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A Situational Analysis of Pradhan Mantri Krishi Sichai Yojna: A Boon for Farmers

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ABSTRACT: Pradhan Mantri Krishi Sichai Yojna (PMKSY) encourages water conservation in order to alleviate the country's developing water scarcity issues. The scheme effortlessly tries to converge irrigation outlay at the field level to ameliorate ingress of water on the farm, upgrade efficiency of on-farm water to minimize wastage and escalates its availability, intensify recharge of aquifers, implement precision irrigation and other water efficient technologies, increase cultivable area under irrigation, implementing sustainable ways for water conservation, secure integrated management of rain-fed areas by applying watershed method, groundwater regeneration, runoff arrest, promote extension activities for farmers and grass-roots field functionaries on water harvesting, water management and crop alignment. In a nutshell, there is endeavour for removing hurdles, establishing responsibilities, openness is being maintained, and awareness is being raised so as to accomplish time-bound goals. The efforts to reach the zenith are in full swing.

Keywords: PMKSY, Irrigated area, Water management, Impact.

INTRODUCTION

Over the years, the government has made concerted efforts to improve water resource management through many flagship initiatives, one of which is the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY). In recent years, these measures have been somewhat successful in bringing about observable changes state-wise in irrigation practices. Both the number of projects completed and the amount of irrigation potential created have improved. The PMKSY will also ensure that all water conservation and management programmes, such as the Mahatma Gandhi National Rural Employment Guarantee Scheme (MANREGA), the Rashtriya Krishi Vikas Yojana (RKVY), the Jawaharlal Nehru National Solar Mission and rural electrification programmes, are aligned (Indian infrastructure, 2020). It is also attempting to solve the issues associated with the management of water resources in order to bestow the aims of doubling farmer income by giving a push to irrigation projects as feasible throughout the country (Vohra and Saxena, 2020)

A. PMKSY (Pradhan Mantri Krishi Sinchayee Yojana): A Brief

PMKSY was established on July 1st 2015 through the Central Government for expanding irrigation coverage (Har Khet Ko Pani), and increasing water efficiency (More Crop Per Drop) (PMKSY, 2021).

PMKSY provides an opportunity for the linkage of District and State irrigation plans to work together (Agriculture Times, 2020). This scheme is composed of two main components implemented by the Ministry: The Accelerated Irrigation Benefits Programme (AIBP) and Har Khet Ko Pani (HKKP). Command Area Development (CAD), Surface Minor Irrigation (SMI), Repair, Renovation, and Restoration (RRR) of Water Bodies, and Ground Water (GW) Development are the four sub-components of the HKKP-PMKSY. Furthermore, PMKSY is made up of two components that are implemented by other Ministries. The Department of Agriculture, Cooperation, and Farmers Welfare, have implemented Per Drop More Crop (PDMC) component. While, Ministry of Rural Development executed Watershed Development component (WDC) (PIB, 2021a). The accomplishment of PMKSY projects along with the short term projects will helps in developing the water requisite needs to fulfill the future demand (Vohra and Saxena, 2020).

Physical targets and financial outlays. PMKSY was approved for its implementation throughout the country and the estimated outlay of Rs. 50,000 crore were sanctioned. In July 2016, it was allotted to complete 99 prioritised AIPB projects, including CADWM work, by December 2019. The overall funding required to

complete the 99 projects is estimated to be Rs. 77, 595 crore (Rs. 48, 546 crore for project works and Rs. 29, 049 crore for CADWM works), with Central Assistance (CA) of Rs. 31, 342 crore. With the completion of these projects, an area of 76.03 lakh ha is expected to be irrigated. The funds were arranged through NABARD (PMKSY, 2017).

A sum of Rs. 9843.45 crore has been released for the states as Central Assistance (CA) since the program's beginning to the end of March 2021. From 2017-18 to 2020-21, a total of Rs. 1893.45 crore in CA was released. The programme has covered an area of roughly 23.06 Mha since its commencement until the end of March 2021, with 1.8, 2.31, 2.08 and 1.918 Mha covered during the IX, X, XI, and XII Plans, respectively. From 2017-18 to 2020, a total of 0.997 Mha of CCA were covered (Department of water resources, 2021). Allocation of the funds by central assistance (CA) under PDMC, HKKP, AIBP, and WDC given in Table 1.

Table 1: Allocation of the funds by central assistance (CA) to different components of PMKSY *(Rs. in crore)*.

Central Assistance/ Allocation of funds	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22 (Budget Estimated / Allocation)
AIBP	3,307.88	3,593.61	2,849.07	1,738.76	1,510.04	*
HKKP	1,001.91	1,678.13	1,343.23	1,217.97	976.53	899.00
PDMC	1,991.24	2,819.49	2,918.38	2,700.01	2,562.18	4000.00
Watershed Development	1,471.72	1,691.81	1,780.55	1,472.33	990.23	2000.00
Total	7,772.75	9,783.04	8,891.23	7,129.07	6,038.98	

Source: PIB, 2021a

* Funding arrangements for AIBP and the CAD component of HKKP are established through the Long Term Irrigation Fund (LTIF) with NABARD borrowings. As and when suitable proposals are received from States, central aid is given through the LTIF. In a written reply to the Rajya Sabha on 02 AUG 2021, Shri Prahlad Singh Patel, Minister of Jal Sakti, informed that the scheme was initially effective until March 2020, but was later extended till March 2021. It has been proposed that it be extended for the years 2021-26 (PIB, 2021a).

B. Status of various components of PMKSY

According to the PMKSY project's module, the Central Government will administer 75% of the funding, while the State Governments will manage the remaining 25%. The PMKSY's components are built on a system that creates an integrated irrigation supply chain that emphasises synergy (PMKSY, 2021). PMKSY not only focuses on establishing reliable irrigation sources, instead also on establishing protective irrigation by capturing rainfall at the micro-scale using 'Jal Sanchay' and 'Jal Sinchan" (Agriculture times, 2020).

Accelerated Irrigation Benefit Program (AIBP): AIBP was established (in 1996-97) with the goal of expedite all irrigation projects including major and minor, which were about to reach their completion. Further in 2015-16 AIBP was merged with PMKSY and presently covers 99 projects with an outlay of Rs. 73,348 crore and Rs. 16,965 crore in central support (as on March 2016). Out of 99, 40 projects have been completed as of March 12, 2020, creating 1.82 million hectares of irrigation potential. The development was not uniform for all states, Gujarat with 0.53 million hectares, Uttar Pradesh with 0.51 million hectares, Maharashtra with 0.17 million hectares and Madhya Pradesh with 0.16 million hectares were the states with maximum potential. With the ending of March 2020, the number of projects completed reached to 44. Approximately 49% of cultivators reported an improvement in the crop yield during interviews with 255 recipients, while 40% reported more irrigated area under and 25% affirmed that they can now sow several crops, respectively (Indian infrastructure, 2020; NITI Aayog, 2020).

Command Area Development and Water Management (CADWM): In 1974 CADWM was founded to tackle the increasing discrepancy between irrigation potential and exploited in both types of irrigation projects- major and minor. In 2016-17 CADWM was merged into (PMKSY-HKKP), it was limited to pari-passu execution for 99 AIBP projects. The scheme comprise of two components, structural interventions and non-structural interventions. The structural interventions include work related to on-farm development, field and intermediate construction, linking drains, restoration of water logged areas and the non-structural interventions comprise forming association of water users and providing trainings as well as demonstrations with engaging in community outreach.

CAD activities are now being performed in 88 priority AIBP projects encompassing 45 lakh hectares of culturable command area (CCA), with CA of Rs. 8,300 crore. Under CAD 14 lakh hectares of CCA is completed till June 2020. The programme has had major positive results and aided the transition from subsistence to commercial crops (in drought prone areas). Approximately 60%, 45%, and 18% of 225 beneficiaries acknowledged increased, irrigated land and crop intensity, respectively, during a household survey. In addition, 45% reported rise in household income, 49% about accessibility to education, 41%

found improved health status, and 43% mentioned about the increased employment opportunities, respectively (NITI Aayog, 2020). The achievement by CADWM component upto March, 2021 is increased to 14.96 lakh hectare, along with formation of 8,562 Water Users Associtions (PIB, 2021b).

HKKP (Har Khet Ko Pani): HKKP is implemented for Surface Minor Irrigation (SMI) and Repair, Renovation and Restoration of water bodies (RRR) and granted Rs 28.49 billion and Rs 3.96 billion in central aid respectively for the duration of 2014-15 to 2018-19 (Indian infrastructure, 2020). Since the XII plan the Irrigation potential created under HKKP (SMI) was 6.85 lakh hectares, while for HKKP (RRR), it was approx 1.31 lakh hectares. Additionally, nearly 35.44 thousand hectares of irrigation potential was created under HKKP (Ground Water component) upto March 2021 (PIB, 2021b).

Repair, Renovation and Restoration of water bodies (RRR): RRR was launched under the XI Plan with the aim to improve and re-establish existing water bodies (including traditional water bodies) to increase storage capacity. In March, 2019, 53% more as of the target (i.e. 0.99 lakh hectares) was reported and along with this 51% more as of the target (i.e. 504.85 MCM) for storage capacity, with only 48% of the expected expenditure paid (NITI Aayog, 2020).

Surface Minor Irrigation (SMI): SMI includes only those projects which cover an area of less than 2,000 ha. As of March 2020, the initiative had reached 64 percent of its planned irrigation potential, or 6.77 lakh acres, and had spent 83 percent of its budget (NITI Aayog, 2020).

Per Drop More Crop (PDMC): PDMC was started in 2015 with Rs. 16,300 crore of budget sanctioned by the Ministry of Agriculture and Farmer Welfare for the five-year duration of 2015-16 to 2019-20. Nearly 70% of agriculture is under rained conditions and only 30 percent has irrigation facilities (Goyal, 2016). The programme attempts to improve the efficiency of water consumption in agriculture by encouraging the water users for implementing water conserving technologies. The project primarily deals on upgrading the efficiency of water to be used on farm by introducing micro-irrigation new techniques, like sprinklers and drip irrigation. There is a need of irrigation and the amount of water to be supplied for a healthy yield of the crops (Joshi and Gupta, 2017). During the period 2015-16 to 2019-20, the scheme was able to cover approximately 48 lakh hectares of land with a micro-irrigation system (NITI Aayog, 2020).

An area of 57.30 lakh hectares has been micro-irrigated out of a total objective of 10 million hectares for during the five years (2015-16 to 2019-21) (PIB, 2021b). During the period under review, Rs. 115.87 billion in central aid was given for the PDMC component. In the meantime, the state governments have been allocated Rs. 40 billion each year for 2020-21. In addition, the NABARD has established a sum of Rs. 50 billion micro-irrigation fund (Indian infrastructure, 2020).

Watershed Development Component (WDC): Rainfed agriculture is critical for the good economy as well as for food security of the country, accounting for roughly 40% of total food grain production. Rainfed areas are home to two-thirds of livestock and 40% of the world's people. Furthermore, 80 percent of small and marginal farmers rely on these areas for their livelihoods, making them particularly vulnerable to monsoon failures. Rainfed zones with net cultivated area, culturable wastelands, and degraded lands are all targets for watershed development. WDC has taken on 6,382 projects with a budget of Rs. 50,739 crore and Rs. 33,642.24 crore as a central support and so far, states have received Rs. 19185.26 crore.

About 70.31 percent of the projects is completed to date and some of the states which done well are Andhra Pradesh, Karnataka, Madhya Pradesh, Nagaland, Rajasthan and Tamil Nadu while some such as Himachal Pradesh, Punjab and Uttar Pradesh have not done up to mark. Since 2014-2015, WDC has resulted in the construction of 0.690 million water harvesting structures, the irrigation of 1.467 million hectares, the benefit of 3.115 million farmers, and the creation of 28.121 million man-days of employment. After 2014-15, WDC has not approved any new projects. Various end-of-period evaluation studies reveal that the scheme was successful in delivering benefits. To gain efficiency, it must be a prime concern to stimulate effective money flow and utilization. Moreover, climate related challenges, management of post-project forest and water resource with O & M shortcomings must all be addressed to ensure the scheme's long-term viability. The plan is built on the equity principle, which has benefited people of all castes, tribes, and genders (NITI Aayog, 2020). For the period 2014-15 to 2019-21, the WDC has created about 6.38 lakh water harvesting structures with an addition of 14.01 lakh hectare area under protective irrigation (PIB, 2021b).

Irrigation Census (IC): IC is an authentic medium for providing information on newly developed small irrigation assets. Till now 5 minor Irrigation Censuses have been completed (1986-87, 1993-94, 2000-01, 2006-07 and 2013-14) with the sixth Census now underway. Until now, the Irrigation Census has been entirely funded by the federal government. The Census of Water Bodies has been introduced to the 6th Irrigation Census. The overall projected cost of the 6th Irrigation Census is roughly Rs. 258 crore, of which Rs. 168 crore is allotted for the 6th Irrigation Census and Rs. 90 crore for the Water Bodies. The IC has changed over time and has expanded in scope. The minor irrigation and water bodies are roughly divided in five schedules which being examined in rural and urban areas. Newer technology for data collecting, validation, tabulation, and analysis have also been implemented by several states, such as Andhra Pradesh and West

Bengal. Irrigation Censuses have thus been an important source of data for programmes (like Atal Bhujal Yojana and other crucial segments such as CCA, IPU and IPC). They are broadly used by several interlinked departments and bodies of central and state level (NITI Aayog, 2020).

National River Conservation Plan (NRCP): Water contamination is associated with increased urbanisation, industry, and population growth. According to Central Pollution Control Board, municipalities generated roughly 61,948 MLD of sewage versus a treatment capacity (23,277 MLD). Across addition, the CPCB discovered 351 contaminated river segments in 275 rivers in India. The goal of the NRCP is to minimize river contamination by adopting various pollution control techniques with increasing quality of river water. That will ultimately protect the ecosystem and conserve the river's biodiversity, as well as the environmental condition of the communities that surround it. During the fiscal years 2014-15 to 2018-19, a sewage treatment capacity of 359.62 MLD was built at a cost of Rs. 641.95 crore, versus a planned capacity of 566 MLD and a budget of Rs. 765.53 crore. As on September month of 2019, the NRCP had built 85 STPs throughout 77 towns in 16 states along 34 filthy river segments. The following are some of the significant issues raised in this study, along with their related suggestions (NITI Aayog, 2020).

Flood Management and Border Area Programme (FMBAP): FMBAP was formed by combining two previous schemes: The Flood Management Programme (FMP) and River Management Activities and Works in Border Areas (RMBA). The scheme's goal is to help state governments provide a reasonable level of flood protection. The activities under the FMBAP were carried out between 2017 and 2020.

RMBA includes activities such as forecasting of flood, hydrological observations, and maintenance of flood protection works. The FMBAP's Flood Management component covers residual works allowed under the Flood Management Plan during the XI and XII Plans. However, out of the total budget (Rs. 18,000 crore), only Rs. 8,000 crore has been utilized for the XI Plan and Rs. 10,000 crore. Utilized in XII Plan. Rs. 6,410 crore has been distributed to 25 States out of the 13,238 crore which has been allocated for FMP activities.

On the other hand, the RMBA component of the FMBAP has been sanctioned for a total of Rs. 700 crores, of which 485.33 crore has been issued to States/UTs. FMBAP is approved by the Union Cabinet at PAN India level for flood, river, and border area operations from 2017 to 2020, with a disbursement of Rs. 2022.28 crore in Central Assistance. Between 2007 and 2020, a total of 49.87 million hectares of land have been protected, with a population of roughly 520 million people (NITI Aayog, 2020).

Fig. 1. Impact assessment of various components of PMKSY.

STP- Sewage Treatment Plant; Lak ha- Lakh hectare

C. Sector-scheme linkages and Gap map

The Centrally Sponsored Schemes (CSS) that are being evaluated, as well as their mapping to the core sector challenges, are examined. The problem of low water storage capacity is being addressed by the RRR of water bodies (decentralised storages) as well as the completion of versatile MMI projects under the PMKSY-AIBP programme. Intrusion of water bodies, sewage dumping, and poor operations and maintenance practices, on the other hand, continue to have an impact on storage capacities.

Major and medium irrigation projects, as well as area development programmes (CADWM, SPFM and PMKSY-AIBP), have been allocated a significant share of the Ministry's financial outlays to improve the country's irrigation coverage. On the other hand, water management in rainfed areas is handled by a single plan (PMKSY-WDC), despite the fact that a large section of the farmers are perpetually reliant on the rains. The PDMC programme aims to improve agricultural water efficiency at the farm level, while the CADWM scheme mandates coverage of 10% CCA with MI facilities. Furthermore, the CADWM system is projected to improve water utilisation and irrigation coverage by lining water courses below outlets. Moreover, most of the unmanaged regional canals responsible for the huge rate of loss in expected outcomes. Shortage of the particular funds for the operations and maintenance is also worsening the situation.

Although various remedial programmes are already conducted by Indian Government such as, WDC (via groundwater recharging through rainwater harvesting), AIBP (seepages by canal), and RRR (Recharging of water zone), which were helped to raise groundwater scale. The unrestricted exploitation of water along with the growing move to water-intensive crops, offers major difficulties in agriculture sectors (NITI Aayog, 2020).

D. Scope for scheme rationalization

Based on the investigation, certain potential prospects for scheme rationalisation have been discovered. Because the Micro-irrigation (MI) component of the CADWM plan is making slow progress, it is being suggested that this MI component be transferred and merged with the several other parts of the scheme like intervention segments. SMI have to work in collaboration with RRR, as RRR's goal of improving and enhancing water body storage capacity is vital to ensuring SMI's usability during low/no flow times. It is advised that the two systems be rationalised in order to improve cooperation and accountability (PMKSY, 2017).

CONCLUSION AND FUTURE SCOPE

Irrigation has gained traction in recent years, with a greater concentration on huge and medium/multipurpose irrigation projects. More money is expected to be spent on numerous initiatives that have been declared as part of officially funded schemes and programmes. However, the success of these programmes has been not up to mark. Despite the government's much-needed push, there are major inter-component differences. While the WDC and HKKP components have made reasonable progress, the AIBP and PDMC components have not. There are also considerable differences in achievement rates between states. While Gujarat, Uttar Pradesh, Maharashtra, Madhya Pradesh, Karnataka, and Telangana have done admirably under the PMKSY-AIBP component, Jammu & Kashmir, Punjab, Goa, Kerala, Rajasthan, and Manipur have underperformed. In light of the current scenario, the PMKSY must be strengthened in order to build the essential irrigation infrastructure. In the irrigation sector, there has to be a greater emphasis on water efficiency. Despite the fact that there are methods, technology, and research available to assure effective water management, little has been done to yet. As a result, the timely and successful implementation of government-sponsored projects and schemes to ensure improved irrigation capacity, better water management techniques, and the employment of innovative technologies is critical to the sector's growth.

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Conflict of Interest. The authors declare no conflict of interest.

REFERENCES

Agriculture times, (2020). India releases state wise data of irrigated land. Retrieved fromhttps://agritimes.co.in/india-releases-state-wise-data-of-irrigated-land/

Department of water resources, RD & GR; Physical and financial progress (2021). Retrieved from https://jalshakti-dowr.gov.in/programmes/physical-and-financial-progress.

Goyal, (2016). Methods for Management of Agricultural Water. Retrieved from https://www.researchtrend.net/ijtas/pdf/4%20DR.%20SADHNA%20GOYAL.pdf.

Indian infrastructure (2020). From Plans to actions. Retrieved from https://indianinfrastructure.com/2020/06/15/from-plans-to-action-2/.

Joshi and Gupta, (2017). Advancement in Irrigation Techniques & Water Supplying in Agricultural Works. Retrieved from https://www.researchtrend.net/ijet/pdf/45-S-840.pdf.

PIB (Press Information Bureau), (2021a). Irrigation Schemes for the Benefit of Small and Marginal Farmers. Ministry of Jal Shakti. https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1741554

PIB (Press Information Bureau) (2021b). Allocation of Funds Under PMKSY. Ministry of Jal Shakti. Retrieved from

https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1739093

PMKSY (2017). Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India, New Delhi. Retrieved from http://pmksy-mowr.nic.in/aibp-mis/Manual/MoWR%20-%20PMKSY-booklet%20final.pdf

PMKSY (2021). Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India, New Delhi. Retrieved from https://pmksy.gov.in/

NITI Aayog (2020). Evaluation of Centrally Sponsored Schemes in Water Resources, Environment and Forest Sector, Government of India.Retrieved from http://pmksy-mowr.nic.in/aibp-mis/Manual/NITI_Evaluation_Report_2020_Vol_2.pdf

Vohra and Saxena (2020). Irrigation growth in India-prospects, initiatives and challenges. Ministry of Water Resources, River Development and Ganga Rejuvenation Government of India. Retrieved from http://pmksy-mowr.nic.in/aibp-mis/Manual/Paper%20on%20IRRIGATION%20GROWTH%20IN%20INDIA.pdf

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