Integrated Watershed Management

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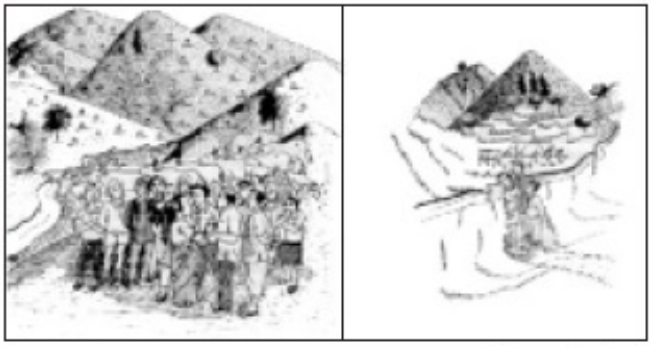
What is Watershed?

A watershed is defined as any surface area from which runoff resulting from rainfall is collected and drained through a common point. It is synonymous with a drainage basin or catchment area. A watershed may be only a few hectares as in small ponds or hundreds of square kilometers as in rivers. All watersheds can be divided into smaller sub-watersheds. As each watershed or sub-watershed is an independent hydrological unit, any modification of the land used in the watershed or sub-watershed will reflect on the water as well as sediment yield of the watershed.



Big watershed Small watershed

Why Watershed-based Development and Management?

The intensification of land use in the traditional agricultural setting is self-defeating because it is exploitative and results in greatly increased runoff and soil erosion, reduced groundwater recharge, downstream flooding of agricultural lands and cities as well as an accelerated sedimentation of reservoirs that negates irrigation and power investments. Consequently, the land resource base is shrinking and its productive capacity diminishing. The solution to these problems lies in evolving development programs that recognize the natural topography and the drainage patterns of the land. In many areas, it is not unusual to experience significant quantities of runoff at one time of the season and serious drought at another time. The collection of excess water and its utilization to provide greater stability to rainfed agriculture appears to be a viable development alternative in such areas, particularly if soils are shallow. Thus, the watershed, or catchment, is the natural framework for resource development in relation to crop production systems and resource conservation and utilization.

Integrated Watershed Approach

A watershed is made up of the natural resources in a basin, especially water, soil, and vegetative factors. Watershed management is the integration of technologies within the natural boundaries of a drainage area for optimum development of land, water, and plant resources to meet the basic needs of people and animals in a sustainable manner. This includes land improvements, rehabilitation, and other technical works as well as betterment of people.

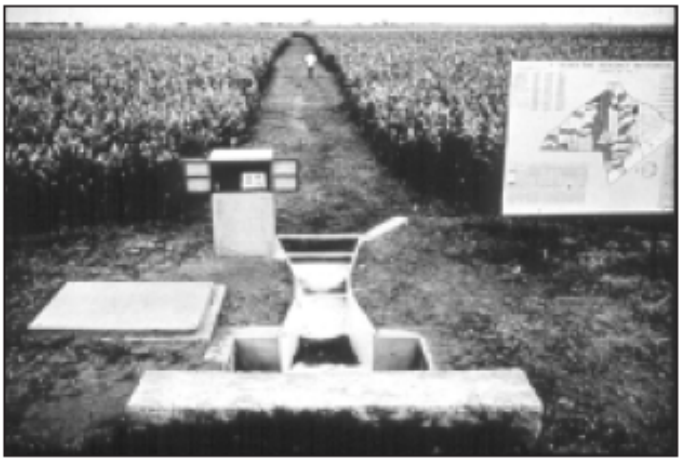
Major Objectives of Integrated Watershed Management

Integrated watershed management aims to improve the livelihood of community/farmers by increasing their earning capacity through offering improved facilities required for optimum production. Some of the major objectives of integrated watershed management are to:

- Conserve soil, rainwater, and vegetation effectively and harvest the surplus water to create water sources in addition to groundwater recharge.
- Promote sustainable farming and stabilize crop yields by adopting suitable soil, water, nutrient management and crop management practices.
- Cover the non-arable area effectively through afforestation, horticulture, and pasture land development based on land capability class.
- Enhance the income of individuals by adopting alternative enterprises.
- Restore ecological balance.

Principles of Integrated Watershed Management

Watershed-based resource utilization involves the optimum use of the area's precipitation for the improvement and stabilization of agriculture on the watershed through better water, soil, and crop management. Sound watershed management means improving overall productivity, controlling floods, and reducing erosion as well as sediment accumulation. Some of the basic principles of integrated watershed management are:



- Utilizing the land according to its capability.
- Adequate vegetative cover during the rainy season.
- Conserving as much rainwater as possible at the place where it falls.
- Draining out excess water with safe velocity and diverting it to storage ponds/recharge ponds for future use.
- Effective utilization of surface and groundwater resources.
- Avoiding gully formation and checking at suitable intervals to control soil erosion and recharge groundwater.
- Optimizing productivity per unit area, per unit time, and per unit of water.
- Adopting integrated soil, water, nutrient, and pest management options.
- Increasing cropping intensity and land equivalent ratio through intercropping and sequential cropping.
- Safe utilization of marginal lands through alternative land use systems.
- Ensuring sustainability of the ecosystem benefiting the man-animal-plant-land-water complex in the watershed.
- Stabilizing total income and cutting down risks during aberrant weather situations.
- Improving infrastructural facilities with regard to storage, transportation, and marketing.

Benefits of Watershed Development

Improved watershed management offers many potential benefits for the farmer, the local community, and the larger cross section of society.

For the farmer:

- Increased production and higher profits.
- Improved water availability for crop production.
- Improved soil quality and better drainage.
- Improved livelihoods .

For the local community:

- Lower land-development costs.
- Reduced flooding and waterlogging.
- Reduced soil erosion and land degradation.
- Increased agricultural productivity.
- Improved livelihood options.
- A more dependable, clean water supply for domestic and industrial use.

For the larger cross section of society:

- Less danger from floods to downstream cities and farmlands.
- Reduced sedimentation of costly irrigation projects.
- Better conservation of natural resources.