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# Assessment of Works under Jalyukta Shivar Campaign – A Case Study of Pusad Region

Prof. R. T. Pachkor [1], Dr. D. K. Parbat[2]
[1]Department of Civil Engineering, Babasaheb Naik College of Engineering, Pusad, Maharashtra, India
[2]Department of Civil Engineering, Government Polytechnic, Nagpur, Maharashtra, India

***Abstract***: ***JYS is the Government of Maharashtra's program to provide water for all and make villages scarcity-free. Maharashtra has been witnessing increasing agricultural and drinking water stress in recent years. Maharashtra government has launched a new program named 'Jalyukta Shivar Abhiyan (Campaign)' in a bid to make Maharashtra a drought-free state by 2019. The JYS proposes a framework for village level water balance calculation which includes estimation of crop-water requirements, drinking water stress etc. JYS promotes an integration and coordination between various government agencies and program during planning and implementation levels and stresses on people's participation as one of the key objectives. The program aims to make 5000 villages free of water scarcity every year. The scheme aimed at solving water woes of draught-prone regions is already a hit with farmers as many villages are inching towards becoming water-sufficient. This transformation has been possible with concentrated efforts towards developing water sheds, improving ground water levels, de-silting and decentralizing water sources and increasing the area under irrigation. The project involves deepening and widening of streams, construction of cement and earthen stop dams, work on lakes and digging of farm ponds .After completion of irrigation projects in next two years, 50% area will be under irrigation. For the rest 50%, rainwater harvesting and decentralizing water sources are the only options to solve the issue of water scarcity. The JYS is a successor of many earlier watershed programs which have already been implemented, and some of which are ongoing, such as the IWMP. With unique initiative like Jalyukta Shivar, water scarcity will surely be a thing of the past!***
***Keywords***: ***Jalyukta Shivar, water stress, Water Scarcity, rainwater harvesting.***

## I. INTRODUCTION

One of the most important natural resources which are extremely crucial for our daily life is water. There are the two types of sources of this essential resource viz. surface water and ground water. Maharashtra, the second largest state in India, both in area as well as in population, has very limited assured irrigation Considering drought-like situation occurring frequently in the state, Jalyukta Shivar Campaign is being taken up under 'water for all - drought-free Maharashtra 2019'.capacity and around 84% of its agricultural land is rain fed. Around 159 lakhs hectares of area is drought-prone. Water Conservation Program is one of the very important programs, the Govt. of Maharashtra has decided to implement with a view to improve the lifestyle of the people in rural areas and thereby achieve the rural development. In the state of Maharashtra, inconsistency of rains in the very times of crop growth and discontinuity of rains create drought-like situation and agriculture field is heavily impacted. Almost 82% area in the state is dry land while 52% area is drought-prone. Government is authorizing implementation of 'Jalyukta Shivar' campaign in all districts of the state, in order to permanently overcome drought situation by convergence of funds approved for schemes under various departments and through MREGS/MLA/MP Fund/District-level Fund/Non-governmental Organizations/CSR and public participation. The scheme aimed at solving water woes of draught-prone regions is already a hit with farmers as many villages are inching towards becoming water-sufficient.

## II. AIMS AND OBJECTIVES OF JYS CAMPAIGN

The various objectives of this campaign are

*A.* Harvesting maximum rainwater in the surrounding of village itself.
*B.* Increasing level of groundwater.
*C.* Increasing area under irrigation in the state - Increasing assured water for farming and efficiency of water usage.
*D.* Guaranteeing availability of sufficient water for all in the state - Increasing water supply by resurrecting dead water supply schemes in the rural area.
*E.* Implementing groundwater act.


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*F.* Creating decentralized water storages.
*G.* Initiating new projects to create water storage capacity.
*H.* Reinstating / increasing water storage capacity of existing and dysfunctional water sources (small dams / village tanks / percolation tanks / cement dams).
*I.* Extracting sludge from existing water sources through public participation and increasing water storage of water sources.
*J.* Encouraging tree plantation and planting trees.
*K.* Creating public concern / awareness about balanced use of water.
*L.* Encouraging / creating awareness about efficient utilization of water for farming.
*M.* Sensitizing people about water harvesting / increasing public participation

## III. THE NEED TO CONSERVE WATER

Factually, Maharashtra has been bestowed with adequate rainfall, perennial rivers, lakes and large streams. However, due to concretization in last few decades, natural resources in the State have endured huge losses, driving it to situations like drought. Any type of natural activity is in essence completely balanced. Natural streams are created as a cumulative result of various land strata such as hills and hillocks, slightly deeper stretches, plateaus and grounds as well as green cover and rainfall in the area. The water bodies, in the form of rivers, streams, nallas and smaller streams, decide the sustainability and future of the region. Urbanization in any part of the land requires changes in the natural landscape of the region. The speed of urbanization in the State too adversely affected the water bodies it had. Today, one cannot find a city, town or a village in Maharashtra where natural streams have not been encroached. One of the major responsibilities undertaken through Jalyukta Shivar Abhiyan is to rejuvenate these natural water sources.

### *A. Present Scenario of Water Availability in Maharashtra*

TABLE IREGION WISE WATER AVAILABILITY OF MAHARASHTRA STATE (PER CAPITA, PER HA.)

| Region | CCA in Lakh Ha. | Population | Water Availability as per Tribunal in Mcum. | Water Availability in Mcum. Per capita (Col.4/3) | Per ha. of CCA (Col.4/2) |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Konkan with (Mumbai) | 17.9 | 28629512 | 65357 | 2283 | 36451 |
| Konkan Excluding(Mumbai) | 17.6 | 16151066 | 64289 | 3980 | 36507 |
| Nashik | 40.2 | 18571535 | 13635 | 734 | 3395 |
| Pune | 45.6 | 23440998 | 16087 | 686 | 3531 |
| **Rest of Maharashtra** | **103.7** | **70642045** | **95079** | **1346** | **9173** |
| Aurangabad | 59.3 | 18727748 | 8202 | 438 | 1383 |
| **Marathwada** | **59.3** | **18727748** | **8202** | **438** | **1383** |
| Amravati | 35.6 | 11266653 | 7033 | 624 | 1974 |
| Nagpur | 26.9 | 11736526 | 15622 | 1331 | 5818 |
| **Vidarbha** | **62.5** | **23003179** | **22655** | **985** | **3627** |
| **Maharashtra** | **225.4** | **112372972** | **125936** | **1121** | **5587** |

Table 1 clearly shows that except the Konkan and Nagpur division, the natural availability of water in Maharashtra is not very good. Use of Water resources for economic development should, therefore, be planned with extreme care, efficiency and caution.

### *B. The Need to Conserve Water*

## IV. BACKGROUND OF CASE STUDY AREA

Pusad is a city and a second largest municipal council in Yavatmal district after Yavatmal of Vidarbha region in the Indian state of


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Maharashtra. Pusad is located at 19°54′N 77°35′E19.9°N 77.58°E. It has an average elevation of 315 meters (1033 feet). Pusad is surrounded by hills from almost all the sides and is at little lower elevation than these hills. The name of the city originates from the name of the adjoining river called Pus Nadi. Pus nadi is lifeline of the city and also a source of drinking water and irrigation water .As of 2001 India census, Pusad had a population of 67,152. Males constitute 51% of the population and females 49%. Pusad has an average literacy rate of 78%, higher than the national average of 59.5%: male literacy is 80%, and female literacy is 72%. In Pusad, 14% of the population is under 6 years of age. Pusad's climate is extreme with the temperatures going as high as 49 degree Celsius in summers and as low as 5 degree Celsius in winters. Experts believe this due to a phenomenon called as "Basket Effect".

### *A. About the Visit*

An exploratory visit was arranged on 24th September to four villages Harshi, Dahiwad,Shilona and Kharshi and then again on 2nd october to another four villages, Marwadi(Budrukh), Rampurnagar, Karla and Wadsad. All these villages are in Pusad Tehsil of the Yavatmal district.

TABLE II LIST OF 20% WORK OF JALYUKTA SHIVAR IN PUSAD TEHSIL

| Sr. | Name of Village | Type of work | Block no | Status Of work | Sanctioned Amount (in lakh) | Expenditure (in lakh) |
|---|---|---|---|---|---|---|
| 1 | Shilona | New C.N.B | 2/6 | completed | 13.94 | 13.44 |
| 2 | Dahiwad | | 1/1 | | 9.99 | 9.99 |
| 3 | Dahiwad | | 1/2 | | 9.99 | 9.99 |
| 4 | Dahiwad | | 2/1 | | 9.99 | 9.99 |
| 5 | Dahiwad | C.N.B Deepening | 1/1 | | 5.02 | 5.02 |
| 6 | Dahiwad | | 1/2 | | 5.15 | 5.15 |
| 7 | Dahiwad | | 2/1 | | 4.79 | 4.79 |
| 8 | Harshi | Dhaliche Bund | 1/1 | | 4.92 | 4.92 |
| 9 | Harshi | C.N.B | 1/8 | | 6.91 | 6.91 |
| 10 | Harshi | | 1/9 | | 7.30 | 7.30 |
| 11 | Harshi | C.N.B Deepening | 1/1 | | 5.71 | 5.71 |
| 12 | Harshi | De-silting of existing C.N.B | 1/1 | | 2.99 | 2.99 |
| 13 | Harshi | | 1/2 | | 2.99 | 2.99 |
| 14 | Kharshi | | 1/3 | completed | 2.99 | 2.99 |
| 15 | Kharshi | | 1/4 | | 2.99 | 2.99 |
| 16 | Rampurnagar | Earthen Dam | 1/1 | | 5.85 | 5.85 |
| 17 | Marwadi (B) | Recharging of well | 3 | 1 Completed, 2 incomplete | 0.33 | 0.11 |
| 18 | Karla | | 1/1 | 1 Completed, 2 incomplete | 0.22 | 0.11 |
| 19 | Wadsad | | 1/2 | 1 Completed, 1 incomplete | 0.22 | 0.11 |
| 20 | Asoli | | 1/1 | 2 Completed | 0.22 | 0.22 |

## V. DATA AND METHODS

Since last two years, chain cement concrete canal construction program, and various other water and land conservation campaign have been implemented in the state. Similarly, water harvesting activities like sludge extraction in Latur district and well refilling in Nanded district have been successfully conducted. To permanently overcome drought situation, Jalyukta Gaav (water full village) campaign was implemented in 5 districts from Pune division in the year 2012-13. Under this, action plan was prepared for water


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harvesting and increasing groundwater level by implementing various schemes collectively through coordination of all departments. Activities taken up under this campaign were - watershed projects in the division through water conservation, cement chain canal constructions, repair and renovation of old existing cement canal dams / K.T. Weir, sludge extraction from water source, water source empowerment, well refilling, efficient utilization of available water and canal joining works. Through all these projects, decentralized water storage of capacity 8.40 TMC has been created. Because of this, groundwater level is increased by 1 to 3 Meter and provision for drinking water and protected irrigation for farming is made. This has helped to permanently overcome drought situation. Considering results of all these projects, the government was thinking of preparing organized action plan to make 'water for all - drought-free Maharashtra and to permanently overcome drought situation and implementing 'Jalyukta Shivar' (water full surrounding) campaign to increase water availability.

Fig.1: Dahiwad, a village in Pusad taluka has been selected under Jal yukta Shivar Abhiyan. The workdone here with public participation has led to a rise in the groundwater level

## VI. BENEFITS DUE TO JYS CAMPAIGN ON PRACTICAL IMPLEMENTATION

### *A. Rivers Deepened, Water Level in the Wells Enhanced*

The results of enhancement of water table in the nearby wells according to our whims are best explained by the villagers of Dahiwad. With good precipitation, agriculture has been flourishing here. However, every year during the rains, the villagers used to be on their toes. To overcome the problem, there was a need to obstruct and store the water by means of C.N.B. Due to community awareness and support to agricultural department of Pusad , finally C.N.B was successfully constructed and now the results shows that there is enhancement of watertable in the nearby wells.

### *B. Water-Filled Dams, Healthy Crops*

In Harshi and Kharshi villages of Pusad, de-silting of existing C.N.B was done and this led to increase in availability of water in CNB.The water stored in the dam is helping in the irrigation of the region's variety of crops. Harshi and Kharshi today presents an opportunity to witness the huge change water can bring about in the life of people, especially farmers. Even after the absence of rain in June and before it started intensely, the benefits of Jalyukta Shivar Abhiyan to the villages were very much visible.

### *C. Efficient Management of Rainwater*

In Marwadi (B),Wadsad,Karla and Asoli villages of Pusad, the precipitation is quite good, but, as there are no ways to store rainwater, the region faces water scarcity. An excellent remedial measure is now set to change the situation. In Marwadi (B),Wadsad,Karla and Asoli, the Jalyukta Shivar Committees has planned to store every drop of rainwater. One of the works is the recharging of well. The water level in the wells has increased and the moisture in the soil has been maintained. The water level in the adjoining agricultural lands has also been enhanced. Even after the absence of and before it started intensely, the benefits of Jalyukta Shivar Abhiyan to the villages were very much visible.

### *D. Use of Mobile App and Representation on GIS Platform*

In order to have proper representation and analysis, data collection of various parameters like terrain, soil, geology, rainfall, wells,


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crops, quality and so on, needs to be transported to GIS platform. JYS GR (dated 5-12-2014) mentions the importance and use of GIS in planning and representation. Currently most of the data like soil, geology, land use etc. is available with Maharashtra Remote Sensing Application Centre (MRSAC) as GIS shape files at village level. The mobile app developed by MRSAC, is being used to these locations. The mapped location can be monitored through web page. These GIS layers can be very useful in understanding the nature and causes of drinking water scarcity, quality problems, impact of conservation structures etc. Use of GIS also makes available different maps like drinking water stress maps, quality affected areas maps, sugarcane belts, poor groundwater belts etc. Such maps would serve two purposes; i) maps convey more information than tables and reports, hence villagers will become more aware and ii) these maps give further direction in understanding the problem better.

Fig.2: Marwadi, a village in Pusad taluka has been selected under Jal yukta Shivar Abhiyan. The workdone here for recharging of well has led to a rise in the water level of the well

## VII. BROADER SUGGESTIONS

*A. Interaction and Coordination between Departments*

Proper representation of data on GIS platform requires integration of data from different departments. Different datasets like revenue and land use data from Revenue department, crop data from Agriculture department, canal and command area data from Water Resources department, groundwater assessment data from GSDA, conservation structures data from Soil conservation department, watershed data from IWMP (Agriculture department), drinking water data from Water Supply and Sanitation department etc. has to be brought to one place for correct analysis and formulation of the problem. This requires proper integration and communication between all these departments. JYS GR mentions this as a requirement while preparing all the village plans. But there is no clear provision and room to make such interaction and communication in the village planning framework. Village plans talk about financial convergence between various departments and program, but this need to be extended to convergence of data, capacities and so on.

*B. Groundwater Modelling and Simulations*

Some complex problems might require more research and analysis and use of tools such as groundwater modeling for greater understanding of the problem. For example, finding suitable areas for interventions like lake-deepening would include understanding of the geology, aquifer characteristics and groundwater flows. Similarly, impact of recharge shafts or identification of source of contamination of drinking water in villages etc. can be carried out by using groundwater modeling and simulations. A suite of such simulations will help in designing JYS better.

## VIII. CONCLUSIONS

*A.* There are 188 Talukas (2234 villages) where groundwater level dropped for more than 2 meter and drought situation were declared in 19059 villages from 22 districts in the year 2014-15. This 'Jalyukta Shivar' campaign needs to be implemented in these locations on priority.

*B.* Implementing Jalyukta Shivar Campaign in other parts of country will be helpful to overcome permanently drought and water



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scarcity problems.

*C.* With unique initiative like Jalyukta Shivar, water scarcity will surely be a thing of the past!

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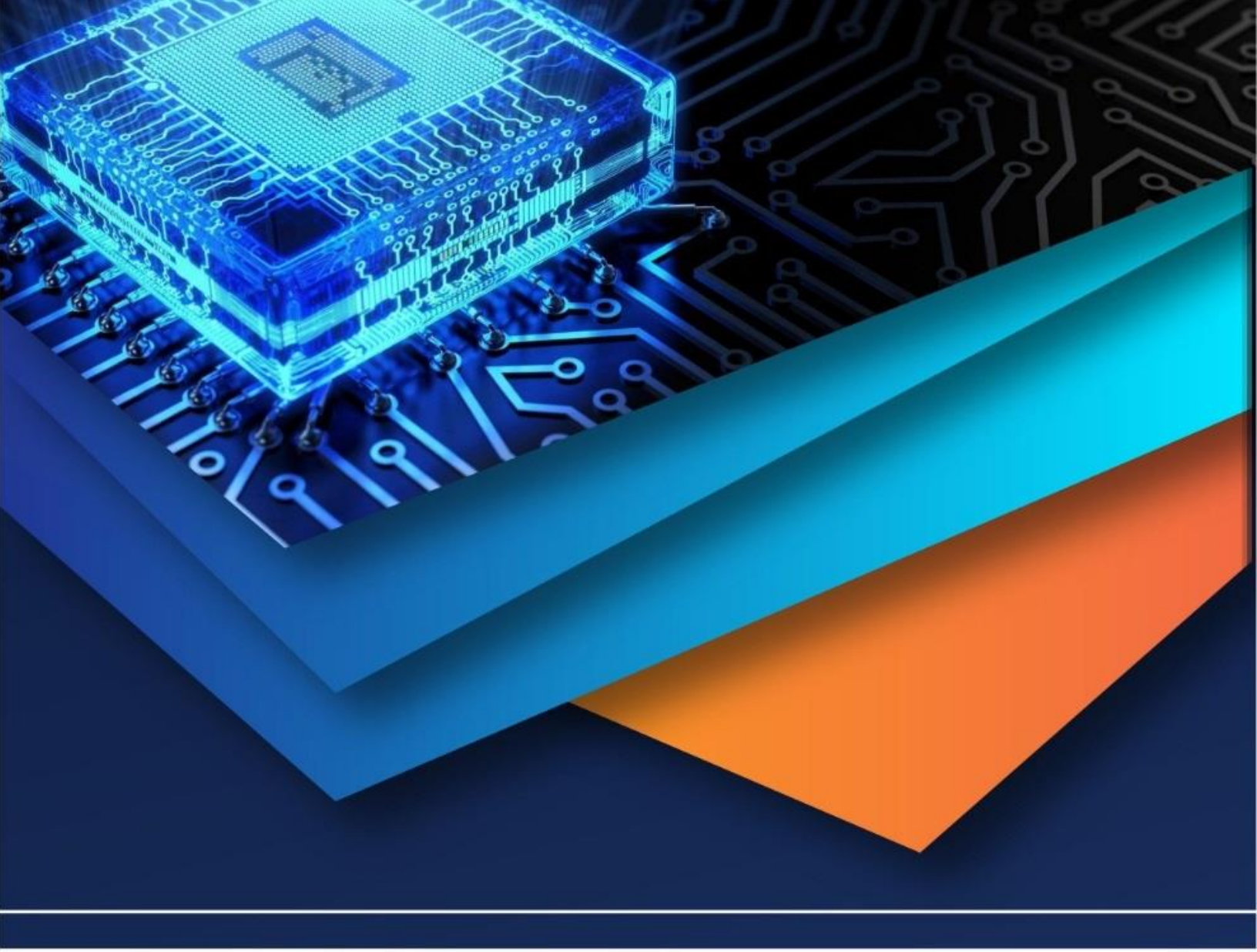

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