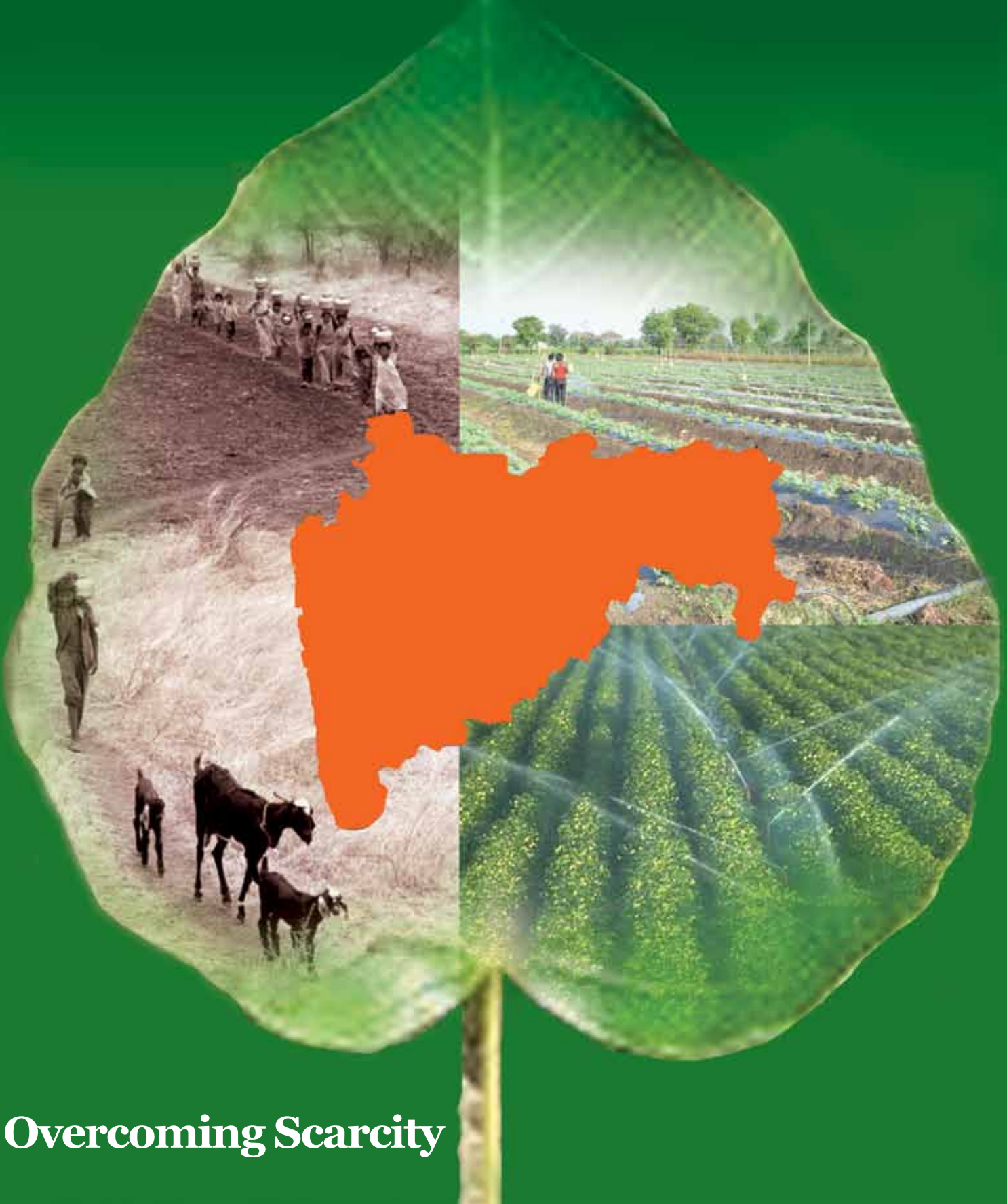


# MAHARASHTRA AHEAD



Overcoming Scarcity

# Ten Decisions to give Succor to Scarcity Affected Villages

1. Concession in land revenue
2. Conversion of co-operative loans
3. 33 per cent concession in electricity bills
4. Relaxation in parameters of MGNREGA
5. Examination fees waived off
6. Recovery of agricultural loans stopped
7. Drinking water is being supplied on war-footing through tankers and bullock carts
8. Water in all irrigation projects is reserved for drinking purpose on priority
9. Fodder depots are opened
10. Electricity connection of affected farmers will not be disconnected due to pending bills and if disconnected will be reconnected immediately



# Overcoming Scarcity



While presenting this issue of 'Maharashtra Ahead' I am filled with mixed emotions. In the milieu of the Maharashtra Day, 52 years flashback showcases the voyage of five glorious decades on one hand, while on the other hand the severe scarcity situation that has gripped some parts of the State has grieved the mind.

The issue details information about efforts of the State Government to mitigate the scarcity situation. These measures should make people from the scarcity hit areas feel secured. We take this opportunity to present before you the praiseworthy experiments of some people in the field of water conservation. These success stories are the testimonies of Maharashtra's strength that has made it the guiding spirit for others.

Immediate necessary measures taken by the Government has provided relief to the people facing the ordeal of the scarcity. The Employment Guarantee Scheme has provided livelihood to lakhs of people. More works are on the shelves. The Government has ensured that there will be no paucity of funds to tackle the situation.

H.E. Governor K. Sankaranarayanan, Hon. Chief Minister Prithviraj Chavan and Hon. Deputy Chief Minister Ajit Pawar are personally giving attention to situation. Every member in the ministry and the whole Government machinery is dedicatedly putting efforts to combat situation. It is time for citizens to be united and support the Government to overcome the situation. I am sure, in the time of crisis the people of Maharashtra will show extra courage and become the role model for the country.

The State of Maharashtra came into existence on 1st May, 1960. A special article 'Raj Bhavan File unravels the Events of the Historic Day', will make you relive those golden moments taking you down the memory lane. This enlightening article is taken from the archives of the Raj Bhavan, where all historic documents are preserved. It is the invaluable heritage of the State.

The issue also carries articles by Dr. Madhavrao Chitale, an authority on Water Management, Director, GSDA K.M. Nagargoje and senior, Geologist Shashank Deshpande, Prakash Bal Joshi, Abhay Mokashi, Dilip Chaware and others showing the ways and means to augment the water resources to fight scarcity. Taking on all odds and emerging with triumph is the true spirit of Maharashtra. The symbolic Peepal leaf on the cover gives the message of peace and enlightenment to overcome any adverse situation. I am sure, our readers will welcome this issue like the past ones.

**Pramod T. Nalawade**

*Editor-in-Chief, 'Maharashtra Ahead', DGIPR*

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# Prioritizing People's Welfare

We are committed to safeguard every citizen's right to live a peaceful, secured, happy and contented life

Maharashtra is a leading progressive State in the country. We all need to take collective efforts to keep the State on the forefront. I am determined to give priority to the welfare of the common man and inclusive development. Society is greater than an individual, is the principle behind this, says the Chief Minister **Prithviraj Chavan**.

**O**n this august day when we celebrate the foundation day of the State it is inevitable to remember the Architect of Modern Maharashtra late Yashwantraoji Chavan. This year we are also celebrating his birth centenary. It is needless to elaborate today on the contributions and achievements of the State. But it is our duty to follow the footprints of Yashwantraoji and never forget the principles of this great visionary. Hence the principle, 'society is greater than an individual', has been set as our motto. In formulating the policies we give importance to the works of the society as a whole than any individual.

## SPEEDY URBANISATION

Urbanization is fast growing in Maharashtra than any other State resulting growing pressure on infrastructure in the city. Construction of houses have increased. Agriculture land is shrinking. There is ever increasing demand for drinking water, water for agriculture usage as well as for the industrial purpose. Demand for electricity is also on rise. Investors from other States and from abroad are getting attracted towards Maharashtra.

We should not consider such issues as the problems as these things are inevitable on the path of growth. Proper planning is the only solution and we are

doing so. Facing natural calamities such as scarcity like situation is a greater problem than solving the issues that are the outcome of the development. Of course we have succeeded in solving these issues by taking corrective measures to overcome the situation.

## TACKLING THE SCARCITY

We have geared up from wider perspective to fight with the scarcity situation. We have decided not to recover outstanding loans by force or cut agriculture power connections. The daily wages of the employment guarantee scheme have been raised to Rs. 145 from 1st April. Collectors have been asked to purchase new tankers in order to supply water to all scarcity-hit villages. I visited scarcity-hit villages of Sangli and Satara districts to get appraised of the situation. A State level meeting was organized in Pune to take stock of the situation. The Governor has looked the issue very sensitively and we are tackling the problem under his able guidance.

Earlier, when grains, cotton and Soyabeen-growing farmers from Vidarbha were hit by unseasonal rains and hailstorm we had announced the largest-ever relief package of Rs. 1282 crore in the Winter Session in Nagpur and the financial aid is being provided to them in phases. We have also announced Rs 1-lakh special interest-free small-term loan to the



farmers who have already paid farm loans within the stipulated time.

The United Nations has declared 2012 as the Year for Cooperation and the Central Government has undertaken some initiatives; the State Government is implementing the same.

**METROPOLITAN GROWTH**

Mumbai the economic capital of the country has spread its tentacles taking into gamut the entire metropolitan region. We are implementing several projects of planned infrastructure development for the Metropolis making it the global economic centre. In the last one-and-a-half year's period the Government has taken several decisions to make life of Mumbaikar comfortable. Decisions taken by the Housing and Urban Development Department will prove to be milestones.

Some of the projects that would give the face-lift to the city are Metro Rail, Mono Rail, Navi Mumbai International Airport, Mumbai Urban Transport Project, Cluster Development Scheme and Mumbai Trans-harbour Link have been speeded up. The first Mono Rail of the country will run between Chembur and Wadala and Wadala to Jacob Circle. The test run of the mono rail was recently conducted successfully. In all 24 sub projects with an expenditure of Rs.1488 crore, under Mumbai Urban Infrastructure Project have been taken up which includes 11 roads, 7 flyovers, 3 creek bridges and 3 railway flyovers.

**AFFORDABLE HOUSING**

Every citizen has a dream to have a house in Mumbai. Keeping this in mind we have decided to amend the Development Control Regulations for Mumbai. According to the norms the space utilized for balcony, terrace, mezzanine floor and stilt will be calculated in the total FSI consumed thus protecting the consumers from being cheated by the builders. The developers preparing a lay out of more than 2000 sq mt have to set aside at least 20 per cent of land in 30 to 50 sq mt area for affordable housing while developing housing complex projects. It is mandatory for developers to reserve

**DELEGATION MEETS PRIME MINISTER**

The Chief Minister Prithviraj Chavan alongwith a delegation met Prime Minister Dr. Manmohan Singh and submitted a memorandum apprising him of the severe scarcity situation in Maharashtra.

The Maharashtra Government sought a financial package of Rs. 2,281.37 crore and five lakh metric tonne foodgrain at BPL rates from the Centre to tackle scarcity situation in 15 districts of the State.

The State has sought Rs. 782.11 crore for small farmers who have lost their kharif and rabbi crops, Rs. 73.60 crore for grapes, mangoes, orange, pomegranates growers, Rs. 129.39 crore for water supply schemes, Rs. 300 crore for construction of check dams, Rs. 700 crore for mid term schemes to cope with scarcity.

With the severe scarcity, about 15 districts are facing acute water shortage. Apart from Western Maharashtra, Marathwada, North Maharashtra and some talukas of Vidarbha are also facing acute water shortage, the State Government was fully geared up to mitigate the hardships of the people and ensure that there is adequate water for people and fodder for the cattle.

The Chief Minister said the State Government has already announced Rs. 80 for large animals and Rs. 40 for rearing small animals in cattle camps and Rs. 8,000 per hectare, upto two hectares, for small and medium farmers growing grapes, orange and pomegranates while Rs. 8,000 per hectare for big farmers.



20 per cent flats of 27.88 sq mt to 45 sq mt area for people from low income group and economically weaker section.

The State Government has, taken the decision to protect the slum dwellers residing in the slums constructed after 1995. This will help lakhs of slum-dwellers who have been staying in slums before 1995, to have their own houses. It will also remove hurdles in the work of Dharavi rehabilitation as well as airport and other infrastructure projects. In the ambitious Dharavi Rehabilitation Project around 60,000 families will be rehabilitated on their original land on the lines of Slum Rehabilitation. The largest slums of the Asia will get access roads, gardens and other facilities.

**REGULATIONS AMENDED**

We have amended the Development Control Regulations which will benefit rehabilitation and reconstruction of old cessed buildings in Mumbai. Now the old residents of these old cessed buildings will get their own houses of minimum 300 sq ft and maximum

753.5 sq ft. In Redevelopment proposals of 250 buildings in 39,585 sq mt. area in Bhendi Bazar area have been approved. We also have taken the revolutionary decision to give additional FSI of 0.33 per cent for Mumbai Suburbs and extended suburbs of Greater Mumbai.

**MIHAN GETS MOMENTUM**

The Multi-modal International Cargo Hub and Airport at Nagpur, MIHAN has the potential to give a face-lift to Maharashtra as well as the country and it has gained the much needed momentum. The project, an ideal business hub, located in the geometrical centre of India is easily accessible to all the metro cities of India. Among the renowned corporate giants have expressed their interests to start their business here are: Boeing, Infosys, TCS, HCL, Mahindra and Satyam.

The Government has taken the decision to give the 12.5 per cent of the developed land or the ex-gratia amount to the project affected persons. Provision of Rs. 189 crore has been made for the remuneration in cash. Work

of acquiring land of Jaitala, Bhamti, Dahegaon, Shivangaon, Telhara villages for the second runway is to be completed. Employment opportunities for lakhs of youth will be generated through MIHAN.

### **PROTECTING FORESTS**

In order to protect and conserve forests, the State Government has taken many important steps. Melghat, Tadoba and Pench has large number of tigers. For protecting tigers and to give impetus to tourism, Nagpur has been declared as the Tiger Capital. Sahyadri Tiger Project is the country's 37th and Maharashtra's 4th Tiger Project have been approved. For strengthening tiger projects Tiger Foundations have been set up at Melghat, Pench and Tadoba.

With a view to protect the forests the Government has taken a landmark decision of appointing Adivasis on the posts of Forest Guards. In all 224 new posts of Forests Officers are created. The aborigines in the area have been provided with the hybrid cows, biogas, cooking gas and LPG so that trees are protected for the balanced development of forest regions. For strengthening the Gram Sabhas and Forest Management Committees the State Government has taken the decision to grant the benefits of the forest resources. The decreasing rainfall in the State has necessitated increasing the green cover. Therefore, the Government has resolved to plant 100 crore saplings in the State. Tree plantations will be undertaken in non-forest regions too. Assessment of tree-plantation programme is taken in every district on 12th and 25th day of every month.

### **THE IT REVOLUTION**

The State has launched a revolutionary project called SANGRAM – Sangankiya Gramin Maharashtra that aims at computerizing Government administration in rural areas and making governance of the Panchayat Raj System transparent. The project has created employment for 20,000 youth in rural areas so far. This will help people to get all services under one roof. In the near future all the local self government

bodies will be operational on-line.

These projects have awakened rural people, in turn they have overwhelmingly responded to the cleanliness campaigns. Maharashtra is leading the country in implementing projects like Nirmal Gram Abhiyan, Sujal va Nirmal Abhiyan and Cleanliness Campaign. These programmes have also helped in improving health of rural people.

Maharashtra has emphasized on bringing Adivasis in the national mainstream. In view of that the Government has taken important measures such as: increasing the maintenance allowance for Adivasi hostelites, construction work of 51 hostels is in full swing building more Ashram Schools and scholarship for Scheduled Tribes students up to 10th standard. About 12 lakh students are getting the scholarship under the Suvarna Mahotsavi Shishyavrutti Yojana.

To ensure more employment opportunities in rural areas under the Mahatma Gandhi National Rural Employment Guarantee Scheme the Government has established a separate Commissionerate for EGS at Nagpur. Works of tree plantation, concretization of roads, construction of public toilets and play grounds have been included in the EGS.

### **INDUSTRIAL DEVELOPMENT**

Maharashtra is still the most-preferred destination for global investors One third of country's foreign direct investment has come in Maharashtra. In the current year the State Government has approved development projects worth Rs. 1,12,000 crore. Under the Mega Project policy projects worth Rs. 2,63,000 crore have been approved till the date. Of these 63 per cent projects will start in backward regions of the State. This will create employment for 3 lakh people.

India Economic Summit was recently held in Mumbai. Nearly 800 entrepreneurs from 40 countries participated in it. The State is taking deliberate efforts to facilitate industrial development, to promote exports and generate employment. I am happy to mention that in the national exports

the State contributes 25 per cent. New Industrial Policy of the State will soon be declared.

During July 2010 and June 2011. 4.12 lakh hectare additional area has come under irrigation. The Central Government has approved 258 irrigation projects worth Rs. 135 crore.

### **HEALTH FOR ALL**

Maharashtra has started implementing the Rajiv Gandhi Jeevandayee Arogya Yojana in eight districts in the first phase. The scheme provides health facilities to the ration card holders who have annual income less than Rs. One lakh. The scheme is presently undertaken in Mumbai and Mumbai Suburbs, Raigad, Solapur, Dhule, Nanded, Amravati and Gadchiroli. It will be implemented throughout the State in phased manner.

### **ROAD DEVELOPMENT**

Road are the arteries of any State or the country as far as the development is concerned. It is said that the State is developed because it has good roads. In view of this the State Government has undertaken an important project of widening of national and State highways in four lanes. Till the date road works of 2,145 km length has been completed on the private-public participation basis.

The mega project of Mumbai-Delhi Industrial Corridor paving the way for fast transportation of goods has taken momentum. In next three years investment worth Rs. 20,000 million is expected in the State under the project. The freight corridor will connect Jawaharlal Nehru Port Trust (JNPT) which will create global competitive atmosphere.

Development is a continuous process. In the Democratic society people's welfare is the top priority of the Government. Development should not be of any particular region or individual, it has to be integrated and inclusive. Every citizen has the right to live a peaceful, secured, happy and contented life. We are concentrating our efforts on the sole aim with the confidence that the success is at our doorstep. ■

*As told to Satish Lalit*

# Blueprint of Development

The Government has taken necessary measures to tackle the scarcity situation on war-footing.

Maharashtra is synonym for development. It has been on the forefront in social, educational, economic and other fields. The other States look at it as the role-model for development. The Deputy Chief Minister **Ajit Pawar** elaborates on the future plans of speedy development of Maharashtra to make it the global State.



17,207 projects worth over Rs. 8,74,053 crore. Maharashtra has received 22.4 per cent of the total national foreign direct investment. Our contribution in the national exports is 27 per cent. We have set some benchmarks in the development.

## HUMAN DEVELOPMENT MISSION

Under the Maharashtra Human Development Mission Rs. 235 crore have been spent in 25 talukas of 12 most backward districts between 2006 and 2010. The mission aims at enhancing the standard of living of the backward regions. With the mission resulting in the rise in the human development index the State has now decided to implement it in 172 most backward talukas. Each taluka will get at least Rs. 3.5 crore.

The mission facilitates tuition classes for students failed in Standards X and XII, study centre in secondary schools, providing textbooks to students, providing transportation facilities to girls in rural areas upto XII standard and establishing Science Centres. It also helps undertake education, health, child welfare projects as well as initiatives generating income sources.

## REGIONAL BALANCE

The regional economic backlog calculated by Dr. V. M. Dandekar committee has been cleared, however physical infrastructure backlog is still there. On the recommendations of the Governor new committee to find a solution for the balanced regional development has been appointed under the chairmanship of Dr. Vijay Kelkar.

Provision of Rs. 300 crore has been

made for the irrigation projects of Vidarbha in the Central Budget owing to the demand by Union Minister for Agriculture Sharad Pawar will give impetus to pending projects. Seeds of Soyabeen, Tur etc worth over Rs. 20.56 lakh have been distributed to farmers in Amaravati, Yavatmal, Washim, Buldhana, Akola and Wardha under the Vidarbha Development project for change of crops. In all 59,28,760 farmers have been benefitted under the Programme.

## PRIORITY TO AGRICULTURE

Agriculture is the backbone of Maharashtra as 45.20 per cent population is living in rural areas. Modernization of agriculture is important in view of the increasing population. Water management and use of organic fertilizers is the need of the hour for taking more yield per acre.

Our efforts are to bring more agricultural land under cultivation through all-season irrigation. Geological diversity has brought only 33 per cent land under irrigation based on seasonal rains. Maharashtra is leading the country by creating capacity for 37.35 tmc water by constructing dams and bunds. The State has largest water storage capacity. It is 15 per cent of the national capacity.

## NEED TO ENHANCE EDUCATION STANDARD

The literacy rate in Maharashtra has increased. Our next step is to make people more learned. The Government is committed to enhance the education standard in urban as well as rural areas. The latest technology will

**M**aharashtra is growing strong. According to the Economic Survey Report published recently we are on the top in per capita income, contribution to national GDP and growth rate. We have recorded growth in the industry by 9.1 per cent and in the service sector by 10.1 per cent. Maharashtra is at the top in the Industrial sector. Maharashtra's Industrial policy and the Mega Project Policy have attracted corporate giants like Mercedes, Mahindra, General Motors, Bharat Forge, Bajaj, Volkswagen Hyundai, Boeing, General Electricals, Bridgestone, Photon, Philips, Schindler etc. to invest in the State.

With a steady infrastructure development 77 mega projects have come in the State since last April with investment potential worth Rs. 82,386 crores. These projects will create 54,453 jobs. We have received proposals for





be introduced in all schools to earn new identity for Maharashtra as the intelligent State. Education in Maharashtra will be on par with the global level. The new Education Policy in the State has opened the gates for foreign universities.

#### **INCREASING POPULATION**

Rising population is putting a barricade in the process of development. It is creating unemployment and increasing poverty. We have to enlighten the people on this issue. Alongwith Government we expect NGOs also should take up the issue.

#### **EMPOWERING WOMEN**

The State Government has adopted liberal policies for women. Maharashtra has taken a revolutionary decision by reserving 50 per cent seats for women in local self government bodies. In the

State Government recruitments 33 per cent reservation has been given to women. The effective involvement of women in the decision making process will make administration more sensitive and transparent.

Strengthening of women self help groups has made housewives economically independent and stable. The self help group movement has transformed the rural economy. Empowerment of women is need of the hour.

#### **TACKLING THE SCARCITY**

Maharashtra is facing scarcity like situation in some districts. The Government has taken necessary measures to tackle the situation on war-footing. All collectors have been given orders to provide water through water tankers. They are told to review the situation every day.

#### **FOR BETTER FUTURE**

Maharashtra has lived up to its name, Maha i.e. great leading in social, economic, cultural, industrial, educational, sports and other fields ever since it was established. Therefore it is known as the progressive State.

The Government is committed to keep its reputation intact. We are planning to develop physical and social infrastructure facilities such as electricity, water, roads, transportation, education, health etc to bring qualitative changes in the common man's life.

Maharashtra has a glorious past. Its present too is bright. We want to make the future brighter. Government's role in the developing process is instrumental, if people take the collective efforts everybody's dream will come true. ■

*As told to Vishal Dhage*

# Sustainable Solution

Government's Relief measures, rehabilitation and regular review are yielding good results.

Some parts of the State are facing scarcity. The Government is aware of the situation and it has put the entire revenue machinery is working on the war-footing to fight the situation. No stone will be left unturned in providing relief to the people, assures Minister for Rehabilitation and Relief Works **Dr. Patangrao Kadam**.

This year 6201 Kharif villages and 1552 Rabbi villages are facing scarcity in Maharashtra. The Government has taken some important decisions to help people in the ordeal. Some immediate relief measures are: Examination fees of students from scarcity-hit villages has been waived off, concession given in land revenue to farmers, loans taken by farmers from cooperatives being converted, 33 per cent concession in electricity bills given to farmers, parameters of EGS works altered, recovery of farmers' agricultural loans stopped, drinking water is being supplied on war-footing through tankers and by bullock-carts in remote rural area, water in all the irrigation projects is reserved for drinking purpose on priority, fodder depots are opened for cattle in scarcity-hit villages, electricity connection will not be cut for the want of pending bills and if power is



disconnected it will be reconnected.

## SAVING THE CATTLE

The fodders depots have been opened at the panchayat Samiti level where the final paisewari for the crop was declared less than 50 paise. Collectors have been empowered in this regard. For the farmers with not more than 10 cattle who sell milk and those whose wells have gone dried are provided fodder at 75 per cent rate. Fodder has been made available at 90 per

cent subsidised rate to landless farm labourers and farmers and labourers working for more than 15 days under National Rural Employment Guarantee Scheme till 30th June 2012. Rules to start fodder depot has been kept flexible whereby demand for the depot is sympathetically considered. Where there is cattle camp there will not be fodder depot. Powers have been given to collectors to avail fodder under Fodder Development Scheme and Forest Department respectively.

## COPING WITH SCARCITY

Right from its inception the State Government has undertaken several irrigation projects to bring more and more agriculture land under irrigation and to provide drinking water to scarcity-prone areas. However, the problem has still remained unsolved. The landmark experiment of lake tapping in the Koyana Dam has been successfully carried out recently. It is a revolutionary leap towards generating more electricity and providing more drinking water.

An action plan is being out-lined. Water supply through tanker or bullock cart, de-silting of wells, acquiring private wells have been brought under the purview of Collectors. He can take the decision regarding this in the area where less than 20 liter water is supplied per person per day and if there is no water source in the periphery of 1.5 km. Concerned departments have been empowered to procure tankers replacing the out-dated damaged tankers. District Collector can sanction water pipeline project costing up to less than Rs.15 lakh and for the projects costing





less than Rs. 30 lakh will be sanctioned by Divisional Commissioner. A tube-well is sanctioned for the population of 200. New tube-well can be dug on this guideline considering the status of the existing tube-well.

#### **RELIEF MEASURES**

On the humanitarian ground agricultural power connection will not be suspended for the want of the pending bills. Similarly if the bills are outstanding the connection will not be cut in the villages with less than 50 paise paisewari in Rabbi or Kharif seasons. Examination fee of students from scarcity-hit villages is waived off. This is applicable for only students of aided schools.

#### **FINANCIAL AID**

For cotton growing farmers according to the land records Rs. 4000 financial aid will be given per hectare up to 2 hectare. For Soyabean growers and other food grain growers if the yield is reduced over 25 per cent Rs.2000

" The State has drawn an integrated plan to fight the scarcity situation. The Chief Minister Prithviraj Chavan has visited the scarcity affected areas. I have been concentrating on measures to combat the scarcity. The whole revenue machinery has been geared up. Water is an important aspect for areas permanently reeling under scarcity. The speedy plan work in this direction is going on. I assure there will be no dearth in providing financial assistance by the Government."

financial aid will be given for per hectare upto 2 hectares.

#### **PRESENT STATUS**

At present water is being supplied through 1172 tankers in 977 villages and 4703 hamlets in 15 scarcity hit districts. Till the date 29721 metric tonne fodder has been made available through 111 fodder depots. Under the EGS 46,986 works are on and employment for 5,14,025 people has been created. Weekly assessment of the situation is done by Divisional Commissioners and Collectors. Authority to sanction drinking water scheme up to Rs. 25 lakh is given to Collector and schemes costing not more than Rs. one Crore has been given to Divisional Commissioners. The Principal Secretary, Relief and Rehabilitation has been directed to take immediate action after video conferencing once a week with Divisional Commissioners and District Collectors. ■

- As told to **Yuvraj Patil**

# The Precious Drop

Every drop that percolates, results in increasing the underground water level.

The Government has planned to provide one spare tanker with every 10 tankers to give pure and clean water. The Government has resolved to save and protect the cattle stock by giving enough assistance. Now tanker water is poured in synthetic tank for the first time instead of pouring it in wells to avoid contamination says Minister for Water Supply and Sanitation **Prof. Laxmanrao Dhobale**.

In case of scarcity, sensible act implies to scrupulous use of water keeping in mind that the quantity is limited. More importantly, preserving water for the eternal use which requires saving of every drop of water in the most natural way so that the rich heritage that we have received from God by our forefathers, be passed on to the next generation. Every drop that percolates, results in increasing the underground water level.

Rain harvesting is very much useful in refilling the ground-water level. As per the conventional measures water tanks are created in huge rocks to save the rainwater. The Ground-water Survey and Development System is working as the coordinating agency for rainwater harvesting.

Till January 2012 funds worth Rs. 284.23 crore have been made available for the Shivkaleen Pani Sathwan Yojana and the scheme has been implemented in 8202 villages and hamlets. Under the schemes 18,190 measures have been undertaken and 2767 measures are in progress. These measures helped to stop water supply through tanker to 1051 villages and in 1837 villages the period of supplying water through tankers has been reduced. Under the flagship scheme 16 programmes have been included. A plan was drawn for 16,570 villages and hamlets under 2011-12 and 1012-13. The Centre has allocated Rs. 535.80 crore while the State Government has provided Rs. 511.40 crore. Of this Rs. 745.66 crore have been spent till March 2012 for 6364 villages and hamlets under National Rural Drinking Water Programme.

The State Government has started the Jeevan Sanjivani Yojana to provide

relief to outstanding electricity bills of the rural water supply schemes. Under the scheme if local self government body pays 50 per cent of the outstanding bill six months grace time is given to it to pay the rest amount. Under the Maharashtra Suvarna Jayanti Gramin Dalit Vasti Pani Puravatha ani Swachhata Yojana (Golden Jubilee Rural Dalit Habitat Water Supply and Cleanliness Scheme) every Scheduled Caste and Nav-Bauddha family is given the aid of Rs. 4000 for water pipeline and Rs. 11,000 for constructing toilet block. Under the scheme Rs. 48.45 crore have been spent in 2011-12.

Laboratories to assess drinking water quality have been established in 30 districts. Similarly 6 regional laboratories have been established for ground water survey and development. Funds have also been made available for strengthening of 351 rural hospitals.

Maharashtra is the first State in the country to launch the programme for chemical testing of all public drinking water sources. It will be launched in the 11 districts of Pune, Sangli, Nanded, Buldhana, Aurangabad, Nashik, Amaravati, Nagpur, Thane, Raigad and Akola. In the second phase it will be implemented in the rest 22 districts.

The Government has launched a dual purpose water supply scheme, under which water is lifted through submersible pumps from the tube-wells with the capacity of at least 2000 liters per hour and the hand pumps with availability of water throughout the year and it is stored in tanks to be supplied later. A similar scheme has also been launched based on the solar energy.

The State Government is implementing the World Bank-aided



Jal Swarajya Project in 3007 Gram Panchayats of 26 districts on the basis of peoples' participation. Of these 2966 Gram Panchayat water supply has already been started in the first phase. The Central Government has given approval in principle to the second phase of Jal Swarajya.

The drought is no novice for Maharashtra, but in the history of scarcity it is planned to provide one spare tanker with every 10 tankers to give pure and clean water. The Government has resolved to save and protect the cattle stock by giving enough assistance.

Now tanker water is poured in synthetic tank for the first time instead of pouring it in wells to avoid contamination. Sugar factories have been permitted to use the Sugar Development Fund for purchasing the tanks. In last 30 years the State has seen two severe droughts. In those scarcity conditions of drinking water for cattle was not considered, which is done this time.

The department has successfully implemented the Jal Swarajya Scheme in 3000 villages making them tanker-free.

Rivers must be protected by taking stern action against the culprits who push effluents in to the rivers. Need is to curb ill-habits as well as to have understanding about water and cleanliness. ■

As told to **Dr. Surekha Mulay**

# The Magic of EGS

The Centre has adopted the MGNEGS on the lines of the one in Maharashtra making State proud

The Employment Guarantee Scheme is the revolutionary feat taken by Maharashtra in the Government administration. It brought the State out of the crisis two decades ago, recounts **Dr. Nitin Raut**, Minister for Employment Guarantee Scheme and Water Conservation

The Central Government has initiated an ambitious Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) on the lines of the State EGS. The State adopted it in 2006 in phased manner. Since 2008 it has been implemented in all the districts. In the first year the expenditure incurred on the scheme was Rs. 300 crore. In 2010-11 it was Rs. 351 crore the plan for the scheme grew to Rs.1346 crore in 2011-12.

## EFFECTIVE IMPLEMENTATION

The State Government re-arranged the district and divisional office works under the schemes. Gram Panchayat's were empowered to undertake 50 per cent works under the schemes.

The Government undertook works such as land reform scheme, digging wells, farm ponds, orchard plantation, etc for Scheduled Castes, Scheduled Tribes, people Below Poverty Line and beneficiaries of the Indira Awas Yojana. The Government has resolved to dig up 3000 farm ponds and 18000 wells to bring 40,000 hectare land under irrigation. De-silting of village lakes, percolation lakes will also be undertaken.

## BHARAT NIRMAN

Bharat Nirman Rajiv Gandhi Service

Centres are established at village and taluka level. These centres aim at linking the villages to talukas and districts to facilitate development works. Under the scheme 73 Gram Panchayat Bhavans and 29 Panchayat Bhavans are being constructed. Every Gram Panchayat has been allocated funds of Rs. 40 lakh and they have to prepare blueprint of the works to be done under the scheme. These works include road construction, water conservation, horticulture development, tree plantation etc. Under the scheme Gram Sevaks and Gram Rojgar Sevaks are trained.

## IRRIGATION CAPACITY

In all 60,000 minor irrigation projects with capacity upto 100 hectare have been completed. This has added irrigated area of 14 lakh hectare. With the financial aid from German Bank and other financial institutes 13 schemes have been completed. This has brought 1500 hectare additional land under irrigation. Parameters for minor irrigation projects have been amended to pave the way for more projects. In Pune and Nashik regions 169 schemes have been sanctioned which will irrigate 4319 hectare area. In Marathwada 124 schemes will bring 3492 hectare area, in Vidarbha 206 schemes will bring 5836 hectares land under irrigation.

Through the Watershed Area



Development Programme under the Soil Conservation Scheme the State Government has completed works on 2,5333 hectare land with an expenditure of Rs. 309 crore. Rs. 1194.80 core have been sanctioned for the State under the Centre's Integrated Watershed Area Development Scheme. In 66 talukas 1901 watershed area treatment works will be undertaken in the project. The Government is also implementing Dr. Babasaheb Ambedkar Nursery Scheme which helps poor women to earn livelihood through developing saplings.

With the initiatives of the V.S. Page the scheme was launched in the State. We are celebrating the birth centenary of it. The machinery working for the scheme will be felicitated from State level to taluka level on the occasion. National symposium will be organised on the occasion. The scheme was launched to fight the scarcity and will prove useful for State's and Nation's progress. ■

As told to **Hemant Khaire**



# The Fruitful Integrated Efforts

The Government has ensured that no domestic animal dies for the want of the water or fodder.

The Government has taken strong measures to supply drinking water, providing employment, declaring various concessions, supplying fodder to cattle, opening cattle camps in scarcity hit areas. Minister of State for Rehabilitation and Relief Works **Prakash Solanke** takes the stock.

Most of the crops in Maharashtra have been badly affected by meager rainfall in last monsoon. In more than half of the districts rainfall has been below average – 20 to 40 per cent correspondingly water stock depleting. The Government took the review of the situation and declared scarcity on 18th January 2012 first in 6201 villages on the basis of Kharif crops and then on 26th March 2012 in 1552 villages on the basis of the Rabbi crop. As immediate measures to cope up with the situation the Government announced several sops for the rural people. In view of the unseasonal rains. The Government opened fodder depots in 998 villages on 28th September 2011 and made available jobs under the Employment Guarantee Scheme.

Necessary measures to tackle the situation fall in the purview of different departments. Success of the measures depends on the better coordination and integration. Therefore concerned Collectors have been empowered to take actions at the earliest. The Chief Secretary is in touch with the Divisional Commissioners reviewing the status

regularly and giving them instructions in the changed situations.

## REGULAR REVIEW

A separate scarcity control room has been opened in every collector office for smooth functioning and effective implementation. Collectors take a weekly review through video-conferencing with the concerned officers. After the review, the Collector sends the detailed status report to the Government regarding the tankers' demand, EGS works, attendance of MGNEGS workers, works to be taken under the EGS, fodder requirement etc.

## CATTLE CAMPS

Collectors have been empowered to taken necessary action regarding opening of fodder depots and cattle camps. In view of the severe conditions in the scarcity-hit villages, subsidy on the fodder rate has been increased from 50 per cent to 75 per cent in 7643 villages that witness the scarcity. For Below Poverty Line farmers the subsidy on fodder is increased to 90 per cent.



The same rate is also given to the workers who work over 15 days in a month in the National Rural Employment Guarantee Scheme.

The fodder scheme is now entitled for 10 cattle instead of 5. Expenditure on cattle in the camps has been doubled – Rs. 80 for

big and Rs. 40 for small cattle. In four districts of Sangli, Satara, Solapur and Ahmednagar 111 fodder depots have been opened. The Government has incurred Rs. 580.57 lakh on supplying 29721 metric tonne fodder. In the 15 scarcity-hit districts for the repairs of water supply schemes Collectors have been empowered to sanction Rs. 25 lakh while Divisional Commissioners can sanction Rs. 1 crore.

In the present situation in all 1389 villages and 5059 hamlets are getting drinking water through 1620 tankers. Total 101 temporary water pipelines have been approved. Of these 35 schemes have been completed and the rest 66 are near completion. Water pipelines which were defunct due to non-payment of bills have been made operational and the electricity connections to the pipelines that are cut for the want of outstanding payment have been reconnected. Collectors have also acquired some private wells. Collectors have been empowered to take contingency measures in the area where the required water is not being supplied or the source of water is not available within the periphery of 1.5 km. ■

As told to **Mukta Pawar**



# Mitigation Measures

As a part of medium term drought mitigation measures, the Maharashtra Government is taking up and completing all incomplete irrigation projects

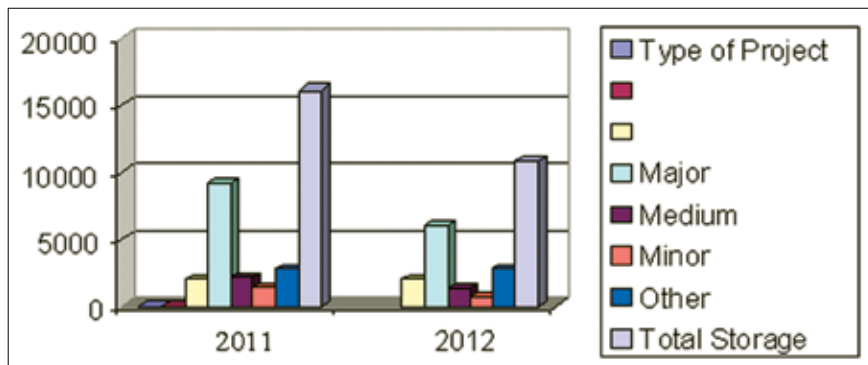
In response to the serious drought situation, the Government has undertaken to implement relief measures which include provision of relief employment, supply of drinking water and distribution of fodder through fodder depots, says Principal Secretary, Rehabilitation and Relief Works, **Praveen Pardeshi**.

**M**aharashtra State has a tropical climate with 70 per cent of Maharashtra land area being hot-semi-arid to arid. Agriculture in the State is largely dependent upon monsoon rainfall. The drought situation in Maharashtra has deteriorated in 2012. Deficient rainfall in Western Maharashtra and part of Marathwada and Vidarbha regions has severely affected agriculture, which is the main source of livelihood and employment. Following untimely and deficient rains, the Government of Maharashtra had declared drought in 15 districts of the State on October 15, 2011 and on 26 March 2012. These districts are Pune, Satara, Sangli, and Solapur (Pune Division), Nashik, Ahmednagar, Dhule (Nashik Division) and Latur, Osmanabad and

Aurangabad (Aurangabad Division), Amravati, Buldhana (Amravati Division), Gadchiroli, Nagpur and Gondia (Nagpur Division).

Altogether 209 talukas in these 15 districts are seriously affected by the drought. The declaration of drought has already come into effect from the 18 January 2012 for 6201

villages for Kharif and 26 March 2012 for 1552 Rabi villages and would continue to be in effect till the State Government issues a revocation order. The State received erratic and comparatively low rainfall in the year. 50 talukas experienced a deficit of 20-30 per cent from normal rainfall, 38 talukas experienced a deficit of



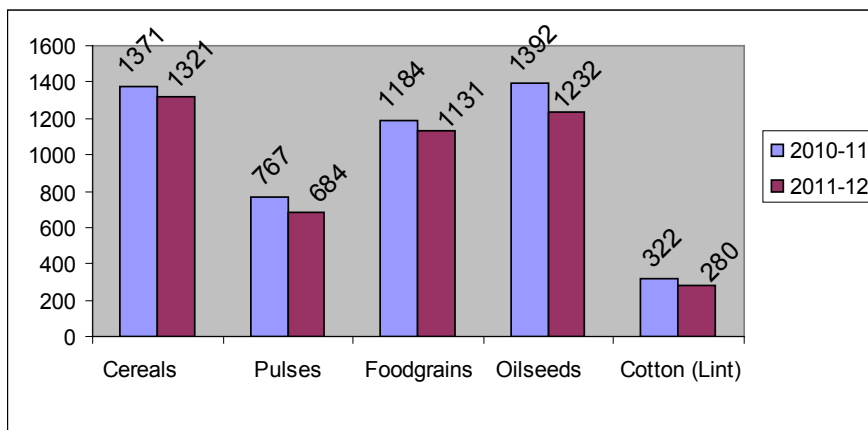
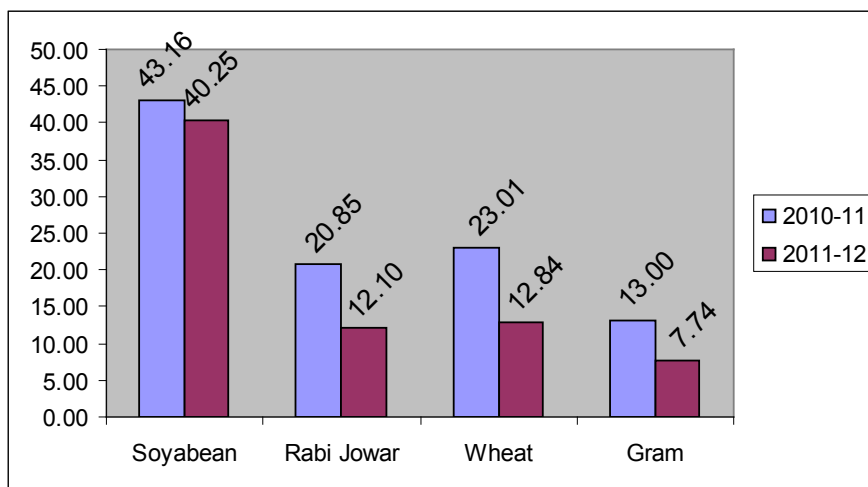
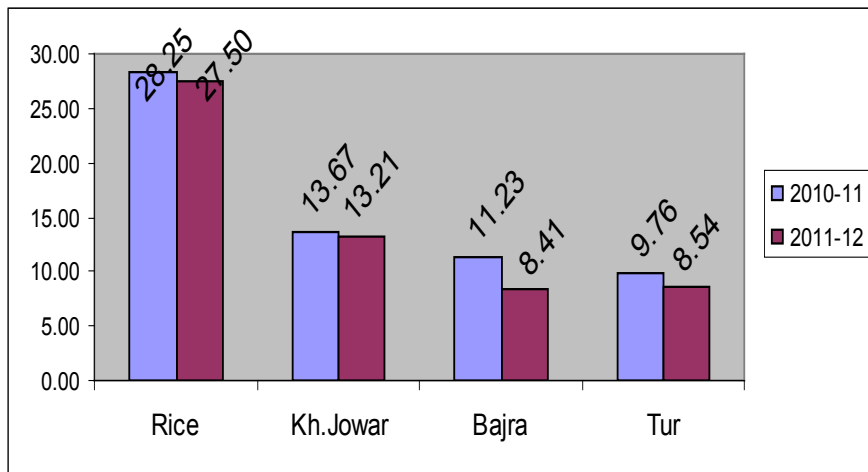
30 – 50 per cent rainfall while 4 talukas experienced a deficit of more than 50 per cent. Thus in all 209 talukas out of the total 353 talukas experienced a deficit in the average of 0-60 per cent in the year 2011.

The lack of rainfall has also affected the water levels of the irrigation projects in the State. The following figure indicates the storage comparison in major, medium, minor and other reservoirs in the State.

In comparison with the previous year, the storage levels in all the projects, major, medium, minor and others are already less as compared to the previous year. So far an average water storage in reservoirs in the State is concerned, the present storage is 29 per cent as on 9th April 2011 as compared to 44 per cent on the same date in the last year. The level of water storage is still continuously depleting at an alarming rate in the State.

Another indicator of drought can be seen in the form of the depletion in the level of groundwater in the talukas. It can be seen that in 84 talukas, water level has depleted upto 1mtr, in 23 talukas from 1-2 mtrs, in 9 talukas between 2-3 mtrs while in 6 talukas the decline of groundwater level is above 3 mtrs. This is with reference to comparison of groundwater levels in the last five years.

The impact of the lack of rainfall, depleting levels of ground water and water in irrigation projects has had an adverse impact on the agricultural production in the State. The reduction in rainfall and the decline in reservoir as well as ground water levels have had an adverse impact on the crop production in the State. The third advance estimates indicates that there is reduction in production of food-grains, oilseeds, cotton & Sugarcane as compared to 2010-11. Cereals are expected to face a decline in production by 5 per cent, pulses by 22 per cent and food grains by 5 per cent. The expected productivity of Rabbi - Jowar too will be reduced by 11 and 26 per cent as compared to normal and last year respectively.



The above figures indicate the comparison of Agricultural production between 2010 – 11 and 2011 - 12;

In response to the serious drought situation, the Government has undertaken to implement relief measures which include provision of relief employment, supply of drinking water and distribution of fodder through fodder depots. These measures have been initiated since the beginning

of January 2012. As the drought conditions have intensified, the scale on which these relief measures are organized has been scaled up. Similarly, the expenditure on these measures has also correspondingly gone up. These measures include

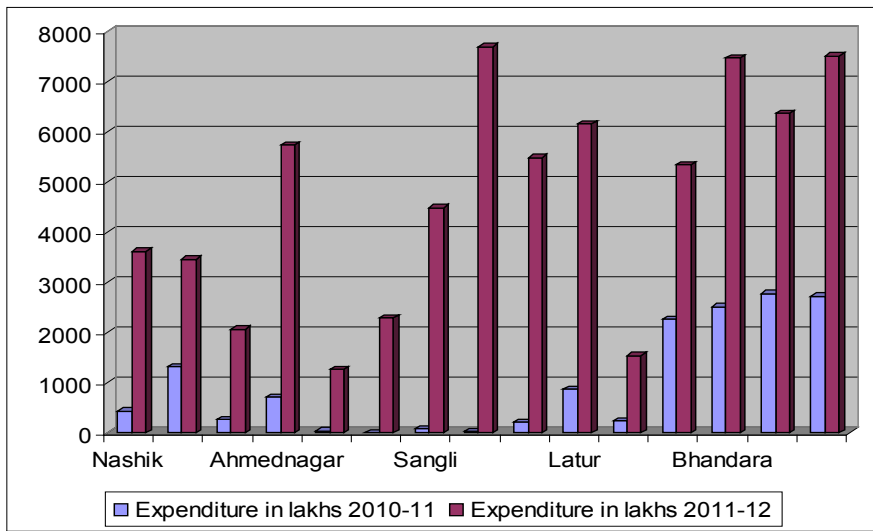
**RELIEF EMPLOYMENT**

At present the number of works in drought-affected 15 districts has

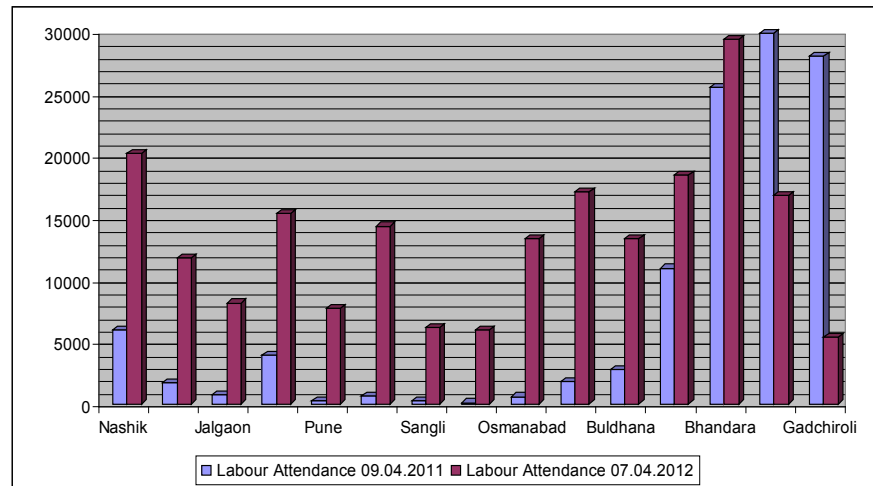


increased to 2.03 lakhs, while the attendance of labour on these works was 1.13 lakhs last year. The scale on which relief employment is being provided has almost doubled in the last one year. It clearly shows the lack of agricultural employment in rural areas and an ever-increasing demand for employment. Currently, 55,039 works are in progress and labour on muster was 6,00,244; 267349 works are on shelf with capacity of 2221.31 lacs.

**Comparison of Labour attendance MGNREGA**



**Comparison of Expenditure as per MGNREGA between 2010 and 2012**



The State is looking to supply drinking water to the drought affected villages through provision of water

tankers. The number of drinking water tankers being provided as on 02.05.2012 in 902 villages, 4526 hamlets, is 1064 as compared to the previous year where on the same date, there were 57 villages, 114 hamlets which were being supplied drinking water through 53 tankers.

Another initiative taken up by the State is distribution of fodder through fodder depots. As on 2.5.2012, in 4 districts (Ahmednagar, Satara, Sangli and Solapur) 101 fodder depots are operational and 4 cattle camps which have supplied 18,808 MT of fodder. There is increasing demand for

fodder in drought affected districts. Government has taken up a green fodder development programme in the

non drought affected Talukas. The State is also taking up short-term drought mitigation through Micro



Water Harvesting Structures. The affected districts are in the rain shadow and have been repeatedly affected by drought. To break the vicious cycle of drought and drought-relief, the State Government is planning to provide a special package to drought-affected district to undertake cement check dams, earthen bunds and micro water harvesting structures, which is scheduled to be completed in this summer itself. This will help to recharge the depleting water table, and even if there are deficient rains in the next monsoon, the drinking water scarcity could be mitigated and protective irrigation to the next kharif crop could be provided. The Government is thus planning to undertake construction of micro water harvesting structures like check-dams etc the cost of which would be approximately Rs 300 crores.

Apart from this, as a part of medium term drought mitigation measures, the Maharashtra Government is taking up and completing all incomplete irrigation projects under the accelerated irrigation benefit programme. ■

# Self-sufficient Villages, a Fundamental Development

The MGNREG aims at braving the scarcity and creating the tangible assets for the country.

In remote Adivasi areas of Melghat in Amaravati district, people who had migrated have started coming back to their home town with availability of jobs at their door-step, malnutrition has come down and drop-outs number is reduced. Consequently socio-economic development is taking place gradually, Principal Secretary, Employment Guarantee Scheme and Water Conservation **V. Giriraj** talks about the results of the revolutionary MGNREGS.



**E**mployment Guarantee Scheme, the most innovative initiative of Maharashtra was the result of the successful measures to combat the severe drought the State witnessed in 1972. It is the brain child of the then Chairman of the Legislative Assembly V. S. Page's vision. The scheme provided the jobs to small farmers and also facilitated infrastructure for the development work. Irrigation projects, dams and lakes have come up in many places in the State through the scheme.

Considering the capacity of the EGS

to bring transformation in the rural areas, the Central Government too adopted the scheme and implemented it in other States of the country. The Centre passed the National Rural Employment Guarantee Act in 2005 paving the way for the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). The scheme that aimed at triumphing over the scarcity has today become the backbone of the national development.

The purpose of the scheme is to create the tangible assets. Transparency is the

hallmark of the MGNREGS. Therefore payment is given to workers through post or bank and not at all by cash. In the 7 districts and 7 talukas where there is no bank or post, nationalized banks have appointed Business Correspondent Model on the experiment basis. NIC has developed a website: [www.nrega.nic.in](http://www.nrega.nic.in) which provides the national data.

Maharashtra implemented the MGNREGA in phased manner between 2006 and 2008 in all districts barring Mumbai and Suburban District. Under

the MGNREGS the State plans to create sustainable assets that would facilitate increase agriculture yield. This would make villages self-sufficient and promote the fundamental concept of rural development.

The scheme provides job throughout the year to every unskilled employee willing to work. Every Gram Panchayat is supposed to prepare the Labour Budget of the village and present it in the Gram Sabha. Selection of the work and priority are the prerogatives of Gram Panchayat. Fifty per cent jobs in the EGS are carried out through the Gram Panchayat.

From the job allocation till its completion the Panchayat plays important role. The Panchayat has to see that enough works are on the shelves so that employment could be provided within the 15 days from the date of the application made by the villagers. If work is not provided the applicant is entitled to get the unemployment allowance, as per the provision of the Law.

Villager seeking the employment under the scheme has to register in the concerned office. He/she then gets the job card. This card gives them the guarantee of the employment. The job seeker has to be given the employment within the 5 km periphery. Contract system in the EGS is banned. Machines could be used for the works if inevitable.

Through computerization planning and implementation of the scheme have been done in innovative manner. Prospective employees are trained, work system is simplified, the MIS is applied to strengthen the scheme. This resulted in completion of works worth Rs. 1500 crore in 2011-12. The total remuneration given to the employees for various works under the scheme has increased this year. Presently nearly 6,15,000 workers are reporting on the jobs. Works undertaken under the scheme are: plantation on the banks of farms on barren fields, digging of in-well bores and tube-wells.

The Central Government is also inspiring the local self government bodies who carry out works under the EGS, by awarding them as per their performance. For the best performance

#### WORKS TO BE TAKEN UP UNDER THE MGNREGS

1. Water Conservation and Water Harvesting
2. Scarcity combating works including afforestation
3. Creating small canals for micro and small irrigations
4. Facilitating the horticulture, land reform and irrigation facilities on the lands of Scheduled Castes, Scheduled Tribes or beneficiaries of Land Reform and Indira Awas Yojana minor and limited land holders.
5. Renovation of traditional water schemes and de-silting of lakes
6. Land Development
7. Flood-control and flood protection
8. All weather roads in rural areas
9. Construction of Village Knowledge Resources Centre (Gramgyan Samsadhan Kendra), and construction of Bharat Nirman Rajiv Gandhi Seva Kendra in the form of Gram Panchayat Bhavan at Gram Panchayat level.
10. Other works ascertained by the State Government in consultation with the Centre.

#### WORKS DONE LAST YEAR UNDER THE MGNREGS

1. Sapling Nurseries and plantation
2. Creation of farm lakes etc
3. Implementation of programme raising nurseries and protecting nurseries at Gram Panchayat level.
4. De-silting of conventional water bodies, village lakes and percolation tanks.
5. Construction of pathways through farms.
6. Digging of Private wells
7. Horticulture development programme
8. Bharat Nirman Rajiv Gandhi Seva Kendras at village and taluka level
9. Gram Panchayat Development Plan
10. Individual and common toilet blocks under Sampoorna Swachhata Abhiyan
11. Rural toilet blocks
12. Construction of playgrounds in naxal affected areas
13. Concretization of roads and paver blocks roads. Construction of irrigation wells, farm ponds, orchard plantation, land reforms on the lands of Scheduled Castes, Scheduled Tribes, beneficiaries of Indira Awas Yojana, land reform and land holders under Forest Right Act.



in water conservation in 2010-11 Nanded district and Sitepar village panchayat in Beed district were awarded in February 2012.

For the effective implementation of the scheme the Government has established a separate Commissionerate in Nagpur and appointed Ombudsmen in 29 districts. State MGNREGS fund has been created and a society has been established for its management. The better implementation of the EGS made available employment for local people. Good results are seen in remote Adivasi areas of Melghat in Amaravati district. People migrated elsewhere for the want of jobs have started coming

back to their home town. Malnutrition in the area has come down. Similarly, number of drop-outs has also come down. It is also noticed that social and economic development is taking place in the area.

In 2011-12 in Maharashtra's scarcity-affected districts work for 315 lakh man days under the EGS was created. With a view to coping up with the severe scarcity of 2012-13 in the scarcity-hit districts total 1,40,695 works are on shelves worth the capacity of 453.70 lakh workers. Concerned authorities have been instructed that works should be provided immediately on demand. ■

# Strategies of Water Management for Drought Prone Areas

## Recharge of ground water also needs to be planned

For understanding the real significance of a drought situation, it is not proper to go by the variability in the total amount of rainfall alone, but it is necessary to analyse and understand the variability in the total hydrologic process in the area. Management of a drought prone area really revolves around the management of the variable manifestations of water in the form of soil-moisture, ground-water or surface flows says **Dr. Madhavrao Chitale**, an authority on water management

While considering the strategies of drought management, it is necessary to distinguish between the different situations of water shortage. The problems of the arid areas, where one good crop is not possible even in the normal years, are quite different from the ones of those areas, where one good crop is normally expected, but because

of a large variability in the rainfall this crops is frequently lost under conditions of scanty precipitation. Areas of the latter type are the drought prone areas as distinct from the arid or desert areas.

But where the normal rainfall is limited to about 750 mm to 800 mm in a year and the variability is also very high, i.e., above 30% as in the case of the Deccan plateau, the life supporting

hydrologic system is always in a delicate balance. In these areas all the hydrologic entities like the surface river flows, reservoir storages, soil-moisture or ground-water get seriously affected frequently throwing out of gear the various activities woven around them. Hence a more comprehensive and long-term attention is required to such areas for establishing a stronger and stabler economic base.

### VARIABILITY OF THE HYDROLOGIC PROCESS

The nature of disturbance caused by the variations in the precipitation pattern in the drought prone areas is not the same in different years. It manifests itself in different years in different degrees in respect of soil moisture deficits, ground-water decline, reduced river flows or loss of storage in the reservoirs. In some years good amount of total annual precipitation is received in a few intensive storms with the result that the reservoirs get filled up by the flash floods, but the agricultural soils do not receive their moisture replenishment on a continuous basis over the crop season. Under such a situation crops from the unirrigated lands stand considerably affected. On the other hand, there are



some years in which the well spread out thin showers replenish the soil-moisture periodically throughout the agricultural season, thereby giving rise to excellent crops, while over land run-off is very poor, river flows very low and reservoirs left empty or only partially filled. All the activities dependent on the waters from reservoirs or from the river flows suffer in such years. Under the conditions of a thinly spread out precipitation, the evaporation losses from the land surface are also very high. When the surface soil does not experience saturation conditions, recharge of the ground-water is poor. Thus, while the normal rainfed cultivation is in good shape, those who are dependent on replenishment of ground water or on reservoirs storages either for drinking water or for crop cultivation badly suffer.

Hence for understanding the real significance of a drought situation, it is not proper to go by the variability in the total amount of rainfall alone, but it is necessary to analyse and understand the variability in the total hydrologic process in the area. Management of a drought prone area really revolves around the management of the variable manifestations of water in the form of soil-moisture, ground-water or surface flows.

### **IMPACT OF THE SOIL COVER**

A very large part of the drought prone region has a cover of clayey soil, locally known as the black cotton soil, which is highly moisture retentive. It has high proportions of organic matter, calcium and magnesium carbonates, iron and alumina. It holds up to 300 mm of free water per meter depth as compared to only 100 mm in the sandy loam. An excellent crop of cotton or groundnut can be grown on these soils even with a limited precipitation of about 500 mm during the three months of the rainy season if it is reasonably well spread out. A good crop of sorghum is possible with just 400 mm of precipitation. But for the presence of these soils the impact of a drought situation on the agricultural produce from the Deccan plateau could have been much more severe. However, this is also a mixed



blessing. Because these soils are highly impervious and do not permit liberal percolation and recharge of the ground water, these areas witness an apparently paradoxical scenario of good agricultural crop but acute scarcity of drinking water. Particularly the villages that depend on ground water for their domestic supplies are badly hit.

### **USE OF GROUND WATER**

With the advent of machine power, man's capacity for ground water extraction has increased manifold. The annual extraction has now exceeded the limits of annual recharge at many places. Aquifers in hard-rock areas which are not properly linked with a natural or artificial recharge system have been found to be not dependable. Ground Water is not an independent entity but is only one of the phases in which water exists in its overall hydrologic cycle. There are, therefore, obvious limitations to the extent its use can be stretched. Deep drilling may only help to mine the water accumulated over centuries. Such mining efforts cannot provide a long term sustainable support for development.

### **MANAGEMENT OF AGRICULTURE**

Since the large demand for water is from the Agricultural Sector, greater attention is needed to ensure water for establishing the agricultural output.

Effects of short drought periods can be overcome by adopting correct agronomical practices like deep tillage, and mulching which improve the availability of soil moisture. Mulching techniques have particularly a great role to play not only on the dry land farms but also on the irrigated farms, because of the moisture losses are very heavy in the dry climate of the drought affected areas. For various reasons, mulching has not received as much attention as it should have from the farmers. Mulches of straw, organic compost, coir waste, gravel, plastic sheets or chemicals and petroleum products have been tried on the research farms. It has been seen that introduction of scientific mulching practices on the agricultural farms in the drought areas can improve the retention of moisture in the farm soil by as much as 50% and improve the yields by 75%.

The year's choice of crops depends upon the commencement of the rainy season an early start or a late start. This can vary by as much as 30 days. Hence alternative seed packages have to be kept ready as a measure of contingency plan. One of the effective ways of reducing the impact of variability in the precipitation process is to have a system of intermixed cropping. The agriculturist who is supporting himself from dry-land farming will always be better off over a series of years by

growing a mix of 2 to 3 crop varieties simultaneously, each having a different period of growth and germination. Short duration crops like grams, mustard and pulses can be very well intermixed with others like sorghum and wheat.

There are natural limitations on the irrigation facilities that can be provided in the drought prone areas. In the Deccan plateau, more than 60% of the drought prone region will have to depend on the dry land farming practices only, even after developing the water resources of this area fully. The crops that are very sensitive to the moisture stress should not be encouraged in the drought areas.

Water is required by the crops more at their critical stages of growth. Water stress during other periods has negligible impact on yields. In the case of lentils, grams, linseed sunflower, mustard or safflower reducing the watering from 4 to 2 in Rabi has hardly any effect on the optimum yield levels of lentil (2.0 t/ha) gram (2.65 t/ha) or sunflower (2.2 t/ha). Even under the rainfed conditions millets, barley, pulses possess intrinsically higher tolerance.

**MAXIMIZATION OF RETURNS**

For a proper management plan, the deficit tolerance capacity of the

different activities will have to be properly quantified and the activities permitting greater tolerance of deficits will have to be preferred. Rather than providing the theoretically needed six applications of water, the crops can still flourish well with only four applications for the winter crops and may reasonably survive, if not flourish, with only two applications also. The net gains to society by adopting such a curtailed and rationed supply for all the farmers are far greater than those obtained by meeting the full needs of a limited few. The management strategy to has ensure the fulfillment of this objective.

For maximizing the economic returns from the limited available water resources, it is more advantageous to encourage the low water consuming crops like sorghum (Jowar), maize and oilseeds (sun flower, groundnut), pulses (moong) and vegetables chilies potatoes and onions. It has been shown that net returns per unit of water in growing the above mentioned crops are 150%, 200%, 210% 250% and 400% respectively, of those obtained by growing paddy or sugarcane. Irrigation systems in the drought prone areas will have therefore to support such low water consuming crops in preference to the high water consuming crops.

**DRINKING WATER**

On the drinking water side, however relatives less flexibility exists. While the water supply required for cleaning purpose could be somewhat adjusted, the requirement for human consumption or for cattle population is an inflexible quantity. In the management of supplies such inflexible requirements will have to be met with as the first charge. The actually supplies are seldom above 150 LPCPD even in the normal years. It is difficult to scale down the supply below 60 LPCPD during the severest drought period. Rural community suffers most under the drought conditions for want of employment and for want of water. A dependable water supply system ensuring at least 40 LPCPD in the difficult periods is of utmost importance for these areas. Absence of dependable arrangements for supply of drinking water tend to aggravate the migration to cities and hence the need for a greater priority to the rural water supply schemes.

**PREVENTION OF EVAPORATION**

Faced with the limited availability of water, all possible efforts are necessary to prevent losses by evaporation from the irrigated farms as well as from the reservoir surfaces. Irrigated areas are 5 to 10 times larger than the surface areas of the reservoir. Moreover, when irrigation water is applied to parched and heated land surfaces or to open the porous soil crusts, evaporation loss is particularly very high. In the aggregate, evaporation losses from irrigated areas are much greater than those from the reservoir surface.

It is observed that in the drought prone areas the daily rate of evaporation increases sharply from March onwards reaching a peak rate of 14 mm/day in May which is more than double the average evaporation rate up to February. In the three months from March to May, more than 1000 mm of water evaporates from the reservoir surface. To avoid large losses of water in these three months, instructions have already been laid down that the reservoir should be depleted to the minimum possible levels latest by the



end of February, thereby shrinking the reservoir surface. It has also been advocated that the surface irrigation systems in drought prone areas should support only two seasonal crops between the period July to February (i.e. Kharif and Rabi seasons). Requirements of irrigation for the hot weather months, if any, are to be met from ground water only.

### CONVEYANCE LOSSES

Losses in water conveyance are also high during the dry summer months. Hence from the point of water conservation, it is not at all economical to run a canal system in the drought areas during the hot dry months. A better practice is to transport as much water as possible during the wet monsoon months or latest during the winter period thereafter and to store it in small ponds and tanks near the points of consumption for later use, during the summer months. An irrigation system in a drought prone area should accordingly, consist of a main reservoir, the conveyance and distribution network, and a large number of tanks and ponds scattered throughout the command area, to be fed from the conveyance system. The irrigation as well as the drinking water supplies should best be tagged on to these local tanks and ponds, rather than directed to the main conveyance system which should necessarily be closed by the end of winter season and well before the commencement of the summer season to avoid losses.

What applies to the canal system equally applies to the releases into the river channel. It is not correct to release water in the river channel for transport over a long distance during the dry months. Even when this has to be resorted to, continuous low flows over long periods should be avoided. It is better to rush the required quantity of water in a small period and then hold it up in small storages behind the barrages near the points of consumption.

### PROTECTION AGAINST VARIATIONS

Apart from the net deficit beyond (20%) in the annual precipitation that leads



to drought conditions, the drought situation is also caused by the three types of aberrations in the precipitation pattern namely, (a) late start of the monsoon; (b) long dry spells during the monsoon period; (c) early withdrawal of monsoon. Situations of late start have been found to be more frequent than those of early withdrawal. Industrial and Drinking water supplies are most vulnerable to the conditions of late commencement of monsoon. Hence it is always prudent to reserve some storage in the water supply reservoir for the requirements of the months of June and half of July, from whatever limited quantity is at hand.

Agricultural cropping programmes suffer under any of these three aberrations. But under all these conditions ground water can provide a good relief to the farmers. In the command areas of irrigation canals, the sudden demand from the extensive area arising out of a long break in monsoon cannot be coped with by the canals and distributaries because they do not have enough carrying capacity to convey water required by all the fields simultaneously. The irrigation conveyance systems are designed essentially for a rotational schedule.

Hence sudden peaks in the demands can best be met only by pressing into service all the wells in the command. Conjunctive use of ground water and surface water not only optimizes the use of water resources in an Irrigation command, but also makes the irrigation system operationally more viable during the periods of stress. Farm ponds are particularly useful for protecting the crops during the long dry spells during monsoon or after the early withdrawal of monsoon.

### USE OF LESS DEPENDABLE YIELDS

For the drought areas, use of average flows of 50% dependable quantities have been recommended by many commissions and committees to increase the availability of water mainly for the agricultural purpose. Minor Irrigation tanks (i.e., which have culturable command area of 2000 ha or less) are already being planned for 50% dependable water. But it is seen that the system planned for the use of water of lower dependability do not function effectively unless they are handled with greater administrative and managerial skills and there is a greater social responsiveness amongst the

beneficiaries. Use of lower dependable flows means inviting larger variations on the supply side from year to year. Unless the distributive mechanism is properly refined to distribute the shortages amongst the recipients of water in a successful manner the system fails to support the extended clientele effectively. In the years of shortages, it should not happen that the needs of a few only are met with in full, while some other are totally eliminated from the protective folds of the distribution system. The shortages will have to be shared by all the potential users. Achieving this objective is a difficult task and a challenge to the managerial skills of the system's operators. Unless specific clear rules are laid down for sharing the shortages amongst the beneficiaries, it is difficult to regulate the short supplies.

**ROLE OF PASTURES AND FORESTS**

Water management cannot succeed without simultaneous coordinated efforts in land management. In the drought prone areas there is just neither enough water to irrigate all the lands, nor are all the lands fertile enough to support agricultural farming. Hence pastures and tree farming will have to form an integral part of the land and water management strategy. While grasses can grow on the moisture from the shallow soil cover, the deep root system of the trees can draw their moisture from the deeper ground water zones and survive under a drought condition. Forest covers can also help in the ground water recharge process through their root system, by reducing evaporation under their dense canopy and by adding leaf litter and humus.

For optimizing the output of land water interaction, it is desirable to have afforestation and development of grasslands in the upstream portions of a basin or a watershed to reduce the silt load in the runoff followed by a cluster of cities and industries in the middle portion of the basin or the watershed. Their effluent can be profitably used along with the natural river supplies in the downstream portion of the basin



where the agricultural activities could best be concentrated.

**EMPHASIS ON ACTIVITIES REQUIRING LESS WATER**

The primary objective of any management plan for a drought prone area would be to minimize the effects of a drought situation on the economic activities in that area. In this context, the activities which are less dependent on use of water should be the most preferred ones. Commercial activities such as shops, schools, offices and hospitals require little support of water other than that for domestic purposes. Many industries like toy making, structural fabrication and weaving also do not need much of a support from the water resources. Grain cultivation is a highly water consumptive activity by and large. It required ten times more water for every person employed therein than that required for the above mentioned other economic activities. Hence while drawing up a perspective programme of economic development of the drought prone areas or while operating a water supply system for that area preference in the use of arranged supplies of water should be given to the commercial and industrial activities having low water consumption.

**WATERSHED MANAGEMENT**

Proper management of water is the

kingpin in the development of the drought prone area. There are no general solutions possible. They will have to be area specific, because of the hydrological peculiarities of the watershed. It has also to be remembered that the development of the drought prone areas cannot be modeled on the lines of the development of the other favourably placed areas. The pattern of development of the drought prone areas will have to be quite different from that for the others. Each watershed in the drought prone area needs to be developed keeping in view the geographic, geologic, hydrologic peculiarities of the watershed and the nature of the soil profiles prevalent in the watershed.

Recharge of ground water also needs to be planned through a combination of contour trenches, nala bunds and small ponds by choosing appropriate physical locations for this purpose. Each watershed should also have a dedicated local rain gauge station preferably a self recording one and a systematic local ground water monitoring system to properly regulate the use of water throughout the year. The recent Ground Water Act (2009) passed by the Maharashtra State's Legislature has many provisions in this direction. It will be very useful if that law can be put into practice immediately by establishing the watershed management committees of the villagers. ■



# Rethink Watershed Development

Many villages in Maharashtra have conquered the water scarcity and they act as the lighthouse ...

Use of machinery in the State-sponsored EGS has now been permitted could speed up watershed works. The State Government's decision to raise the height of bunding from 60 cm to one metre is an important one, opines **Vijay Anna Borade**, an expert in the field of water and watershed development area.

It's incorrect to say that drinking water problem is over once the watershed development is complete. Stored water in the project could be wasted if there is no coordination in water storing and water using. Kandvanchi village has successfully shown how watershed development area water could be used with more capacity for Rabbi and Kharif crops. Farmers have right to use the watershed development area water. To implement the Food Security Act soil conservation and water conservation should be tagged together to stop soil erosion. This means that soil and water in the farm should be stored in the farm itself. This would help to provide water for agriculture and solve many issues.

It's necessary to take up the watershed area works in Solapur, Ahmednagar, Vidarbha and North Maharashtra on the lines of the works done by the Marathwada Watershed Development Mission to make it more useful. Similar missions have been formed in Vidarbha, Konkan

and Khandesh, for the Western Maharashtra it is yet to be established. In Western Maharashtra some talukas like Maan and Khatav are severely scarcity-hit. Scarcity should be fought cutting across the regional barriers. Separate missions could be established in the valleys of the five rivers to take up the watershed area development works in the area. The valley of Sina, Sindphana, Maan, Vairal and Manjara rivers come under the scarcity-prone area. Rs. 500 crores should be allocated in the State budget every year for the watershed area development.

EGS policy needs to be changed as workers are not willing to do the watershed work. Remuneration for these workers should be linked to Dearness indicators. Daily wages of EGS workers should be increased first and then the remuneration of others so that workers would feel motivated to do the works. Instead of just criticizing the corruption a permanent system should be developed changing the present one from the grass-root. Now that the Government



has decided to do the EGS works with the help of machines, it would get speeded up and benefit the people from the respective area. If different works in the district are clubbed and work of one village is taken at a time, it would fetch good results.

In the watershed area development the soil conservation principle is adopted defeating scarcity could be possible. Funds of backlog may not benefit many villages, therefore I feel that emphasis should be on the watershed area. Any new thought is welcomed. The feeling of accountability should be there in the minds of the workers in the EGS. The efforts taken by the Government and by the NGOs should be appreciated. Any particular work should not get credit over and over again. Women's contribution in the works of agriculture is also ignored. In fact they deserve the praise just as their counterparts. ■



# Kadvanchi Defeats Scarcity

The watershed area development has brought the migrated farmers back their home.

The Watershed Area Development Programme initiated in Kadvanchi 18 years ago has astonishingly transformed the surrounding area. The per capita income of people in Kadvanchi has sky-rocketed to Rs. 45,833 now from Rs. 2365 in 1996-97. Today 57 farmers are using motorcycles as compared to just 4 and 136 families have TV sets today as compared to just two some years ago.



**K**advanchi a scarcity-prone small village located just 18 km off Jalana city today with 455 families boasts its prosperity proudly as the testimony of efforts of integrated watershed area development and judicious use of water for agriculture. Following the guidelines of the Vijay Anna Borade it has become the role model of rural development.

Marathwada Agriculture Assistance Board, active since 1969 in the field of rural development, has played an instrumental role in the transformation of Kadvanchi. Its Agriculture Science Centre undertook Watershed Area Development Programme in Kadvanchi in 1994 under the Indo-German Water Area Development Programme. Conscientious use of water along with soil conservation made the Kadvanchi Watershed Area Development

Programme a unique one.

Another important aspect of the programme is that in the Kadvanchi watershed area the 22 big cement bunds have been created on 19-km nullah passing by the village boundary. This created water bodies and accumulated water got percolated in the vicinity making the area irrigated and also provided more water to wells in the area. This is based on the concept mooted by Vijay Anna Borade of stopping soil erosion for accumulating water to get it percolate in the surrounding area. Putting this concept into practice Borade has evolved a model that has been accepted by the State Government.

The prevailing technical parameters of watershed area development were made flexible and as per the farmers' needs trench has been created along side of the farms over 1550 hectare area

that runs into 50,000 lakh metre. Strylo and Hemata grass was sown on the bank of the trench. This helped to strengthen the trench and also created more green grass for cattle. The trench is connected with the concrete pipeline or stoned outlets to spread the water around.

The bund around the farms helps soil conservation. According to a study by the National Bureau of Soil Survey and Land Use Planning 25 tonne per hectare soil is eroded every year. Abrasion of the upper layer of the soil that contains important natural ingredients such as nitrate, phosphorus and potassium results in reduction of yield by 25 to 40 per cent. Therefore soil conservation is important to maintain the quality of the farms and hence the bunding of farms becomes necessary.

The Watershed Area Development Programme of Kadvanchi which is situated in the valley of Godavai and Purna rivers continued for five years. The programme aimed at ridge to valley development. It cost Rs. 1,22,08,467. During the period of the proposed expenditure Rs.12 lakh were saved and the amount was kept as the fixed deposit in the bank. The amount of interest is spent on repairs and maintenance of the bunding. Every year repairs at particular location is done in just Rs 10 through village procession. A JCB is also the part of the procession.

As a result of the programme water level of the village has amazingly increased from 5.5 metres to 10.97 metres. This has brought 1338 hectares

under irrigation of that 300 hectares are under permanent irrigation. This inspired farmers to take up horticulture, floriculture, vegetables and unconventional crops like chili, turmeric etc. Till 1993 the villagers used to take traditional crops. The area of cultivation has gone up to 1517 hectares from 337 hectares. Irrigated land in Rabbi and Kharif has doubled up from 398 hectares, high quality agriculture produce area has gone up to 330 hectares from 174 hectares and land under vegetable cultivation has gone up to 257 hectares from 107 hectares. Number of wells in Kadvanchi has increased from 225 to around 1000 since the Watershed Area Development Programme is complete.

Kadvanchi has developed the capacity to store 75 crore liters water in 47 farm ponds. Polythin sheets are spread at the bottom of the lakes, thus water does not get percolate and the stock remains intact. In case of delayed monsoon when wells go dry this water is used for agriculture.

**ENRICHED SOIL**

Quality of the soil has enriched due to the watershed area development. Farmers have adopted new techniques of farming. They are using modern technology for irrigation. They are also doing community farming. Of the 455 families nearly 275 families have grape yards. Hundred families are engaged in vegetable farming. The area under cotton has gone up from 199 hectares



to 347 hectares, while wheat growing area has increased from 27 hectares to 99 hectares.

The agricultural planning helped increase agriculture yield and agriculture produce has increased from Rs. 79.50 lakh to Rs. 4,61, 60,000 in the past 5 years. In the current year it is has gone to Rs. 11 crore. Within a year from the completion of the project agriculture produce has increased by four times more than the cost of the project.

Horticulture has increased from mere 3 hectare to 200 hectare. Grape yard is spread over 140 hectares while pomegranate is grown over 60 hectare. Horticulture farmers have also opted for group marketing.

**INCREASE IN SAVING**

With the rise in income more housewives have opted for saving. In the village

now 79 self help groups are active. Their participation in social field facilitated construction of 64 common toilet bocks, use of smoke-less stoves and LPG fuel. The per capita income of people in Kadvanchi has sky-rocketed to Rs. 45,833 now from Rs. 2365 in 1996-97.

**EMPOWERED FARMERS**

Once upon a time we frequently used to visit banks for agriculture loans, today the ball is in our court. Farming has enriched us and we are in the position to negotiate rate of interest with the bank managers since we have the repaying capacity, says a farmer, Bhagwanrao Kshirsagar. The villagers have constructed roads through collective participation. In 15 days they collected Rs. 15 lakh to construct roads of 42 km length. It has become easy to transport agriculture produce to the market place due to these roads. The villagers’ prosperity could well be gauged by the assets and modern gadgets they own. Today 57 farmers are using motorcycles as compared to just 4 and 136 families have TV sets today as compared to just two some years ago. In 1987 merely 3 farmers were growing grapes now grape yards exist over 350 acre land. Grapes have fetched Rs. 15 crore through exports. The watershed area development has brought the migrated farmers back their home. Farmers are sending their children to English medium schools. ■

**Yashwant Bhandare**



# Future Favours the Brave

Houses painted in same colour in Papal village stands as the testimony of communal harmony

Papal is being looked at as the agriculture pilgrim. The reputation has not come their way so easily, it is the result of their dedication and untiring efforts of last three years. Villagers resolved to cope up with the inevitable scarcity.

People of Papal village in Amravati district have braved the nature's wrath of water scarcity and the God of fortune blessed them in abundance. A small village of just 7000 population is fully dependant on the rains for their farming. Naturally water scarcity, a famine-like situation is a perennial problem for them. In every summer they toil for the drinking water.

The situation has made them tough over the years. So they have stood in all odds, as the saying goes-when the going gets tough, the tough gets going. They have a strong will power and stronger motivator. And he is none other than the father of India's Agriculture Revolution - Dr. Punjabrao Deshmukh. Papal is late Punjabrao's birth-place.

Villagers resolved to cope up with the inevitable drought to live up to the reputation of their role model, says Papal Sarpanch Kishore Gulalkari. The principles of an ideal village that they followed made the whole difference. Villagers voluntarily imposed restraints on themselves by banning cattle grazing, stopped tree felling, executed prohibition strictly, implemented family planning and undertook all development works in the village together voluntarily.

Shree Shivaji Shikshan Sanstha established by late Punjabrao Deshmukh decided to transform the village through ideal village campaign started by the State Government. The education institute took the villagers into confidence and convinced them that can do it. The villagers participated in the campaign whole-heartedly. They undertook water conservation and watershed area development works. They created farm lakes, constructed concrete bunds with the financial



assistance they got under the Adarsh Gaon Campaign.

Gradually the results started showing. Underground water level got elevated due to accumulated water in farm lakes and concrete bunds. Wells in the villages received water. Farm soil got moisture. Today Papal is being looked at as the agriculture pilgrim. The reputation has not come their way so easily, it is the result of their dedication and untiring efforts of the last three years.

They developed neat, clean and planned market place by constructing permanent shop platforms. Due to this even on the bazaar day the traffic could move smoothly. Now village looks clean even after the bazaar gets over. As a symbolic gesture all villagers painted their houses with a similar colour. The colour stands as the testimony of the communal harmony.

Over 1500 hectare watershed area has been developed. Bunds have been created on 1300 hectare area, 7 farm ponds and 5 concrete dams have been constructed. Integrated water

conservation works were undertaken collectively under the guidance of technical officer Mukund Kanate. This helped to bring more land under irrigation and agricultural yield got increased by 30 to 40 per cent. Subsequently villagers' life style has improved.

Villagers like Vishwanath Borkar, Ananda Tamate and Kishore Balkhande tell their turn-around stories. Balkhande took crops like soybean and cotton which no one had dreamt of in the past.

The villager now has a full-fledged Primary Health Centre that takes care of villagers' health. For the youth a well-equipped gymnasium and for students a good library is also now ready. Physical infrastructure development works are also undertaken. The Rs. 15 crore development plan of the village has been sanctioned. Moreover, the villagers have not forgotten their mentor, their motivator and hence a memorial of Dr. Punjabrao Deshmukh is taking shape. ■

**Mohan Atalkar**

# From Peoples' Participation to Water Conservation

The people's participation in silting mud from dams has helped in increase in water capacity.

Despite decrease in the average rainfall this year integrated measures have brought the situation is under control even in the mid-summer. Marathwada covers eight districts, 76 talukas and 8415 villages encompassing 64,813 sq km area.

People of Maharashtra have set an example how to overcome the water scarcity problem. Even as the entire State is reeling under the scarcity-like situation, most part of Maharashtra has taken a heavy sigh. The KT Gate scheme is the reason to feel good. The KT Gate concept implies installing iron gates on the dams to stop water being drained out.

The approximate cost for constructing one Kolhapur type-weir is Rs. 15 lakh. In all 2663 Kolhapur type-weir have been constructed. Rs. 413.30 crore were being spent on the dams. However, all the money had gone in vain as in spite of the dams water level in the area had depleted.

This concept is being implemented in Maharashtra region for past two years. The idea paid off and 4330 tmc water level got increased in the region bringing 93,261 acres of land under cultivation.

The money spent on gate fixing was Rs. 139 lakh and all money was shared by the people. KT Gates were installed for 1814 dams of the total 2663 dams in the regions in 2010-2011. This resulted in increasing 26282 tmc the water level as water in the dams was properly saved.

Marathwada covers eight districts, 76 talukas and 8415 villages encompassing 64,813 sq km area. The entire region is scarcity-prone as it receives an average rainfall of 779 mm throughout the year. In 2011 the rainfall recorded 655.1 mm amounting to 16 per cent less than the average.

A regular review of the natural water has been undertaken. Necessary actions have been taken. Video conferences



of collectors under the leadership of Divisional Commissioner are being held. In April 759 private wells in the region were acquired by the Government to use the water to supply it through tankers. Last year during the period 455 tankers were used to supply water. This year's situation is better.

People also participated in silting of mud from dams. This helped increase water capacity. Increased water level has increased irrigated area. The land brought under cultivation has relieved the State Government's exchequer's burden worth Rs. 139 lakhs.

## OTHER MEASURES

The region's scarcity plan and integrated action plan has been drawn. Alongwith tankers, bullock carts are also being used, repairs to tube wells are being undertaken, new tube wells have been approved, repairs of special water pipeline schemes are undertaken,

supplementary water pipeline schemes are undertaken. Rs. 52.87 crore are spent on these works. For new tube wells alone Rs. 12.71 lakh are spent. On tankers Rs. 11.15 crore are incurred.

## SOPS FOR FARMERS

Land revenue, electricity bills and agriculture loans of farmers from scarcity-hit area have been given subsidy by the Government. Nearly 150 villages are facing fodder shortage. Worst-hit villages are in Osmanabad and Latur. Fodder depots have been opened at Panchayat level. Divisional Commissioner has been empowered to sanction water pipeline schemes up to the budget worth Rs. 30 lakh. Water in all irrigation projects has been reserved for drinking purpose. Water management measures are being undertaken on continuous basis. Water scarcity measures are satisfactory. ■

*Kiran Wagh*

# A Village With No Water Scarcity

**Pungala, a village in Parbhani district is proud to pronounce that it has ample water.**

The villagers got charged and pressed into action. Development works like tree plantation, 45 cement bunds, 16 concrete nullahs, 80 earthen structures, 2 mud bunds etc were completed by villagers voluntarily and cooperatively.

In this Infotech Age of fast pace nothing happens unless you make it happen. Conviction and determination are the key words today. When you make it happen you have to make believe what you are going to do and you should get led by the inner voice. This spiritual thought saved Pungala villagers who have a rich legacy of spirituality as the village is named after a sage, Pingaleshwar who lived there in the ancient times. The villagers are hardcore devotees. There are temples of Lord Ganesh, Maruti and Goddess Mainapuri.

For the villagers, listening to the inner voice is the simple logic and a relevant philosophy in common man's life. A happy and prosperous villager once upon a time got deprived of their old glory due to lethargic and slothful attitude developed over the years unwittingly.

The village is situated 5 km off Aundh Nagnath Road in Jintur taluka of Parbhani district. Even as the condition was deteriorating the villagers just stood a mute witness. They led go whatever the Nature God had bestowed on them. In the monsoon the villager used to get good rainfall. The rain water used to flow down from the hill area. Rains kept on washing away the fertile soil. The contented villagers used to do farming on whatever rains they received. The situation changed over the years. The farms went barren. Underground water level went down. Rainfall became less.

In 2000 the villagers got awakened with the call that was given former Chief Minister Vasantdada Patil – 'Pani Adava, Pani Jirava'. Pungala villagers



realized the importance of saving rainwater. It is important to accumulate water in ponds, bunds and dams. The water bodies work as barricades for the soil flowing down through rain water. The water percolates in the surrounding areas making it fertile.

In 2002 villagers formed the Mritunjay Krishi Vidnyan Vikas Mandal. The organization carried out survey of the village and chalked out a development plan. It created CCT in the catchment area over 47.24 hectare. The villagers got charged and pressed into action.

Development works like tree plantation, 45 cement bunds, 16 concrete nullahs, 80 earthen structures, 2 mud bunds etc were completed by villagers voluntarily and cooperatively.

These works transformed the village. Now the farmers are growing sugarcane, banana, turmeric and vegetables. Villagers also developed physical and social infrastructure like roads, cultural centre, community hall, common toilets etc. Pungala has regained its lost glory again. ■

**Rajendra Sarag**

# Watering the Long-term Solutions

The Government launches water schemes on war footing to tackle scarcity

There are many solutions for dealing with water shortages. Many have been tested and tried. The most cost-effective and common is water conservation, which as a part of several water conservation schemes is being implemented in the State, says **Prakash Bal Joshi**.

It is irony that Maharashtra, one of the most-advanced States in the country, has been facing recurring scarcity situations for last four decades despite all out efforts to tackle it with short term as well as long term measures. With climate changes becoming more pronounced over the last couple of years as one can really feel the difference, the State is facing water crisis almost every summer.

What is really happening is despite efforts by authorities which are sometimes with skewed priorities are not having desired effects in resolving the issues. One of the prominent reasons is the drying up of water resources on which water management was planned. It is now becoming clear that scarcity conditions are perennial and cannot be dwelt on the basis of one-time settlement as several factors affect the situation.

Water scarcity is one aspect, but

scarcity situation created due to lack of adequate water creates ripples and affects many aspects of life in rural as well as urban life in the State. Though most of the urban areas are spared from drinking water shortage, villages are left to defend themselves and short term measures like water supply by tankers are undertaken to provide drinking water to large number of population.

Over the years it has been noticed that meticulously planned water supply schemes where piped water was provided to smaller towns and villages from a water source, over the years, the scheme has become redundant as water source has either dried down or do not possess adequate storage to quench thirst of many. In many areas where water table was quite closer to surface has dwindled further making wells non-dependable. Same is the case with tube-wells which are life line for much difficult terrain. So what is happening is

the water table in the State as a whole has gone down much below expected level creating situation where scarcity looms large.

As a result if one studies the data available with the various concerned departments of the State Government, not only numbers of affected villages and towns are changing but the area from where these affected areas are identified are also changing as situation changes dramatically. As one moves away from the big cities like Mumbai and Pune, women standing in queue to collect water is a familiar picture. As a result, the authorities have to keep on updating data on water supply position and water reservoirs year on year and then plan measures to tackle water crisis.

As per the Government figures, 70 per cent of the State's villages (around 27,600 villages), water is not available within 500 meters. These figures keep on changing depending on completion



of new schemes and some old schemes becoming redundant. The water level has also gone down 15 meters below ground level. In many cases water is not potable and has to be either treated or brought from nearby places by tankers or other forms using piped supply. In many cases if natural slope is not available then water has to be pumped using power which makes the scheme costly and gets affected in the days of load shedding and power cuts.

It is unfortunate that over half of the rural households in the State do not get safe and ensured drinking water supply as per the human development report of Maharashtra published in year 2002. The Government has spent huge funds for generating water resources for giving relief to such perennial water crisis areas during last decades but it has been quite frustrating that schemes launched a decade before are becoming redundant nullifying effect of new schemes being launched. Vulnerability to dry conditions elicits water reliability to be of the utmost value to water consumers in the State.

The Government launches schemes on war footings to tackle with the scarcity situations by pushing into service tankers to service water starved villages and even part of urban population and almost Rs.100 crores are spent yearly on tanker supply schemes. The State also seeks Central Government's financial support for tackling the situation.

The scarcity of water creates poor sanitation situations leading to health problems putting strain on medical facilities in rural and urban areas. The main sources of livelihood in the State is agriculture as 55 per cent of population lives in villages and water scarcity affects them very badly.

What should be done to improve the water supply situation and avoid recurring scarcity situations year after year? So many studies and commissions have been appointed to suggest ways to tackle the situation but even before suggestions are implemented, situation changes and gets worst. As a result vast tract of cultivable land still depend on rainfall which is scanty and uneven in



many regions.

The Western Ghats and Konkan receive heavy rainfall but most of the water flows down to Arabian Sea while only 5 per cent of water is stored and used. In the rain shadow areas, rainfall drops down and as we move towards Vidarbha it falls back to 1400 mm a year.

Former Chief Minister Vasantdada Patil had suggested a very simple principle for tackling the situation – “Pani Adava, Pani Jirava” (stop water, percolate water). His rustic wisdom told him that unless and until common people are involved and allowed to take some initiative at their level, situation cannot improve. His idea was simple, along with building big and medium dams, let people take initiatives and construct small dams at village level and even take initiative for soil conservation at their own farms by using natural flow of water during rainy season. Much has been done and much can be achieved if the idea is implemented systematically by involving people in form of a mass movement.

Due to geological conditions and rain pattern, there is a limit to which available land can be brought under irrigation system in the State. The First Irrigation Commission of Maharashtra, constituted in 1962, estimated that only 30 per cent of the State's total cultivable area can be brought under surface and groundwater irrigation.

Despite successful projects in Krishna Valley over the years, much

has to be achieved in Marathwada and Vidarbha region. Mere construction of dams on rivers is not going to solve the issue as much more micro level planning and change in crop pattern and implementation of new techniques for dry farm land are used in a massive way.

There is a need to take an overall review of water resources and water supply management in the State. The State has to plan for requirement of water for irrigation, industry and drinking purpose and make provision for such consumption. The scarcity of water is an issue that cannot be tackled only at the Government institution level but the participation of people at various levels, their organizations, Panchayat committees are essential part of the overall planning.

The State has not been able to utilize the stored water properly as construction of canal network in command area has remained very slow and inadequate. The Maharashtra Water and Irrigation Commission constituted by the Government of Maharashtra in 1995 have estimated that out of the State's total cultivable land area of 22.54 million hectares, 8.5 million hectares can be brought under surface irrigation. The area brought under surface irrigation in Maharashtra is only 3.86 million hectares leaving a vast scope for further improvement.

Apart from augmenting water supply position, the State agriculture also needs overhaul and new direction



to cope up with the new opportunities. It is rather difficult to persuade farmers to adopt changes in cropping pattern and take new kind of crops but time has come when farmers should think before taking crops which require more water. The Government appointed experts committee has identified paddy and sugarcane as two crops which should be allowed in controlled manner but it will require tremendous political will power to bring in such change in cropping pattern.

The political pressure also force the authorities to start many new projects while many remain incomplete at various stages and as we are well aware that thin and scattered irrigation facilities result in less achievement. According a survey, the reduction in storage capacity of many dams and wells is due to silting which has to be tackled at war footing. The authorities are encouraging new techniques and methods like lake tapping to ensure enhanced storage capacity.

The plan outlay for irrigation and huge investment in the sector has to be monitored closely to ensure desired results along with ensuring new investments in dams in the State. This also requires political will as scarce water and financial resources are sought after by each and every region. There are number of stories behind many irrigation projects where generations have fought to shift the location of the project on political rather than technical ground and the State exchequer suffered heavily.

Maharashtra is the first State in the country to introduce legislation to check groundwater exploitation. But unfortunately its implementation has

remained very lack lustered leading to waste of water. In fact groundwater is the main source of water for irrigation in Maharashtra as the surface water from canals and tanks accounts for around 21 per cent and 14 per cent respectively of the State's net irrigated area. The groundwater, drawn from bore wells using pumps, accounts for around 60 per cent of the net irrigated area.

There are many watershed areas in the State which are over exploited and the water table sinks further down in the areas. The banks have been asked not to give loan for bore wells in over exploited areas. Unless there is over all planning for utilization of underground water sources, there is going to be a difficult situation in the future in the State. Under such situation, unless surface water resources are developed, groundwater-based agriculture will not sustain for a longer time, water quality will be affected due to percolation of fertilizers and chemicals used on farm and many villages will be deserted for want of potable water.

Maharashtra is drought-prone mainly because of the inherent geographical factors large number of cultivable land still depends on vagaries of monsoon. As one third of the State receives scanty and erratic rainfall, it has remained drought-prone despite all out efforts on irrigation front.

There is a need to take this harsh fact into account and devise a long term policy with totally new and innovative approach. Involvement of people is central to develop such a long-term drought mitigation policy. This is possible only if rational equitable distribution of water is undertaken

along with modern agriculture techniques are adopted.

There are many solutions for dealing with water shortages. Many have been tested and tried. The most cost-effective and common is water conservation which as a part of several water conservation schemes is being implemented in the State. We have not given much attention to other viable methods which exists and help to solve the situation. Desalination, reclaimed water usage, and cloud seeding are some of the other water shortage solutions. However, such programmes also have issues related with environment and climatic changes. Maharashtra has large sea shore and desalination process could be tried in many places.

Sea water desalination appears to be the perfect answer to water shortages, after all, one we have more ocean than our surface and underground water resources. However, the process of desalination is extremely expensive and building new desalination plants is very time-consuming. We can check up viability of such desalination projects in gulf countries.

Recycled water is another viable option in case of serious water shortages. Recycled water is wastewater that has been treated and had contaminants removed. Use of such recycled water for household purpose is accepted all over the world except the use of such water for drinking purpose. There is a big demand to use recycled water for all outdoor purposes to save drinking water which is wasted in outdoor usages. The only problem with the suggestion is again high cost of such projects and their maintenance. ■



# Need to Augment Irrigation Coverage

The Barve Commission proved instrumental in accelerating the development of major irrigation projects all over the State

It is now the need of the hour to bring these drought-prone talukas into the mainstream of development. **Dilip Chaware** says one requirement is changing the mindset of the people living the rain shadow regions. They need to be persuaded to change the crop pattern, imbibe the latest techniques of water management and the use of fertilizers.



**A**lthough the irrigation capacity of Maharashtra has shown some improvement, it is still far short of the national irrigation average of all the States. According to the Economic Survey 2011-12 of Maharashtra, while the national average is 45.3%, it is recorded as 17.7% for Maharashtra. The Survey says it is 17.9% provisional. Still, taking any approach, the inescapable inference is that Maharashtra has to take quantum steps to enhance its irrigation capacity and coverage.

At the recently concluded State-level seminar, "Maharashtra: Yesterday, Today and Tomorrow," various erudite speakers highlighted the need to adopt innovative measures to combat the water scarcity situation across the State. Quoting the Barve Commission report and other documents, they pointed out that not more than 30% of the area under crops can come under irrigation through various projects. Water conservation and drip or sprinkler systems of irrigation were another aspect on which most speakers urged the Government to make their use increasingly. Governor, Shri K. Sankaranarayanan, too, has underscored the need to tackle the situation urgently. All these and relevant factors were brought to the notice of Prime Minister, Dr Manmohan Singh, by an all-party delegation led by Shri Chavan in Delhi.

A glance at the history of Maharashtra reveals that the irrigation capacity was a mere 6.5% at the time of the formation of the State on 1 May 1960. Now that the State is half a century old, there is a need to objectively review its achievements in various sectors. As water and power are the most essential services required by a population, it is only natural to expect that the authorities pay more attention to their development. As far as water is concerned, the scarcity occurs every few years in Maharashtra. Its intensity is more in Western Maharashtra, which is supposedly the most developed region of the State.

#### **MAHARASHTRA CAN BE CLASSIFIED AS BELOW IN TERMS OF ITS AGRICULTURE**

- The alluvial Konkan coastline (Thane,



- Raigad, Ratnagiri and Sindhudurg).
- Red alluvial soil (Mainly Chandrapur, Gadchiroli and Wardha).
- Jambhi soil (Satara, Kolhapur, parts of Ratnagiri and Sindhudurg).
- Alluvial soil (Bhima, Krishna, Panchganga and Tapi river basins).
- Black Regur soil (almost 75% of total area).
- Clay Soil (north-east Maharashtra, Nagpur, Bhandara, Gondia, Gadchiroli and Chandrapur).

Nearly 85% of farming activity in Maharashtra depends upon the vagaries of the monsoon. Therefore, it is imperative that every drop that rains is stored and utilized most economically. To ensure remunerative farming, it is necessary to bring as much land as possible under irrigation. Needless to say, preserving the ecological balance should be given top priority.

The possible potential increase in irrigation in Maharashtra can reach a maximum of 126 lakh hectares. Factors like the availability of water, the extent of cultivable land, the natural increase in the level of sub-soil water, the increase in this level resulting from development of backwater areas, the use of modern irrigation techniques and an improvement in watering techniques in agriculture were evaluated by the

Maharashtra Irrigation Commission (1999) before making this estimate.

It will be educative to review the efforts made by the Government to enhance irrigation capacity.

#### **MAHARASHTRA STATE IRRIGATION (BARVE) COMMISSION, 1962**

The Maharashtra State Irrigation Commission was established under the Chairmanship of S. G. Barve on 7 December 1960 to suggest the ways and means for the development of water resources in the State. The commission presented its report in 1962.

#### **The salient features were**

- Estimation of the availability of total water resources, actual use and amount of land that can be brought under irrigation.
- A concrete plan for equitable distribution of water in future and to provide protection during periods of shortages. Maintenance and repairs of irrigation projects.

#### **The key recommendations were**

- Wells as means of irrigation where it is impossible to have flow irrigation.
- Establishment/relocation of industries requiring more water where abundant



water is available.

- Duration for completing an irrigation project 8 years from the commencement of actual construction or 5 years from the actual start of irrigation.
- Daily water needs of rural population in areas where canals or furrows pass should be considered.
- The Government should undertake responsibility of rehabilitating the project affected people.
- A committee to review irrigation policies every 10-15 years.

**THE DROUGHT-PRONE AREAS FACT-FINDING (SUKHTANKAR) COMMITTEE, 1973**

This Committee was appointed against the backdrop of the severe drought during 1972-74. Its key recommendations were:

- 83 talukas to be declared drought-prone.
- Soil and water conservation activities to aim at the integration of backwater areas.
- Educating the people in backwater areas about soil and water conservation.
- Social afforestation programmes to be undertaken in small-scale irrigation sector.
- Promote drip irrigation.
- Improve the quality of land in areas that benefit from irrigation projects.

Such beneficiary lands should be taxed.

- Establish an authority to keep track of the availability and use of water resources on a permanent basis.

**EIGHT-MONTHLY WATER USE COMMITTEE, 1979**

(Deuskar, Deshmukh, Dandekar Committee, 6 July 1978 to 14 February 1979)

**The Committee made the following key recommendations:**

- One-third of the available water resources should be used for Kharif crops and two-thirds should be used for Rabi and Summer Crops.
- The distribution of available water from irrigation projects should be proportionate with the cultivable land availing benefits from the project.
- Farmers in the areas benefiting from the project should be free to choose crops, after deciding the definite quantity of water to be allotted to them.

**IRRIGATION MANAGEMENT AUTHORITY COMMITTEE, 1981: (CHAIRMAN – SHRI SURESH JAIN)**

**Its key recommendations include:**

- Set up an autonomous institution for effective use of water resources. Form an autonomous body for irrigation

projects having a capacity of over 60000 hectares.

- All such bodies should publish an account of expenses regarding supervision and maintenance every year.
- Impose ceiling on land ownership immediately in the areas benefiting from irrigation projects.
- Start using the block irrigation system in Vidarbha to increase the use of water in rabbi season.
- Impose water tax on farmers to encourage use of water by the method of volume-measurement.
- 25% expenses in irrigation programme to be shared by the beneficiaries.
- Strict policies about recovering water taxes.

**DANDEKAR COMMITTEE TO IDENTIFY REGIONAL BACKLOG, 1984**

**The key recommendations of this Committee were:**

- Identify irrigation-related backlog of all the districts.
- Use the concept of Rabbi Equivalent Area to count the irrigated region covered by different crops by the method of an equal index.

The Barve Commission proved instrumental in accelerating the development of major irrigation projects all over the State. The Koyna project is justly called a boon for the industrial development of Maharashtra. Besides irrigating large areas, it also added to the installed power generation capacity of the State. The first major scarcity jolt was received in 1965-66 when 23 out of 26 districts were declared scarcity-affected. This included 16151 villages in various regions of Maharashtra. The most grueling situation experienced in the State was between 1970 and 1973. Out of 35800 villages, nearly 25500 were under the grip of the scarcity. The conditions were so bad that the leadership promptly accepted the Employment Guarantee Scheme conceived by veteran Gandhian leader V.S.Page. It is now adopted by the Centre with some modifications.

In 1973, the Sukthankar Committee appointed by the Government toured many affected areas and considered various factors like the rainfall in individual areas, frequency of rains, capacity of lands to hold moisture, density of population, land revenue and similar situations in the past. This Committee, too, stressed the need to develop major and medium irrigation projects.

All these efforts paid off and the area under irrigation showed a spectacular rise. However, the scarcity situation for three years starting from 1984 affected over 23400 villages. This prompted the Government to appoint a Committee under then Minister, Dr V.Subramaniam on 5 March 1984. The 15-member Committee submitted its report on 31 March 1987. Its principal recommendation was that 84 talukas in the State should be declared permanently drought-prone. The recommendation covered many talukas in the supposedly advanced Solapur, Sangli and Satara districts.

district as a unit. According to the advocates of this demand, the statistics for a district and for a taluka should be considered on a different footing. This will show, they argue, that many talukas in Western Maharashtra are as or even more undeveloped than their counterparts in Vidarbha and Marathwada.

It is now the need of the hour to bring these drought-prone talukas into the mainstream of development. The lop-sided picture presented by Maharashtra today does not convey a positive image. One requirement is changing the mindset of the people living the rain shadow regions. They need to be persuaded to change the crop pattern, imbibe the latest techniques of water management and the use of fertilizers. Afforestation, fodder cultivation, horticulture, sericulture, poultry and dairy development, fish production and animal husbandry should become their allied activities so that the land is covered by vegetation and they derive

Superintending Engineers of minor irrigation projects in Pune, Aurangabad, Amravati and Nashik. The committees will cover Western Maharashtra, Marathwada, Vidarbha and North Maharashtra regions. They will study the ground situation in drought-hit districts and suggest temporary and long-term schemes that need to be undertaken. The condition this year is quite severe in Pune, Satara, Sangli, Solapur, Latur, Osmanabad, Amravati, Buldhana, Nagpur, Gondia, Gadchiroli, Nashik, Ahmednagar, Dhule and Nandurbar districts.

As an immediate measure, the Maharashtra Government has launched comprehensive efforts to provide succour to farmers, allocating Rs 150 crore and has asked its officials to constantly monitor relief works. As part of these measures, the State Government would provide an assistance of Rs 8000 per hectare to small and medium grape, pomegranate, orange and sweet lime cultivators whose holdings are not over two hectares. Rs 80 will be paid to farmers for each big animal, in place of earlier Rs 40. For small animals, the assistance will be Rs.40 in place of Rs 20 for providing them fodder and cattle sheds. Electricity and water connections discontinued due to non-payment of dues will be reinstated.

There are 6201 villages where the kharif yield is below 50 paise and 1552 villages where the rabi yield is below 50 paise this year.

However, one has to remember the Union Government's stand on drought relief norms. The Centre has ruled out any change in norms till 2015. Union Minister of State for Agriculture, Shri Harish Rawat, said in the Rajya Sabha that the norms were based on the recommendations of the 13th Finance Commission. "The Finance Commission is an independent organisation ....For changing the norms, we will have to wait till 2015," he said.

In view of this, the only alternative available to Maharashtra is to devise the steps to reach water in each nook and corner of the State. ■

Satara district	Rainfall mm 1960	Rainfall mm 1971	Rainfall mm 1987	Rainfall mm 2011
Maan	399	232	267.66	225
Khatav	438	351	345	373
Khandala	319	136	217	230
Phaltan	365	388	238	242
Sangli district	Rainfall mm 1960	Rainfall mm 1971	Rainfall mm 1987	Rainfall mm 2011
Miraj	449	335	238	371
Jath/Kavthe Mahankal	373	206	288	284
Tasgaon	436	429	398	371
Khanapur/Atpadi	391	370	239	249
Solapur district	Rainfall mm 1960	Rainfall mm 1971	Rainfall mm 1987	Rainfall mm 2011
Mangalvedha	465	363	295	309
Mohol	370	87	274	396
Karmala	190	121	259	398

The above table shows how the rainfall has remained more or less static in these talukas over the past five decades :

There has been a persistent demand in Maharashtra Legislature that taluka should be held as a unit for planning purposes and even for computing the developmental backlog. The Dandekar Committee had held

additional income. All this will become possible only after water is made available to them round the year.

The Maharashtra Government has now set up four committees to study the scope of water conservation works in drought-hit districts as part of the relief measures being undertaken by the administration. The three-member committees will be headed by the

# The GROUND Realities

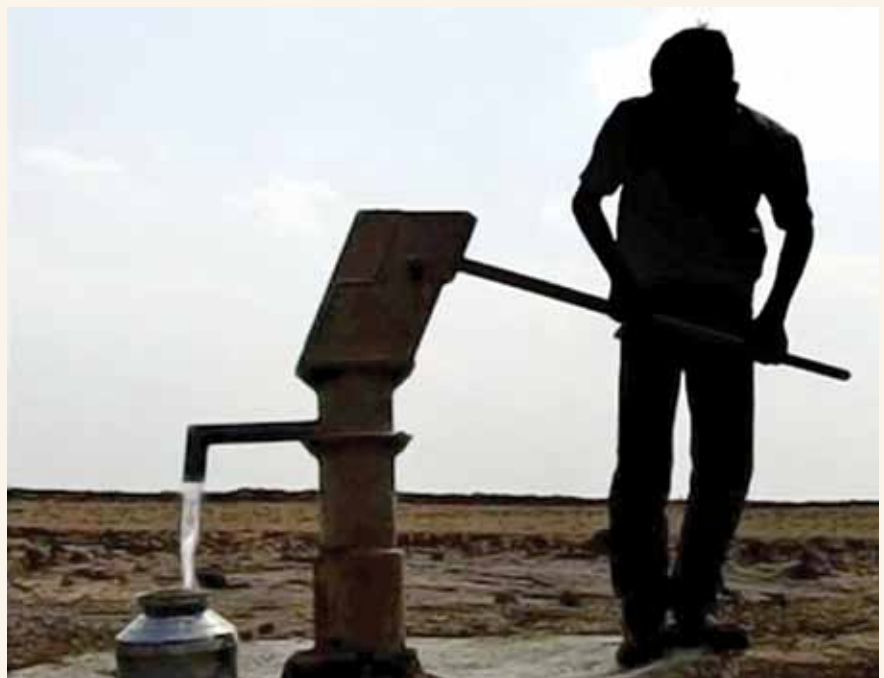
Over 50 per cent irrigation in the State is through groundwater, even industries prefer groundwater for its uniform temperature

Maharashtra is one of the few States to enact the Maharashtra Groundwater (Regulation for Drinking Water Purposes) Act, 1993 and subsequent framing of rules in 1995, to regulate the exploitation of groundwater for the protection of Public Drinking water sources, elaborates Director, GSDA **K.M. Nagargoje** and senior Geologist, **Shashank Deshpande**

An overwhelming rural population of Maharashtra and to some extent urban population is dependent on groundwater for drinking purposes. Earlier, the use of groundwater was insignificant in the State. Subsequent to 1972, the occurrence of frequent droughts, limitations of the availability of surface water, development of low cost drilling device, availability of relatively low-cost institutional finance, and energization have led to proliferation of irrigation wells. More than 50 per cent irrigation in the State is through groundwater and more and more industries now prefer groundwater due to its uniformity in temperature.

Increasing population, out-bursting urbanization and growing industrialization have led to more and more exploitation of groundwater to supplement the water supplied through surface source. The attributes of groundwater like universal availability, relatively less vulnerable to pollution, assured availability during scarcity period have led to increasing its use. Similarly, there being no legal restrictions on the withdrawal of groundwater its use has increased in many folds.

Due to all these factors the groundwater draft has increased over the years but the natural groundwater recharge remained the same. As a result of this imbalance the problems like over-exploitation, progressive water level decline, deterioration of groundwater quality etc have cropped up and started adversely affecting the drinking water sources within such areas. This needs to



be tackled by proper management of the water resources.

Reliable statistics in respect of groundwater withdrawal for irrigation by wells, bore-wells and tube-wells, and the draft caused is, however, not available. The withdrawals caused by bore-wells and tube-wells, in addition to draft from dug wells also contribute on a large scale to lowering of water tables. Therefore, the Maharashtra Water and Irrigation Commission (MWIC, 1999) recommended that for planning and management it is necessary to register the wells, bore-wells and tube-wells in the State. Similarly it is necessary to consider and estimate the groundwater and surface water together and that too on watershed/sub-basin basis.

## AVAILABILITY AND USE

The current estimation of groundwater recharge as brought out in the 2008-09 report is based on GEC 1997 methodology. As per this, the total rechargeable fresh groundwater resources in the State are computed as 35.73 BCM and the net ground water availability is to the tune of 33.80 BCM. The present gross draft for all purpose is 17.00 BCM. There are 18.68 lakh abstraction structures being used for irrigation purpose withdrawing 15.91 BCM of groundwater yearly. This includes 16.76 lakh dug wells (with Mhots and pump sets) withdrawing 14.44 BCM of groundwater and 1.91 lakh bore-wells withdrawing 1.51 BCM of groundwater.

Out of 1531 watersheds 73 are over-

exploited and 3 are critical, where groundwater abstraction is more than 90 per cent of the annual recharge and either the pre or post-monsoon or both water levels are depleting. Total 119 watersheds are in semi-critical category, where stage of groundwater development is between 70 to 90 per cent and the pre and post-monsoon water levels are depleting. In all 4 watersheds are classified as poor quality and rest 1332 watersheds are classified as safe.

### THE OBJECTIVE

Maharashtra is one of the few States to enact the Maharashtra Groundwater (Regulation for Drinking Water Purposes) Act, 1993 and subsequent framing of rules in 1995, to regulate the exploitation of groundwater for the protection of Public Drinking water sources.

With a view to protecting drinking water sources on one hand and to promote optimum utilization of groundwater based irrigation potential in a sustainable manner on the other hand, the State Government had decided to rebuilt the Maharashtra Groundwater (Regulation for drinking water purposes), Act 1993 and enact the Maharashtra Groundwater (Development and Management) Bill 2009.

The bill was approved by the Cabinet in its meeting held on 15th October, 2008 and was introduced in the Maharashtra Legislative Assembly on 15th December 2009. It was under consideration of the Joint Committee of Legislative Assembly and Council. The Joint Committee after detailed deliberations of 16 meetings followed by a field visit to Arawari Jal Sansad of Rajasthan, finalized and submitted the report to the Legislative Assembly. This bill has been unanimously passed in the State Legislative Assembly and Council during March/April 2012 budget session.

The objective of the Act is, to facilitate and ensure sustainable and adequate supply of groundwater of prescribed quality, for various category of users, through supply and demand

management measures, protecting public drinking water sources and to establish the State Groundwater Authority, District Level Authority and Watershed Water Resources Committee to manage and to regulate, with community participation, the exploitation of groundwater within the State of Maharashtra.

The very purpose of this legislation is to honour a recent decision of the High Court in the Coca-Cola case i.e; "Ground water is a national wealth and it belongs to the entire society. It is nectar, sustaining life on earth. Without water the earth would be a desert... Our legal system – based on English common law – includes the public trust doctrine as part of its jurisprudence. The State is the trustee of all natural resources which are by nature meant for public use and enjoyment. Public at large is the beneficiary of the sea, shore, running waters, air, forests and ecologically fragile lands. The State as a trustee is under a legal duty to protect the natural resources. These resources meant for public use cannot be converted into private ownership.

In view of the above authoritative statement of the Hon'ble Supreme Court, it can be safely concluded that the underground water belongs to the public. The State and its instrumentalities should act as trustees

of this great wealth. The State has got a duty to protect ground water against excessive exploitation and the inaction of the State in this regard will tantamount to infringement on the right to life guaranteed under Article 21 of the Constitution of India. The Apex Court has repeatedly held that the right to clean air and unpolluted water forms part of the right to life. The local self government bodies of Panchayat Raj and the State Government are bound to protect ground water from excessive exploitation.

Now there will be one Authority in the State for the surface water and groundwater. The Maharashtra Water Resources Regulatory Authority established by the Maharashtra Water Resources Regulatory Authority Act 2005 will act as the State Groundwater Authority in the State. The 'State Groundwater Authority' and 'District Level Authority' in consultation with Watershed Water Resources Committee, at watershed level, is going to manage and regulate groundwater in over-exploited and critical areas of the State. The registration of well owners, rainwater harvesting for artificial groundwater recharge, registration of drilling rigs, declaration of water scarcity area, prohibition of construction of a well within the zone of influence,



groundwater use plan coupled with crop plan and watershed development are some of the important provisions of the Act. The groundwater will be treated as a common property resource and the community will take care of effective management (demand and supply) of groundwater resources with the support of the State Government.

**LEGAL PROVISIONS**

As per the provisions made under Section 6 and 7 in the Maharashtra Groundwater (Regulation for Drinking Water Purpose) Act, 1993, declaration of Over-exploited watershed and subsequently the groundwater developmental activities in Over-Exploited and Critical watersheds have been prohibited. It is mandatory for the District Collector to notify the list of villages which are included in Over-Exploited and Critical watersheds. Accordingly the District Collectors have notified the 1274 villages from 57 talukas of 12 districts. In these villages the construction of new wells and energization of existing wells have been banned.

However, this Act does not provide the community participation framework and the effective and integrated use of groundwater for different purposes. The scope of this legislation is only limited to safeguarding drinking water sources. Therefore, this law is silent on issues such as how much water may be withdrawn for irrigation from other than drinking source wells; or whether high water intensive crops be grown in overexploited watersheds; or how water use is to be entailed. There is no even restriction under this law on drilling deep bore wells for the purpose of irrigation.

Similarly the issues pertaining to mandatory measures of artificial groundwater recharge, drilling of deep bore-wells, groundwater quality and their management etc are also missing. The Maharashtra Water and Irrigation Commission also recommended that for community ownership of groundwater it is essential to implement the prohibitive measures after placing all the facts before the watershed committee and

seeking its approval. In order to ensure controlled use of groundwater, the MWIC recommended for pumping the groundwater according to the crop water requirements and should be made mandatory.

The Act also provides for formation of State Watershed Management Council, State Groundwater Authority, District Watershed Management Committees, Watershed Water Resources Committee and Groundwater Surveys and Development Agency. All the provisions like, Protection of Public Drinking Water Sources, Scarcity Declaration and Mitigation, Declaration of Over-Exploited area and prohibition of sinking of wells within these areas, etc, of Maharashtra Groundwater (Regulation for Drinking Water Purposes) Act 1993 have been reincorporated.

For optimum groundwater recharge the provision of preparation and implementation of Integrated Watershed Development and Management Plan has been proposed, initially in the notified areas and subsequently in non-notified areas. This shall be a part of the sub-basin/basin water plan. Registration of wells, bore-wells, tube-wells etc within notified and non-notified areas has been made mandatory. Drilling of deep wells, for usages other than drinking purposes, within the notified and non-notified areas has been prohibited.

Construction of deep wells has been banned. Extraction of groundwater from existing wells not more than 60 m deep within notified areas is prohibited. Cess imposed on groundwater withdrawal from wells not more that 60 m deep within non notified areas. Sale of groundwater within notified areas is prohibited. Provision of rain water harvesting for artificial groundwater recharge within the city areas from notified areas for roofs higher than 100 sq m made mandatory.

The other provisions of the Act are: Mandatory provision of registration of drilling rigs with Groundwater Surveys & Development Agency, prohibition of construction of new wells within the area of influence of the public drinking water source. Till the area of influence



of the public drinking water sources are notified the existing provision of 500 m distance is kept as it is. Provision for issuing guidelines for safety of wells and the Gram Panchayat or the urban local bodies shall have to monitor it.

Preparation and implementation of Integrated Watershed Development and Management Plan (IWDMP) with the assistance of Watershed Water Resources Committee within the notified area, making available the grants for IWDMP through government budgetary procedure, preparation of prospective crop plan based on groundwater use plan is mandatory in notified areas. This plan is binding on all the stakeholders and non-observance of the plan shall be deemed to be a cognizable offence under this Act.

WWRC to recommend the regulation or prohibition of sand mining within the notified areas, Delineation and declaration of basic watershed or aquifer, area of influence of public drinking water sources etc by Groundwater Surveys and Development Agency. In non-notified areas Gram panchayats or Urban Local Bodies to prepare and maintain the Water Account and Groundwater Use Plan. Under offences and penalties, for first offence fine up to Rs.10000/-. For the subsequent offence imprisonment up to six months or with a fine up to Rs.25000/- or both. ■



# Natural Irony

A serious thought to artificial rain and conversion of sea water to sweet water is required.

Effective water management is cheap and does not necessarily require huge funds. Instead of laying emphasis merely on big dams, there is a need to encourage water management at the micro level. This can be done by ensuring that rain water is not drained away and is instead used either to recharge underground water resources or can be blocked by uses of bunds and small dams says **Abhay Mokashi**.



India today is faced with scarcity of water, food, electricity, fossil fuel, healthcare, infrastructure, transport, employment and such other thing essential either for the survival of human beings and animals or for a comfortable lifestyle. Unfortunately, the focus, at the mention of the word 'scarcity', is only on the shortage of food and water, while the other issues continue to be neglected, just as the shortage of water and food was neglected for a long time, which has led to scarcity of both these essentials of life.

Scarcity of food and water in India is of two types - temporary or seasonal and perpetual. It is for the decision-makers

of the country to plan with an eye on the near and distant future, so that scarcity-like situations do not arise. The primary scarcities in the country are those of water and food; one of the factors for the food scarcity is the scarcity of water. Water and air have been grossly abused, considering that both are available naturally and free, both having being abused, affecting food production, leading to a shortage of foodgrains.

Most often the shortage of food and water is the effect of bad planning and the exploitative nature of a section of distributors and traders, not to speak of poor planning by different agencies of the government. In fact, food is in abundance in the country and India also

has the potential to drastically increase its food production, yet the food stock in the country is not available to the public at large, leading to a great disparity between the demand and supply of food items, resulting in steep increase in prices.

## ENOUGH FOOD STOCK

India's foodgrain stock with Food Corporation of India (FCI) touched 54.52 million tonnes on 1st March 2012, a rise of 18 per cent compared to 46.01 million tonnes during the same period last year, according to the Union Ministry of Agriculture. Statistics of the Ministry show that the rice stock rose to 33.17 million tonnes and wheat stock to 21.25 million tonnes. Last year, the rice stock was 28.72 million tonnes and that of wheat was 17.15 million tonnes.

India was expected to produce 250.42 million tonnes with 102.75 million tonnes of rice and 88.31 million tonnes of wheat for 2011-12. However, this does not mean that the food situation would improve in anyway. Though we have enough buffer stock of foodgrains, the prices do not come down, as according to a Kaushik Basu, Chief Economic Advisor to the Government of India, the price of wheat in India is 30 per cent more than the price in the international market.

In his paper The Economics of foodgrains Management in India, Basu is critical of India's foodgrain policy. He writes, "In the name of helping the farmer and the consumer and likely even with the earnest intention of doing so, we have ended up creating a

foodgrains policy framework that has not got high marks on either account. Many of India's poor households do not get adequate, nutritious food and many of our farmers remain impoverished, especially the small ones with no marketable surplus."

**ARTIFICIAL SHORTAGE**

The Central Government as well as the State Governments have policies and systems for the distribution of subsidised foodgrains to the poor and these schemes are meant to fight the artificial scarcity and shortages that are created by different elements. But the public distribution system (PDS) has not been able to effectively fight the artificial shortages; on the contrary interested parties have been able to create shortages with the system. This has been pointed out by Reetika Khera, assistant professor in the Department of Humanities and Social Sciences, Indian Institute of Technology, Delhi and a visiting scholar at the Centre for Development Economics, Delhi School of Economics, in here paper Trends in Diversion of PDS Grains. "Looking at the overall proportion of grain diverted, between 1999-2000 and 2007-8 (i.e. the 55th and 64th rounds of the National Sample Survey NSS), the situation is far from encouraging.

At the beginning of the period, 24 per cent of grain was diverted. The situation got worse until 2004-5 when 54 per cent of grain leaked but since then, there has been a reversal of that trend. At the end of the period, 44 per cent of PDS grain was diverted at the all India level," she says in the paper. She also points out that 67 per cent of the wheat meant for delivery to the poor does not reach them. "The discussion on methodological issues, including the fact that all leakages (storage and transport losses included) have to be attributed to corrupt practices, indicates that estimates of diversion estimated in this manner, must be treated as the upper bound on illegal diversion of PDS grain," she adds.

The buffer stock with the Government is far above the statutory stock that is to be maintained and a large part of this

buffer stock is destroyed every year due to contamination or consumption by rodents, due to inadequate and improper storage facilities. This year, over 17 tonnes of foodgrains are likely to be wasted due to poor storage facilities. The Supreme Court has suggested to the Central Government to distribute the surplus foodgrains to the poor, but that is not feasible in a market driven free economy.

Since the foodgrains to be distributed through the PDS are siphoned off, nothing would stop similar elements to siphon off the foodgrains, which the Supreme Court wants to be distributed free to the poor. The same foodgrains would then come to the open market at a price. No doubt there have to be checks and balances, but merely appointment of officials and agencies to monitor the free distribution would not help, unless there is basic honesty amongst those responsible for such distribution.

**INTERNATIONAL EXPLOITATION**

There is no doubt that proper storage facilities have to be created by the Central as well as State Governments for the storage of foodgrains procured by them, but it would be dangerous not to procure foodgrains, till such arrangement is made, as that would make it difficult for the governments to handle the situations of shortages and scarcity. If storage of foodgrains is left only to the private sector, the private sector could hold the country and the people at large to ransom. Even foreign governments could make it difficult for us to import foodgrains from their countries, by imposing sanctions or restrictions, if those governments do not agree with our policy. When Bangladesh wanted to import foodgrains from the US during the time of the famine of 1974, the US government refused permission for on the grounds that Bangladesh had trade relations with Cuba, to which the US was opposed.

India too was exploited by the US under the Public Law 480, popularly known as PL 480, during the 50s and 60s. India, facing an acute food shortage at the time, fell an easy prey to the US food aid programme under

the PL 480. Under the plan, India could buy foodgrains in the US against rupee payment and had to take care of the shipment. The money was partly given back to India by the US for growth of the public sector, while part of it was to be used to take care of the American expenditure in India and part to American companies wanting to do business here.

The wheat purchased under the programme was available at a very low cost as compared to the price in the Indian market. As a result, the Indian farmers, who were badly hit by the imports, decided to reduce acreage under farming, further affecting the food production in the country. In order to overcome the food shortage, Prime Minister Lal Bahadur Shastri suggested that Indians should fast for a day every week or at least avoid the consumption of wheat one day a week. The appeal for fast received good response, but reduction in consumption was not the right solution to the problem of foodgrain shortage. This is what Indira Gandhi realised and she promoted the Green Revolution, amazingly executed by agro-scientist Dr M S Swaminathan. The foodgrain production increased greatly in the country and India was able to fight hunger to a great extent.

India needs to increase its foodgrain production further, keeping in mind the rate of growth of the population; at the same time it is essential that enough attention is paid to proper storage and distribution of the foodgrains and that there is no hoarding and black marketeering of foodgrains. The other major scarcity in the country is that of water and this is more severe than food scarcity, in some parts. Water scarcity, which affects animals too, can be said to be human creation. Unplanned exploitation of water, especially ground water and failure to plan for the storage of water are the main causes of the acute water scarcity in the country.

Water scarcity affects one in three people on every continent of the globe. The situation is getting worse as needs for water rise along with population growth, urbanization and increase



in household and industrial uses. A large section of the Indian population is deprived of sufficient water, with people in some geographical areas suffering from perennial water shortage. The scarcity of water cannot be attributed to less rainfall, but to poor water management. According to water management experts, even an annual rainfall of 400 mm is sufficient to provide water to a given area, with proper management.

### **THE NATURAL IRONY**

According to World Business Council Sustainable Development's Water and Sustainable Development Programme water scarcity occurs even in areas where there is plenty of rainfall or freshwater. How water is conserved, used and distributed in communities, and the quality of the water available can determine if there is enough to meet the demands of households, farms, industry and the environment.

The organisation states that almost one fifth of the world's population (over 1.2 billion people) live in areas where the water is physically scarce. One quarter of the global population also live in developing countries that face water shortages due to a lack of infrastructure to fetch water from rivers and aquifers.

The underground water table in many parts of the country is depleting due to irrational drawing of water,

in the absence of controls from the government. If the ground water resources are exploited without recharging them annually, the underground water table is bound to go down, turning the area arid. The situation is graver in coastal areas, where there is a fear of sea water seeping in, with the reduction in the underground water table. This would affect vegetation, due to the salinity of the underground water. Mumbai faces such a threat due to the commercial exploitation of underground water.

Lack of sufficient water, not only dehydrates the body, but also leads to unhygienic living conditions, resulting in spread of diseases. Water scarcity means people cannot bathe or clean their clothes, utensils or homes. It also forces people to rely on unsafe sources of drinking water leading to risks of diarrheal diseases as cholera, typhoid fever and dysentery and other water-borne infections. Water scarcity can lead to diseases such as trachoma (an eye infection that can lead to blindness), plague and typhus.

People use unhygienic methods for storage of water in areas of water scarcity. Water scarcity encourages people to store water in their homes, increasing the risk of household water contamination and provides breeding grounds for mosquitoes, which are carriers of dengue fever, malaria and other diseases.

Agricultural production in the country has been greatly affected due to water scarcity. Such a situation also encourages people to irrigate their fields with water that has either been contaminated with chemicals and heavy metals, due to industrial waste. Sewage water is often used for cultivation of vegetables, as seen along the railway tracks of Mumbai. Use of such water leads to diseases and the use of chemicals leads to deposition of heavy metals in the agriculture produce which could be carcinogenic.

Effective water management is cheap and does not necessarily require huge funds. Instead of laying emphasis merely on big dams, there is a need to encourage water management at the micro level. This can be done by ensuring that rain water is not drained away and is instead used either to recharge underground water resources or can be blocked by uses of bunds and small dams. People need to be encouraged to conserve water, reducing wastage.

There is a need to give serious thought to artificial rain and conversion of sea water to sweet water on a large scale, given that over 90 per cent of the water available on the earth is saline.

Our failure to handle the food and water situation can be attributed to the lack of vision of the decisions makers at all levels. Also, the lopsided planning, with emphasis on the urban development, at the cost of rural areas has also resulted in such shortages. The pipelines carrying water to Mumbai, for example, go through villages in Thane district, which do not suffer from water shortage. The situation has become grave and we are yet to wake up to handle it properly.

India suffers from other scarcities like electricity, fuel, employment and the like. It is time that these scarcities are also looked into instead of merely talking of food and water scarcity. Unless we start planning to handle these scarcities immediately, the situation would go out of hand and could lead to increase in violence in the society.

Sufficient availability of electricity means increased production, increased jobs and an increase in the GDP. ■

# A Raj Bhavan File Unravels Events of the Historic Day

Raj Bhavan is a repository of documents of historic importance

The State of Maharashtra came into existence at the stroke of midnight connecting 30th April and 1st May 1960. The historic ceremony of inauguration of Maharashtra took place at Raj Bhavan which had the responsibility to host the State formation ceremony, the programme had the touch of discipline, decorum, meticulous planning and of course protocol. There was an air of excitement all over says **Umesh Kashikar**, Public Relations Officer to Governor.

**R**aj Bhavan, formerly known as Government House was the seat of power before Independence. After independence, it became the office and residence of Governor – the Constitutional Head of State, - first of the Bombay State and post - 1960, that of the Governor of Maharashtra. Not surprisingly, Raj Bhavan is a repository of documents of historic importance.

Thanks to the initiative of Governor K Sankaranarayanan, an Archives Cell has been created in Raj Bhavan to preserve all important documents. Under the Archives project, documents of historic importance are being retrieved, reorganized, classified and digitized under the guidance of a Committee of experts headed by renowned historian Sadashiv Gorakshkar. The Archives Cell likely to be commissioned by the end of this year will remain accessible to researchers, students and historians after prior permission. In the first phase, documents from the year 1935 onwards are being classified after which the Committee will dig deeper into the history and restore documents prior to 1935. It is hoped that access to these documents will throw new light on many events of historic significance.

The file on the subject

**‘Inauguration of the State of Maharashtra’** numbered A-202 (A) classified in the Raj Bhavan archives, for instance, reveals a range of less known events that preceded, accompanied or followed the inauguration of Maharashtra at the stroke of midnight on 30th April 1960. The article takes the reader through the pages of this file and narrates the incidents associated with the formation of Samyukta (unified) Maharashtra from the very place where it all happened.

The State of Maharashtra came into existence on 1st May 1960 after a sustained struggle by the Samyukta Maharashtra Samiti led by a battery of eminent leaders. The people of Maharashtra can never forget the supreme sacrifice of the 105 martyrs who laid down their lives for the cause of creation of Samyukta Maharashtra.

On 21st April 1960, the Lok Sabha passed the bill proposing division of the bigger bilingual State of Bombay. It would be interesting to note how Maharashtra was defined in the Bombay Reorganization Act published on 25th April 1960.

## **‘MAHARASHTRA’ DEFINED**

Before defining Maharashtra, Part II of the Reorganization of Bombay State has first defined the contours of Gujarat in

the following words:

3. (1) As from the appointed day, that is 1 May 1960, there shall be formed a new State to be known as the State of Gujarat comprising the following territories of the State of Bombay, namely:-

(a) Benaskantha, Mehsana, Sabarkantha, Ahmedabad, Kaira, Panch-mahals, Baroda, Broach, Surat, Dangs, Amreli, Surendranagar, Rajkot, Jamnagar, Junagadh, Bhavnagar and Kutch district; and

(b) the villages in Umbergaon taluka of Thana district, the villages in Nawapur and Nandurbar talukas of West Khandesh district and the villages in Akkalkuwa and Taloda talukas of West Khandesh district, respectively specified in Parts I, II and III of the First Schedule.

After defining what the new Gujarat State would constitute, the Act goes on to define Maharashtra in just two lines...

“and thereupon, the (above) said territories shall cease to form part of the State of Bombay, **and the residuary State of Bombay shall be known as the State of Maharashtra.**”

The State of Maharashtra came into existence at the stroke of midnight connecting 30th April and 1st May 1960 on Vaisakha 11, Saka 1882. The historic ceremony of inauguration of Maharashtra took place at Raj Bhavan in

presence of Pt Jawaharlal Nehru, Prime Minister of India, Sri Prakasa, Governor of Maharashtra and Yashwantrao Chavan, the Chief Minister.

Reply from the Government came rather late. In a letter dated 27th April 1960, the Special Secretary of the Political and Services Department

the request to convey whether the proposals meet with the approval of the Governor. The Governor's approval to the proposals was conveyed to the Government on the same date 27th April 1960.



*Pt Nehru presses the button to unveil the map of Maharashtra at Raj Bhavan on 1 May 1960*

Since Raj Bhavan had the responsibility to host the State Formation ceremony, the programme had the touch of discipline, decorum, meticulous planning and of course protocol.

There was an air of excitement all over about the formation of Maharashtra. Newspapers were giving updates of various events relating to the formation of the new State. In anticipation of organization of various official functions connected to the main event, the Governor's office wrote to the State Government in the first week of April seeking to know what all programmes the Government was planning to celebrate the formation of Maharashtra.

Secretary to the Governor K K Moghe, IAS in a letter of 4th April 1960 addressed to State Chief Secretary N T Mone, ICS wrote:

"It is understood that the Government is planning to have celebrations extending over 3 to 4 days in connection with the inauguration of new State of Maharashtra on 1st of May 1960. In order to facilitate making Governor's programmes for the last week of April, I shall be glad if details regarding these celebrations are sent to me for the information of the Governor as soon after they are finalized as possible."

of the Government D R Pradhan, ICS informed the Governor's office that the following programmes have been organized by the Government as part of the inauguration of the State of Maharashtra:

- i) Inauguration of the New State by the Prime Minister at Raj Bhavan on the 30th April 1960 at midnight.
- ii) Police Parade at the Brabourne Stadium on the 1st May 1960 at 8.00 a.m.
- iii) Swearing-in Ceremony of the Ministry at the Sachivalaya, at 12.34 pm on the 1st May 1960.

#### **SOFT DRINKS, CASHEW NUTS, ETC**

One paragraph from Special Secretary D R Pradhan's letter to the Governor's Secretary is worth reproducing here:

"It is proposed to invite a large and distinguished gathering to witness the ceremonies both at Raj Bhavan and the Sachivalaya. After the inauguration ceremony at Raj Bhavan is over, it is proposed that the invitees should be served with soft drinks, cashew nuts etc. In the past such occasions, arrangements for serving the soft drinks etc. were made by Raj Bhavan. I am therefore to request that on this occasion also you may kindly make the necessary arrangements." The letter ends with

#### **RESIGNATION OF Y. B. CHAVAN**

One major political development preceded the formation of Maharashtra. By a letter of 26th April addressed to Governor Sri Prakasa, Chief Minister Y B Chavan tendered the resignation of his council of ministers. Chavan wrote:

"Owing to the coming into force of the Bombay Reorganization Act, 1960, on the 1st of May 1960, and the constitution of the States of Gujarat and Maharashtra with effect from that date, I herewith submit, for your consideration and acceptance the resignation of my colleagues and myself, who constitute the present Council of Ministers of your State."

Chavan concludes his letter to Governor with the words: "May I, on this occasion, voice the deep and heart-felt gratitude of my colleagues and myself for the inspiration and guidance you provided us in the task of administering the State."

The Governor while acknowledging the letter from Mr Chavan informed him that he would be accepting the resignation from the midnight between 30 April and 1 May, 1960. The Governor further asked Mr Chavan to carry on the work of the Government of the new State of Maharashtra that will then come into existence, till such time that a Ministry is formed for the purpose.

#### **HERALDING THE ARRIVAL OF PRIME MINISTER**

Meanwhile, Under Secretary in the Political and Services Department of the Government, D S Telang issued a general circular carrying the 'Immediate/ Confidential' tag giving minute by minute details of the Prime Minister's visit to 'Bombay' on the 30th April and 1st May 1960. Some of the important entries in the Prime Minister's itinerary were as follows:

**SATURDAY, 30TH APRIL 1960**

- 12.50 - Arrive Santacruz by IAF Viscount
- 13.00 - Leave for Raj Bhavan
- 13.45 to 17.30 - Reserved for Lunch, meeting with Visitors, Tea, etc
- 18.00 to 18.45 - Address a Mass Rally at Shivaji Park
- 19.15 to 20.15 - Address a Mass Rally at Chowpatty
- 20.25 - Arrival at Raj Bhavan
- 23.30 - Inauguration of Maharashtra State

**SUNDAY, MAY 1ST 1960**

- 00.10 - Leave for Santacruz
- 01.00 - Departure for London

**CHIEF SECRETARY APPEALS STAFF TO REPORT TO WORK ON SUNDAY**

When it came to the notice of the Government that 1st May 1960 was Sunday, a public holiday and that all offices would remain close, an appeal was issued by the State Chief Secretary on 23 April asking the Government staff to report to work on Sunday. The Circular reads:

“The State of Maharashtra will be inaugurated on the 1st of May 1960, which being a Sunday is a public holiday. The Government offices would, therefore, be closed on that day. The Government, however, feels that it would be inappropriate and incongruous also that on the day of the installation of the new State, no official business should be transacted. It, therefore, desires to appeal to all Government employees serving under the Maharashtra State to attend their respective offices as if it were a working day. It is not necessary that the normal working hours should be observed. It would be desirable to observe, however, the opening time of the offices. The undersigned is directed to issue an appeal to all offices accordingly.”

**FIRING A 17 GUN SALUTE**

A communiqué addressed by the State’s Special Secretary D R Pradhan to Brigadier Kamta Prasad, Commander, Bombay Sub Area, the copy of which was forwarded to the Governor’s Secretary makes for an interesting reading. The communiqué reads thus:

“The Government of India in the

Ministry of Home Affairs have agreed to the firing of a Gun Salute of 17 guns on the morning of 1st May 1960 in celebration of the inauguration of the State of Maharashtra. I am therefore to request you kindly to take necessary steps immediately to arrange to fire a 17 Gun Salute at 0800 hours on Sunday, the 1st May 1960 from a suitable spot. Please let me know the arrangements made by you in this respect to enable us to give suitable publicity in the matter.”

**UNRESTRICTED FLYING OF NATIONAL FLAG FOR 5 DAYS**

On 26th April 1960, the Political and Services Department of Sachivalaya dispatched a Telegram to All Divisional Commissioners and District Collectors of Maharashtra which stated:

“Government of India have agreed to unrestricted flying of National Flag from April 27 to May 1 in Maharashtra State and Hoisting of National Flag if accompanied by ceremonial parade. Please arrange communicate these orders to all concerned and give wide publicity.”

**MAHARASHTRA STATE CELEBRATIONS COMMITTEE**

A high level Committee was constituted to organize the Maharashtra State Inauguration Celebrations in a befitting manner. Shri Y B Chavan was the President of the Committee while Shri V N Desai, Mayor of Bombay was its Chairman.

Members of the Committee were Sarvashri S L Silam, Y A Fazalbhoy, S M Joshi, Bhanushankar S Yagnik, His Eminence Valerian Cardinal Gracias, H P Mody, J C Jain, Ramnath A Podar, B D Garware, Moinuddin Harris, A K Hafizka, P K Sawant, Homi J H Taleyarkhan, Dr T R Naravane, Pratapsinh Mathuradas, Smt Sumati S Morarjee, C M Campbell, P T Borale, S G Patkar, Smt Meenakshi Bakhle, Smt Sophia Wadia, Smt H C Captain, Shri H

Cynowicz, R D Bhandare, H R Mahajani, G G Gawde, T V Ramanujam and Prof Ram Panjwani Director of State Government’s Publicity Department Binod Rao was the Convenor of the Committee.

**LET CELEBRATIONS BEGIN!**

The Director of Publicity had published a booklet giving details of the 5-day long cultural and official programmes organized between 27 April and 1 May 1960.

According to the booklet, the Celebrations commenced at 7.30 am on the morning of 27 April at Home Guards Ground at Cross Maidan (Dhobi Talao) with the chanting of Community prayers by representatives of different religions.

The detailed programme shows Vedic hymns were chanted by Shri Vasudev Shastri Konkar and party, Shri Yadnygam Dixit and party and Shri Veni Madhav Shastri and Party.

Ovis from Jnaneshwari and Abhangs from Saint Tukaram’s Gatha were sung by Suresh Haldankar. Hafiz Ahmed Khan and Madhubala Javeri (Chawla) sung Mahatma Gandhi’s favourite bhajan ‘Vaishnava Jana To’.



Invitation Card of Community Prayers Meeting

Likewise representatives of Jains, Buddhists, Islam, Zoroastrians, Jew, Sikh and Christians - both Roman Catholic and Protestant - read out prayers and hymns from their Holy books.

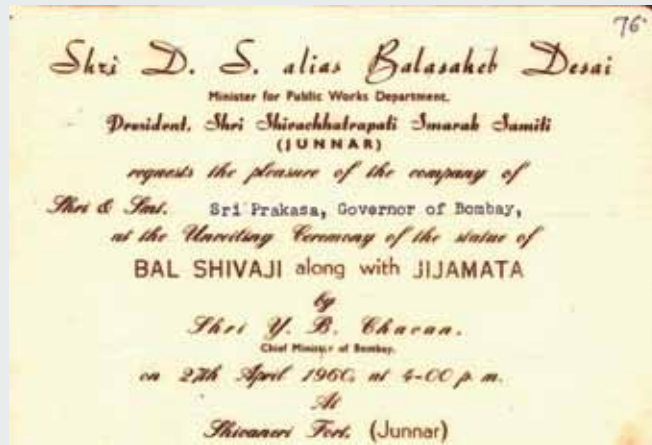
Chief Minister Yashwantrao Chavan felicitated the heads of religions by offering them Shawl.

The second important programme

on the 27th April was Shiv Jayanti Celebrations held at 4 pm at Shivneri Fort at Junnar, the birthplace of Chhatrapati Shivaji Maharaj. A beautiful statue of Balraje Shivaji and Jeejamata was unveiled by Chief Minister Yashwantrao Chavan at a programme organized by the Shri Shivchhatrapati Smarak Samiti

programme were also placed in the newspapers to elicit good response from the people.

Cultural programmes depicting the life and traditions of Maharashtra and other parts of the country were organized at Oval Maidan and Nare Park at 7 pm and 8.20 pm respectively



Invitation Card of the Unveiling of the Statue of Balraje Shivaji and Jijamata at Shivneri

headed by Minister for Public Works D S Alias Balasaheb Desai.

According to newspaper reports of those days, several hundred people walked up to the steep hill to reach Shivneri to attend the unveiling of the statue. The last of the programme on 27th April was 'Cultural Programme and Fireworks' held at Shivaji Park at 8.30 pm. According to the booklet, the line up of the programme was as follows:

- Shehnai by Babanrao Gaikwad
- Maharashtra Geet by Yashwant Deo and Party
- Kathak by Gopi Krishna
- Folk Dance by Madras Sisters (Sasi, Kala and Mala)
- Fishermen's Folk Dance by Dadarkar and Party
- 'Maharashtra Samaj Darshan' a Ballet by Swami Samarth Sangeet Vidyalaya
- Maharashtra Geet (Hindi) by Mohammed Rafi
- Lavni by Usha Kiran
- Garba by Yogendra Desai and party
- Bharat Natyam by Madras Sisters
- 'Maharashtra Darshan' by Kala Tarang.

Advertisements carrying the detailed

on 28th April. One of the highlights of the programme at Oval Maidan was Classical Dance by Wahida Rehman. Well known vocalist R N Paradkar rendered his Bhajan at the programme held at Nare Park. Similar programmes were held on 29th April at Chowpatty and Chembur Township colony at 7 pm and 8.30 pm

respectively. Details of the programme reveal that well known playback singer Mukesh had sung at the programme held at Chembur.

Since the inauguration of Maharashtra was scheduled at the stroke of midnight connecting 30 April and 1 May, all programmes connected to the formation of Maharashtra were held on 30th April. Details of these programmes were as follows:

**SATURDAY APRIL 30**

- Mass Rally Shivaji Park, 6.00 p.m.
- Abhang 'Soniya Divas' of Dnyaneshwar rendered by Lata Mangeshkar and family; presented by Vasant Desai
- **Maharashtra Geet** by Lata Mangeshkar and family
- **Introductory Speech by Shri Y B Chavan, Chief Minister of Bombay**
- **Address by Pt Jawaharlal Nehru, Prime Minister of India**
- National Anthem

\*According to the description provided by Indian News Review no 604 published after the event and attached to the Raj Bhavan file, a mammoth procession started from the working class area of Bombay. Tableaus depicted incidents from the

life of Shivaji Maharaj and the history of Maharashtra. The procession waded its way to Shivaji Park. Prime Minister Jawaharlal Nehru acknowledged the greetings of lakhs of people assembled on this occasion. Mr Nehru appealed to the people to serve Samyukta Bharat through Samyukta Maharashtra.

**Mass Rally Chowpatty, 7.15 p.m.**

- Ovi 'Majha Marathachi Bolu Kavatike' of Dnyaneshwar presented by Vasant Desai
- Maharashtra Geet presented by Vasant Desai
- Introductory Speech by Shri Y B Chavan
- Address by Pt Jawaharlal Nehru
- National Anthem

**Cultural Programme and Fireworks**

Venue: St Xavier's High School Compound, Vile Parle, Time 8.30 p.m.

- Shehnai by B B Jadhav
- Maharashtra Geet by Yashwant Deo and Party
- Kathak by Damayanti Joshi
- Song by Jyotsna Bhole
- Fishermen's Folk Dance by Thakur and Party
- Garba by Yogendra Desai and Party
- Dance by Sudha Doraiswamy
- Song by R N Paradkar
- 'Maharashtra Darshan' by Kala Tarang
- Kathak by Damayanti Joshi

**Inauguration of Maharashtra State**

Venue: Raj Bhavan, Time : 11.30 p.m.

- Shehnai by Ramlal
- 11.30 Introduction of special guests to Prime Minister
- 11.40 Vedic Prayers by Vasudevshastri Konkhar and others
- 11.45 Ovi 'Pasayadan' of Dnyaneshwar rendered by Lata Mangeshkar with Shehnai accompaniment by Ramlal; presented by Vasant Desai
- 11.50 Speech by Shri Sri Prakasa, Governor of Bombay
- 12.00 Switching on the button of Neon Map of Maharashtra State by Pt Jawaharlal Nehru  
Address by Pt Jawaharlal Nehru
- 12.07 Thanks by Shri Y B Chavan
- 12.10 National Anthem

Apart from the booklet providing detailed programmes relating to State inauguration celebrations, the Director of Publicity had published another booklet that contains Greetings and

**SUNDAY MAY 1**

**Swearing-in of State Cabinet  
Sachivalaya, 11.45 a.m.**

- 11.45 Flag Hoisting by the Governor
- 11.55 Vedic Prayers
- 12.34 Swearing-in of Chief Minister and his Cabinet
- Speech by Chief Minister
- National Anthem

**Tattoo By Police**

**Vallabhbhai Patel Stadium, 9.30 p.m.**

- Reveille
- Massed Band
- Mallkhamb
- Anti-dacoity operations
- Tattoo of Sinhgad
- Retreat

Good Will messages to Maharashtra State received from various leaders. These include congratulatory messages from Dr Rajendra Prasad, President of India, Dr S Radhakrishnan, Vice President of India, Maharshi Dhondo Keshav Karve, Founder, Indian Women's University, Pt Govind Ballabh Pant, Union Minister for Home Affairs, Shri Morarji Desai, Union Minister for Finance, N. Sanjiva Reddy, President, Indian National Congress, U.N. Dhebar, Former President, Indian National Congress and N H C Coyajee, Former Judge, Bombay High Court.

**AND THE MOMENT COMES...**

The ceremony at Raj Bhavan was attended by a host of dignitaries including the leaders who played significant role in the struggle for the creation of Samyukta Maharashtra, Judges of the Bombay High Court, Consuls of various countries, eminent doctors, citizens, representatives of Industrial Workers' unions, artists, ex-servicemen, etc.

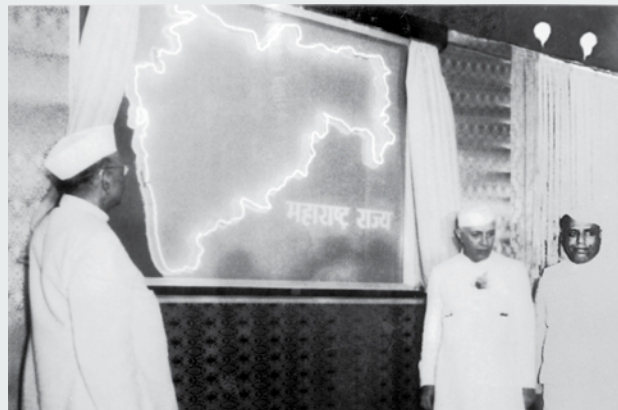
Sadashiv Gorakshkar, historian and author of 'The History of Raj Bhavans in Maharashtra' has recorded that the ceremony was attended among others by Governor of Kerala B. Ramakrishna Rao, Punjab Governor N V alias Kakasaheb Gadgil, Madhya Pradesh Governor Haribhau Pataskar, Defence Minister V K Krishna Menon and Indira Gandhi.

There are few people who were witness to the State Inauguration ceremony at Raj Bhavan.

Janardan Sankhe, 78, who retired

as Comptroller of the Governor's Households and who had witnessed the ceremony, recalls that nearly 500 special invitees attended the ceremony at Raj Bhavan. According to him, the stage was erected in the open space between the Banquet Hall and Darbar Hall of Raj Bhavan facing the Governor's secretariat. Arrangement to serve tea and snacks was made on the lawn outside the Darbar Hall. According to him, as soon as Pt Nehru pressed the button to unveil the Neon map of Maharashtra and to mark the birth of the new State, there was a thunderous applause from the invitees. Newspapers of the following day reported that bells in temples and churches rang at midnight. Mills, factories, Railway engines and Steamers blew horns and sirens to celebrate the moment.

According to the Indian News Review no 604, for five days, buildings and offices were illuminated all over



*Sri Prakasa, Pt Nehru and Y B Chavan after unveiling the Map of Maharashtra*

Mumbai to symbolize the festive spirit. Thousands of people were roaming in the streets of Fort the whole night to see the illuminated buildings. People were delighted that both Western and Central Railways had arranged for extra trains to facilitate the movement of people. Apart from buildings and offices, hundreds of ships and boats lined up across the sea shore at Appollo Bunder and Dadar Chowpatty were illuminated.

**MAHARASHTRA RAJYA  
MAHOTSAV MUDRA**

The Raj Bhavan file contains an interesting publicity Circular dated 16

May issued by the Director of Publicity, Government of Maharashtra. The Circular reads:

"The Maharashtra Rajya Mahotsava Mudra, issued to commemorate the birth of the State of Maharashtra, will now be sold in gold and silver to the members of the public against orders. Mudras in copper are expected to be ready soon.

The Mudra (medallion), which contains a drawing of the typical laman diva – oil lamp – which is perpetually kept burning in practically every home in Maharashtra and also a part of the inscription from the Gold Mohor issued by Chhatrapati Shivaji Maharaj at the time of his coronation, is designed by Prof V N Adarkar, Principal, Sir J J Institute of Applied Art.

Initially, only a few mudras were struck in gold, which were presented to Shri Jawaharlal Nehru, Prime Minister of India, Shrimati Indira Gandhi, Shri H

V Pataskar, Governor of Madhya Pradesh, Shri N V Gadgil, Governor of Punjab, Shri B. Ramkrishna Rao, Governor of Kerala, Shri Sri Prakasa, Governor of Maharashtra, Shri Y B Chavan, Chief Minister of Maharashtra and Shri V K Krishna Menon, Union Minister for Defence.

A gold mudra is estimated to cost about Rs.625, exclusive of packing and postage charges, and a silver mudra about Rs.15, also exclusive of packing and postage charges. The silver mudra will weigh about four tolas and the gold mudra about 4 1/2 tolas, the diameter of the mudra being 1 7/8".

Those desirous of buying the mudras, either in gold or in silver, should place their orders with the Director of Publicity, Government of Maharashtra, Sachivalaya, Bombay 32, with an advance of Rs15 for a silver mudra and Rs.625 for a gold mudra. The orders are to be booked before May 31, 1960."

It is not known how many people





placed their orders with the Director to buy the gold medallions. But those who did surely struck gold, considering the current price of gold !

#### UNREST IN VIDARBHA

It is well known that a section of leaders from Vidarbha was strongly opposed to the creation of Samyukta Maharashtra. Expectedly, there were minor scuffles, violent protests and demonstrations in some parts of Nagpur on the day of inauguration of Maharashtra State. Police had to resort to firing on 2-3 occasions and impose curfew in a few localities of the city.

In a letter to Chief Minister Yashwantrao Chavan dated 2 May, Governor Sripraka has congratulated the Chief Minister for “the happy and

successful inauguration of the new State of Maharashtra.” In the concluding part of his letter, the Governor refers to the disturbances in Vidarbha in the following words:

“My great sorrow, however, is that many people in Vidarbha are creating unnecessary trouble, and I may only hope everyone there too will settle down to peaceful pursuits, and make the State a great success.”

On the same day, the Governor dispatched a telegram to A. U. Shaikh, Commissioner, Nagpur which reads:

“Very deeply distressed at continued violent disturbances in Nagpur. Hope situation under control. Please convey my sympathies to Collector, DSP and other Officers and best wishes for speedy successful restoration of peace,

good will. Kind regards. Sri Prakasa”

#### SRI PRAKASA'S MOVING LETTER

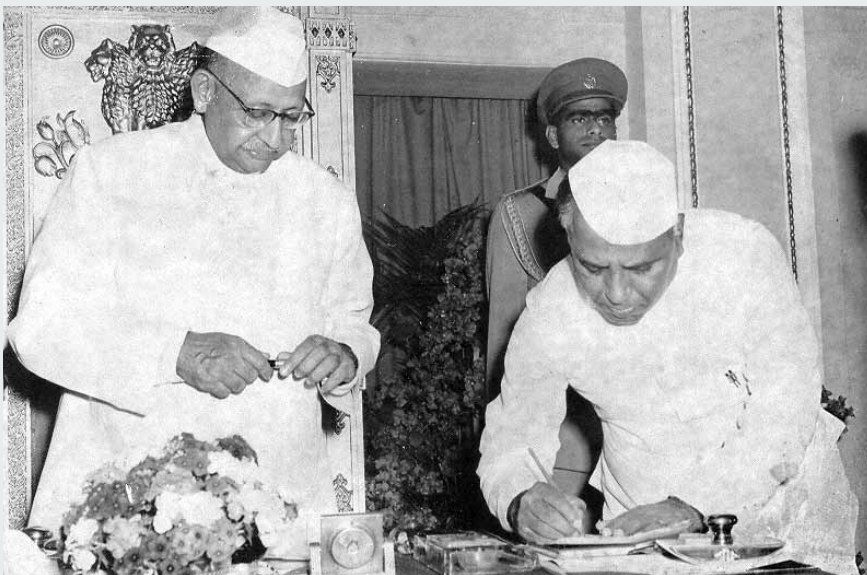
Even though formation of Maharashtra was a moment of jubilation for the majority of the people of Maharashtra, it had a tinge of sorrow. Gujarat which had been part of the old Bombay State for decades had become a separate State. Governor Sri Prakasa's letter to his 'old friend' Dr Jivaraj Mehta, the first Chief Minister of Gujarat dated 6 May is very touching and reflects the tenderness of his feeling on the separation of Gujarat.

Writes Sri Prakasa : “It had been in my mind to write to you a proper letter ever since I bid sad good-bye to you that evening at the railway station here in Bombay. I have had hectic days, and my heart has been too sad for words. I therefore did not feel strong enough to sit down and write to you. I feel, however, that I must not delay any longer, and so this goes.”

#### A FEW PARAGRAPHS LATER, SRI PRAKASA WRITES:

“I wanted very much that the name of Bombay should be kept on for Vidarbha is particularly angry that it is not included in the new name of Maharashtra. Bombay could mean both, but Maharashtra decidedly envisages only the old conception, and does not necessarily include all Marathi-speaking people. I also see the danger lurking ahead of the stratification of linguism. However, we have to take things as they are, and make the best of them.

I write all this to show to you how really sad I am at heart. The many functions I have still to go to seem to be rather desolate because I miss familiar faces. I am indeed an unfortunate man inasmuch as I have had to be associated as much with the disintegration first of the county itself, and then of the States of Madras and Bombay. I hope I shall have your sympathy and not your anger. My admiration for you is very very great indeed for I know that though you were to be the



*Y B Chavan signs the papers after taking oath from Governor Sri Prakasa*

Chief Minister of Gujarat, you preferred to be the Finance Minister of a composite State rather than the head of a State of your own.

When the talk of the subject arose during the Congress session at Nagpur in January 1959, I said to Jawaharlal that you were very much against any talk of bifurcation and that your wishes deserve to be respected. He also was worried but he too had to yield. I have personally no doubt that you are going to make a great success of the Gujarat State.”

Governor Sri Prakasa wrote similar

letters to Ministers in the newly formed Government of Gujarat with whom he apparently had personal bonding. The letters to Maneklal Shah, Minister for Rural Welfare & Health, Ratubhai Adani, Minister for Cooperation, Rasiklal Parikh, Home Minister and Hitendra K Desai, Minister for Law and Judiciary convey the Governor’s emotions over the parting of the two States.

**SWEARING-IN THE MAIDEN CABINET OF MAHARASHTRA**

Barely 12 hours after the formation of

Maharashtra State, the new Cabinet led by Chief Minister Yashwantrao Chavan was sworn in by Governor Sri Prakasa at the Quadrangle of the Sachivalaya Annexe.

The oath taking ceremony started with National Anthem, followed by Prayers. At 12.34 p.m. Chief Secretary presented the Chief Minister designate Y B Chavan who advanced in front of the Governor. The Chief Secretary then handed over to Shri Chavan a copy of the Bhagwad Gita and a copy of oath separately. After the reading of oath by Shri Chavan, the Governor administered the oath to Ministers and Deputy Ministers. In a departure from normal practice wherein no speeches are delivered at the Swearing in ceremonies, Chief Minister Yashwantrao Chavan had made a speech immediately after the oath taking and just before the National Anthem was played.

By a notification issued by State Chief Secretary N T Mone on 1 May 1960, the list of Ministers and their portfolios in the first cabinet was published. The notification reads as follows: The notification stated that Shri Yashwantrao Balwantrao Chavan would be in charge of General Administration, Home, Planning and Industries.

**\*It can be seen that the honour of becoming the first woman minister of Maharashtra went to Smt Nirmala Raje Bhosale, the Deputy Minister for Education.**

**PAT FOR DIRECTOR OF PUBLICITY FROM THE GOVERNOR**

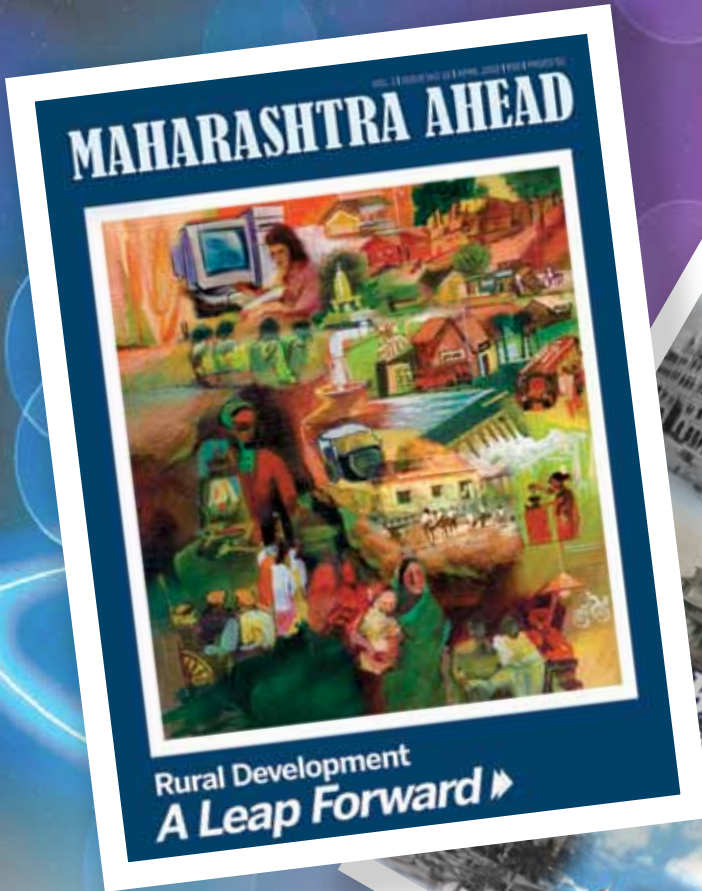
Governor Sri Prakasa’s letter to the then Director of Publicity Binod Rao complimenting the latter for his role in the organization of various progr-ammes relating to Maharashtra State Inauguration celebrations reveal the Governor’s humane qualities of head and heart. The reply from Binod Rao to the Governor shows his feelings of gratefulness. The notings on the Raj Bhavan file shows that the Governor sent a similar letter of appreciation to Dr V N Adarkar, the Director of Sir J J Institute of Applied Art. ■

Sr Nos.	Name of the Ministers	Department
<b>Ministers</b>		
1	Chief Minister Shri Yashwantrao Chavan	General Administration, Home, Planning and Industries
2	Shri M. S. Kannamwar	Minister for Buildings and Communications
3	Shri Shantilal H. Shah	Minister for Law, Judiciary and Labour
4	Shri Vasant P. Naik	Minister for Revenue
5	Shri B. G. Gadhe	Minister for Rural Development and Forests
6	Shri S. K. Wankhede	Minister for Finance
7	Shri D. S. Desai	Minister for Education
8	Shri S. G. Kazi	Minister for Civil Supplies, Housing, Printing Presses, Waqfs and Fisheries
9	Shri T. S. Bharde	Minister for Co-operation
10	Shri P. K. Savant	Minister for Agriculture
11	Dr. T. R. Naravane	Minister for Prohibition and Social Welfare
12	Shri S. B. Chavan	Minister for Irrigation and Power
13	Shri H. J. H. Taleyarkhan	Minister for Public Health, Small Savings and Tourism
14	Shri D. Z. Palaspagar	Minister for Urban Development
<b>Deputy Ministers</b>		
1	Dr. Bhaskar R. Patel	Deputy Minister for Prohibition
2	Smt. Nirmala Raje Bhosale*	Deputy Minister for Education
3	Shri Devisingh V. Chauhan	Deputy Minister for Buildings and Communications
4	Shri S. R. Patil	Deputy Minister for Sarvodaya, Forest Labourers Societies and Khar Land Development
5	Shri G. D. Patil	Deputy Minister for Planning and Industries
6	Dr. N. N. Kailas	Deputy Minister for Co-operation
7	Shri M. D. Choudhari	Deputy Minister for Revenue
8	Shri Y. J. Mohite	Deputy Minister for Home
9	Shri Madangopal J. Agrawal	Deputy Minister for Public Health
10	Shri N. U. Deshmukh	Deputy Minister for Irrigation and Power
11	Shri Narendra M. Tidke	Deputy Minister for Rural Development
12	Shri Madhusudan A. Vairale	Deputy Minister for Agriculture

# Water Scarcity Facts By WHO

- Water scarcity occurs even in areas where there is plenty of rainfall or freshwater. How water is conserved, used and distributed in communities, and the quality of the water available can determine if there is enough to meet the demands of households, farms, industry and the environment.
- Water scarcity affects one in three people on every continent of the globe. The situation is getting worse as needs for water rise along with population growth, urbanization and increases in household and industrial uses.
- Almost one fifth of the world's population (about 1.2 billion people) live in areas where the water is physically scarce. One quarter of the global population also live in developing countries that face water shortages due to a lack of infrastructure to fetch water from rivers and aquifers.
- Water scarcity forces people to rely on unsafe sources of drinking water. It also means they cannot bathe or clean their clothes or homes properly.
- Millennium Development Goal number 7, target 10 aims to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation. Water scarcity could threaten progress to reach this target.
- Water scarcity encourages people to store water in their homes. This can increase the risk of household water contamination and provide breeding grounds for mosquitoes - which are carriers of dengue fever, malaria and other diseases.
- Poor water quality can increase the risk of such diarrhoeal diseases as cholera, typhoid fever and dysentery, and other water-borne infections. Water scarcity can lead to diseases such as trachoma (an eye infection that can lead to blindness), plague and typhus.
- Water scarcity underscores the need for better water management. Good water management also reduces breeding sites for such insects as mosquitoes that can transmit diseases and prevents the spread of water-borne infections such as schistosomiasis, a severe illness.
- A lack of water has driven up the use of wastewater for agricultural production in poor urban and rural communities. More than 10% of people worldwide consume foods irrigated by wastewater that can contain chemicals or disease-causing organisms.
- Water is an essential resource to sustain life. As governments and community organizations make it a priority to deliver adequate supplies of quality water to people, individuals can help by learning how to conserve and protect the resource in their daily lives.





O.I.G.S. Presented by The Government of India

# MAHARASHTRA AHEAD

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