Introduction
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India is one of the major agricultural countries with nearly 58 per cent of the population depending on it. Nearly, three fourth of the cultivable land in India is dependent on monsoon, which is contributing approximately 42 per cent of the total production from agriculture. The Productivity of any crop mainly dependent on two natural resources: Land and water in addition to management practices. Therefore, the conservation, upgradation and utilization of these two natural resources on scientific principles is essential for the sustainability of rainfed agriculture. In this context, the concept of watershed nowadays for development of rain-fed agriculture is gaining importance. The mission of watershed development department is to develop, promote and implement through participatory approaches, a decentralized, cost effective/productive, transparent and sustainable watershed treatment packages which include,

- To meet rural needs.
- To enhance employment and income for the poor,
- To improve the productive potential.
- To reduce the degradation.

Karnataka has been given an important place for watershed development because 75 per cent of the cropping area in Karnataka depends upon low and uncertain rainfall.
Importance of watershed development in Karnataka

The land resources of Karnataka, has drought prone lands, which comprises more than 79 per cent of the total arable area, which have been poorly managed by the farmers of the state. Soil loss due to erosion coupled with reduced water resources has led to a situation of rapid soil fertility deterioration, declining/stagnating crop yields, depletion of underground water sources, deforestation, denudation, destruction of natural pastures and diminishing biomass production. Exploring the full potential of rainfed agriculture to meet the food, fodder and fuel requirement of the state population, is the only alternative. However, this will require investment on soil and water conservation technologies, crop breeding targeted to rainfed environment, agricultural extension services, and access to markets, credit and input supplies in rainfed areas.

The potential for increasing the irrigable area and enhancing productivity from irrigated lands has its limitations. The total irrigation potential from all sources, including inter basin transfers, is estimated around 50 per cent of the total cropped area of 104.89 lakh hectares. The remaining land has to depend on rainfed farming forever. Therefore, if the state has to conserve and develop natural resources in rainfed areas to improve their production and productivity, their development on watershed basis is inevitable. Development of rainfed areas is important because, more than 42 per cent of its agricultural production comes from dry lands.

Karnataka has the largest proportion (79%) of drought prone area among all major states in the country and in absolute terms it has the second largest area of dry land in the country after Rajasthan. In addition,
Karnataka also has the second lowest (154.2 mha m/yr) replenishable ground water resources among major states after Rajasthan.

Watershed is a geo-hydrological unit of all land and water within the confines of drainage divide which contributes runoff to a common point. It is a land area that contributes rainfall and conveys the overland flow and runoff to an outlet in the main flow channel. Watershed development refers to the conservation, regeneration and the judicious use of all the resources-natural (like land, water, plants and animals) and human-within the watershed area. Watershed management tries to bring about the best possible balance in the environment between natural resources on one side and man and animals on the other. Since, it is the man who is primarily responsible for degradation of environment, regeneration and conservation can only be possible by promoting, awakening and participation of the people who inhabit in the watershed area.

AIMS OF THE PROGRAMME.

1. Improving agricultural productivity.
2. Improving vegetative cover.
3. Increasing milk production and horticulture production.
4. Increasing fodder and fuel availability.
5. Reducing soil erosion runoff and nutrient loss.
6. Improving surface and ground water availability.
7. Increasing household income.
9. Local institutional development through community based organizations.

10. Ensuring institutional support by watershed Development Department as facilitator and by NGOs for community organization and strengthening.

**History of watershed Development**

**A. Pre-Independence Era**

Soil conservation and Land development activities have been in practice, since the era of agriculture was initiated. The kings, emperors and rulers of the ancient India have taken up such activities like construction of village ponds, tanks and road side plantations. The British imperial Government took steps to control problem of soil erosion and water conservation. The Royal Commission on Agriculture (RCA) constituted by the Imperial Governments suggested several measures to combat the severe droughts prevailing in the country. Recommendation for establishment of dry land research stations was the most important among other measures of the Government. Out of five Dry Land Research Stations (DLRS) established in the country, three were in Karnataka viz: Bijapur, Hagari and Raichur.

**B. Post-Independence Era**

**Phase-1. Conventional Soil and water conservation period: (up to 1970)**

During the first five year plan (1951-1956), scientists and planners were very much aware of the soil erosion problems prevailing in the country, but the scientific solutions to tackle these problems were not available at that time. Therefore, the Government had established nine Soil conservation
research demonstration and training centers in the country during first and second five year plans and one such centre was in Bellary of Karnataka. The focus was to develop soil and water conservation techniques to support farming in arid and semi-arid regions for effective soil erosion control and insitu moisture conservation. Mysore State Government passed an Act and Rules for land improvement during 1960s and further, the Government of India also launched River valley Projects in the year 1962.

The project and programmes of soil and water conservation remained as Government programmes, without peoples’ participation and without integration of other departments like Horticulture, Forestry and Animal Husbandry.

**Phase –II. Integrated approach for soil and water conservation: (1970 to 1985)**

During 1970’s rainfed agriculture was given importance and at the same time, the idea of multi-disciplinary approach to tackle the problems of dry land farming was also conceived. Indian Council of Agricultural Research (ICAR) started All India Co-ordinated Research Project (AICRP) for dryland agriculture during 1971 and in Karnataka AICRP on Dryland was started in three places, namely Gandhi Krishi Vignana Kendra (GKVK), Bangalore, ARS-Bijapur and Central Soil and Water Conservation Research and Training Institute (CSWCRTI) Bellary. Later, the operational Research Projects were established to disseminate the research results to the farmers’ fields. Government of India launched Drought prone Area Development Programme (DPAP) during the year 1973-74 to tackle problems faced by those areas constantly affected by severe drought with an objective of taking up drought proofing measures. Again, during 1977-78, Dry Land
Development Programme (DLDP) was started based on the recommendations of National Commission on Agriculture (NCA) in its reports during the year 1974 and 1976, to mitigate the effect of desertification and adverse climatic conditions on crops, human and livestock population.

During this period, the soil and water conservation activities were lacking peoples’ participation, even though it attained momentum for integrated approach for watershed development.

**Phase-III Consolidation of co-ordination/Integration and initiation of the concept**

The projects under phase II of above, amply demonstrated potential of dry land technologies using integrated approach in watershed development. However, implementation has suffered due to lack of Co-ordination among different departments. Therefore, to address these problems of co-ordination, World Bank assisted projects like Kabbalanala watershed project (1984) was implemented, where the officers from Agriculture, Horticulture and Forestry departments have to work together under a single administrative leadership of Project Director. Government of Karnataka established four Dry Land Development Boards (DLDBs) at Revenue divisions to implement the District water projects. A state watershed Development Cell (SWDC) was also set up at state level headed by a Director, to co-ordinate the activities with policy makers and other developmental departments in respect of technical, financial and administrative problems.

Projects like National Watershed Development Programme (NWDP) (1985) was launched by Government of India. Further, Hanumantha Rao committee (1993) was also constituted to identify the strategies to improve
the implementation of Area Development Programmes (ADP) like DPAP/DLDP and Integrated Waste-land Development Programmes (IWDP). This committee recommended for providing responsibility to community based institutions, in planning, execution and maintenance of watershed projects (1995).

Watershed development approach has undergone a transformation to make it stronger. On one hand, the watershed development approach has been consolidated on the principle of integration and co-ordination. But, on the other hand, the peoples’ participation has not been taken its momentum to the expected level.

**Phase-IV Watershed Development Department (WDD): (2000 onwards)**

Soil and water conservation, a pre-requisite for the farming sector to flourish, started with a massive field bunding programme, which has undergone a horizontal and vertical transformation up to the year 2000 and Karnataka State Department of Agriculture (KSDA) was the nodal agency. The watershed Development Department was created separately.

In the background of growing population in the state with a consequent demand for ever increasing food, it was strongly felt for bringing large tracts of rainfed/dry land under watershed system to increase their productivity. Different departments apart from Agriculture were implementing different soil and water conservation programmes and watershed projects, Rural Development and Panchayath Raj (RDPR) implementing various rural development programmes having, watershed concept as a component through Panchayath Raj Institutions. The Horticulture, Forestry, and Animal Husbandry departments were also carrying out various programs in watersheds. In addition, there is also a
component of non-land based activities in watershed development and participation of Non-Governmental Organizations (NGOs) and village committees. Therefore, the State Government considered various aspects including commitment given in the context of an externally aided project and decided that better co-ordination in planning, implementation and supervision would be achieved by setting up a separate department of watershed with multi-disciplinary teams. With this prime aim, to develop watershed in an integrated and co-ordinated manner, the lessons learnt from the past experiences were thoroughly diagnosed and integrated in to the present ongoing projects by adopting appropriate technologies along with building up of appropriate institutions, to ensure in watershed development and thereby improving land and livelihood of people.

The Government of Karnataka has initiated bottom-up, participatory farmer driven Sujala watershed project with the assistance of World Bank. Even though peoples’ participation is one of the major focuses by watershed projects, very few research studies have been taken on this aspect. The studies indicated the involvement of women in agriculture directly or indirectly, but studies related to women participation particularly in watershed development programme are scanty. So to fill this lacuna and to find out womens’ participation, the study has been planned with the following objectives.

**Objectives of the Study**

1. To develop a scale to measure participation of women in Sujala watershed development programme in Chitradurga district.
2. To study the extent of participation of women in Sujala watershed development programme in Chitradurga district.
3. To assess the impact of Sujala watershed development programme on Socio-economic status of women.
4. To study personal, socio-economic and psychological characteristics of women in Sujala watershed development programme.
5. To study the relationship between participation of women and impact of Sujala watershed programme on Socio-economic status of women.
6. To document the constraints faced by the women in Sujala watershed area in relation to participation in watershed development activities.

**Limitations of the Study**

1. This study was confined only limited area, i.e. three taluks in Chitradurga District. A wider coverage was not possible due to limitation of time and recourses at the disposal of the student researcher.
2. The study was confined to assess the Extent of womens’ participation in the watershed development programme. However, sufficient care was taken to make this study as objective and systematic as possible.
3. The findings are restricted to only three taluks of Chitradurga. Therefore, more area covering all the taluks may be taken up in the years ahead to draw wider generalisations.