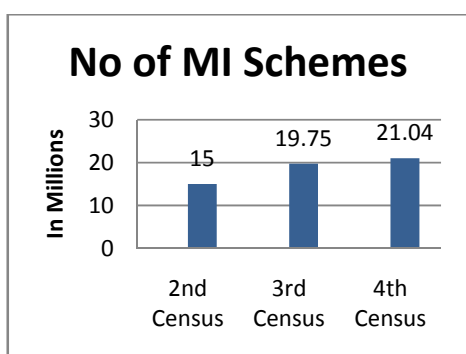


Minor Irrigation Census (2006-07)
Ministry of Water Resources
Government of India

Results and Salient Findings

The 4th census of Minor Irrigation (MI) schemes was conducted with reference year 2006-07 across the country in 33 states and UTs except Daman and Diu and Lakshadweep Islands. The census covered 609 districts and 6,41,062 villages in the country. It involved large scale collection of data for more than 2.1 crore minor irrigation structures and was completed by primary workers in the states under the overall supervision of state nodal departments for minor irrigation statistics under RMIS schemes. Some of the important findings of the census are presented in the following paragraphs.

5.1 Number of minor irrigation schemes:



There has been significant increase in the number of minor irrigation structures in the country as observed during the 4th MI census as compared to that in the 3rd. In all 21 million MI schemes were enumerated in 4th census as against 19.7 million found during the previous census. There has been significant growth in ground water schemes from 18.5 million to 19.75 million during the period of 2000-01 to 2006-07.

Minor decline has however been observed in the surface water schemes which remain around 1.2 million in number. Uttar Pradesh possesses the largest number of MI schemes in the country (42.8 Lakh) followed by Andhra Pradesh (23.1 Lakh), Maharashtra (22.7 Lakhs) MI schemes. Tamilnadu (19.12 lakh) and Madhya Pradesh (19.06 lakh) also have large number of MI schemes. In Surface Water schemes, M.P (2.39 lakh) possesses the largest number of MI schemes followed by Maharashtra (2.19 lakh), Karnataka (1.21 lakh), A.P (1.06 lakh) and Odisha (0.89 lakh) MI surface water schemes.

As during the previous census, predominance of dug wells and shallow tube wells has been observed during IVth MI Census, however, during the 4th census there has been decline in the number of dug wells from 96.2 lakhs during the 3rd census to about 92 lakhs in the 4th census. The numbers of shallow tube wells and deep tube wells have substantially increased from 83.5 and 5.3 lakhs respectively to 91.2 and 14.4 lakhs. On the other hand, there has been decline in surface flow schemes from 6.4 lakhs to 6.0 lakhs while the surface lift schemes have increased from 6.1 lakhs to 6.5 lakhs. As such, we find that there has been shift from dug-wells and surface flow schemes to tube wells and surface lift schemes.

MI schemes are now pre-dominantly owned by individual farmers and very few (less than 5%) are owned by public institutions. Out of the total 92 lakh tube wells, 73.4 lakh

(79.8%) are owned by individual farmers, similarly out of 91.2 shallow tube wells 86.2 lakh (94.5 %) and out of 14.4 lakh deep tube wells 12.1 lakh(83.9%) are owned by individual farmers. Surface lift schemes are also pre-dominantly owned by individual farmers with 5.1 lakh (79.2%) out of 6.5 lakh owned by individual farmers. However, from among surface flow schemes about 60% (3.7 lakhs out of 6.00 lakhs) are owned by public sector.

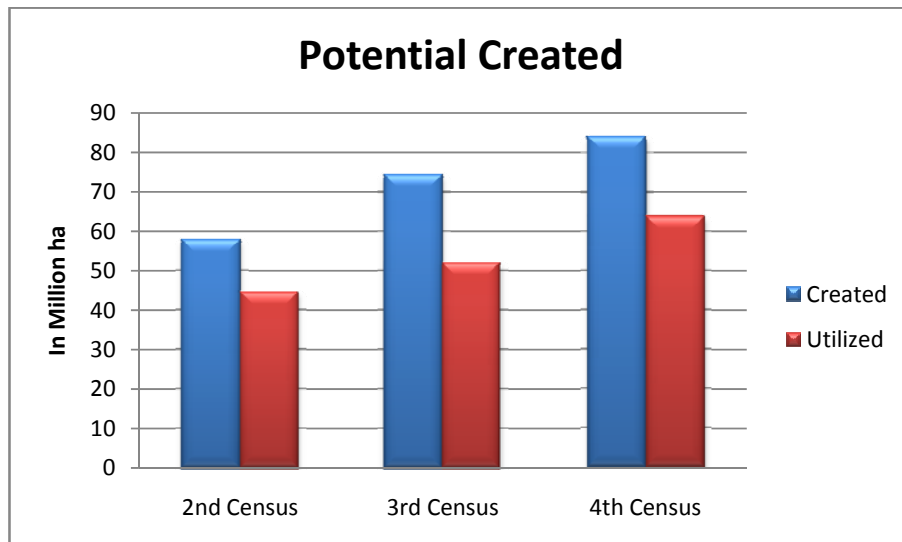
In many states, e.g. UP, Punjab, Rajasthan, M.P., A.P., Tamilnadu, Karnataka, and Maharashtra, the proportion of MI schemes in Public sector is less than 1 %. On the other hand, in states like Chhattisgarh (more than 60 %), and Jharkhand (about 35 %) higher proportion of MI schemes is in public sector (cooperative societies or government).

About 7 % of MI schemes are located in the tribal areas and about 63 % of the schemes are owned by marginal and small farmers, while only about 3 % are owned by the large (big) farmers in the country. The position w.r.t. location of schemes in the tribal areas and the ownership share of marginal and small farmers of MI schemes have remained same as during the 3rd Census.

5.2 Irrigation Potential Created (IPC):

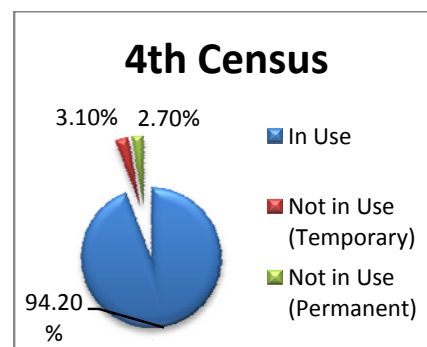
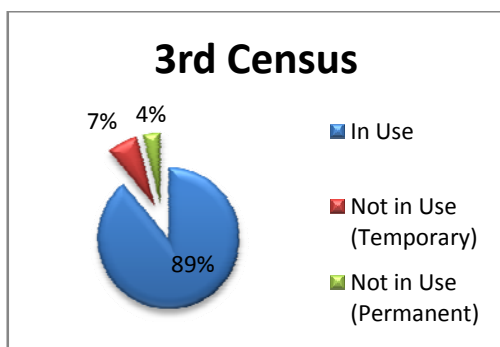
There has been significant increase in the Irrigation Potential Created (IPC) from the period of 3rd MI census to 4th MI census. The potential created has increased to 70 million ha in ground water schemes from 62.4 million during 3rd Census, and to 14 million ha from surface water schemes as against 11.9 during the earlier period. It is very important to note that there has been significant improvement in the Irrigation Potential Utilized (IPU) in ground water schemes and it has reached the level of 79.4% as against 72% achieved during the earlier period. However, there has been only marginal increase in utilization of surface water schemes from 58% achieved during 2000-01 to 58.6% as reflected in the 4th MI census. In many states very high level of utilization (more than 90%) of MI schemes has been observed and these states include Haryana, HP, J&K, Kerala, Maharashtra, Punjab, UP, Uttarakhand and Puducherry. With regard to the percentage utilization of surface water schemes, the performance of Goa, Chhattisgarh, HP, J&K, Kerala and Uttarakhand has been of the very high order (about 90% or more).

Another important improvement observed in IVth MI Census is the reduction in gap in potential created and potential utilized. While in the 3rd census, gap in IPC and IPU was almost double as compared to that in 2nd census, it is heartening to note that in spite of significant increase in the potential created by about 10 million ha in 4th MI Census, there has been a reduction in gap in potential created and potential utilized which was observed as around 20 million ha during 2006-07 as against 22 million ha found during the 3rd census (2000-01).



5.3 Status of Utilization of MI Schemes:

Due to some reasons like inadequate power, less water discharge, siltation in rivers/canals, some MI schemes go out of use resulting in loss of irrigation potential. During earlier census it was observed that 11% schemes were found 'not in use' including 4% which were permanently 'not in use'. During the 4th census only 5.8% schemes were found 'not in use' and it included 2.7% which were permanently 'not in use'. So, there has been significant improvement in use of MI schemes. Here it may be important to note that in shallow tube wells and deep tube wells, the percentage of schemes 'in use' is more than 97.5%, while in case of surface lift schemes, 95.6% of the schemes were 'in use'. The minimum percentage of schemes 'in use' were the surface flow schemes (83.6%) and dug wells (90.9%). 6.1% of potential created was observed as lost for schemes 'not in use' during 4th MI census. During the earlier census, 8% of irrigation potential was lost during due to schemes 'not in use', as such there is an improvement of about 2% in potential due to schemes being operational.

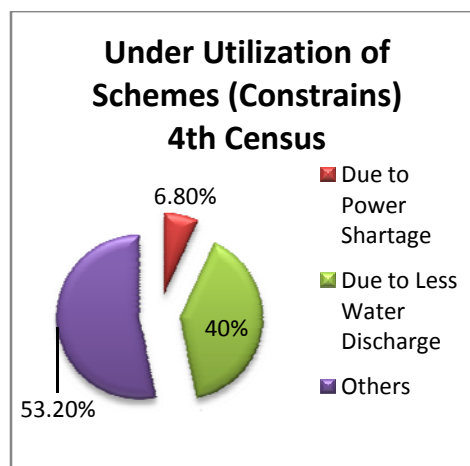
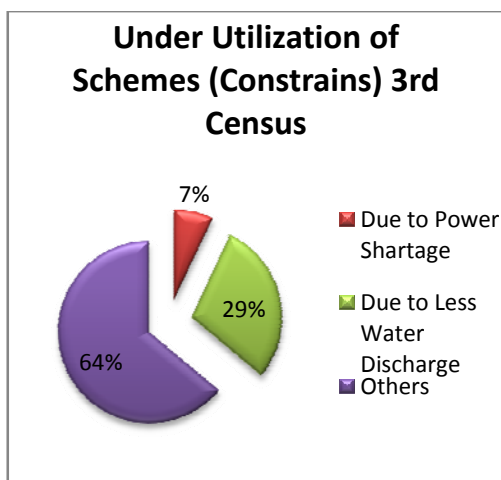


When we analyse the loss, the states, viz. Rajasthan (with 3.1 lakh), Andhra Pradesh (2.6 lakh), Odisha (1.3 lakh), Tamilnadu (1.29 lakh) and Uttar Pradesh (0.66 lakh) have suffered the most due to schemes being not in use. Rajasthan state had lost 4.1 lakh

Ha irrigation potential followed by U.P, 90 thousand Ha, A.P. , 78 thousand Ha irrigation potential lost during 2006-07 due to schemes 'not in use'. As far as Surface water schemes are concerned A.P. followed by Karnataka, Odisha, Chhattisgarh and Tamilnadu have maximum number of schemes 'not in use' and as a result Tamilnadu has lost irrigation potential to the extent of 7.9 lakh Ha, A.P. lost 4.6 lakh Ha, Karnataka 2.9 lakh Ha and Odisha had lost 2.2 lakh Ha irrigation potential during 2006-07.

5.4 Under-Utilisation of schemes:

For the MI schemes 'in use' under-utilization has been observed as gap between irrigation potential created and irrigation potential utilized and recorded in the census. With reasons like non-availability of adequate power supply or less water discharge, mechanical break-down, siltation etc., of 19.8 million schemes in operation those reporting less discharge were about 6.8% and are under utilization due to inadequate availability of electricity and about 4.0% due to less of water discharge, remaining 53.3% are under-utilized due to some reasons like mechanical break-down, siltation or sinking etc. Out of ground water schemes about 60% have been observed to function without constraint while in case of surface water schemes around 62% function with significant constraint. In case of ground water schemes less discharge of water was the most important cause in potential lost of irrigation (44%) followed by inadequate power supply (11%). On the other hand, in case of surface water schemes non-availability of power and less discharge were the two most important causes (25, 18%) loss caused in irrigation potential.



5.5 Crop-wise Utilisation of MI Schemes:

Information regarding utilization of irrigation potential of MI schemes during different crop seasons was asked during the census. The information collected indicates that there has been significant growth of utilization of irrigation potential during the Rabi season. The utilization of potential during Kharif season has increased from 20.58 mha during 3rd census to 26.5% mha during 4th census, during Rabi season the irrigation potential utilized has increased from 24.7 mha to 31.37 mha in the 4th census. However, there has

been a decline in utilization of irrigation potential for perennial crops from 4.18 to 3.69 mha and in case of other crops from 2.5 to 2.24 mha. It reveals that there is more utilization of irrigation potential for the major crops during Kharif and Rabi seasons. Out of the total Potential created for different seasons, the utilization is higher (77.5%) during Rabi season as compared to 73.6 % during the Kharif season. The comparative position was much lower in the 3rd Census with 62 and 65% respectively for Rabi and Kharif seasons. The irrigation potential utilized has also increased for the perennial and other crops as well.

5.6 Water Distribution Device:

There has been improvement in water use efficiency and decline in wastage of water through use of improved water distribution devices over the years. As reflected in 4th MI census, about 55% MI schemes only distribute water through open kutchha channels and about 26% schemes distribute water through under-ground pipe or surface pipe leading to less wastage through leakage and evaporation of water. About 1% schemes used drip irrigation and about 2% used sprinkler system for water distribution. During the 3rd census about 81% schemes used open channel which now has reduced to 'about 65%' during the 4th census including 10% by open Pucca channels. The percentage of schemes which used ground-water channel during 3rd census was 8% which has now increased to about 12% during the 4th census .As such there is a significant improvement in utilization of irrigation potential by improved water distribution system.

5.7 Financing of MI schemes:

The information as available from 4th census reveals that more than 70% of MI schemes are constructed by farmers with their own savings and about 10% by Govt funding and 12% financed by bank loan. The share of schemes funded by loan from money lenders is less than 3% and about 5% schemes are funded with the help of friends and relatives. As compared to the 3rd census the share of bank loan to construct dug wells has increased from 4% to about 14% and share of use of own savings has reduced from 80% to around 67% which shows that banks are coming forward to provide loans for construction of dug wells or dug-cum-bore wells in more cases. In case of construction of shallow tube wells, the proportion of self-financing has increased from 60% during the 3rd census to about 68% during the 4th census and share of govt. funding has reduced from around 23% earlier to about 10%. The contribution of bank loans has marginally reduced from 14% to around 11%.

5.8 Irrigation through Tanks and Storages:

As per the 4th census about 6 lakhs tanks and storages in India are used for minor irrigation schemes under surface flow and surface lift and it has increased from 5.56 ha during 3rd census. The major states which have large number of reservoirs and tanks include AP (81 thou.), Maha (71 thou.), Chattisgarh (56 thou.), MP (56 thou.), Odisha (39 thou.), TN (39 thou.), Uttarakhand (31 thou.), and WB (30 thou.).

5.9 Utilisation of Surface Flow Schemes:

Out of these 6 lakh surface flow schemes including tanks 5 lakh schemes are in use and remaining 1 lakh schemes are not in use due to various reasons. The total irrigation potential created through tanks is about 58.9 lakh ha out of which 39.31 lakh ha has been utilized; as such about 1.95 lakh ha has been lost due to under-utilisation. Out of the surface flow schemes not in use 74 thousand were temporarily not in use and about 24 thousand were permanently not in use.

5.10 Supplementary Irrigation through MI Schemes:

Minor irrigation schemes provide irrigation even in the command areas of major and medium irrigation projects as supplementary sources of irrigation. As reflected from the 4th census results, 10.7% MI schemes are located in the command area of major and medium irrigation projects and 12.2% irrigation provided through MI schemes has been in the command area. While the percentage of schemes in command area has gone down from 3rd census by 1%, the area irrigated has increased in the command area during this period by about 5%. It has been observed that the shallow and deep tube wells and surface lift schemes are more and more coming up in the command area to provide supplementary irrigation for agriculture and specially horticulture crops.

Among states, Haryana (> 65 %) has the highest percentage of MI schemes inside command area particularly the tube wells followed by Punjab (> 35 %). In case of surface water schemes Maharashtra is the leading state where above 40% of the surface water schemes are in the command area.

5.11. In all there were 41 districts in India which possessed more than 1 lakh MI schemes during 2006-07. Karimnagar (A.P.) with 2.40 lakh MI schemes was the leading district and another district Warangal in A.P., Ahmednagar, Solapur, and Nashik in Maharashtra had about 2 lakh or more MI schemes. Among top ten leading districts A.P. had 5, Maharashtra 3, and Tamilnadu 2 districts. However out of the districts having more than one lakh MI schemes, 8 belong to U.P., 7 each to A.P. and Maharashtra, 6 in Tamilnadu, 2 each in Gujarat, Punjab, Rajasthan, and Karnataka and one in M.P. (Table 1a). However when we consider the MI schemes in Use, 37 districts have more than 1 lakh schemes except two districts of Rajasthan, one each of A.P. and TN states (Table 1b).

5.12. With regard to Surface Water(SW) Schemes, there are 21 districts with 10 thousand or more MI schemes. Solapur (38048 schemes) in Maharashtra is the district which has the largest number of SW MI Schemes, followed by Sagar, and Jhabua from M.P., Kolhapur and Nagpur in Maharashtra with more than 19000 schemes. Out of top 10 districts, 4 each belong to Maharashtra and M.P., one each to Chhattisgarh and Karnataka (Table 2a). Considering the SW schemes in Use also, the same districts have maximum number of SW schemes except one district of Chhattisgarh (See Table 2 b).

5.13. There were 18 districts during 2006-07, in which more than half million ha irrigation potential was created including 2 districts viz. Dhar in MP and Bareilly in UP where

more than one million ha irrigation potential was created (Table 3). Out of the top 20 districts in India with the largest Irrigation Potential Created (IPC), 9 districts belong to UP, 4 to Punjab and 2 each to MP, Gujarat and Rajasthan and 1 district being in Maharashtra state. With regard to Irrigation Potential Utilised (IPU), Bareilly district of U.P. had maximum IPU (10.78 lakh Ha). Out of 23 districts with 4 lakh Ha or more IPU in India, 12 belong to U.P., 5 to Punjab, 3 to Maharashtra, 2 to Gujarat and one to Rajasthan (Pl. See Table 4).

5.14. There are 35 districts which possessed more than one lakh Ground Water schemes "In Use" during 2006-07. Karimnagar and Warangal in AP, Ahmednagar and Nashik in Maharashtra, Rajkot, and Junagarh in Gujarat, Sultanpur and Sitapur in UP, Ludhiana in Punjab, Salem and Coimbatore in TN, Chittorgarh and Alwar in Rajasthan, Tumkur in Karnataka are among these districts (Kindly see Table 5a). However, when largest IPU is considered, Bareilly in U.P. is the leading District with more than one 1 Million Ha IPU in GW schemes in use. There were 42 districts in India with more than 3 lakh ha worth Irrigation Potential Utilisation (IPU) during 2006-07 in Ground Water (GW) Schemes in use. There are in all nine districts with more than half million ha IPU in GW schemes including 4 District of U.P., 4 from Punjab and Banaskantha District of Gujarat among such districts. Out of top 20 districts with highest IPU in GW schemes, 12 belong to U.P., 5 to Punjab and one each to Gujarat, Maharashtra and Rajasthan. (see Table 5b).

5.15. Considering the largest IPU in SW schemes in use, Tirunelveli in Tamilnadu has the maximum IPU. Besides there are five more districts in India with more than 1 lakh Ha IPU in SW schemes in use including Villupuram in Tamilnadu, Aurangabad in Maharashtra, Korba in Chhattisgarh, Bankura in West Bengal, Ganjam in Odisha. Out of top 20 districts with highest IPU in SW schemes in Use, there are 5 districts from AP, 4 from TN, 3 from Maharashtra, 2 each in West Bengal, M.P. and one each in Chhattisgarh, Odisha, Jharkhand, and Uttarakhand states (Pl. See Table 6).