EK BHARAT–SHRESHTHA BHARAT

Regional Conference

on

JAL SHAKTI AND DISASTER MANAGEMENT

in collaboration with
State Government of Tamil Nadu; and
UT Administrations of Jammu & Kashmir and Ladakh

November 30-December 1, 2019

JAMMU

Proceedings

Govt. of India
Department of Administrative Reforms & Public Grievances

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Introduction

The Department of Administrative Reforms and Public Grievances successfully organized two-day Regional Conference on 'Ek Bharat–Shreshtha Bharat' with focus on 'Jal Shakti and Disaster Management' in collaboration with the Governments of Tamil Nadu, Jammu & Kashmir and Ladakh on 30th November – 1st December, 2019 at Jammu.

The theme of the Regional Conference was national integration through deep and structured engagement to celebrate the unity in diversity of the Nation, envisaged under 'Ek Bharat–Shreshtha Bharat'. The objective of the Conference was national integration- a One Nation Concept wherein the highest focus is accorded to the transparent public policy and good governance to create a transparent, accountable and citizen friendly effective administration.

The two-day Schedule of the Conference was drawn in line with the PM's focus to bring peripheral states closer to mainstream and other parts of India, in terms of development. Six Sessions were held during the Conference: 'Rejuvenation of Rivers-Cauvery and Jhelum' and 'Reducing Water Consumption in Agriculture', 'Water Warriors Discussion' and 'Collectors Speak on Jal Shakti Mission'. In the Session, 'Urban Flooding', speakers addressed on 'Management of Floods', 'Forecasting & Early Warning ', 'Emergency Responses' and 'NDRF Rescue Operations– 2014 Srinagar Floods and 2015 Chennai Floods'.

On this occasion, a Special issue of e-journal, 'Minimum Government Maximum Governance' on Successful Innovations in Governance in the Union Territories of Jammu & Kashmir and Ladakh was released. The integration of CPGRAMS Public Grievance Portal of Government of India and Awaaz-e-Awam Portal of Jammu & Kashmir was also done.

Around 350 delegates from State Government including District Collectors, District SP's, Officers of State Disaster Relief Force, Additional District Collectors, Members of Civil Society, Officers of Engineering and Food & Civil Supplies Departments, Media and Flood affected Families participated in the conference.

Inaugural Session

Union Minister of State (Independent Charge) of the Ministry of DONER, Minister of State for PMO, Personnel, Public Grievances & Pensions, Atomic Energy & Space, Dr. Jitendra Singh inaugurated the two-day Conference on 'Ek Bharat–Shreshtha Bharat' with focus on 'Jal Shakti' and Disaster Management' on November 30, 2019 organized by the Department of Administrative Reforms and Public Grievances (DAR&PG) in collaboration with Governments of Tamil Nadu and Union Territory of Jammu & Kashmir at Jammu.

Also, present on the occasion were His Excellency Shri G.C. Murmu, Lieutenant Governor of the Union Territory of J&K and Shri BVR Subrahmanyam, Chief Secretary, Jammu & Kashmir. The 2-day Conference was attended by about 350 delegates hailing from State Government – District Collectors/ District SPs and representatives of Civil Society/ Engineering Departments/ Food & Civil Supplies Department, among others.

Earlier, while delivering his welcome address, the Additional Secretary, DAR&PG, Shri V. Srinivas mentioned various initiatives taken by the DAR&PG following which the collaboration with J&K Government gained momentum. He added that DAR&PG's conference on 15th-16th November, 2019 had adopted 'Sushasan Sankalp: Jammu Resolution' and two points from the Sankalp are being implemented in the present conference. He added that 'Ek Bharat–Shreshtha Bharat' has brought together partner state of Tamil Nadu and UTs of J&K and Ladakh.

Welcome Address by Shri V. Srinivas, Additional Secretary, DAR&PG

In his welcome address, Shri V. Srinivas, Addl. Secretary, DAR&PG extended a warm and hearty welcome to Dr. Jitendra Singh ji, Hon'ble Minister of State, Lt. Governor of Jammu & Kashmir His Excellency Shri G. C. Murmu ji, the Chief Secretary of Jammu & Kashmir, Shri B.V.R. Subrahmanyam ji. Further, he extended a warm and hearty welcome to all the senior officers of the Ministries/Departments of Govt. of India, the delegates from Govt. of Tamil Nadu and senior officers of Govt. of Jammu & Kashmir. This is the second major Regional Conference being organized by DAR&PG at Jammu in Nov. 2019. This conference has been possible due to the support of Dr. Jitendra Singh ji, Hon'ble Minister of State (PP), His Excellency Lt. Governor of Jammu & Kashmir Shri G. C. Murmu ji, the Chief Secretary of Jammu & Kashmir, Shri BVR Subrahmanyam ji.

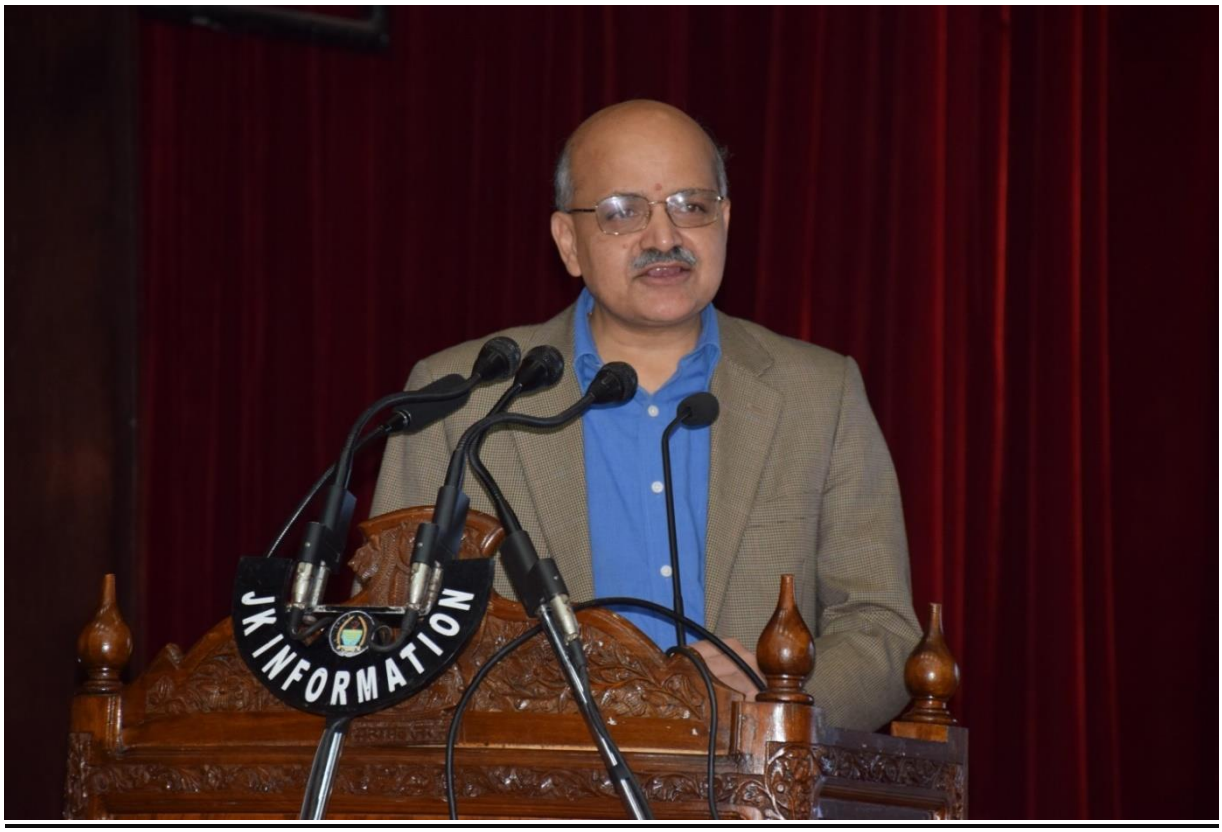
Outlining the subject to be deliberated upon in the conference, he said that the subject of the Regional Conference was carefully chosen after due & extensive consultation with all the stakeholders. The topics to be covered in the conference include Rejuvenation of Rivers - Cauvery and Jhelum, Reducing Water Consumption in Agriculture, Water Warriors Discussion and Collectors Speak on Jal Shakti Mission.

In the Session, ‘Urban Flooding’, speakers will address, Management of Floods, Forecasting & Early Warning, Emergency Response and NDRF Rescue Operations– 2014 Srinagar Floods and 2015 Chennai Floods and the Regional Conference will adopt “Sahyog Sankalp” in the valedictory session.

Shri Srinivas informed that the response from the Govt. of Tamil Nadu has been overwhelming. The Hon’ble Minister for Revenue & Disaster Management, Tamil Nadu Shri R.B. Udhayakumar, accepted the invitation to attend the conference at a very short notice.

The Addl. Secretary also extended warm welcome to the officers from Govt. of India participating in the Regional Conference.

Address by Shri BVR Subrahmanyam, Chief Secretary, Jammu & Kashmir



Underlining the unique topography of Jammu & Kashmir, the Chief Secretary of Jammu & Kashmir, Shri BVR Subrahmanyam in his address said that disaster management included prevention as well as mitigation.

The newly created UT of Jammu & Kashmir should learn from the state of Tamil Nadu to build up capacities and response to various disaster striking the States.

He informed that the entire state will have piped water supply by June 2021.

He also informed about the Devika River Project, which has the potential to be the next tourist destination in J&K.

Address by Shri R. B. Udhayakumar, Hon'ble Minister for Revenue & Disaster Management, Tamil Nadu

Shri R.B. Udhayakumar, the Minister for Revenue & Disaster Management, Government of Tamil Nadu, in his address, said that this collaboration will promote exchange of technical expertise and best practices in the areas of optimal use of water resources in domestic consumption, agriculture and other usages.

He said that each disaster is of different nature and teaches us a new lesson to prepare ourselves better.

He also said that sharing of experiences and advancements in disaster management would help in minimizing the magnitude of adverse impact of disasters with our meticulous preparedness, swift response, quick rehabilitation and recovery.

Presidential Address by His Excellency Shri G.C.Murmu Lt. Governor Jammu & Kashmir

In his presidential address, His Excellency Shri G.C. Murmu, Lt. Governor of Jammu & Kashmir emphasized upon the importance of water conservation and sustainability of natural resources.

He said that agricultural scientists should study the cropping patterns to suit the monsoon and other climatic conditions.

He stressed that it is not only the availability of water, but also about the quality of water that matters. There are certain structural things to be undertaken to save water and mitigate the crisis of water shortage.

His Excellency further said that Swachh Bharat Abhiyaan has proved that sanitation can improve the lives of people in many ways. He elaborated on the role of citizens during natural and manmade disasters, saying that the first respondents to any disaster are citizens and their empowerment is an absolute requirement.

He emphasized the importance of creating awareness amongst citizens through early warning and SMS service, among other things. He termed 'Ek Bharat–Shreshtha Bharat' Conference as an excellent opportunity to share the best practices.

Address by Chief Guest Dr. Jitendra Singh, Hon'ble Minister of State for DONER (Independent Charge); PM Office; Personnel, Public Grievances & Pensions; Atomic Energy and Space

In his address as the Chief Guest of the Conference, Hon'ble Minister said that all Central laws applicable to other parts of the country will now be applicable to the newly created UTs of Jammu and Kashmir (J&K) and Ladakh. He informed the gathering that there are about 854 such laws which are citizen-friendly and beneficial to the common man of Jammu & Kashmir and Ladakh.

The Minister said that Article 370 has gone forever. He appealed to the people of the UTs to cooperate with the Government in providing welfare to common masses.

In the conference, Dr Jitendra Singh released the Special issue of e-Magazine, 'Minimum Government Maximum Governance' based on Successful Innovations in Governance in the Union Territories of Jammu & Kashmir and Ladakh. The innovations included - Back to Village: A People's Programme; Panchayat Polls: IE&C Campaign for Panchayat Elections Amendments in J&K Panchayati Raj Act, 1989; Project KREDA Kargil, Ladakh; Project Tsangda Leh: A Waste Management Programme; Power to all: Total Household Electrification in J&K state; Project Jal Shakti: Reasi; Constituency Development Fund Management Information System, Budgam; Project Saubhagya Plus, Ganderbal; Enabling Girl Child Education, Bandipura; Rejuvenating Lost Ponds,

Kathua and Enrolment Drive in Schools and Infrastructure Improvement with Community Support in Border Areas, Baramulla.

He also launched the integration of CPGRAMS Public Grievance Portal of Government of India and Awaaz-e-Awam Portal of Jammu & Kashmir. Dr. Jitendra Singh affirmed that the Development Model of North Eastern Region will also be implemented in the newly formed UTs. He also mentioned about the upcoming Panchayat Adalat and Bamboo workshop. Commending the theme of the conference 'Ek Bharat–Shreshtha Bharat', the Minister said that this conference will provide an occasion to replicate and learn from the good initiatives of Tamil Nadu in these UTs, especially the river management.

Mentioning Prime Minister's focus on maximum use of technology and real time monitoring, the Minister said that India now has a foolproof technology to deal with the crisis and early forecast of disasters very early by keeping the administration informed in real time.

In reference to Jal Shakti Abhiyaan, a flagship programme of the Government of India, the Minister said Shahpur Kandi and the Ujh River Projects in Jammu & Kashmir will be expedited.

He was delighted to express that the unique bonding of northern-most UTs and southern-most state would carry a message of good governance from Kashmir to Kanyakumari.

PRESENTATIONS

Session – I: Rejuvenation of Rivers - Cauvery and Jhelum

Presentation by Shri Ranjan Kumar Sinha, Member, River Management, Central Water Commission

River Rejuvenation need arises from the degradation caused by Pollution, Over-extraction of water, Encroachment of Flood Plains affecting Water availability, Collapse of fisheries, Floods/drought risk and Ground water Recharge.

The River Rejuvenation action is mainly started after taking into account the ecological considerations, Social and cultural factors, Economic drivers, Navigation, need to protect infrastructure and assets from water-related risks and 'Water security'.

River Rejuvenation includes action aimed at improving the health of river. The action includes modifications of River channels, Floodplains, Water (Quantity & Quality) and sediment.

Shri Sinha, while elaborating on common measures of River Rejuvenation mentioned the followings:-

(i) Catchment management;
(ii) Flow modification;
(iii) Stormwater management;
(iv) Floodplain reconnection;

(v) Bank stabilization;
(vi) Channel reconfiguration;
(vii) Water quality management;
(viii) Instream species management and
(ix) Aesthetics, recreation and education.

The objectives of National River Conservation Plan (NRCP) are to reduce the pollution load in rivers (other than Ganga Basin) through implementation of various pollution abatement works and improving the water quality. Presently NRCP has covered the polluted stretches of 33 rivers in 76 towns spread over 15 States.

POLLUTION ABATEMENT OF RIVER CAUVERY IN TAMIL NADU AND KARNATAKA by NRCD:-

National River Conservation Directorate (NRCD) executes the NRCP. The project cost of pollution abatement of River Cauvery in Tamil Nadu comes to Rs. 263.76 crore and STP Capacity Created (in million liters per day - mld) is 161.41. It is implemented in the towns of Erode, Karur, Kumarpalayam, Kumbakunam, Mayladuthurai, Pallipalayam, Trichirappalli and Trichy.

The project cost of pollution abatement of River Cauvery in Karnataka is Rs. 5.34 crores and STP Capacity Created (in mld) 7.62. It is implemented in the town of Krishna Raja Nagar, Kollegal, Nanjangud and Srirangapatna.

For future course of action, some Rivers have been identified to be taken up for rejuvenation in polluted stretches selected on the basis of the report published by Central Pollution Control Board in 2015 and 2018.

The National Mission for Clean Ganga (in Ganga Basin) includes works like: -

a) Sewage Treatment Infrastructure,
b) River Surface Cleaning;
c) Afforestation;
d) Industrial Effluent Monitoring;
e) Restoration of Water Bodies;
f) River Front Development;
g) Bio-Diversity;
h) Public Awareness;
i) Ganga Gram;
j) Aviral Dhara/e-flow.

The above also needs to be replicated in other basins having similar problems.

To cite a specific case, Kumudvathi River, which is a tributary of River Arkavathi, flowing 50 kilometres from Bengaluru had dried up. As a result, groundwater dropped drastically. To revive it, traditional techniques were used. Boulder checks were built, desilting of traditional stepwells was undertaken, recharge wells & water pools were constructed, saplings planted and the people residing in surrounding villages were made aware of the need to revive the river.

ISHA Foundation has started the Rejuvenation of Cauvery River. It aims to create an impact by providing support to farmers to plant trees in Cauvery basin and adopting agro-forestry. This will have the benefit of improving soil health and reviving the river and groundwater levels.

For comprehensive flood threat management of river Jhelum and its tributaries, immediate measures need to take to plug all the breaches in embankments. As a short term measures the carrying capacity of river Jhelum and its flood spill channel at Padhsahibagh needs to be increased by dredging.

Presentation by Shri Iftikhar Kakroo, Director (Technical), Jhelum & Tawi Flood Recovery Project, Govt. of Jammu and Kashmir

Shri Kakroo during his deliberations informed that Jhelum River originates from Verinag spring in Anantnag and after passing through Srinagar it flows down into Wullar lake and then passing through Baramula and Uri, it enters into Pakistan occupied Kashmir. The total catchment area up to the Line of Control when it enters into PoK is about 13,000 km.

The Jhelum River is the only major Himalayan river which flows through the Kashmir valley. There are about 147 glaciers in the Jhelum basin covering an area of about 75 sq. km.

The Jhelum basin extends to an overall area of 33,300 sq.km within India and Pakistan occupied Kashmir covering 3% of the overall Indus Basin area. Khadanyar gorge divides the entire area into two segments. The upper segment of the basin has an area of 12,759 sq.km and drains the entire Valley of Kashmir. The highest mountain peaks enclosing the basin have an elevation of more than 5300 m on Great Himalayan side and more than 5500 m on Pir Panjal side.

The rest of the basin area forms a vast plain consisting of Kashmir Valley and its four side Valleys viz. Lolab, Lidder, Sindh and Kishanganga with an area of 4865 sq. km and altitude ranging from 1400 m to 1650 m. The karewas having flat topped terraced features account for nearly 50% of the overall Valley area. The karewas on the left bank of the River Jhelum are extensive and massive till the northern west end. Whereas, these are quite few in number and smaller in extension on the right bank. The karewas have alluvial land features.

Important peaks surrounding the basin are Nanga Parbat and Tosa Maidan in the north, Mahadev, Gwash Brari, and Amarnath in the south, Qazi Nag on the North West and Harmukh on the east.

JHELUM TAWI FLOOD RECOVERY PROJECT (WORLD BANK FUNDED)

The Jhelum River Valley suffered record flooding in September, 2014. Under World Bank funded Jhelum Tawi Flood Recovery Project, M/s EPTISA Serviciosde Ingenieria SL (Eptisa) has been commissioned to undertake the Study,"Preparing feasibility and detailed project report for flood mitigation and comprehensive river management measures in Jhelum basin " .

The first stage of the Study comprises data collection, flood modelling, and conceiving design components leading to a feasibility study of options from which selected components will be taken up for inclusion in the proposed Flood Management

Plan. This plan will be a blueprint for flood management and mitigation in the Jhelum River catchment for several decades.

Once the elements of the Flood Management Plan have been finalised, the second stage of the Study will comprise the development of a Detailed Project Report for the planned works including detailed design drawings and tender documents.

Since Jhelum passes through many rural and urban settlements, the river gets polluted with sewage from settlements, agricultural runoff etc. Samples were collected at four locations of Verinag, Bijbehara, Aaramwari, Qamarwari, Sopore and Baramulla during Summer (June-August), Autumn (September- November), Winter (December-February) and Spring (March-May) seasons (Year 2014-15).

Most of the parameters showed peak values at Qamarwari site of the river Jhelum, as this site receives domestic and commercial sewage from Srinagar city. Among four seasons, summer season showed elevated levels for all quality parameters, as this is the main season for agricultural and commercial activities leading to decline in the water quality of river Jhelum. Drastic changes in water quality of Jhelum are mainly due to indiscriminate use of chemical fertilizers, pesticides, and unplanned urbanization and commercialisation in its catchment area.

The main factors plaguing the Jhelum are Pollution; Sedimentation; Sand/Boulder mining; Land Use change; Water Quality; Encroachments; loss of Flood Plain; Climate Change; Loss of ecosystem.

Sedimentation and Sand/Boulder mining:- Due to loss of vegetal cover and snow cover in the upper reaches there is substantial increase of sedimentation in the river. The problem is compounded by sand/boulder mining in Jhelum and its tributaries which have made the channels change course besides threatening indigenous species of fish.

Loss of ecosystem:- In the Jhelum basin, there are 788 wetlands and water bodies out of which 69 are high altitude lakes and wetlands. There are a few famous and picturesque lakes in the Jhelum basin like Dal and Wular but most of these lakes and wetlands are facing brunt of anthropogenic pressure. The influx of the untreated domestic wastewater and the application of fertilizers are mainly responsible for the eutrophic conditions in most of the lakes in the Jhelum basin.

Climate Change:- In the Jhelum basin, minimum, maximum and average temperatures are showing a significant increasing trend in all the four seasons .The proportion of snow is decreasing and correspondingly, the proportion of rains is increasing. During the last 51 years, the glacier area in the Jhelum basin has decreased from 46.09 km^2 in 1962 to 33.43 km^2 in 2013 amounting to the depletion of 27.47%. Further, the concentration of black carbon in the valley is highest compared to the other high altitude

station in the Himalaya. All of these factors act in the same direction to decrease the volume and extent of the glaciers in the Himalayas.

Land use changes:- Over the decades, landscape in the Jhelum basin has got greatly transformed with land being used or converted to other use without any regard for suitability. Increased population has put pressure on the agriculture land having serious implications for the hydrological processes.

Urbanisation and encroachment of flood plains:- There have been significant changes in the land system, particularly in the floodplains of the Jhelum river. The large-scale urbanization of the Jhelum floodplains in the last 5 decades has adversely affected the hydrological functionality of the floodplains increasing the vulnerability of the people and infrastructure to floods.

Mixing of Storm Water and Sewage is to be avoided at all costs. Under JTFRP apart from upgrading the existing drainage pumping stations, constructions of new storm water drainage schemes is envisaged in Srinagar city. It is being ensured that mixing of storm and sewage doesn't take place for which necessary facilities for water quality monitoring are being created under JTFRP. Department of Irrigation & Flood Control has initiated removal of encroachments from river valley and flood plains. The department has to overcome many challenges on this account stemming from resistance from encroachers, judicial interventions etc. Revival of important water bodies like Dal lake and Wullar Lake is underway through structural and non-structural measures. While Dal Lake is under sharp focus, Priority is now being accorded to Wular Lake also. Efforts are on to regulate Sand and boulder mining in the River and its tributaries. Master Plans have been framed and approved for Srinagar and Jammu cities. Master plans of other towns are also under preparation. Master plans will restrict construction in no go areas like river plains. Efforts of the Government Departments are backed by legislations like the "J&K Water Resources Regulation and Management Act 2010".

The Department of Forest, Environment and Climate Change, Government of India has decided to implement the 'Namami Indus River Rejuvenation Project' through forestry interventions for which the Himalayan Forest Research Institute (HFRI) has been commissioned to prepare the DPR.

The Main benefits envisaged through the Navigation lock project are Socio-Economic benefits through overall development; Development of inland water transport system as a viable alternative to surface transport system to ease stress on Highways; Reduction in hydro Carbon emission and consumption of fossil fuel in the environmentally sensitive area like Kashmir; Tourism development including pilgrimage tourism; Overall improvement of important water bodies like Wullar Lake; River Jehlum etc through development of infrastructure, removal of encroachments and regular

maintenance; Development of Fisheries, floriculture, bird sanctuaries (Hygam jeel); Incidental benefits to downstream hydro power generation projects.

Presentation by Er. R. Thiruvettai Sellam, Superintending Engineer, Government of Tamil Nadu

The river basins in Tamil Nadu are Chennai Basin Groups; Palar; Varahanathi; Ponnaiyar; Vellar; Paravanar; Cauvery; Agniyar; Pambar Kottakaraiyar; Vaigai; Gundar; Vaippar; Kallar; Thamirabarani; Nambiyar; Kodayar; Parambikulam Aliyar.

Cauvery is an eastern flowing river of the Peninsular India running across three of the southern Indian states i.e. Karnataka, Tamil Nadu, Kerala and a Union Territory of Puducherry. The fourth largest river of southern region begins its 800 km long journey from the Western Ghats and drains into the Bay of Bengal. The point of origin of Cauvery is Talakaveri in Karnataka and its point of confluence is at Poombukar in Tamil Nadu. The total length of river Cauvery is 800 kms of which 320 KM is in Karnataka, 416 KM in Tamil Nadu and 64 KMs forms their common boundary. The major tributaries of river cauvery are Bhavani, Noyyal, Amaravathy, Thirumanimuthar and Sarabhanga.

River Cauvery is also referred to as “PONNI”. Cauvery is one of the seven sacred rivers of the country. It is the principal source of water ensuring food security and catering to 4.71 lakh Hectares for the delta irrigation. It sustains the livelihood of over three million farm worker in delta and other en-route districts farmers apart from being source of drinking water supply for 22.88 TMC ft. annually for several districts.

Tamil Nadu River systems are being stressed as a result of increased industrialization, and urbanization, thus reducing the availability of clean water. The polluted river endangers the survival of aquatic organisms, plants, humans, environment and River Eco System.

On 20th July, 2019, the Hon'ble Chief Minister announced the scheme "Nadanthai Vaazhi Cauvery Project in Tamil Nadu Reach" in the Assembly. This is the first and foremost project rejuvenation of River Cauvery. The Preliminary Project Report for Rejuvenation of Cauvery and its tributaries within Tamil Nadu for an amount of Rs. 11250 crore was submitted to the Ministry of Jal Shakti, Government of India in October 2019 for approval.

The objectives of the project are:-

(i) to abate pollution and protect the river by adopting a more self-sustainable manner;
(ii) to improve river ecological condition by improving the quality of the water environment and create healthy ecosystems that benefit society as a whole and
(iii) to revamp the river as a more dynamic and healthy river without inflicting the eco-system in existence.

A total of 12 Districts; 6 Municipal Corporations; 22 Municipalities; 94 Town Panchayats and 1725 Village Panchayats are covered in NADANTHAI VAAZHI CAUVERY River Rejuvenation Project.

Water Resources Department; Revenue Department; Pollution Control Board; Municipal Administration and Rural Development Department; Tamil Nadu Water Supply and Drainage Board;Tamil Nadu Slum Clearance Board; Tamil Nadu Housing Board; Environment and Forest Department and Tamil Nadu Generation and Distribution Corporation are involved in NADANTHAI VAAZHI CAUVERY River Rejuvenation project.

The components of River Front Development projects include:

a) Repair and Modernization of Public Amenities–Urban and Dam sites at 20 Places;
b) Repair and Modernization of 750 Bathing Ghats;
c) Upgrading and Modernization of 1600 Rural Crematoria and 10 new Electrical Crematorium/ Gasifier;
d) Drain Entry Bed Dam Project at 36 Locations;
e) River Surface Cleaning at 22 Locations;
f) Solid Waste Management and Rural Sanitation in 1725 Villages;
g) Bio-Diversity Conservation & Afforestation;

h) Cauvery Gram - People Participation and creating Awareness;
i) Online Monitoring System for Sewage exit locations and Industrial waste exit locations;
j) Real time GIS application for water management;
k) Rehabilitation and Resettlement for High Risk Area, Flood Prone Zone and Intervention required Area;
l) Ground Water Recharge including wells in Tanks & Recharge Shafts in River/ Drain;
m) Barrages for Storage for Artificial Recharge.

PRESENTATIONS

REDUCING WATER CONSUMPTION IN AGRICULTURE

Shri Gagandeep Singh Bedi, Agricultural Production Commissioner and Principal Secretary to the Government of Tamil Nadu

Shri Gagandeep Singh Bedi chaired the session on reducing consumption of water in Agriculture. Setting the tone of the deliberations, he said India conserves only 8% of the rain water. The ground water usage in India is very high - in fact more than that of USA & China put together, most of which goes for agriculture. The total geographical area of Tamil Nadu (TN) is 130.33 Lakh Ha, Gross Area sown: 57.30 Lakh Ha, Gross Area Irrigated: 32.78 Lakh Ha (57%) mainly Paddy (51%), Fruits & Vegetables (9%), and Sugarcane (5%). Balance 43% area is rainfed. There is no Perennial River in TN. The normal Rainfall in Tamil Nadu is 943.7 mm vis-à-vis 1,200 mm National average.

To reduce water consumption, he mentioned about technologies like direct seeding in rice, system of rice intensification, micro irrigation in water intensive crops with more focus on sugarcane and banana and other interventions like pipe carrying water from source to field to avoid seepage.

Importance of Micro Irrigation: It is energy efficient i.e., reduces consumption of energy; facilitates uniform maturity and uniform quality, which bring better price to the yield; reduces labour in Irrigation and water use efficiency increases by 40-60%. When

fertigation is done through micro irrigation, there is effective utilization of nutrients and effective weed control thus reducing the cost of cultivation.

ACHIEVEMENT UNDER MICRO IRRIGATION

The achievement under micro irrigation in the state of Tamil Nadu during 2014-15 (0.12-Lakh ha) is 120.26 crores, 2015-16 (0.32 Lakh ha.) is 204.61 cr., 2016-17 (0.48 Lakh ha.) is 266.28 crores, 2018-19 (1.46 lakh ha.) is 700.69 crores) and 2019-20 (as on 26.11.2019) (1.22 Lakh ha.) is 541.97 crores.

Rs. 1,370 Crores has been allocated for budget of 2019-20 which has GOI share of Rs. 418 crores and state Share Rs. 952 cores. The vision of the project is to cover area under well and tube well upto 17.20 Lakh Ha. So far covered areas under micro irrigation concerned, it is for 4.00 Lakh Ha and the vision is to cover of 13.20 Lakh Ha by 2025.

With the aim to sensitize farmers about the benefits of micro irrigation, awareness campaigns including Van Campaigns; Village Mela; Distribution of Pamphlets; Short Films on MI through Whatsapp; Wide publicity through User friendly Mobile App – “UZHAVAN” have been started. The objective is to increase area under cultivation, effective utilization of water, improved productivity, and doubling farmers income.

Presentation by Shri Md. Yasin Chief Planning Officer, Srinagar

Reduction of water consumption is possible by means of Mass Awareness; Water Conservation; Water harvesting; Capacity building; Convergence of manpower and other resources; Improving Green Cover; Community involvement.

The Departments of Rural Development & Public Relations; Public Health Engineering; Health and Family Welfare; Forests, Ecology & Environment; Soil Conservation; Social Forestry; Urban Forestry; Municipal Corporation; Revenue; Information and the NGOs and Civil Society organizations can bring a positive change in this regard.

The initiatives taken to reduce water consumption are Groundwater recharge, Slope stabilization, soil & moisture conservation works, percolation pits, Rainwater Harvesting, Integrated in building permissions; Plantation, covering every household and vacant land, Community Participation, Eco Clubs, Schools, PRIs, NGOs, Awareness, Information and Education campaigns, Smart Water Meters, Process started to cover 1 Lakh HH in City (Phase -1), Storage Tanks, Ponds, Safeguarding Water bodies, Mapping of encroachments, Action at critical areas and involvement of various stakeholders for conservation. A plantation helpline was also put in place to connect with every home.

Integrated Watershed Management Programme (IWMP) was initiative in Srinagar in consultation with District Administration. 12 Projects were undertake in 2019 for rain

water harvesting (RWH) i.e., collection and storage of rainwater from roof tops, roadside, open areas, etc.

Building Permissions:

The integration for Rainwater Harvesting for new building permissions has becomes mandatory. Capacity Building Workshops were organized with the department/staff of SMC, LAWDA and Revenue staff. Part solution for urban floods is making water conservation a way of urban life. The annual target is to cover 10,000 houses including existing buildings.

The outcomes are re-regularisation of all connections, increased revenue, focussed conservation, checking misuse. Awareness campaigns are carried out through Radio, TV, Print Media; Schools, Colleges; Community programmes; Panchayats; Urban Municipal Wards; NGOs; and Eco Clubs. Awareness campaigns are also organized in Health & ICDS Centres.

Presentation by Dr. Vijay Bharti, Associate Professor and Senior Scientist, Water Management Research Centre, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu,

Water Saving Technologies for Irrigated Plains of Jammu

Problems of Indian agriculture include plateauing of the production of food grains, decreasing income of farmers, fragmented land holdings; dependence on monsoons putting pressure on irrigation infrastructure and climate change.

Jammu in North Western Himalayan Region has three Agro-Climatic Zones viz., Sub-tropical, Intermediate, and Temperate. The Sub-tropical Zone are Jammu, Samba and Kathua. The rainfall is 1100 mm. The major cropping Sequences are Maize-wheat and in irrigated Area: Rice (Basmati-370) and Wheat.

Agriculture and allied sectors is the predominant livelihood activity involving 65% of the population contributing 27% to the Gross State Domestic Product (GSDP). Jammu and Kashmir is having 40% deficit in food grain production, 70% deficit in oilseeds and 30% in vegetable production. In Jammu and Kashmir, 42% area is under irrigation and 90% of available ground water is unutilized. Jammu Division is located between an altitude of 300 meters and 4200 meters above Mean Sea Level (MSL). Ranbirsingh Pura in Jammu district and Sumeham (Padder) in Doda district are the lowest and highest permanent settlement points for human population. Jammu region has about 31.5% irrigated area and 87% irrigated area comes under canal systems.

Strategies for Irrigated Plains

Deficit irrigation schedule developed for rice crop can be summarized as “one irrigation (10cm) for puddling; two irrigations, (5 to 7 cm depth) during stand establishment period of two weeks; 7cm irrigations, once in eight days, during non-rainy periods after stand establishment period and up to maturity stage (i.e., until two weeks before harvest”)

Irrigated Plains (Direct Seeded Rice): - Direct seeding of rice crop is an establishment method, which consists of sowing seeds directly to the main field rather than replanting of seedlings grown in nurseries to puddle fields as in conventional method. Studies carried out in all India coordinated research project (AICRP) in Water Management at its Jammu Centre on comparative performance of rice plantation methods have confirmed that grain yield of direct seeded rice is comparable to that of transplanted rice with application of irrigation water every three days after disappearance of ponded water in light soils.

Irrigated Plains- System of Rice Intensification (SRI) is a system of growing rice which involves principles that are at times radically different from the traditional ways of growing rice. It involves planting of single and young seedlings with care instead of

conventional method. Study on SRI under Jammu conditions in one of the research experiments have confirmed that SRI can save 29% of irrigation water as compared to normal transplanting.

The project 'Upliftment of Marginal Basmati Growers Through System of Rice Intensification (SRI) in Jammu Region was approved with the following objectives:-

a) to enhance capacity building of beneficiary farmers through demonstrations and training on SRI in basmati rice;
b) to promote vermin-composting and *insitu* green manuring in basmati;
c) to improve the productivity level of basmati rice.

Strategies for Irrigated Plains Irrigated Plains (Aerobic Rice):- Aerobic rice is a new way of cultivating rice that requires less water than transplanted rice. It entails the growing of rice in aerobic soil with the use of external inputs such as supplementary irrigation and fertilizers and aiming at high yields. The target environments for aerobic rice includes irrigated lowland rice areas where rainfall is insufficient to sustain low land rice production but sufficient for aerobic rice. Aerobic rice can also be practiced in pump irrigated areas where water has become so scarce that lowland rice production is often abandoned.

Irrigated Plains- Wheat (Border Strip Irrigation): - Substantial winter rainfall (average of 300-350 mm) being a hallmark of Jammu agriculture has remained as mainstay for wheat production. In one of the success stories of AICRP (Water Management), Jammu Centre yield increase of about 14 q/ha was recorded in the demonstration laid at village Hakkal, block Satwari, Jammu. The border strip irrigation also helped the farmer to save irrigation water as well as to drain out excess water.

Strategies for More Crop - Per Drop: - Sowing of wheat with zero seed drill can be one of the most promising water saving technology for wheat crop. Study on comparative performance of establishment methods has proved that comparable wheat yield can be harvested under zero-tillage under Jammu conditions.

Strategies for Irrigated Plains - Laser land leveling:- Precision land leveling resulted in significant reduction in water use marking the improvement in water productivity in rice-wheat cropping system as compared to traditional leveling. Study completed in 2013 under AICRP (Water Management) Jammu Centre, laser levelled plots in both rice and wheat crops proved to be more water productive as compared to traditionally levelled plots. Water use efficiency in rice was 2.25 kg/ha-mm with laser levelled plots showing 23% increase over traditionally levelled plot whereas in wheat laser levelled plots recorded 8.07 kg/ha-mm of WUE registering 23.3 % increase over traditionally levelled plot. The Problems in Irrigated Plains of Jammu are over irrigation in *Kharif;* Poor Drainage; Water Logging (15000-20000 ha).

The Solutions for waterlogging are surface drainage where the outfall is available i.e field drain-link drain-main drain; Recycling of drainage water; Improvement of landform; On-farm reservoir; Rice-fish integrated system; Stage drainage structures; Cultivation of waterlogged resistant deep water rice varieties; Alternate land use. The Other solutions are bio-drainage; IFS and raised and Sunken Bed Technology etc.

SKUAST- Jammu has successfully established a multiple water use model involving raised bed-sunken bed technology to make better use of water logged areas. The raised beds can be used for agricultural activity like growing grains, vegetables, flowers, etc. whereas the sunken beds act as ponds where fisheries can be taken up.

PRESENTATIONS

COLLECTORS' SPEAK

Presentation by Ms. J. Innocent Divya, DC, Nilgiris

DISASTER MANAGEMENT IN NILGIRIS DISTRICT

The Nilgiris or the Blue mountains is located at the tri-junction of Tamil Nadu, Kerala and Karnataka. India's first Biosphere Reserve, it is a part of Western Ghats which has been declared as one of the 35 biodiversity 'hotspots' of the world because of its unique diversity. Situated at an elevation of 1,000 to 2,600 metres above MSL, Nilgiris plateau is endowed with a rich heritage and vast variety of flora and fauna, grasslands, shoals and swamps. Famous for tea and eucalyptus plantations, tourism is a major industry. The total Area of Nilgiris is 2565 Square KM.

The topography of Nilgiris District is rolling and steep. About 60% of the cultivable land falls under the slopes ranging from 16 to 35 degrees. The Nilgiris district receives rainfall from South West and North East Monsoons. Disasters like heavy downpour, landslide and landslips occur in the district. The District has 17 rain gauge stations and the average annual rainfall is 1,920.80 mm. The average rainfall received

during November 1993 was 337.20 mm in north-east monsoons. 18 huts were washed away. 12 persons lost their lives and 15 persons were found missing. 2 buses with 21 passengers were washed away.

Due to continuous rainfall especially from 9th to 14th December 1998, one big boulder weighing about 20 metric tons fell on Coonoor – Mettupalayam main road in North-East. The traffic on the road was obstructed for four days. One person was killed and 3 persons were injured, disrupting traffic movements in NH 67 and blocking Mountain Rail track between Mettupalayam and Coonoor in North-East Monsoon 2006.

In 2009, 43 person was killed and 3758 hut damaged and 1150 landslips occurred and the estimated damages was Rs. 300 crores. In North-East Monsoon 2015, 17 huts were damaged partly and 15 huts damaged fully and 36 vehicles damaged.

The Vulnerable locations as per taluk are Udhagai, Kundah, Coonoor, Kotagiri, Gudalur and Pandalur. The vulnerable locations are defined by the factors i.e. Demographic expansion, Environmental Degradation, Rapid Urbanization and Unplanned Development.

PRE-DISASTER PREPAREDNESS

The Disaster Management Act, 2005 (DM Act 2005) lays down coordination mechanism for effective disaster management at the national, state, district and local levels.

The District Disaster Management Plan was formulated and 42 Interdepartmental Zonal Teams, 6 Early Warning Committees, 6 Search and Rescue Committees, 6 Evacuation Committees and 6 Relief Centre/ Shelter Management Committees were constituted. For better communication VHF with TNSMART app sets were provided to Revenue, Fire & Rescue & other departments to have uninterrupted communication during disaster through a 24x7 helpline (No. 1077) at District level and Taluk levels.

PREPOSITIONING OF MEN AND MATERIAL

- 42 Zonal Teams with 250 members with designated areas are kept an alert and positioned.
- Highways Department officials are instructed to keep JCB in areas where tree falling and landslide occur often.
- Fire & Rescue department officials are instructed to keep power saws sufficiently to cut and remove fallen trees.
- RELIEF ARRANGEMENTS- 456 Relief centres are functioning in the district.

The Avalanche region received 910 mm of rain over a 24-hour period till 08.08.2019 morning, the highest in Tamil Nadu's history during 2019 in south-west monsoon. 184 Relief centers were opened and 15,875 people evacuated.

Presentation by Shri Praveen P Nair, DC, Nagapattinam

JAL SHAKTI ABHIYAN (A RAINWATER HARVESTING & WATER CONSERVATION CAMPAIGN)

The seasonal rainfall report in Nagapattinam district is as under:-

S. NO.	Monsoon	NORMAL	ACTUAL		
			2017	2018	2019
1	SOUTHWEST	286.01	337.43	183.56	461.43
2	NORTHEAST	751.10	938.19	818.12	550.71 upto 28 Nov.

Water Channels flowing through the district (delta channel) are Cauvery, Palavar, Vennar, Manjalar, Odaiyar, Vettar, Mahimalaiyar, Nandalar, South Rajan, Vikraman, Pudumannaiyar, Odampogiyar, Ayyavaiyanar, Archandra Vennar, Kaduvaiyar, Manniyar, K. K. Maniayar, Pandavaiyar.

Jal Shakti Abhiyan (JSA) is a time bound campaign with the mission mode approach to improve the condition in and around blocks that are drought affected, water stressed or over exploited. Designed on the lines of Gram Swaraj Abhiyan, JSA was planned to be carried out in 2 phases. First phase from 1st July and 15th September 2019 and wnd phase for States / UTs with retreating monsoon between 2nd October and 30th November, 2019.

The Jal Shakti Abhiyan aims at making water conservation and promotion of irrigation efficiency a public campaign through asset creation and communication campaigns.

ENTRY POINT & PREPARATORY ACTIVITIES:

Special IEC Campaign has been organized with KVK and Agriculture department focusing on motivating farmers to shift from water intensive crops to less water consuming crops as well as need to shift to water efficient micro-irrigation system like drip and sprinkler methods. Preparation of inventory of traditional water bodies in the district and plan to review them has been done. A list of Government owned buildings where roof top Rain Water harvesting (RWH) system was to be built was prepared. Identification of places in the coastal area was done for the creation of infrastructure, to prevent saline water ingression into the main land.

Jal Shakti Abhiyan – The areas of intervention and principles followed are the effectiveness through Reuse & Recycling; Renovation for local Rejuvenation; Effectiveness through Reduction in use; Conservation through Afforestation; Community Participation; Preventive Measures to arrest sea-water incursion.

It's effectiveness through Reuse and Recycling are the roof Top Harvesting of Rain Water; Conversion of Borewells into Recharge wells and Recharge shafts and Underground Drainage System to reuse urban black and grey water.

In individual household soak pits, the household waste water from the bathroom and the kitchen is collected through inlet pipe to the inspection chambers where the waste water is screened and the water is then led to the soak pit where the water passes through the filter media and soaks to the ground. Rural sanitation is improved. It is part of liquid waste management. Now no drainage is seen overflowing in streets.

<u>WATER CONSERVATION AND RAIN WATER HARVESTING</u>

Earthern Bund is the most popular soil conservation structure. It may be defined as construction of small embankment with soil along the contour line of the land. It decreases the length of slope and intercepting runoff flowing down the slope thus, conserving the moisture and reducing the soil erosion. It would enhance soil moisture regime around the area proposed. Earthern bunds are constructed on agricultural land with the aim of preventing soil erosion and improving the soil moisture profile.

Kudimaramath Project is a very important scheme implemented from the year 2016-2017. In this project, the works will be identified by the farmers themselves and executed by the farmers associations or group of Ayacutdars as well. Under this project, the old dilapidated masonry structures like Irrigation head sluices, drainage sluices, regulators, syphons has been rehabilitated or reconstructed desalting

the Channels /Rivers/ drains for free flow of water for irrigation as well as flood drain. The project is a boon to the irrigation system as well as to the farmers since all the works could not be attended by the TNWRD with regular maintenance funds.

Under this project, a limit of 10% of the estimated cost is contributed by the beneficiary (i.e., farmers) showing his commitment to and ownership of the infrastructure. Implemented from FY 2016-17, the scheme is likely to continue in FY 2020-21 too.

INTENSIVE AFFORESTATION- PADUGAI TEAK PLANTATION

The Nagapattinam Forest Division is functioning since 03.10.1986. The total area of 5565.979 Ha is under the control of Nagapattinam Forest Division. Though only 2% of the area in the District is under protected areas. Teakwood has been cultivated in the canal and river bunds under Padugai Teak and Social Forestry schemes.

The impact of the project has been very positive. It has resulted in increased community ownership and awareness among farmers. By use of farm ponds, ground water level increases and innovative steps in desilting of old open wells were undertaken with community participation.

The way forward for the project are: -

a) Water budgeting at micro watershed level;
b) Reducing the overall runoff and improving percolation;
c) Community ownership of water assets;
d) Shifting to more water efficient crops and from more crop per acre to more crop per drop.

Presentation by Ms. Indu Chib, DC, Reasi

Reasi has moderate to high water holding capacity. Receiving a maximum rainfall of 8.54 mm, the rain-water flows down casually through the hills, which could be harvesting. To implement rain water harvesting, special gram sabhas were organized and local IEC tools adopted.

JALSHAKTI REASI

One thousand percolation pits lined by intensive water holding plantation; 500 water holes, check dams with stone masonry, 10 vegetative check dams, two ponds roof top harvesting structures; one well, five gully plugging sites and contour trenches were constructed. A demonstration room with audio-visual set-up was constructed and literature on Jal Shakti prepared and disseminated. The standard measurement of the percolation pits is 3x3x2.5 meter and water stored per pit at one time is 640 litres. This way around one crore litres (approx) of water excluding the water which percolated and supplemented the ground water table and couldn't be measured was conserved.

Hon'ble Minister Dr Jitender Singh MoS was always guiding, supporting and monitoring the project with keen interest. The demonstration site was established at Gram panchayat Agarballian. By using "water hole" concept of Dr. Anil Joshi, the District would be recharging the aquifers /water sources, which were gradually drying up.

A large number of plant-species including Deodar, Kail, Chir, Walnut, Apple, Pear, Robina, Popular, Mulberry etc. were planted in Mahore area. The plantations in Reasi area included Sissoo, Mulberry, Chir, Toonu, Arjun, Amla, Deodar, Kail etc.

After intensive plantation that started in Reasi at least 2 lakh plants have been planted in last 3 months by the Forest Department in the District. A number of Jalshakti works have been inaugurated during the current Back to Village Programme.

The Target is to make Reasi a Water Plus district in a short span of time.

Presentation by Dr. Piyush Singhla, DC Udhampur

TAPPING PERENNIAL WATER RESOURCES

District Udhampur is predominantly Agrarian, where 80% population lives in rural areas with agriculture as their mainstay for livelihood. The District has a total of 65,200 land holdings with average holding size of 0.97 Ha. 97% of the farming families are small and marginal. Only about 6% of the cultivated area is under assured irrigation. The District has several untapped perennial water sources like natural springs, bowlies and nallahs.

The objectives of the JEEVIKA are to harness the untapped perennial sources thereby increasing the irrigation potential through innovative water harvesting structures; to promote efficient water use for irrigation by means of micro irrigation-Drip method; to create livelihood opportunities for small and marginal farmers of the district by following integrated farming system approach; to mobilize masses for larger participation in water conservation in the district and to promote larger participation of farming community in economic growth of the district with principles of integrated farming system.

The aims of the Project are innovative Water Harvesting and Conservation of Water by tapping perennial water resources, minimizing water losses, protected cultivation by Tubular Green House Structures and Mulching; ground water recharge; increasing Water use efficiency; and providing sustainable Livelihood including doubling of farmers' income

The Project "JEEVIKA" is a targeted livelihood plan for small and marginal farmers. It aims at development of sustainable ecosystem by water conservation and allied activities. It is being implemented by convergence of existing schemes of various departments to provide sustainable income and employment opportunities to small and marginal farmer community who have perennial water source nearby their field but unable to utilize it effectively. The Vision of the Project incorporates principles of water harvesting & conservation viz., sustainability; equitable access of water which requires effective management of local water resources and suitable supportive role of Government. JEEVIKA" Project is an integrated package for farmers with perennial source of water at nearby location, largely on community model, and in some cases on individual beneficiary basis.

WATER HARVESTING / CONSERVATION:

District Udhampur is blessed with natural springs/ bowlies (traditional water bodies) and other perennial water resources, the outflow/ runoff from these resources were mostly untapped. Moreover, erratic rainfall pattern in the district, excessive runoff,

leaching, and orthodox methods of farming also add towards the low water use efficacy and thereby decrease the production productivity per unit area

In the backdrop of this, 840 ponds are being developed through convergence of various schemes under the Project “JEEVIKA”. Out of these, 250 ponds are being developed by using innovative water harvesting structures with poly lining of 500 microns sheet and 590 ponds are being developed specifically for ground water recharge to help improve the water table. The special poly lining ponds shall be harnessing perennial sources of water across the district for which a detailed ground survey and analysis was done by joint teams of rural development and agriculture department.

INCREASE IN WATER USE EFFICIENCY

District receives annual rainfall between 1100 mm to 1300 mm, which is in 5 months of the year i.e., July, August, September, December and January. During Kharif Season (April to Sept) there is scarcity of water as there is vary scanty rainfall due to which it is difficult to provide even the critical irrigation to the Kharif Crops, which otherwise reduce the production and productivity of the District.

In an effort to increase the water use efficiency of the water to be stored in the water harvesting structures built on the perennial sources; Drip irrigation system is being provided as part of package under the Project “JEEVIKA” so that the Kharif Crops do not suffer from moisture stress.

SUSTAINABLE LIVELIHOOD

97% of the farming families are small and marginal with poor economic condition having low per capita income. Moreover, due to rain-fed conditions they have been deprived of crop diversification and other sustainable income generation activities, due to which there is higher rural to urban migration for livelihood.

Under the project “JEEVIKA” it has been targeted to cater to the season vegetables cultivation besides various schemes of different departments are being dovetailed in the project to achieve water conservation on one hand and effective usage of water through drip irrigation. The farmers are also provided poly-house, vermin-beds and mushroom trays to increase the production per unit area and improve their cropping pattern which would in turn help to increase the income of the farmers. Subsequently, other departmental schemes of horticulture, sericulture, animal/ sheep husbandry/ fisheries, forests, and floriculture shall be converged to make a way forward towards integrated farming system.

The project “JEEVIKA” being implemented by Rural Development department and Agriculture Department Udhampur will mitigate the irrigation related problems to a large extent and shall serve the purpose of community participation in water conservation thereby augmenting the livelihood of small and marginal farmers of the district in near future.

EXPECTED OUTCOME OF THE PROJECT

The unutilized perennial source of water will be tapped and used for increasing production and productivity through effective management. It would induce a behavioral change in the mind-set of the farmers for water conservation and its effective management and utilization. Approximately, 50 Hectare Area will be put under assured irrigation with the creation of 250 Water Harvesting Structures nearby perennial sources. Approximately, 16300 cubic meter of water will be conserved/ harvested and put to efficient use in diversifying the Agriculture; and approximately 59000 cubic meter water will be recharging the ground water through 590 rechargeable ponds.

INCREASE IN WATER USE EFFICIENCY

About 35 Lakh Litre of water will be saved by adopting Drip Irrigation method on 12.5 Hectare area @ 70% water use efficiency and with the creation of assets viz; Water Harvesting Tank, Drip Irrigation and Poly Green House Structures about 50 Hectare Area will be effectively utilized for Vegetable /Cash Crop Cultivation.

SUSTAINABLE LIVELIHOOD

Shifting from orthodox farming techniques to latest innovative technologies viz Drip irrigation, mulching and vermin-composting will improve their farming skills and economic condition. With the adoption of protected cultivation, more impetus will be laid on off-season vegetable cultivation which is already in vogue in the District. Creation of employment opportunities will arrest the migration of rural youth to urban areas. Sustainable income for the farmer will be possible by adopting Integrated farming System Model (IFS). With the diversification of crops the net income of the farmers will increase from Rs. 5000 per kanal to 29000 per kanal every year. It will serve as role model for Small and Marginal Farmers of the district and step towards doubling the farmers’ income by 2022.

PRESENTATIONS

WATER WARRIOR DISCUSSION

Presentation by G. Asok Kumar, Additional Secretary and Mission Director, National Water Mission (NWM)

The goal of National Water Mission (NWM) is the Promotion of citizen and State action for water conservation, augmentation and preservation through the focused attention to the vulnerable areas, including over exploited areas, increasing water use efficiency by 20%, and promoting of basin level integrated water resources management.

There is a need to increase yield per unit of water by improving non-water inputs that lead to increased production per unit of water consumed and changing to new/ different crop varieties with higher yield per unit of water consumed.

Reduction of non-beneficial depletion and increasing of the intensity of water use by restricting evaporation from bare soil and from fallow land and reducing water flows to sinks (deep percolation and surface runoff) is the need of the hour. Minimizing salinization of recoverable return flows, reallocating water from lower to higher value uses within or between sectors, Co-manage water by promoting multiple uses, Better Storage, Conveyance, distribution efficiencies. The Mantras of 3Rs are to reduce, reuse and recycle

In Jammu region major (surface water) rivers are: Basantar, Jhelum, Indus, Chenab, Ravi and Tawi- of which the first 4 are now declared as '*national waterways*'. Rivers and all seasonal tributaries act as major drainage lines. Of the 0.2 billion cubic meters of groundwater extracted 41% goes to irrigation, 47% to domestic use and 12% to industrial use. Agriculture is an challenge because 1/3rd area is hilly terrain, and 62.53% of the total area is under cultivation of which the net sown area is only 37%.

In Kashmir about 65% of the precipitation occurs in the form of snow during winter season (Dec-Feb) when the temperature drops and remains between -8ºC and 12ºC. Kashmir has about 2 lakh kanals of cultivable land with a net sown area of 3.5 lakh hectares.

In Jammu & Kashmir agriculture contributes to only 17% of the State GDP with 70% population depending upon it. Over 20% of agricultural land has been converted to commercial/ residential use. With the loss of flood basins, the state is experiencing unprecedented flooding. Due to recession of Himalayan glaciers water discharge into the rivers is reducing.

Although sources of water are abundant in the state, infrastructure for water use is lacking in terms of effective encatchments and storage. Due to hilly terrain irrigation opportunities are limited and require intervention in terms of effective water use. There is a need to avoid water guzzling crops such as Paddy. Due to low efficiency in agriculture food grain shortage has climbed from 32% in 1950-51 to 82% now.

Recommendations: -

- In valley areas, in addition to traditional ground water structures shallow to medium depth tube wells can be constructed for developing the ground water resource.
- Since perennial *nallas* are major sources of water. Shallow to medium depth bore wells fitted with hand pump are useful ground water structures for domestic needs.
- Traditional resources like springs need to be revived developed & protected. The discharge of such springs can be sustained by construction of small check dams or subsurface dykes across tributaries downstream.
- Small ponds/tanks/talavs can be utilized for recharging ground water; and can contribute to harvesting water and for meeting domestic needs.

SUGGESTIONS TO CONSERVE WATER:

a) Roof-Top Rain Water-Harvesting practices must be adopted in hilly areas since the district receives ample rainfall-but it is mostly getting wasted as runoff. It is an

ideal solution for augmenting water resources particularly in hilly & chronic water scarce areas.

b) Water stupas as promoted in Laddakh should be promoted in snow bound areas.
c) Mining of riverbeds should be prohibited as it leads to fall in the water levels & it also damages natural river system.
d) Create awareness among masses for water conservation and augmentation, proper waste disposal and for protecting water sources.
e) Aerators to be used in taps to reduce wastage.
f) People's Active participation.
    (i) People should be made aware about the value of water.
    (ii) It will help in proper utilization and conservation of the water resources available.
    (iii) Grass root level efforts are required for proper implementation of development programme.

Presentation by Shri Shekhar Raghavan, Director, Rain Water Centre, Chennai

Rain centre, Chennai is an initiative of the Akash Ganga Trust, an NGO. The primary activity of the Rain Centre is awareness generation. It is a one-stop information and assistance centre for rainwater harvesting and this is the first rain centre in the country, set up in Chennai.

Rain is the predominant source of all freshwater on earth. Both Chennai and Tamil Nadu have adequate rain. Almost all the cities in India face the dual problem of floods during monsoon and drought during summer months. The main reason behind floods is shrinking of open spaces and indiscriminate paving. The droughts happen due to over exploitation of water sources. The attitude of the urbanites is that they take water taken for granted and have an apathetic attitude which is mainly because of lack of awareness on the need of rainwater harvesting and sustainable ground water recharge and use.

He said that rain-water harvesting is the only way to sustain both surface and subsoil water. Upto 200 years ago, the Kings and Rulers created water bodies and used them for harvesting rain. There used to be community wells. In the last 100 years, more and more areas have been built up and people have to extract water through their own groundwater sources.

The key word to sustainable water management is rainwater harvesting (RWH) and in most of India all water comes from rain. Rain water harvesting is the

responsibility of both the society and the State. Rain falling on the roof can be collected in a sump through a first flush arrangement if there is a need or put into the soil for sustaining the groundwater source through properly designed recharge wells. Driveway runoff harvesting is done only to recharge the water table and not for immediate use. The methods of driveway runoff harvesting the rain that falls all around the built up area runs off to the street can be intercepted near the gate by a gutter and injected into a recharge well.

SUCCESS

Due to increase in the number of rain water harvesting systems, the increase in groundwater levels and improvement in its quality have made people less dependent on municipal supply and also helped in achieving self reliance in water. In Chennai the groundwater levels rose by 6 metres (20 feet) and so did the quality of ground water. The dried water tanks, which were earlier used by the children to play, are now filled with water. The temple tanks are also full of water round the year. The State makes sincere attempts to harvest the urban runoff. It has recovered the water-bodies in the extended area of Chennai. In addition, the State has recovered the 3000 odd water bodies in Thiruvallur & Kanchipuram districts.

PRESENTATIONS

URBAN FLOODING

Presentation by Shri Amrendra Kumar Sengar, IG NDRF

NDRF RESCUE OPERATIONS – 2014 SRINAGAR FLOODS AND 2015 CHENNAL FLOODS

The general features of urban flooding are significantly different from other sorts of floods. They have higher peaks, higher volumes and faster flooding. Damages to vital infrastructure may have global implications. Since, urban areas are densely populated, the population affected is large. It is not only the eventuality of flooding but the secondary effect of exposure to infection also that has its toll in terms of human suffering, loss of livelihood and, in extreme cases, loss of life. The visible effects are more perceptible as people are more vocal and have multiple means to communicate.

Increasing trend of urban flooding is a universal phenomenon and poses a great challenge to urban planners, world over. Problems associated with urban floods range from relatively localized incidents to major incidents, resulting in cities being inundated from hours to several days. Therefore, the impact can also be widespread, including temporary relocation of people, damage to civic amenities, deterioration of water quality and risk of epidemics.

There has been an increasing trend of urban flood disasters in India over the past several years whereby major cities in India have been severely affected. The most notable amongst them are Hyderabad in 2000, Ahmedabad in 2001, Delhi in 2002 and 2003, Chennai in 2004, Mumbai in 2005, Surat in 2006, Kolkata in 2007, Jamshedpur in 2008, Delhi in 2009 and Guwahati and Delhi in 2010, Jammu & Kashmir 2014, Chennai 2015, Kerala-2018 and Sangli, Kohlapur & Patna in 2019. Chennai and Srinagar are the worst examples of urban flooding in the country.

2014 - SRINAGAR FLOODS

The State of J&K experienced heavy rainfall from 1st to 5th September 2014, leading to floods in South Kashmir. Situation started improving from 5th September, onwards. However, water level in Jhelum increased at exceptionally high intensity on 6th night leading to early morning massive flooding of Srinagar. Flooding was so sudden that 90% of the city was under water within first 2 hours of the morning of 7th Sept, 2014. This is unique example in the world when the entire capital city was under water. The rainfall was in excess of the normal average due to which the rivers overflowed and most of the low-lying areas submerged. Due to excessive rains, four main tributaries of Jhelum overflowed causing increase in water level of river Jhelum.

In Srinagar district, river Jhelum overflowed and breached its embankment at several points. Over 6,00,000 people were stranded in Kashmir region. Around 50 Lakh people affected (45 Lakh in Kashmir and 5 Lakh in Jammu areas). Thousands were left homeless and shelter less. Communication was totally disrupted. There was scarcity of drinking water. Hospitals and schools were damaged. 2500 villages were impacted. Extensive loss of heritage architecture, art and masterpieces (Approx.1trillion) and more than 400 deaths took place in the State.

State Administration, NDRF, Army, SDRF, J&K Police, CRPF, BSF and Air Force were involved in rescue operations. 22 NDRF teams were deployed and 50,815 Lives saved/ evacuated, 88.22 tonnes relief material distributed and 10,145 patients were attended.

Five Medical camps comprising doctors and pharmacists were established to provide medical care to the needy people for the villages at Naugaon, Bakshi Stadium, Tangpura, Khursubagh and Amar Singh College. In addition, 8 mobile medical camps were also made operational on boats and vehicles.

Messages of people approaching for help through various communication modes were listed at NDRF (HQ) and follow-up was regularly being done through phone calls on the numbers provided.

In relief and medical care, NDRF worked as facilitators for various corporate, NGOs and individuals in collection, dispatch and distribution of relief material including

food water and medicines. Approximately 163 tons of relief material was collected at its collection centre at NDRF base, Dwarka, which was sent to Srinagar for distribution by NDRF. Mobile water medical camp was initiated by NDRF for the first time in inaccessible flood-affected localities of the valley.

CHALLENGES FACED:

The team faced many challenges. The first challenge was breakdown in communication. The terrain was hostile for boat operations as area was infested with barbed wire and concertina coils with sharp tin edges. There was lack of co-ordination with local stakeholders in initial days as most of them were themselves affected. Local guides were not available initially, the weather was inclement, strong currents were causing difficulty in maneuverability, and it was difficult for boats to enter narrow streets. On some occasions, the crowds were impatient and hostile. For rescuers it was difficult to access the personnel trapped in submerged houses, surrounded by perimeter walls, protected fencing, shrubs, requiring entry into water.

The administration faced the following challenges:-

a) Reaching out/Communication with the people;
b) Restoration of Public utilities;
c) Immediate supply of essential provisions;
d) Evacuation shelters; Health care;
e) Removal of garbage and animal carcasses;
f) Rehabilitation of affected families; and
g) Damage/loss assessment.

NDRF took some new initiatives in these operations, as mentioned below: -

(i) Use of software defined radio (SDR) for data and voice transmission through HF set manufactured by NECTAR (North East Centre for Technology & Research).
(ii) All Terrain Vehicle (ATV) was used on experimental basis.

LESSONS LEARNT

Prior establishment of dedicated control room, availability of maps of local area and local guides, strong communication networks and solar chargers, training to deal hostile or panicky crowd, availability of light weight ladder with each boat, navigational lights for night rescue operations, sufficient vehicles for local mobility, small inflatable boats useful in urban floods and mobile workshop for repair of boats, would have accelerated the rescue operations.

2015 - CHENNAI FLOODS

Chennai, State capital of Tamil Nadu lies in the Eastern Coast of South India where three water bodies meander through it namely, Cooum River, Adyar River and Buckingham Canal. Chennai is the fourth largest Metropolis in India having a total population of nearly 47 Lakhs with a growth rate of 13% and density of 26,903. Within a century, Chennai has grown 8 times in population. Chennai even though, having a plain terrain is bounded by Bay of Bengal in the East with an average elevation of 6.7 m from the mean sea level. Chennai experiences most of its rainfall during October to December associated with Depressions & frequent cyclones during this period. Average annual rainfall is about 1200 mm – 1300 mm being situated on the coastal side.

Tamil Nadu had experienced unprecedented rain in November and early December 2015. Due to this, devastating floods ensued in many parts of the State. This meteorological eventuality caused extensive rainfall in four spells i.e. first spell between 8th and 10th November, 2015, causing extensive damages mainly in Cuddalore district, second spell on 13th November, 2015 severely affected Kancheepuram town, third spell from 15th to 17th November, bringing heavy rains in Chennai and adjoining districts of Kancheepuram and Thiruvallur districts, and fourth spell on 1st December, which again hit Chennai and the two adjoining districts with such great intensity that it marooned large parts of the metropolis causing untold suffering and destruction.

The unparalleled levels of rainfall (319.60 mm) on 1st December, 2015 caused a deluge in densely populated areas of Chennai Metropolis.

The outcome of unprecedented downpour was immediate and disastrous with major water bodies overflowing into major rivers, Adyar, Cooum and Kosasthalaiyar coupled with the heavy downpours in the city unable to drain into the Adyar river. This flood put a large number of urban populace of these areas in great difficulty causing severe damages to public and private property. Flood waters entered into a large numbers of houses in many areas of Chennai and other districts and remained so for several days, forcing the inhabitants to evacuate the houses and move to higher floors or safer areas. This caused loss of movable assets like furniture, cars, two wheelers and other domestic durable assets. Power and communication was shut down and Electricity was restored by the night of 6th December 2015 in 95% of the areas, except in areas which still had some residual inundation. Telephone connectivity was restored to the extent of 75 per cent on 5.12.2015 and subsequently restored completely. Widespread flooding shut down the airport and factories of top automobile companies, and stopped trains packed with passengers on submerged tracks. The Indian Navy's air base at Arakkonam - 70 km west of Chennai – was readied for commercial flights to evacuate hundreds of passengers stranded at the civil airport, which had been shut till 6th December, 2015.

With 30 teams on the ground, the scope and magnitude of the problems confronting the State, prompted the Hon'ble Chief Minister to approach the Centre for assistance in the

form of additional manpower. 20 additional teams of NDRF were air lifted into Tamil Nadu on 04.12.15 to assist in the rescue work.

NDRF DEPLOYMENT

This was the largest deployment of NDRF for urban flooding. Total 50 teams were mobilized from seven NDRF battalions across the country. 34 teams were airlifted. 22450 lives were saved and people evacuated.

SOME SUGGESTIONS: SPECIFIC TO URBAN FLOODS

Identification of vulnerable/ flood prone low lying areas is imperative. Timely and selective evacuation should be done depending on the rainfall status and forecast. For this adequate number of evacuation centers with sufficient provisions be planned in advance. Instead of issuing general advisories to the public, specific advisories should be issued, as general advisories and warning are usually misunderstood by the people. Instead, they should specifically be advised on what action should be taken by them. Evacuation warning should not be random and panic driven. People living in multi-storey houses should better stay put. In towns & cities, hotels and hostels etc. may be advised to cater for alternate cook houses, with adequate rations and drinking water on 1^{st} or 2^{nd} floors of the building. Since communication is an essential requirement, the mobile operators need to be advised to place their gen sets/equipment at raised level, so that the services are not affected during floods. In case of large scale flooding, distribution of essential provisions like food packets, drinking water and basic medicines should commence from the second day itself. These provisions can be disbursed through NDRF/ SDRF boats going for rescue/evacuation. Periodic simulation exercises and mock drills involving NDRF, SDRF and all other stakeholders should be undertaken for ensuring effective, functional emergency response. The local emergency squads should be provided with necessary training and equipment as per local Disaster Management plan. The community resources and assets should be utilized in such situations and urban flood education provided in schools.

NDRF has amended the Hand Book for teachers of Central Board of Secondary Education and is going to start training programmes for teachers of CBSE on the line of currently operational Nehru Yuva Kendra Sangathan training programmes.

NDMA has issued comprehensive guidelines on “Management of urban flooding”. It contains all workable suggestions and details required by planners and implementers. All stakeholders must go through the summary of action points mentioned at chapter – 10 of the guidelines.

LINE DEPARTMENT SPEAK

PRESENTATIONS

Presentation by Shri Simrandeep Singh, Chief Executive Officer, Shree Mata Vaishno Devi Shrine Board

Shree Mata Vaishno Devi Shrine Board was formulated by the Jammu & Kashmir State legislature vide "The Jammu & Kashmir Shree Mata Vaishno Devi Shrine Act, 1988 for better management, administration and governance of Shree Mata Vaishno Devi Shrine and its endowments, including the appurtenant lands and buildings. The management of the Holy Shrine was taken over by the Board on 31st August 1986.

The Board has undertaken a number of developmental activities aimed at making the Yatra a comfortable and satisfying experience for the Yatris. The Board continues to reinvest the offerings and donations received in carrying out improvements in various kinds of Yatri facilities.

Prior to the takeover, the management and control of the Shrine used to be with a private trust called the Dharamarth Trust and a group of traditional local residents called Baridars (so called because they collected their offerings as per their turn- bari). The takeover was necessitated considering the poor state of things and the absence of facilities for the pilgrims. While the offerings were pocketed by the Baridars, the other incomes including rentals and royalties were taken by the trust. However, there were very few facilities for the Yatris. The pilgrims reaching the Holy town of Katra from all

over India with devotion and faith in their hearts were often met with all kinds of hardships, insensitivity and mismanagement.

Ever since the Shrine Board has taken over the management, it has been continuously striving to provide all possible facilities to the Devotees visiting the Holy Cave Shrine of Shree Mata Vaishno Devi Ji. As a result, the yatra to the Holy Shrine has increased tremendously in volume.

CHALLENGES:

The shrine is spread in area beginning at from 2875 ft. high above MSL to 5800 ft. high above MSL. It is in Zone-V of Seismic activity, hilly terrain has high risk of accidents, there are dense Pine forests and the geology is slide prone as the region has high precipitation and has wildlife. The slides are both rainfall triggered as well as non-rainfall triggered including loose boulders, shooting stones. The area is vulnerable to forest fires, windstorms and animal attacks and some people may have altitude sickness/ cardiac issues.

ACHIEVEMENTS:

After the takeover of the management of the Shrine by the Board there have been significant improvements in facilities. The entire stretch of track from Banganga to Bhawan covering a distance of over 12 Kms. has been laid with tiles for the convenience of the pilgrims, an alternate track measuring 5.5 Kms has been constructed. Alternate track starts from Inderprastha (just below Adhkuwari) and reaches right up to Bhawan. Over 70 shelter-sheds (Vishram Sthals) covering a distance of nearly 4 KM have been constructed - 52 on Main track and 18 on the Alternate Track. The entire track has been well illuminated with approximately 1200 High Power Sodium Vapour (HPSV) lamps. Over 100 toilet blocks with over 600 seats including European type seats have been constructed at regular distances all along the track. 125 Water Points and 50 Water Coolers have been installed for the pilgrims.

Free accommodation for the devotees is available at Adkuwari, Sanjichatt and Bhawan. Rented accommodation is available for the yatries at Niharika Complex (Katra), Trikuta Bhawan, Adhkuwari, Sanjichhat, Bhawan and Vaishnavi Dham/ Saraswati Dham at Jammu.

A total of 12 viewpoints (restaurants) [9 on the old track and 3 on the alternate track] have been constructed. The pilgrims can relax at these viewpoints to enjoy the natural beauty and refreshments at reasonable rates. Bhojanalayas providing wholesome and hygienic food on no-profit basis are being run by the Board at Katra, Bhawan, Adhkuwari, Sanjhichhat and at Vaishnavi Dham/ Saraswati Dham at Jammu.

Well equipped Medical centres manned by professionals have been set up at Banganga, Adhkuwari and Bhawan. There is a 24 hr charitable dispensary at Katra/ Himkoti. At Sanjichhat there is a 24-bedded full-fledged hospital with all facilities and round the clock medical facilities including ICU are available at the Bhawan.

Free cloak rooms and blanket stores are available at all important locations. The rates of Ponies, Pithus and Palanquins have been fixed and displayed. Helicopter facility is available at Katra-Sanjhichhat route. Banks, Police Stations, Post Offices are available at all important locations. The shops selling toiletries, provision items, camera rolls are adequate and medicines, eatables, walking sticks, shoes, caps, rain-coats are also available.

Computerized donation counters have been set up at Central Office Katra and other places and donations can be made in the form of cash, D.D. Cheque or in kind. For every donation made, computerized donation receipts are issued to the Donors.

To increase the capacity of clearance, the Board constructed a new artificial tunnel in tandem with the existing tunnel to create a one way circuit, thus adding considerably to the clearance capacity. The satisfaction level of the visiting pilgrims remains same and now more number of pilgrims are able to have darshan in a single day. The waiting period has also reduced.

Televisions sets have been installed at various locations in the Bhawan complex through which Atka Arti in the Holy Cave as well as Darshans of the Holy Pindies are relayed live. Closed Circuit cameras have been installed inside the cave to offer to the pilgrims a view of activities inside the Sanctum Sanctorum while they wait for their turn for Darshans.

Improvements in the Atka area and Sanctum Sanctorum areas and the new gold decoration of the Holy Pindies are other major milestones in the development of the Bhawan area. Another accommodation complex called Manokamna Bhawan (I, II) with a restaurant and dormitory accommodation stands operationalised and construction of Parvati Bhawan is in advanced stage.

To further regulate the Yatra and strengthen the security in the area troops of the local police and the paramilitary along with the Security wing of the Board have been deployed. In addition, X-Ray Baggage Inspection Systems and Metal Detectors have been provided, to ensure adequate security of the Shrine and the visiting pilgrims.

Hence, a complete transformation of the area has been brought about.

Presentation by Shri Ajeet K. Sahu, Secretary (Irrigation), Government of Jammu & Kashmir

The massive floods in the first week of September 2014 affected close to 50 Lakh people in Kashmir valley and five lakh in Jammu region. This was the worst flood, the state of J&K had witnessed in the past 60 years.

Jammu and Kashmir had experienced heavy monsoon rains that began on September 2, 2014 and lead to unprecedented widespread flooding and landslides across the state. River banks of river Jhelum, Chenab, Tawi and many other streams were burst. The worst affected districts were Srinagar, Anantnag, Baramulla, Pulwama, Ganderbal, Kulgam, Budgam, Rajouri, Poonch and Reasi. Links to Kashmir Valley were disrupted and the 300- km- long national highway was closed for vehicular traffic from 7th September as a result of landslides and floods. As many as 60 major and minor roads have been cut off and over 30 bridges washed away, hampering the relief and rescue operations. Except for connectivity between Srinagar and North Kashmir's Ganderbal district, all other districts of the valet including Anantnag, Pulwama, Kulgam, Shopian, Badgam, Baramulla and Bandipora were cut off.

The Govt. had started over 87 camps in Jammu and over 147 (excluding Srinagar, Banidipora and Kupwara) in Kashmir division. Tents, blankets, tarpaulin ration (Rice, Wheat Floor, pulses), Food, Milk, Utensils were distributed in Shopian, Budgam, Baramula, Ganderbal, Anantnag, Rajouri, Udhampur, Jammu areas to the affected community.

Over 20,908 people were evacuated and 23,900 were rehabilitated in the Jammu region. Indian Army rescued persons at the earliest through airlifting and supported with

Boats, Pumps, JCB, Constructed 3-4 floating bridges, repaired roads and supplied water in Jammu region.

Agriculture is the main livelihood of the families in the villages, except for very few families with job holders. The paddy seed beds were lost due to inundation, standing crops were damaged and stored grains/ food stocks lost, raising food security concerns. In view of winter season, people prioritize repairing and cleaning of their houses thus impacting their daily wages. The paddy straw is used as feed for their livestock, which was completely damaged. So there was a likelihood of shortage of fodder for livestock especially during winters. The major impact of the flood was seen in case of livelihoods and livestock (cattle). Many households own agricultural land. Community has a habit of storing grains for the winter season when the temperature is below freezing point. Even the poorest families with small tracts of land store all the food they grow (as opposed to selling them in the market) for winter, and engage themselves in wage labour, or other activities like being a driver, tourism operator, running a shop etc. for the rest of the year. Floods had a major impact on livestock, with losses of cows, sheeps and goats.

Most of the people in assessed villages had lost one or two of their livestock. The usual diet is 3 meals a day and then they were getting 1-2 meals per day. There was no special nutritional provision for children or nursing mothers & pregnant women in the camp. The ICDS centres in all the villages were affected by flood water, hence closed. All the supplementary nutrition and food grains were damaged completely. It would not open for another 15 days due to water logging and massive silt deposition. Ration was supplied by the District Administration in the relief camps but most of the food packets were supplied by local Mohallas and Gurudwaras including NGOs. The Government announced free rice for six months (Total 250 Kg's for six months). The household size being averaged at 5.91; therefore this was not sufficient in quantity and providing them the required diversity of food consumption. Rates of food items had increased tremendously in the state and shortage of essential commodity could be seen. Vegetable and horticulture industry was also damaged severely causing severe shortage of vegetables in the market.

Tourism is one of the most important sources of livelihoods (earnings) which is most affected. September is the peak season. As tourist flows stopped resulting into reduced incomes. In urban areas, especially Srinagar, business communities received major losses. There was a very strong need for a humane financial package for the business community for the kind of losses they had faced.

Flood affected availability of food in the market resulting in increase of food prices. Accessibility to markets was affected; the accessible markets were running out of stock, reducing the food security. ICDS and health centres were also affected by disaster, cost of food increased tremendously.

The overall health infrastructure and system in Kashmir region was badly affected. Equitable access to health facilities is a big concern. The lack of access to healthcare from PHC, AWC, Rural Health Providers, attributed to facilities being affected and reduced staffing levels as staff and their families themselves being affected. Health camps are concentrated in urban pockets of Srinagar, the appropriate and equitable health services not available. Drugs and essential medical reserves had been affected; the supplies in general were short in Kashmir valley and in medical camps due to lack of coordination and effective supply chain management. Health surveillance was largely missing. The organised and unorganised medical camps were not in coordination loop and information on health surveillance and utilisation status was not being maintained. Poor water, sanitation and hygiene conditions increased health risks for spread of communicable diseases and epidemics. The appropriate measures for information and awareness of people to prevent communicable diseases were not in place.

PRESENTATIONS

FORECASTING AND EARLY WARNING EMERGENCY RESPONSES

Presentation by Amit Kumar, Consultant, National Seismic Risk Mitigation Project (GOI), Team Leader NDMA

In 2011 Union Ministry of Home Affairs, launched National Cyclone Risk Mitigation Project–I (NCRMP-I) in two coastal states (Andhra Pradesh & Odisha). In 2015-NCRMP-II was launched for 6 states (Goa, Gujarat, Maharashtra, Karnataka, Kerala and West Bengal). National Seismic Risk Mitigation Programme (NSRMP) is one of the recommendations of NCRMP-II.

Under NCRMP-II, a project-designing of National Seismic Risk Mitigation Programme (NSRMP) is planned as risk reduction strategy at National & State Level. National Disaster Management Authority (NDMA) has awarded design-consulting project to joint venture of DDF Consultants Pvt. Ltd (DDF) and Aga Khan Agency for Habitat, India (AKDN). Eight States covered under this phase of the Project are Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Laddakh, Manipur, Meghalaya, Tripura and Uttarakhand.

The specific objectives of the project are Earthquake Early Warning Dissemination System, Enhancing Emergency Response Capacity, Multi-Hazard Risk Mitigation of Critical Facilities / Infrastructure, Technical Assistance to Improve Disaster Risk Management, Management, Monitoring and Implementation Support System.

The Design/Development of Earthquake Early Warning Dissemination System (EEWDS) has two components viz.,

(i) Regional Earthquake Early Warning System (EEWS),
(ii) On-Site Earthquake Early Warning System (EEWS).

Under Enhanced Emergency Response Capacity, the components comprising of

(i) Upgrading Existing and providing additional search & rescue equipment for SDRF, Fire & Emergency Services and other emergency/ first responders
(ii) Training & Capacity Building Programme for Emergency/ First Responders - Manual development and
(iii) Augment Disaster Risk Management Capacities of the Communities.

For retrofitting of selected critical Infrastructure, support is required to list critical infrastructure for retrofitting (both Central Government and State Government owned Infrastructure), list Critical Links on Evacuation Routes to be retrofitted/ constructed and relevant maps/ architectural drawings/ structural Drawings.

The components of technical assistance to improve Disaster Risk Management, include reviewing and providing inputs on National Council of Professional Engineers (NCPE) Bill for strengthening of Seismic Research and Centre for Excellence; Curriculum revision of Earthquake Engineering topics; Strategy formulation on Techno Legal Regime; Documentation on improving traditional EQ resistant construction; Develop IEC material and Design training and capacity building.

GUIDELINES FOR INFRASTRUCTURE SELECTION

(i) Larger serving population districts should be given preference;
(ii) Sizable building / facilities with built-up area more than 500 sq. mt.;
(iii) 20-40 years old Engineered construction;
(iv) Old & very old buildings should be given less preference, as they would have less residual service life and require more cost to upgrade to desired performance level; and
(v) Economically and Strategically important buildings for State Government should be given higher preference

PRIORITSING THE BUILDINGS AND INFRASTRUCTURE

State Departments are required to come up with the list of critical buildings and Infrastructure in the kick-off meeting, review the list with the selection criteria, assign the priority from critical, important and general based on knowledge and experience, consolidate the list on priority and submit to the State Nodal Officer, post confirmation, facilitate the consultant to receive all buildings infrastructure specific data/ drawings and to provide necessary access to the field team for assessment and testing

RESPONSIBILITY MAPPING

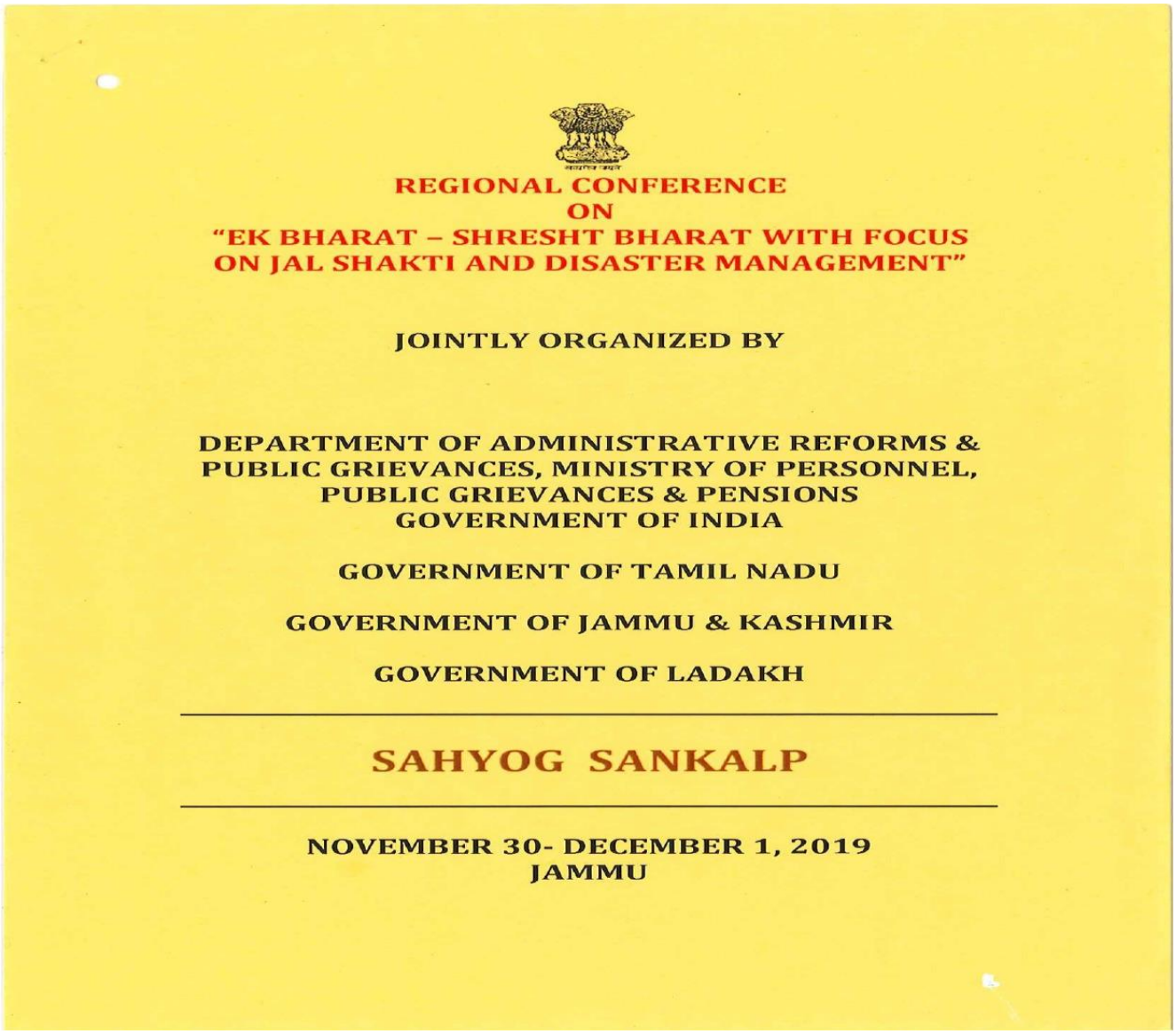
The Departments may nominate a nodal officer who could be approached by the consultant / technical team for logistics and other help as needed, especially in difficult terrains and restricted areas. The required data, discussions/ feedback on various project components will be submitted on time.

VALEDICTORY SESSION

In his valedictory address, Shri V. Srinivas welcomed the guests and presented a detailed report on the proceedings of the 2-day Conference. He summed up the deliberations on various themes and outlined the plans of DAR&PG to carry forward such initiatives.

Shri Pandurang K. Pole, Secretary DMRRR (J&K) read out the Jammu Sahyog Sankalp on this occasion.

The 'Sahyog Sankalp' Resolution was adopted in the presence of the Advisors to the Lt. Governor J&K, Shri K. K. Sharma and Shri Farooq Khan, Additional Secretary, DAR&PG, Government of India Shri V. Srinivas, Principal Secretary, Department of Disaster Management, Govt. of J&K, Shri Pandurang K. Pole and other delegates.


REGIONAL CONFERENCE
ON
"EK BHARAT – SHRESHT BHARAT WITH FOCUS
ON JAL SHAKTI AND DISASTER MANAGEMENT"

JOINTLY ORGANIZED BY

DEPARTMENT OF ADMINISTRATIVE REFORMS &
PUBLIC GRIEVANCES, MINISTRY OF PERSONNEL,
PUBLIC GRIEVANCES & PENSIONS
GOVERNMENT OF INDIA

GOVERNMENT OF TAMIL NADU

GOVERNMENT OF JAMMU & KASHMIR

GOVERNMENT OF LADAKH

SAHYOG SANKALP

NOVEMBER 30- DECEMBER 1, 2019
JAMMU

Sahyog Sankalp

The Department of Administrative Reforms & Public Grievances (DARPG), Ministry of Personnel, Public Grievances & Pensions and the Governments of Tamil Nadu and the Union Territories of Jammu & Kashmir and Ladakh organized a 2-Day Regional Conference on "Ek Bharat – Shresht Bharat with focus on Jal Shakti and Disaster Management" at Jammu from November 30 to December 1, 2019.

After extensive deliberations during various sessions of the Conference, a 'Sahyog Sankalp' has been unanimously adopted as under:

Government of India and the participating Governments of Tamil Nadu and the Union Territories of Jammu & Kashmir and Ladakh shall collaborate to:

1. **Promote unity in diversity envisaged under the 'Ek Bharat - Shresht Bharat' Programme through enhanced exchange of information in the fields of Jal Shakti and Disaster Management;**

2. **Make concerted efforts to resolve mutually concerning issues in the areas of Jal Shakti and Disaster Management through improved monitoring and a deep and structured engagement between the paired Governments;**

3. **Hold Regional Conferences throughout the year, alternatively, between the paired Governments, on mutually agreed subjects related to Jal Shakti and Disaster Management. The first of these Conferences will be convened in Chennai in 2020 by DARPG, where officials from the Union Territories of Jammu & Kashmir and Ladakh will present the progress registered and achievements made in the areas of Jal Shakti and Disaster Management;**

4. **Share technical expertise in the areas of Water Harvesting, Cutting Down Farm Water Consumption, Preventing Urban Flooding and Rejuvenation of Rivers;**

5. **Work towards long-term engagements in the areas of Jal Shakti and Disaster Management through Memoranda of Understanding (MoU) between the Line Departments of the paired Governments; and**

6. **Create a favourable environment for learning by sharing best practices and experiences in terms of documentation and dissemination through conference proceedings and special publications of the DARPG Journal 'Minimum Government - Maximum Governance' on the subjects of Jal Shakti and Disaster Management.**

Jammu; December-1, 2019

In his valedictory address Shri Farooq Khan, Advisor to the Lt. Governor J&K commended and lauded the role of armed forces in dealing with different disasters, especially the 2014 Kashmir floods.

On this occasion Shri K. K. Sharma, Advisor to the Lt. Governor appreciated the initiatives of the Govt. of India, Government of Tamil Nadu and J&K Administration for having organized the Conference on crucial issues of Jal Shakti and Disaster Management. He underlined the purpose of pairing different states and regions for sharing the best practices and success stories in different spheres of life. He congratulated the participants for having attended the event with such a huge participation and interest.

Smt. Renu Arora, Deputy Secretary, Department of Administrative Reforms & Public Grievances, while concluding the two day event, presented vote of thanks to the dignitaries and to the speakers for making high impact presentations and laying the foundation of sharing valuable knowledge and experience in the arena of Good Governance.

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