



# PMKSY and MGNREGA Investments in Irrigation

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## Introduction

*India being an agrarian economy is highly dependent on monsoons. According to Agricultural census 2011-12, around 58% of the districts in India are rain-fed. Climatic changes being witnessed in the form of erratic rainfall events are bringing distress to the farm economy. In a recent survey by NABARD<sup>1</sup>, 54% of the households have faced crop failure due to excess rainfall, very low rainfall or unseasonal rainfall in the last ten years. While, only 18% of the farm households have reported facing distress from sudden fall in market price of crops. Even though 85% of total water withdrawals is by the agricultural sector, water efficient irrigation has been receiving greater attention very recently. Public expenditure in irrigation has been mostly concentrated in Major irrigation schemes. These are huge dams, reservoirs and hydropower projects. Some of the concerns are that India's spending on food and fertilizer subsidies are crowding out much-needed investments in irrigation.*

Public investment in irrigation is done through financing of individual large-scale irrigation projects and through central schemes. Pradhan Mantri Krishi Sinchayee Yojna (PMKSY) is one such scheme that was rolled out in 2015 and has been approved for implementation across the country with an outlay of Rs. 50,000 crores in five years. PMKSY is an umbrella scheme of few ongoing schemes like Accelerated Irrigation Benefit Programme (AIBP), Integrated Watershed Management Programme (IWMP), On Farm Water Management (OFWM) along with emphasis on Water-use efficiency, precision-irrigation and sustainable water conservation practices.

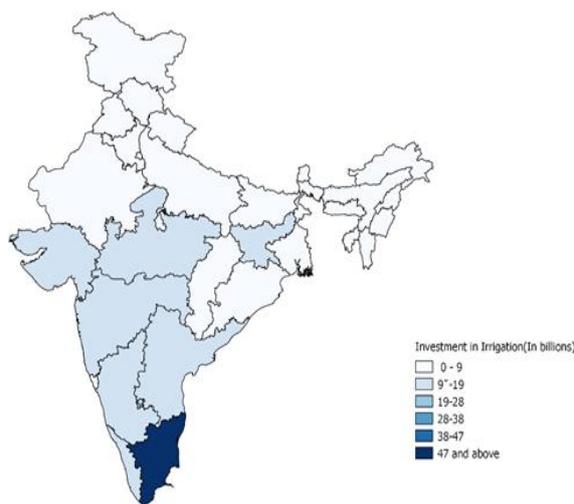
Prior to the introduction of PMKSY, much of the public expenditure and works at the farm

level were managed by creating assets through the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) programme. Under the MGNREGA scheme, several small-scale water related infrastructures have been developed. The works taken up also include water conservation and drought proofing activities. Since the rollout of the scheme until the end of financial year 2017-18, the total investment made in Irrigation through PMKSY is 191,60 crore rupees and the irrigation potential created is 300 million hectares. In the financial year 2017-18, a total of 7934 crore rupees were spend for water related activities in MGNREGA accounting for 42.3% of the total expenditure in the same financial year. Works related to water were carried out in a 1.49 million hectares of area.

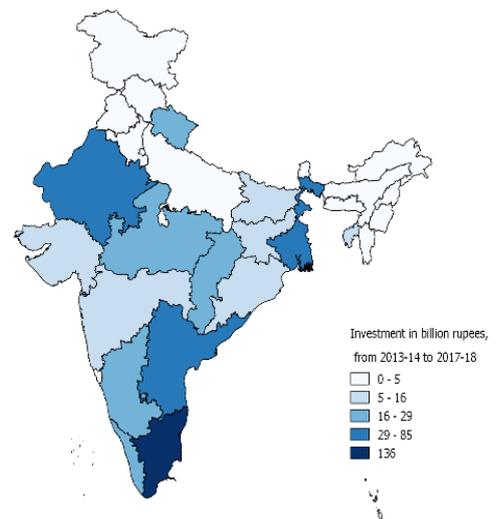
<sup>1</sup> The numbers for PMKSY do not include AIBP numbers

Both MGNREGA and PMKSY schemes have online Management Information Systems (MIS) which consists information on the district-wise expenditure across categories. PMKSY MIS provides information on expenditure on various irrigation related activities that the scheme covers. MGNREGA MIS is a detailed database at block/tehsil level expenditure and works carried out over the years. The assets created under these schemes are being geo-tagged in collaboration with India Space Research Organization (ISRO) as to integrate into the MIS.

*State Wise Investment in Irrigation by PMKSY*



*State Wise Investment in Irrigation by MGNREGA*

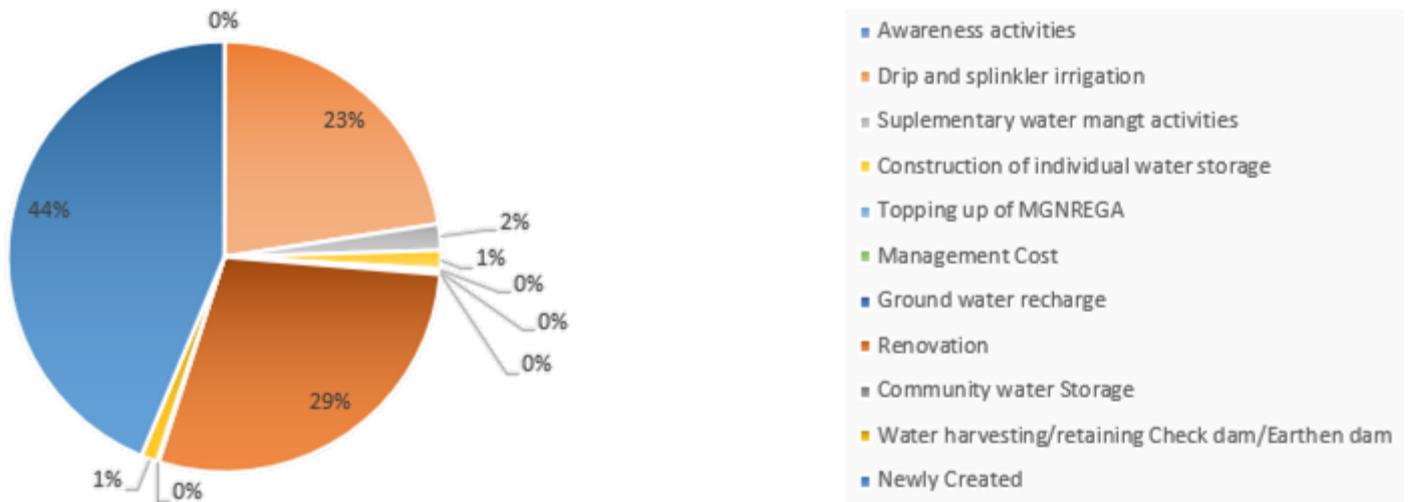


Pradhan Mantri Krishi Sinchayee Yojna data gives information on investments in irrigation at district level for the four components AIBP, *Har Khet ko Pani*, Watershed and Per Drop more Crop by various ministries and departments. Under the Ministry of Agriculture and farmers welfare, we have data under various activities for Departments Extension Reform Monitoring System, Micro irrigation (Drip and Sprinkler irrigation) and other interventions (supplementary water management activities). Under the Ministry of Rural development, there is data for Department of land resource and rural development covering varied activities around newly created and renovated water structures.

The data gives detailed information on the various activities under which these investments are made. We have divided the activities under broader categories of Awareness Activities, Drip and Sprinkler Irrigation, Supplementary Water Management Activities, Construction of Individual water Storage, Topping up of MGNREGA, Management Cost, Ground water Recharge, Renovation, Community Water Storage, Water Harvesting, Newly Created structures. Over the course of 3 years (2015-18) the three states that have seen the maximum investments are Tamil Nadu, Madhya Pradesh and Karnataka.

The graph below clearly depicts the highest amount of investments going in the Category of Newly Created structures. The other two major areas of investments are the Renovation of water bodies and Drip and Sprinkler Irrigation. Increased investments have been directed towards Micro irrigation (Drip and Sprinkler Irrigation) in the past few years to enhance the water use efficiency.

**Investments by Categories**

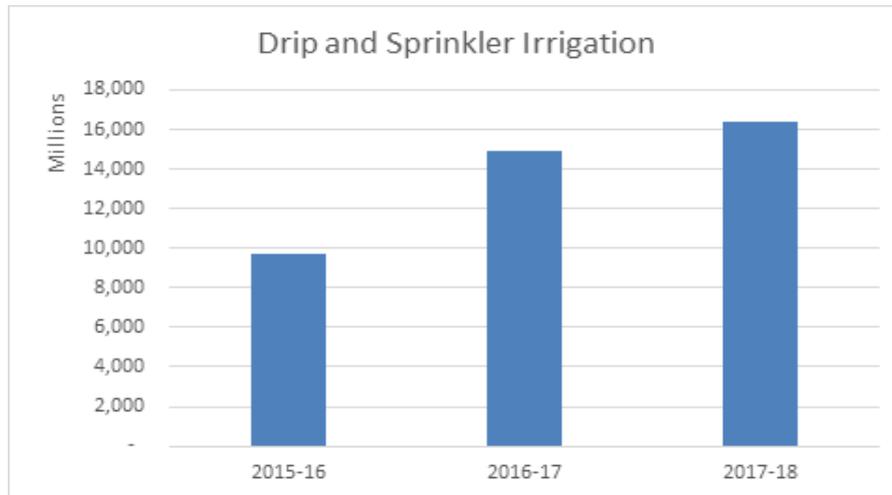


### Drip & Sprinkler Irrigation

Drip and sprinkler irrigation are micro irrigation methods in which water is supplied in a controlled manner through distribution pipes, sprinklers, ditches, etc. This method of irrigation is believed to be more efficient than conventional methods since water measurement and even application of water is easier. Micro irrigation also contributes to reduction in electricity requirement, solving problems like weed and soil erosion and reduces the cost of cultivation. Over the years, under PMKSY the investments of micro irrigation methods have seen a jump, but it has been restrictive to a few states. According to an INCID (Indian National Committee on Irrigation and Drainage) report, 1994, about 80 crops can be grown under micro-irrigation and can be adopted in all kinds of land, making it a suitable irrigation method.

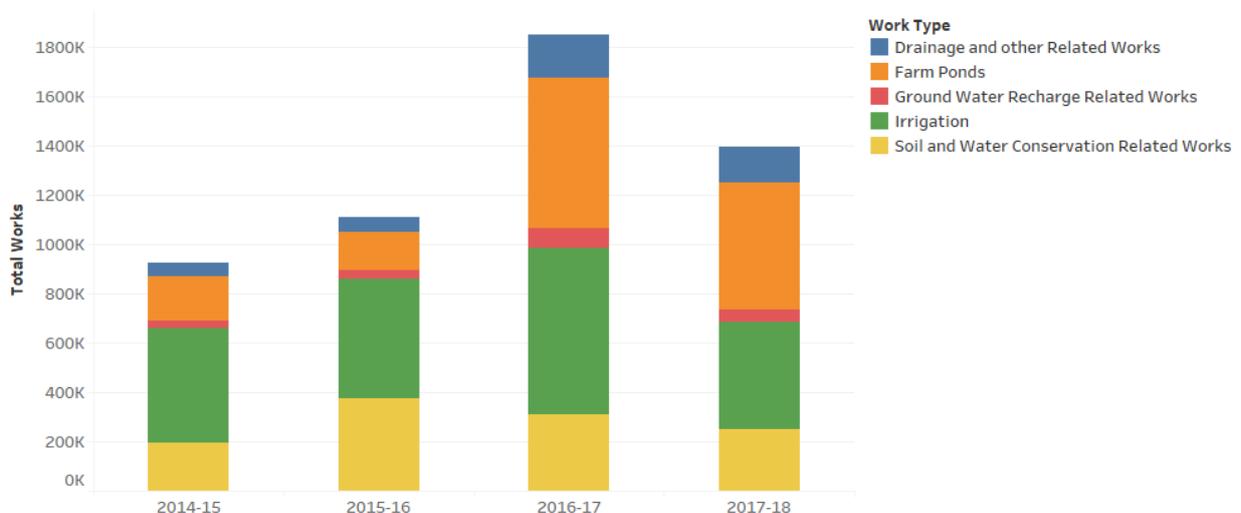
NREGA is primarily involved in supply-side management of water, both for irrigation and drinking water. The works carried out are designed around the activities of irrigation, watershed management, water conservation and renovation in traditional water bodies. NREGA's data on expenditure, works and assets are available from the year 2013 to present. The expenditure is further detailed into the costs incurred due to labor and material. Much of the works are carried out are on-farm irrigation interventions, especially construction of farm ponds. Besides supply side interventions, PMKSY carries out training to farmers and demand-side interventions for higher water-use efficiency in farms.

PMKSY and NREGA, both centrally sponsored schemes have given the states more funds which enables them to design and spend irrigation programmes that cater to the local hydrology and relevant conditions. This is evident if one looks at the investments made into building farm ponds and drip, sprinkler irrigation systems.



## Farm Ponds

Farm Ponds are designed and built as to store excess runoff from rainfall events so that the water can be utilized for irrigation purposes throughout the year. In low to medium rainfall rainfed regions, the occurrence of high intense rainfall events with the short duration are very common causing the soil erosion. Hence, the efficient rain water management is necessary to improve water productivity and protect the natural resource base in rainfed regions.



Works in water related activities for each Year. Color shows details about Work Type.

These extensive datasets on public sector investments gives researchers the opportunity to access the bottlenecks and realities of irrigation in India. For deeper studies in the topic having granular data in terms of geography under PMKSY is a palatable idea.

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