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**Map Series No. XVII**  
**PUNJAB-HARYANA REGION:**  
**LEVEL OF IRRIGATION DEVELOPMENT, 2021-22**

**M. S. Jaglan**  
**Narender Kumar**

Punjab-Haryana region has been the part of undivided Punjab of pre-independence British era. The undivided Punjab has a long modern history of irrigation development. This region has been the part of the state of Punjab of colonial India where many canal constructions and renovations were carried out by the British government and canal colonies were established between 1880s and 1920s. However, during partition of the country, the canal colonies and most of canal irrigated area went to Pakistan. Construction of Bhakra dam and network of canals during post-independence period opened up the prospects of agricultural development in Punjab-Haryana region. It was the irrigated area of this region where Green Revolution started in mid-1960s. However, the expansion of canal irrigation almost came to a halt in 1980s as the available surface water resources have not been enough to sustain the Green Revolution induced growth of agricultural production. Thereafter, started the expansion of tubewell irrigation in 1980s and presently it is the main source of irrigation in the region.

Today, Punjab-Haryana region is amongst the most irrigated areas of India. According to 2021-22 irrigation statistics obtained from the Statistical Abstract of these two states, Punjab has about 99 per cent of its cultivated area under irrigation, while this figure is 93 per cent for Haryana. In terms of

ratio between net area irrigated (NAI) and net sown area (NSA), only two districts (Rupnagar and Ludhiana) out of 22 districts of Punjab are not 100 per cent irrigated. But in Haryana out of 22 districts, 13 are not 100 per cent irrigated. Fig. 1 shows the spatial pattern of the ratio of NAI to NSA in Punjab-Haryana region. It is evident from Fig. 1 that entire Punjab except Rupnagar district and north Haryana except the Shivalik foothill district Panchkula has irrigation level above 95 per cent. An east-west running belt of three districts in south Haryana comprising Rewari, Gurugram and Faridabad districts also has high level of irrigation. But in the same southern Haryana, 3 districts (Charkhi Dadri, Mahendergarh and Nuh) have comparatively very low level of irrigation as less than 80 per cent of their NSA is irrigated. The adjoining Bhiwani and Palwal districts in south Haryana also have low level irrigation. Rohtak, Jhajjar and Hisar districts which separate north and south Haryana are moderately irrigated.

Fig. 2 depicts the spatial pattern of percentage of gross area irrigated (GAI) to gross or total cropped area (TCA). The idea to construct this map has been to decipher the difference in the level of irrigation with respect to net and gross cultivated area. However, Fig. 2 shows almost similar spatial pattern of irrigation level as of Fig 1. It has been observed that in Punjab, all the districts except

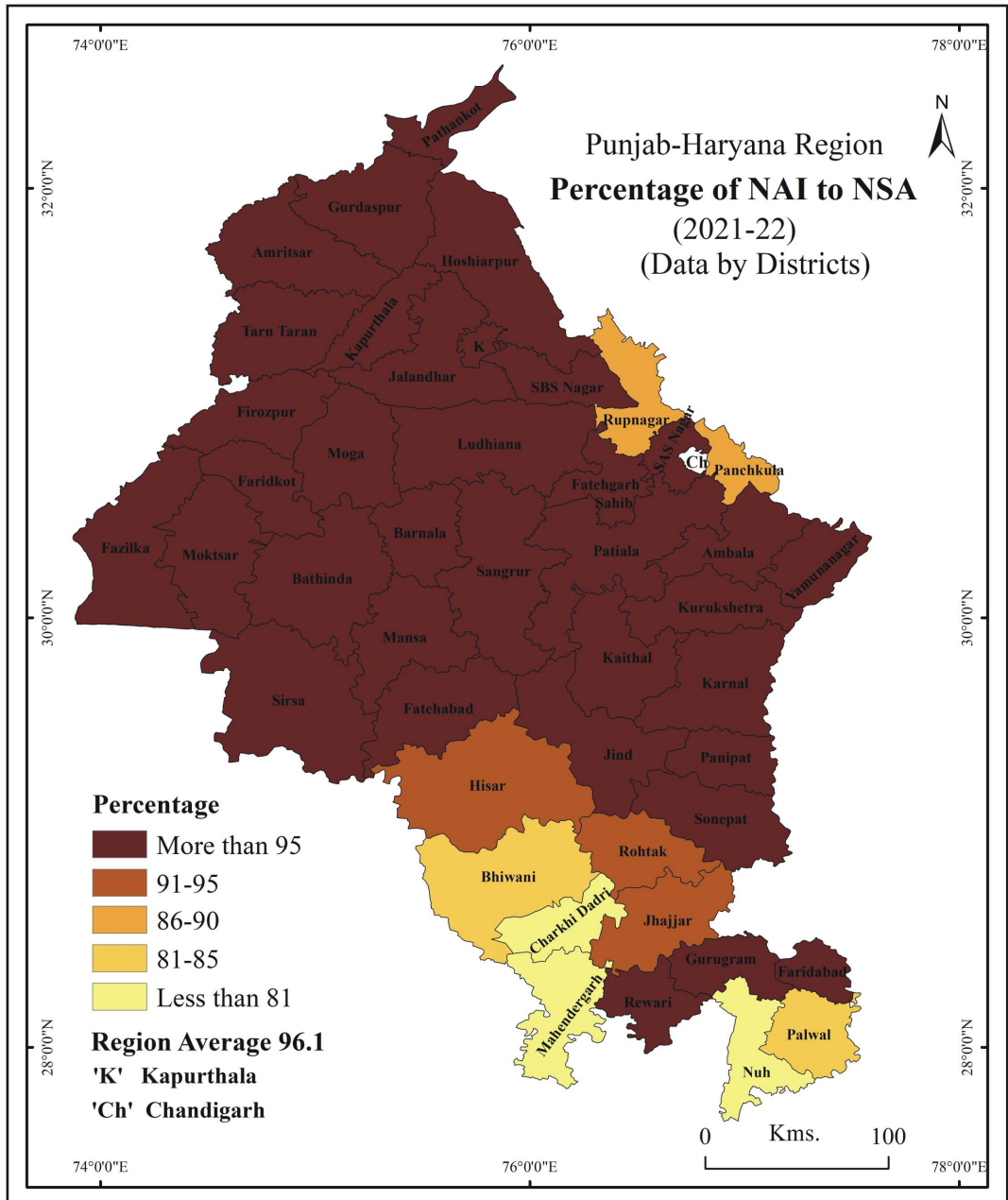


Fig. 1

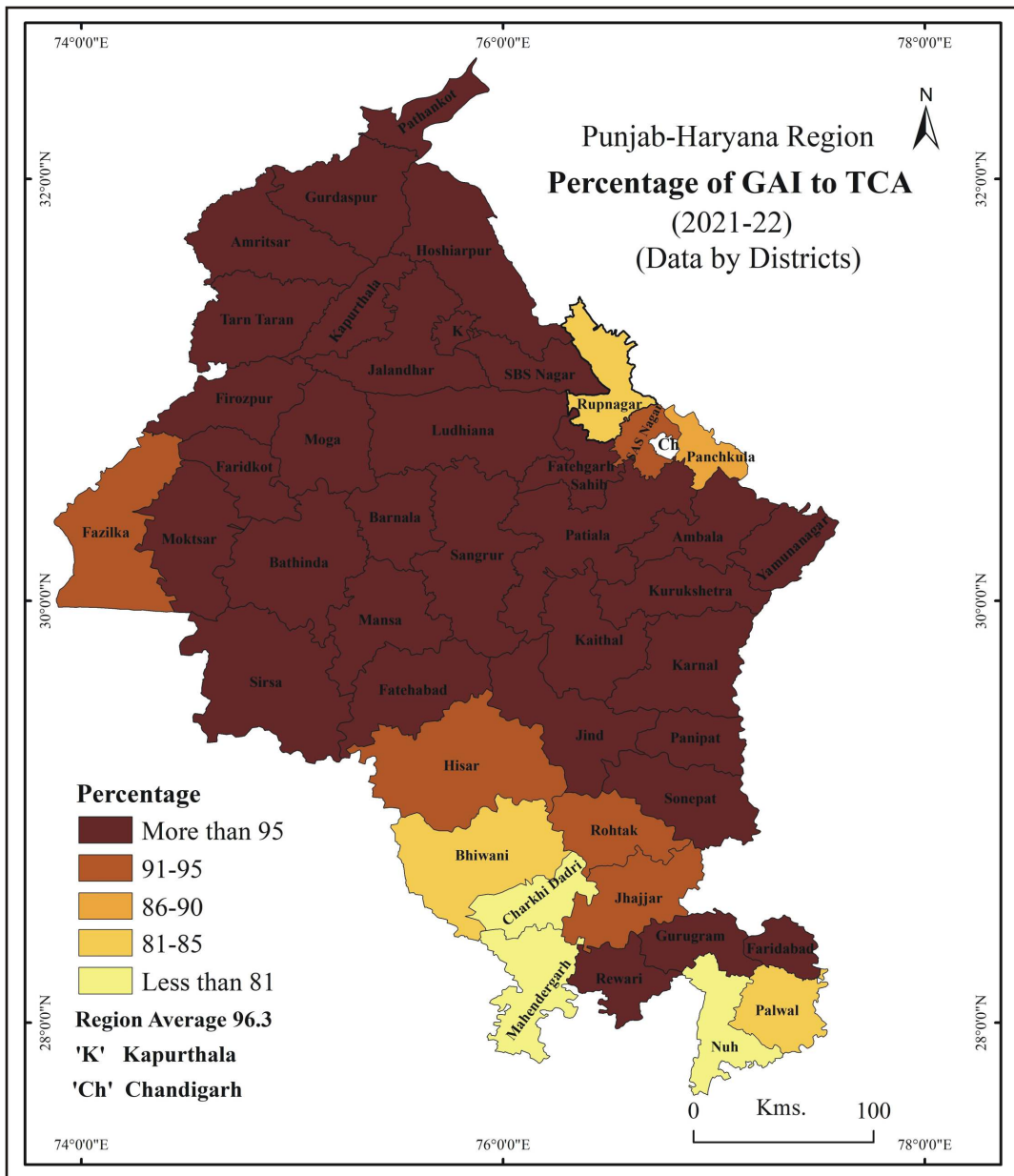


Fig. 2

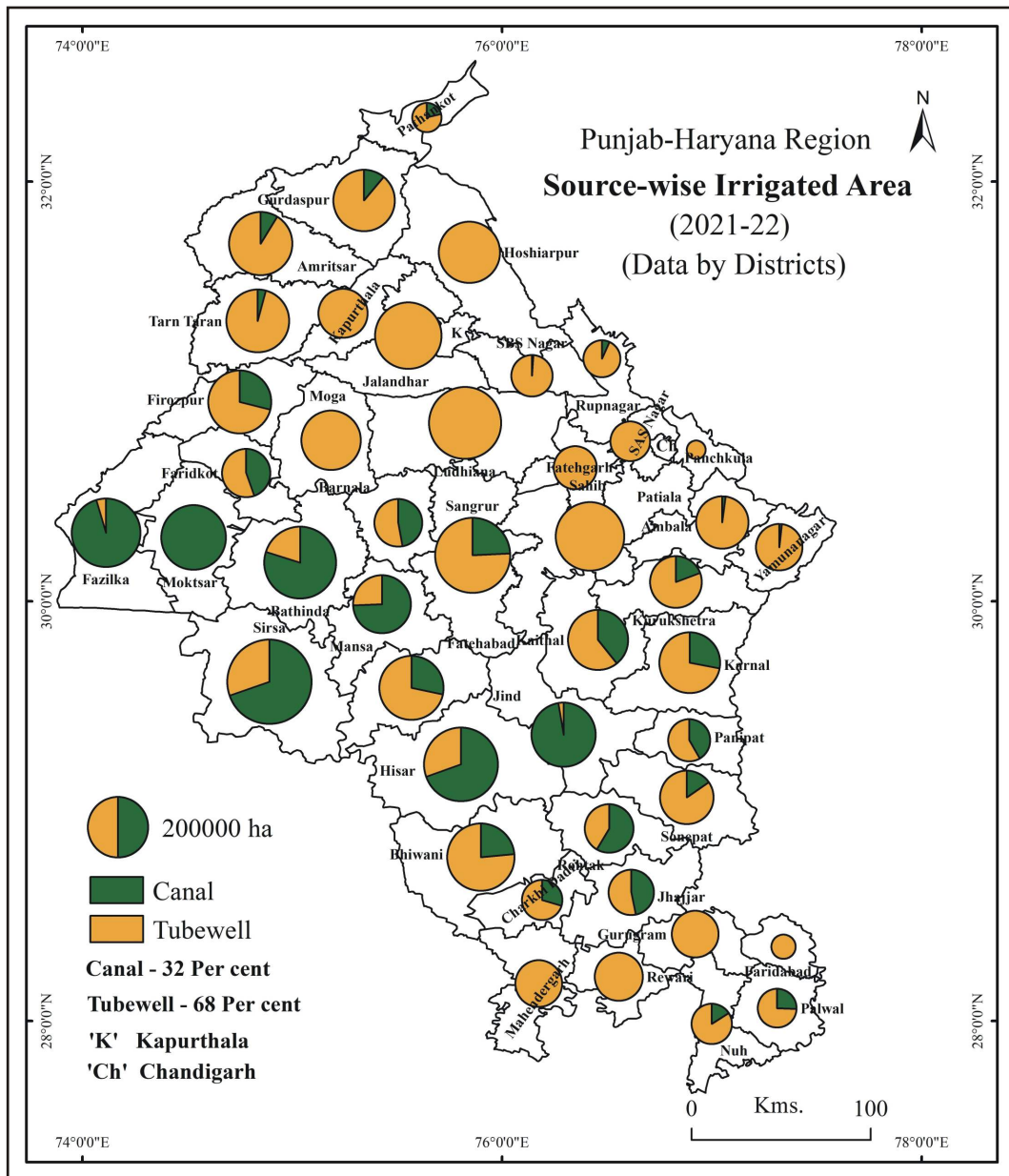


Fig. 3

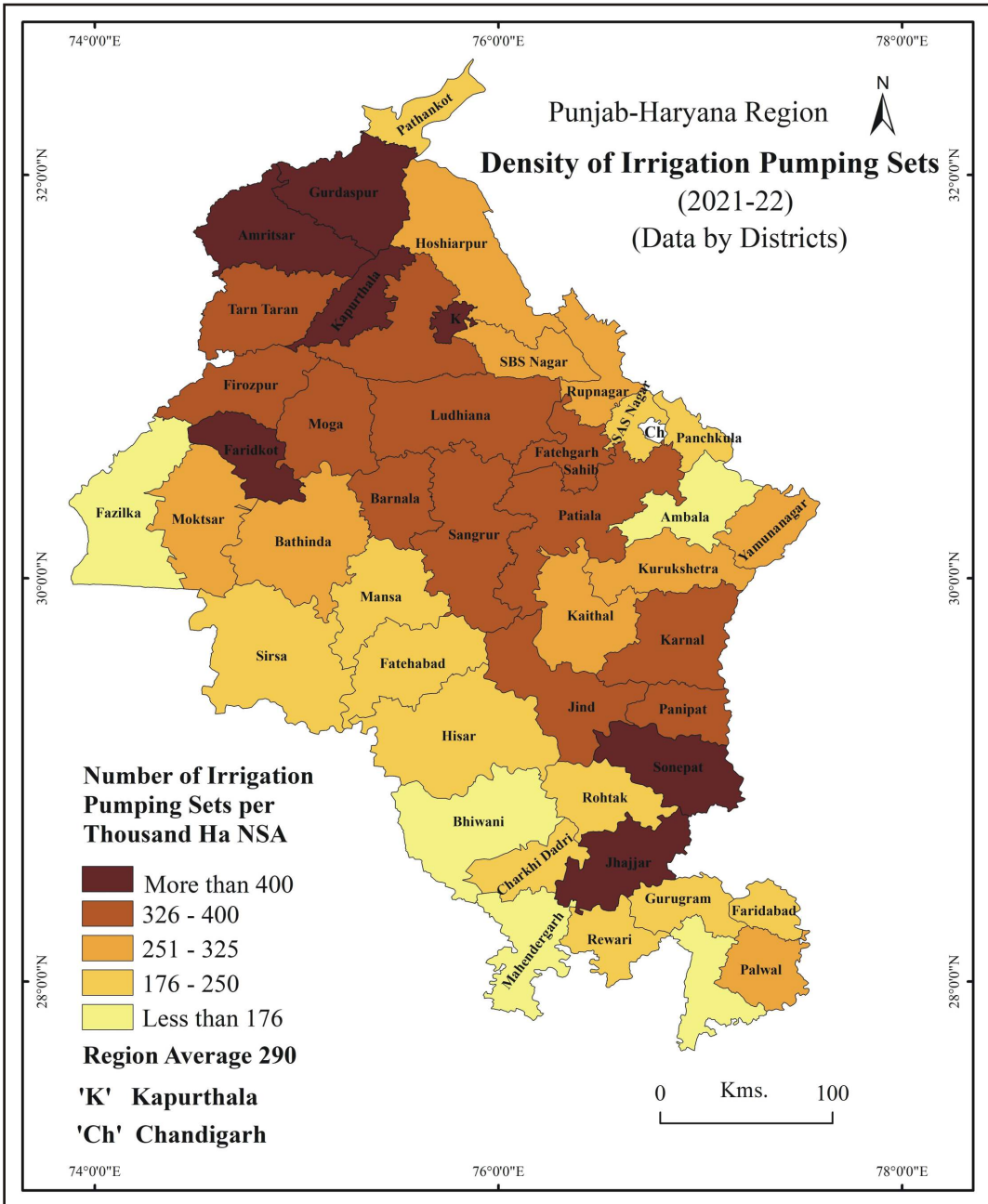


Fig. 4

Rupnagar, S. A. S. Nagar and Fazilka, have more than 95 per cent TCA under irrigation. Rupnagar district has less than 90 per cent gross cropped area under irrigation, while, in Fazilka and S. A. S. Nagar districts, 90-95 per cent TCA is irrigated. In north Haryana, all the districts except Panchkula have more than 95 per cent TCA under irrigation. Like irrigation level of NSA (Fig. 1) 3 districts of southern Haryana, Rewari, Gurugram and Faridabad have more than 95 per cent TCA under irrigation. In this regard, Rohtak, Hisar and Jhajjar districts in central Haryana have moderate level of irrigation. Contrary to these three districts of southern Haryana, Charkhi Dadri, Mahendergarh and Nuh have less than 80 per cent TCA under irrigation. The two adjoining districts in this region, Bhiwani and Palwal also have low level of irrigation.

Fig. 3 shows district-wise distribution of NAI by source of irrigation in Punjab-Haryana region. The size of the circle is proportionate to NAI of the district and its divisions show the proportion of area irrigated by different sources of irrigation. The irrigated area is comparatively less in the Shivalik foothill districts of both the states and Aravali region of southern Haryana. Overall, the NAI in Punjab is 4,095 thousand ha, while it is 3,343 thousand ha in Haryana. The ratio of irrigated area between Punjab and Haryana is 55:45. Interestingly, the ratio of the cultivated area between the two states is also almost same as it is 54:46. Taking Haryana and Punjab together, about two-third area is irrigated by tubewells, while the remaining area is almost irrigated by canals. However, this 67:33 ratio of tubewell and canal irrigated area is defied when these two states are taken separately. In Punjab about 72 per cent area is irrigated by tubewells and the remaining 28 per cent NAI is mostly

irrigated by canals, but in case of Haryana tubewells irrigate about 63 per cent NAI and remaining 37 per cent area is irrigated by canals. There is an interesting spatial distribution of source-wise irrigation in Punjab-Haryana region. A contiguous belt of almost 100 per cent tubewell irrigated belt runs parallel to the foothills of Shivaliks in Majha, Doaba and eastern Malwa regions of Punjab and northeastern Haryana plains extending along Yamuna River. However, the western districts of Malwa region of Punjab (Muktsar, Fazilka, Bathinda, Faridkot, Mansa and Barnala) and adjoining northwestern and central districts of Haryana (Sirsa, Hisar, Jind and Rohtak) are dominantly canal irrigated. The canal water hardly reaches most parts of southwestern and southern Haryana. Four districts of this area, Mahendergarh, Rewari, Gurugram and Faridabad, are 100 per cent tubewell irrigated and remaining 5 districts are dominantly tubewell irrigated. Overall, the quality of irrigation in southern Haryana is poor owing to lack of both surface and groundwater resources.

Fig. 4 depicts the spatial pattern of density of irrigation pumping sets in Punjab-Haryana region. It is expressed as number of pumping sets per thousand ha net sown area and it shows the availability of pumping sets used for drawing for irrigation. In Punjab Haryana region, there are 290 pumping sets per thousand ha. But the density of pumping sets in Punjab (337) is much higher than in Haryana (232). There is considerable inter-district variation in Punjab where the density of pumping sets is very high in the districts of Gurdaspur, Amritsar, Kapurthala and Faridkot and it is very low to low in Fazilka, Mansa and SAS Nagar districts. On the other hand, pumping set density is very high in only two

districts of Haryana, namely Sonapat and Jhajjar. Overall, the western and southern districts of Haryana have low density of pumping sets. The lowest density is found in Mahendergarh, Bhiwani and Nuh districts. The belt of low to moderate pumping set density in Punjab-Haryana region runs along Rajasthan border from Fazilka to Nuh districts. On the other hand, the belt of high to very high pumping set density runs in northwest to southeast direction from Gurdaspur district in Punjab to Jhajjar district in Haryana. It roughly coincides with the belt of high tubewell irrigation in the region.

To sum up, Punjab-Haryana region is one of the most irrigated areas in India. Comparing the two states, the level of irrigation development is higher in Punjab than in Haryana. In terms of the parameters of

irrigation development portrayed by maps, there are not very significant spatial/regional differences in the level of irrigation in Punjab. But the state of Haryana witnesses significant spatial/regional variations in irrigation level. The southwestern and southern part of the state has low irrigation level as it lacks the availability of both surface and groundwater resources. Tubewell are the main source of irrigation in both the states, but the southwestern parts of Punjab and northwestern and central parts of Haryana have the dominance of canal irrigation.

**Dr. M.S. Jaglan**, Formerly Professor,  
**Narender Kumar**, Research Scholar  
Department of Geography,  
Kurukshetra University,  
Kurukshetra (Haryana).



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