



A Review on Water Shed Management

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Abstract:

A watershed is an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel.

The basic goal of watershed management is to preserve a catchment's soil, plant, and water resources while helping people. To handle watersheds holistically, all environmental, social, and economic problems are incorporated. In addition to maintaining the watershed, the overarching goal of watershed management is to promote the social and economic advancement of the inhabitants of the watershed. Enhancing the viability and calibre of rural livelihood support systems is the primary goal of watershed management initiatives. Massive soil and water conservation practices are needed for effective watershed management. Three main kinds of practices for conserving soil and water have been suggested by Morgan (1986). These are connected to techniques for managing soil, techniques for managing crops, and techniques for stopping soil erosion.

Key words: watershed, watershed management, Biodiversity, catchment's soil, drainage basin

I. Introduction:

The process of implementing land use practices and water management practices to safeguard and enhance the quality of the water and other natural resources within a watershed by managing the use of those land and water resources in a comprehensive way is known as "watershed management." A land area that drains to a specific spot along a stream or river is subject to watershed management, which focuses on land and water resources. In order to fulfill human demands for water, food, fibre, energy, and habitation as well as other acknowledged features related to recreation, aesthetics, and ecological function, watershed management attempts to take good care of natural

resources. In affluent nations, rainwater collection is frequently used to augment the primary supply of water during times of regional water shortages. When a drought strikes, it supplies water, can lessen flooding in low-lying areas, and lessens the need for wells, which might allow groundwater levels to be sustained. By increasing the number of dried-up wells and bore wells, rainwater harvesting improves the amount of water that is available during dry seasons. Because surface water is easily accessible for many uses, there is less need for subsurface water. By reducing salinity, it elevates ground quality. It is environmentally friendly and does not pollute. It is reasonably priced and cost-effective. Rainwater is largely free of salinity and other salts, which increases the availability of drinking water. By reducing the need for clean water in water distribution systems, less storm water is generated in sewer systems, and less storm water runoff pollutes freshwater bodies, rainwater harvesting applications in urban water systems offer a significant benefit for both water supply and wastewater subsystems. The complexity of rainwater harvesting systems can vary, from simple manual systems that only require basic installation skills to automated systems that demand extensive setup and installation. Since every outlet from the building's terrace is connected by a pipe to an underground water storage tank, the installation of the basic rainwater harvesting system is more of a plumbing than a technical undertaking. Pre-filters (such as vortex filters), drains/gutters, storage containers, and depending on whether the system is pressurised, pumps, as well as treatment equipment like UV lights, chlorination devices, and post-filtration equipment, are common parts installed in such systems. The water storage tank's volume should be sufficient to hold the water that was captured. Rooftop systems, surface water capture, and pumping rainwater that has already seeped into the ground or collected in reservoirs and storing it in tanks (cisterns) are only a few low-tech methods utilized for low-tech systems to collect rainwater.



Since systems need to be large enough to accommodate daily water consumption, they are best sized to meet water demand throughout the dry season. In particular, the area that collects rainwater, such a building's roof, must be sizable enough to sustain a sufficient water flow.

Importance

- Recharges the groundwater table.
- Restores soil fertility and helps in soil conservation
- Restores water for drinking and other human purposes.
- Helps to fight climate change and promotes sustainable agriculture.
- Protects biodiversity of a region, if managed properly can restore biodiversity.

Components of Watershed Development Programme

The components of watershed development programme includes;

- (i) Soil and land management
- (ii) Water management
- (iii) Crop management
- (iv) Afforestation
- (v) Pasture or fodder development
- (vi) Livestock management
- (vii) Rural energy management
- (viii) Other farm and non-farm activities and development of community skills and resources.

II. Methodology

The paper examines the importance of watershed development & some successive water management Programmes in India. The paper based on secondary data which is available by government research institutes, journals, books etc.

III. Results

Integrated Watershed Development Programme (IWMP)

The Department of Land Resources (DOLR), Ministry of Rural Development (MORD) is implementing the Integrated Watershed Development Programme (IWMP) from 2009-10 with an objective to cover 55 million hectares of rain fed land by 2027. It envisages restoring the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover & water through watershed management initiatives.

The program is being implemented in all the states of India and is financed by the central and state governments in the ratio of 90:10.

The outcomes of IWMP are prevention of soil run-off, regeneration of natural vegetation, rain water harvesting and recharging of the ground water table.

This enables multi-cropping and the introduction of diverse agro-based activities, which help to provide sustainable livelihoods to the people residing in the watershed area.

Watershed Development Programmes in India

Government of India has sponsored and implemented Watershed development projects in our country since 1970s. Various watershed development programs like Drought Prone Area Program (DPAP), Desert Development Program (DDP), River Valley Project (RVP), National Watershed Development Project for Rain-fed Areas (NWDPA) and Integrated Wasteland Development Program (IWDP) have also been launched in various hydro-ecological regions; affected by water stress and draught like situations. This Programme is primarily focused on structural-driven compartmental approach of soil conservation and rainwater harvesting during 1980s and before. The integrated watershed development program with participatory approach was emphasized during mid 1980s and in early 1990s. This approach had focused on raising crop productivity and livelihood improvement in watersheds along with soil and water conservation measures. The Government of India appointed a committee in 1994 under the chairmanship of Prof. CH Hanumantha Rao to study the above aspects. The committee reviewed existing strategies of watershed program and strongly suggested for moving away from the conventional approach of the government department to the bureaucratic planning without involving local communities. The new guideline was recommended in year 1995, which emphasized on collective action and community participation, including participation of primary stakeholders through community-based organizations, non-governmental organizations and Panchayati Raj Institutions (PRI) (GoI, 1994, 2008; Hanumantha Rao et al. 2000; DOLR, 2003; and GoI, 2008; Joshi et al. 2008). Watershed development aims to balance the conservation, regeneration and use by humans of land and water resources within a watershed. Common benefits from successful watershed



development projects include improved agricultural yields and increased access to drinking water. The overall attributes of the watershed development approach, by and large, are: promoting economic development of the rural area, employment generation, and restoring ecological balance (DOLR, 2006) and other objectives are as follows:

(i) Environmental- Protecting the vegetative cover for the year, to create ecological balance in the watershed area, protecting fertile top soil, utilizing the land based on its capabilities, in situ conservation of rain water, increasing ground water recharge.

(ii) Economic- Drawing attention for increase in cropping intensity through inter and sequence cropping, maximizing farm income through agricultural related activities like dairy, poultry, sheep and goat farming, improved and sustained livelihood status of the watershed community with special emphasis on the poor and women, etc.

(iii) Institutional- Including formation of watershed committees and self-help- groups, establishing sustainable community organization, etc.

(iv) Social- It Includes alleviation of poverty, awareness generation, improving skills of the local community, capacity building activities, women's participation in decision-making process, empowerment of the community, etc.

(v) Equity- To Develop equitable distribution of the benefits of land and water resources development and the consequent biomass production, involvement of village communities in participatory planning, implementation, social and environmental arrangement, maintenance of assets and to operate in a more socially inclusive manner.

Advantages:

- Utilising rainwater collecting and harvesting is a suitable technique for addressing the global water crisis.
- Utilising a rainwater harvesting system has numerous advantages for every community.
- In regions with adequate rainfall but insufficient groundwater supplies, this straightforward method of water conservation can help an amazing solution take off.
- It will not only offer the most effective and sustainable method of managing water resources, but it will also open the door to a variety of other economic pursuits that will empower local populations.

IV. Conclusion

Watershed management is the process that organizes and guides land, water, and other natural resources used in a watershed to provide appropriate goods and services mitigating the impact on the soil and watershed resources. It involves socio-economic, human-institutional, and biophysical inter-relationships among soil, water, and land use in connection between upland and downstream areas. Simply, it is resource management with the watershed as the basic organizing unit. It has now been transitioned to a holistic resource management approach, employing integrated and adaptive management strategies to account for biological, physical, and social elements within the landscape.

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