2016

VISION DOCUMENT -2030
SOIL & WATER CONSERVATION DEPARTMENT, J&K

Department of Soil & Water Conservation
J&K, Haft Chinar, Srinagar -190008
www.jkdosc.com email; dirscd@gmail.com

PREFACE

The state of Jammu and Kashmir because of its fragile mountainous terrain and having shallow soil is subject to various types and degrees of **soil erosion**. Realizing the magnitude of soil erosion prevalent in the state and its ever increasing intensity due to various factors such as; deforestation, over exploitation of pasture lands and other natural resources, faulty agricultural/ horticultural practices, raising of developmental infrastructure, the State Government took a conscious and conscientious decision in the year **1978** to create a nucleus organization in the State for Soil & Water Conservation activities vide Govt. Order No.212-FST of 1978 dated: 21.10.1978 pursuant to Cabinet decision No.831, under the administrative control of Secretary to Government Forests and renamed as "Department of Soil & Water Conservation" vide Govt. Order No.312-FST of 2014 dated 21.10.2014.

Subsequently, appreciating the enormity of multi-dimensional loss due to soil erosion resulting in decrease of agricultural/horticultural production, power production due to siltation of dams and reservoirs, sedimentation of lakes and other water bodies having scenic beauty and tourism potential, flash floods, degradation of forest soil, frequent disruption of communication system etc. the Department actively participated in formulation and implementation of various site-specific treatment plans.

However, in order to have a macro-level planning in future, a need of a vision document has been felt for the Soil & Water Conservation Department. Accordingly, this Vision Document-2030 has been devised reflecting; Introduction, Land Degradation and Soil Erosion problem, Land & Soil Management, Water scenario and Vision by 2030. In view of the increasing mandate in 2014 of Water Conservation activities, the focus has also been elaborated in the document. The Department is projecting **70,000 hectares** to be taken care of for Soil & Water Conservation activities by 2030. The projected area would be undertaken in different programmes under State Plan/ Centrally Sponsored programmes and other aided programmes.

(Javed Iqbal)IFS
Director,
Soil & Water Conservation Deprtment,
J&K, Srinagar

VISION DOCUMENT 2030
OF SOIL & WATER CONSERVATION DEPARTMENT, J&K.

INTRODUCTION :

The State of Jammu and Kashmir lies within the latitudes 32^{o}-17′ to 36^{o}-58′ north and longitudes 73^{o}-26′ and 80^{o}-30′ east. It has a total geographical area of 22.22 million hectares with three regions Jammu, Kashmir Valley and Ladakh. These three regions have different climate, rainfall, physiography, culture, religion, demographic ratio, vegetation, agriculture, needs and problems. The four great mountain ranges of Himalayas are the Karakoram, the Ladakh, the Zanaskar and Pir Panjal. The Himalayan ranges extending North-west to South-east covers maximum part of the state with 300 to 6000 meters, Zanaskar range which starts from Nampa rises to a height of 6000msl and above. The highest peak in this region is Mount Godwin which has a height of 8697msl. Pir Panjal range with a height of 3420 meters which separates Jammu province from Kashmir valley. The important rivers flowing in the state are Indus, Jhelum, Chenab and Ravi. The state is endowed with a wide variation in topography, geology, landforms and vegetation which has resulted in the development of a variety of soils. The entisols are dominant soils covering about 34% of the area, followed by inceptisols, alfisols and mollisols which cover 6.4%, 0.5% and 0.2% of the total geographic area of the state.

Due to increase in human and cattle population which by 2011 is reported about 12.54 million and 10.99 million respectively, there is tremendous pressure on the resources of the state especially on forests, soil and water. The soil erosion is the major problem because of its hilly terrain, undulating topography, fragile eco-system, climatic conditions and loss of vegetal cover due to excessive grazing, lopping, illicit felling, and encroachments. Land degradation is further aggravated with triggering of landslides, earthquakes, development activities including road constructions, railway lines, constructions of hydroelectric projects etc. A healthy vegetal cover in catchments is essential for long term operation of hydroelectric projects.

LAND DEGRADATION AND SOIL EROSION:

According to the National Bureau of Soil Survey and Land Use Planning, water erosion is the most serious degradation problem in India, resulting in the loss of top soil and terrain

deformation. About 7 Mha (31.6%) is affected by various soil degradational problems in Jammu and Kashmir. Out of this degraded area, 77.78% is subject to water erosion while as 19.37% is facing wind erosion which mainly occurs in Ladakh. Water logging and flooding affects 2.85% of the total degraded area. As per an estimate by Indian Institute of Soil and Water Conservation 16.35tonnes of soil per hectare is lost annually at the national level while as the state of Jammu and Kashmir loses 20 tonnes of soil per hectare annually, which is quite higher than national average.

According to a study by the Geological Survey of India-2016, about 12.6% of the total land mass of India falls under the landslide-prone hazardous zone. Out of this area, around 0.14 million sq. km falls in North West Himalayas' including Jammu and Kashmir. The Geological Survey of India lists **15 highly unstable landslide zones in the state viz; Udhampur (villages Sadal, Kheri), Ramban (village Dharam, Gool), three areas along Jammu- Srinagar highway (villages Tak, Channagabra, Rakh Jhrog, Triangula) three zones each in Leh (Karu-Tangtse road, Shyok-Agham road, Rema-Rewari road), and Poonch (villages Upper Potha, Chela and Dangri)**.

As per J&K State Disaster Management Policy 2011, **areas along major highways particularly Ramban, Panthal, Banihal, Doda, Kishtwar, Gulmarg, Dawar, Gurez, Tangdhar, Rajouri etc. are landslide prone.**

Under PMGSY so far, **6511 kms of roads have been constructed in the state having direct effect on the soil resources.**

Central Water Commission, 2012 reports that **Jammu & Kashmir is one of the states having the highest total length of rivers and canals and there are 14 dams in the state out of which 2 are under construction posing further threat to soil resources in the state.**

Forest play an important role in moderating the climate, maintaining the soil mantle, improving soil fertility, minimizing soil erosion, purifying the air, preservation of wildlife and in regulating the flow of water in rivers and streams in our state. The intangible benefits of forest in supporting human life and vegetation are far more superior to its tangible benefits. The augmentation of natural regeneration, eco-restoration of degraded forests together with

increasing productivity have assumed significant place in the economy. **The State Forest Policy, 2011 also stresses on checking denudation and soil erosion in catchments through integrated watershed management techniques and practices besides maintenance of forest soils for augmenting water supplies through recharge of underground aquifers and regulation of surface water flows, sediment levels and water quality.**

As revealed by State of Forest Report 2015, against 22988 Sq. kms of total forest area in the State, 10112 sq. kms falls under open forest category. **This area is actually prone to soil losses and low water percolation / infiltration. This is the thrust area which needs both extensive as well as intensive soil and water conservation measures of different models as per specific site requirements.**

Various factors which enhance soil loss in the state include:

- **Karewa Transformation**: Karewas comprise of unconsolidated gravel sand and mud succession appearing as plateaus above the present plain of Jhelum and its tributaries. The Karewa Lands of the district Budgam and Baramulla in Kashmir region have been subjected to the unplanned excavation which has destabilized the area in and around these excavation sites. The huge land mass has been disturbed where earth has been removed very deep and wide, leaving vertical cuts in the hillocks to the extent of 80 feet and even above. The excavated spots have been left with 90° vertical slope which will yield any time under its own weight as the angle of repose has been totally disturbed and aggravates the problem. This is one of the major causes of soil loss due to various factors of erosion and needs immediate attention so that the unplanned disturbance/ transformation of Karewas in Budgam & Pattan areas of the valley is stopped. A proper regulatory mechanism is required to be placed in position.
- **Nallah Choking:** Due to rapid urbanization, many nallahs in and around Jammu vicinity are under the threat of choking by their filling for roads and other construction purposes. This hinders free flow of water during rains. At times the problem gets aggravated to situation of man-made floods damaging life and property. This problem needs immediate attention to avoid any eventual damages.

- **Natural Disasters**: The recently disturbed spots due to natural disasters like earthquake, floods, sinking of land etc need to be identified and the guidelines for their remedial measures shall be required.
- **Climate Change:** The major challenge in the coming decades is to mitigate the impacts of climate change on our finite degrading resources i.e. land and water which otherwise can prove detrimental for the future generations and they may pose a question **"HERE IS THE LAND, BUT WHERE IS THE SOIL"**. The climate change may enhance the degradation of these resources which needs to be checked by applying technically sound measures.

LAND & SOIL MANAGEMENT:

Better land management involves identifying land-use changes, understanding current land-use patterns or features and assessing economic and ecological benefits and costs that arise from land-use practices, as well as finding the best alternatives for each area. Land-use change may affect many natural phenomenon and ecological processes, including runoff, erosion and soil conditions. It can drastically modify resistance of soil to environmental changes in particular. Inappropriate land-use is one of the main reasons for soil erosion and nutrient loss in the hilly areas.

The irreparable loss of soil leads to degradation, deterioration and denudation of sloppy land which results into serious problem for the State because the fertile soil is ripped off, besides leaching of soil nutrients and silting of water bodies, dams, causing land slips/ landslides resulting in blockade of road communication and bringing miseries to the tourist and administrative hassles, loss of human and cattle; jeopardises the progress and prosperity of the State and deprivation in all spheres of life. This needs attention of the soil conservationists, ecologists, farmers, forester and every one living or visiting the state.

The Department created in late seventies shall continue with the vision for next decades in the fields of formulation and implementation of site-specific schemes to conserve and manage soil resources in the state using modern inputs and technology. The department has worked immensely in the field of survey and formulation of project reports of critical areas affected by soil erosion problem and has also implemented a number of schemes/ projects.

The Soil Conservation Department was added mandate of water conservation and has been renamed as **"Soil & Water Conservation Department"** by the State Government in 2014 vide Govt. Order No.312-FST of 2014 dated 21.10.2014. The works are taken up by identifying the problematic areas for the improvement of soil and water conservation by way of conducting survey, interaction and meeting with the people. Accordingly, schemes/micro-plans are prepared under State Plan, Finance Commission Award, BADP, TSP and special schemes. The Department has taken up the works on the basis of watershed, micro-watershed basis fulfilling the basic principle of soil and water conservation i.e. top to bottom approach by taking of plantation and engineering works coupled with water harvesting techniques. Most watershed projects are implemented with the twin objectives of soil and water conservation and enhancing the livelihoods of the rural poor. Different types of treatment activities carried out in a watershed include soil and moisture conservation measures, drainage line treatment measures (loose boulder check dam, minor check dam, major check dam, and retaining walls) and water resource development/management. All soil and water conservation measures help in augmenting groundwater recharge by inducing the infiltration rate and increasing the opportunity time. Today watershed development has become the main intervention for natural resource management. So far an area of 48,000 hectares has been tackled and most of the areas have responded very nicely and degraded waste land has been turned into lush green patches. The cooperation of the public is highly appreciable and they are getting dividends in the shape of fodder, grasses, timber and MFP. The Department has also taken some prestigious projects like; Stabilization of Rangil Water Filtration Plant (water supply to Srinagar City), CAT Baglihar, Dal Catchment, NHPC Uri Rim Reservoir Treatment and has stabilized the disturbed slopes in various catchments. Some of the success stories are; Rangil, Tujjar-Sharief, Chewa, Watnar, Gojripora, Loolipora, Nishat, TsuentWali War, Takia Farooq Shah, Gulab Bagh Lower Munda in Kashmir Region, Birpur, Purmandal, Chenani Catchment, Balol Catchment, Lower Tawi, Rui Catchment, DingaAmb, Balshama, Nonath, Phalata in Jammu Region and Mathu, Barsoo besides to Winter Pasture Reserve in Ladakh Region.

Although while treating the landslide and soil erosion areas by way of soil conservation measures, the water conservation aspect was also taken care of. However, since 2011-12, more attention has been paid to the water conservation to achieve the desired results having inconsonance with the Forest Policy-2011 etc.

The job of the Soil and Water Conservation Department is highly technical and research oriented especially when the state is facing rapid deforestation, disturbance of soil due to landslides, earthquakes, frequent floods, avalanches and over exploitation of agricultural land. All soil and water conservation measures are directed towards improving water table of the area and augment water holding capacity of the soil.

WATER SCENARIO:

With rapid growing population and improving living standards the pressure on our water resources is increasing whileas per capita availability is reducing day by day. There is a need for proper planning, development and management of the greatest assets of the State viz; water and land resources for raising the standards of living of the millions of people, particularly in the rural areas. The problem of ground water crisis is no less acute. Over-extraction, misuse and illegal "water mining" have combined with other factors to push the water table ever low. In India, the annual demand is expected to increase almost 1500 cubic kms against projected availability of 744 Cubic kms i.e. a deficit of 50%. As per an estimate, the water demand will increase sevenfold by 2050 as compared to 1997. This rings alarm bells for all stake holders, as water is emerging a major problem, both for drinking and other uses. Since distribution and availability of groundwater is mainly dependant on rainfall but the pattern of rainfall over the state is very uneven both spatially and temporally. **As per Central Water Commission, total annual replenishable groundwater resource of Jammu & Kashmir is estimated to be 4.25 BCM. During 2013, Srinagar received 689.9mm rainfall while as Jammu received 1716.2 mm. When compared with the previous years, the frequency of rare events with high intensity rainfall has increased which calls for better management practices and safe design of soil conservation structures**. As per the survey conducted by the Central Ground Water Board, North-Western Himalayan Region, Jammu, the measurement of water levels in Ground Water Monitoring Wells of the state during the period 2014-15 revealed that ground water is fresh and potable in most of the areas of the state and water supply is mainly dependant on it. Ground water forms the main source for surface water bodies in the form of base flow in lean periods. The water level between 10-15m below ground level (bgl) has been observed in some parts of Pulwama and Anantnag districts and more than 15m bgl at Tral in Pulwama district. Some parts of Jammu

and Kathua Districts show water levels between 5-10m bgl and 10-20m bgl especially in Kandi belt. Water levels deeper than 20m bgl were observed in the extreme north portion mostly in Kandi belt especially Taryai Bhagwanchak and Marjoli areas of Jammu district and Nilcha area of Kathua district.

From the distribution of water table and the availability of rain water, it is crystal clear that to fulfil the future requirement one of the main sources is to harvest rainwater for artificial recharge of ground water. This technique is cheap and simple to do, besides an excellent way to preserve the water for prosperity. There are evidences that water can be preserved for longer period and that too purified.

Keeping in view the facts and figures it is quite evident that the role of Department of Soil & Water Conservation cannot be undermined. As per J&K State Disaster Management Policy 2011, the Department of Soil & Water Conservation is one of the stakeholders in disaster risk reduction and management of soil and water resources. It is envisaged in the J&K State Land Improvement Act, 1972 that the prevention of soil erosion, reclamation of waste land, construction of earth and masonry works in fields, gullies and ravines, training of streams and improve soil and water supply is imperative. The various Water Harvesting Schemes in the shape of small dams, water tanks and ponds have been constructed mostly in the water deficient areas i.e. Kandi and Karewas. The Department also took up scheme of Artificial Recharge of Ground Water fully funded by the Ministry of Water Resources under Artificial Recharge of Ground Water by constructing dams etc. The various techniques of harvesting and recharging are gully plugging, construction of ponds, bunding of Nallahs by constructing embankments in the shape of earthen, sand & concrete dams along with harvesting of roof water. So far 260 water harvesting structures have been constructed by the department in the state. Presently Soil & Water Conservation Department is working in all the 22 Districts of the State and implements programme under State Plan (State Sector as well as District Sector) besides some externally aided projects.

There is need to create and enhance the potential of water conservation schemes /programmes in the state and explore similar schemes/programmes of central government to the State of Jammu & Kashmir for the welfare of the common masses. There is also need to protect and revive the traditional ponds/springs in forests and outside

for judicious use by locals and for wildlife to avoid man-animal conflict.

VISION:

Department of Soil & Water Conservation vision 2030 shall articulate many key challenges of the upcoming decades and appropriate strategies to address them through a roadmap for conservation and management of soil and water resources of the state and land degradation with changing climatic scenario. The mission of the Department is to conserve the valuable soil resources of the state by way of adopting soil and water conservation techniques and to create educational awareness among the stake holders for posterity. The Department also envisages the vision of conserving soil and water for sustainable management of forests and agriculture resources and to save water bodies from siltation and degeneration.

The vision shall be accomplished with the focussed mandate viz; research, demonstration, formulation of soil and water conservation schemes, monitoring, evaluation and coordination of soil conservation activities of various departments i.e. Forest, Agriculture and Irrigation etc. read with the State Forest Policy-2011 and in view of the importance of soil and water in J&K State, their intrinsic link with human survival and criticality for livelihood security on sustainable basis. Hence the mandate assigned to the Soil & Water Conservation Department for the period **upto 2030** shall be:

- To undertake, formulation and implementation of site-specific schemes to conserve & manage soil and water resources in the state by adopting **watershed approach for an area of about 70,000 hectares.** Site specific treatment through vegetative and engineering works like DRSM, crate works, brush wood check dams etc. shall be executed by the Department to conserve the valuable soil and increase water regime of the area viz-a-viz the productivity and provide other intangible benefits like; carbon sequestration, pollution abatement and amelioration of climate, in-situ conservation of biodiversity and maintenance of ecological balance.
- To take up appropriate water conservation measures in and outside forest (included in above mentioned area), impounding of water wherever sites permit to increase ground water recharge and prevent floods.

- To estimate soil carbon tapped in the forests as well as non forest land of the State and take suitable measures to ensure retention of the carbon in the soil and increase it further.
- To provide technical guidance for preparation of schemes on scientific basis for other line departments and implement catchment area treatment projects, wherever required.
- To coordinate with the institutions and departments working on water conservation in the State as well as outside including Govt. of India for capacity building to act as nodal agency in the State on water conservation.
- Undertake collaborative research and development projects involving R&D organization in different agro-ecological regions for erosion assessment and conservation planning.
- Generating additional employment opportunities and income for secured livelihood in rural areas.
- Delineate prioritize erosion risk areas for identifying best management practices to bring the erosion losses within the tolerance limits at watershed and state level.
- Enhancing and sustaining productivity of land available for primary production systems (crop cultivation, livestock raising and forest management).
- Capacity building of technical hands for optimum utilization of advanced tools and techniques.
- Formulate mission oriented, multi-objective, multi-locational technology developmental projects cutting across disciplines and institutions in different regions of the state.
- Conduct hydrological evaluation of watersheds under different landuse and management practices with the objective of establishing rainfall-runoff relationships.
- Understanding the importance, there is need of appropriate officers at district level including restructuring of existing strength, equipped with ample men, machinery and laboratories for study management of conservation of soil and water.
- Treatment of Catchment Areas of the Hydro Electric Projects.
- To create awareness about soil and water conservation by adopting suitable communication strategy and extension measures.

--{{{Conserve Soil & Water for posterity}}}--