate the project
5. Drafting backstopping note for field observation and analysis work of the project
6. Preparation of sub-contracts with line agencies

### 2nd year

1. Rapid Appraisal Process (RAP) training workshop
2. RAPs as On-the-Job-Training in the selected schemes of the member countries
3. Preparation of detailed work plan for field observation
4. Measurements, data collection and analysis

### 3rd year

1. Measurements, data collection and analysis continued
2. RAPs by the implementing agencies
3. Drafting of guidelines
4. Assessment of capacity building requirement of the relevant line agencies
5. National workshops to discuss results of the analysis
6. Regional workshop to introduce the draft guidelines

