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## Agricultural Infrastructure Development index (2018-19), Haryana: A district wise ranking

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### Abstract

The present paper is an attempt to rank the districts of Haryana according to agricultural infrastructure development in 2018-19. The rank of districts in agricultural infrastructure development has been assigned by Deprivation Index Method. Further, districts are classified into developed (D), moderately developed (MD) and less developed (LD) category on the basis of values of index. The study reveals that agricultural development in the state is found to be concentrated mainly in thirteen districts of the north-eastern and middle part of Haryana. This proves the divergent agricultural development in the state and is a serious issue of concern and requires immediate attention of state government.

**Keywords:** *Agricultural Infrastructure, Development, Deprivation index, Haryana.*

### 1. INTRODUCTION

The theories relating to economic development and growth always put emphasis on the role of infrastructure. Infrastructure refers to services drawn from the set of public works that traditionally has been supported by the public sector, though in many cases, the infrastructure services may be rendered by private sectors. Public-sector investment, mostly in hard infrastructure, has tended to 'open up' underdeveloped regions to private-sector investment in soft infrastructure. It is this coupling of public and private-sector investment which has the potential to promote centre periphery integration and reinforce agricultural development. Under this scenario the provision of rural infrastructure becomes an engine for economic development. According to Rostow (1960) in his theory of 'Stages of Growth' and pre-condition for takeoff- availability of infrastructure is pre condition. The role of social overhead capital in economic development is more vital.

In a study by Deno and Eberts (1989), it was found that a significant increase in personal income was appropriated when infrastructure (of all types) was created in rural areas. However, the authors concluded that most of the effect lasted only for a short span of time – usually less than one year. The



installation of physical infrastructure has the potential to generate employment as workers are used in the construction process. Jacoby (1994) observes that construction jobs are created rather rapidly following the brief contracting period that is necessary after a decision is made to invest in a project.

Minten (1999) attempted to understand the level of influence of infrastructure on the prices of agricultural produces in Madagascar. Since changes in the prices of food grains do impact on the welfare of the individuals through alteration in consumption, the study investigated whether presence of infrastructure (especially the transportation) often determines the price level after market liberalization as transport costs, that is different due to distance and the quality of infrastructure, influence how the benefits (costs) from a liberalized environment are shared between producers and other economic agents, i.e. transporters, middlemen, and consumers. The study found that hard infrastructure is an important determinant of producer price levels. Price levels decrease significantly as the distance to main roads increases and the quality of infrastructure decreases, and they decrease relatively faster over shorter distances than over longer distances.

## **THE STATE-HARYANA**

Haryana is a landlocked state in northern India one of the 29 states in India. It was carved out of the former state of East Punjab on 1 November 1966 on a linguistic basis. It is between 27°39' to 30°35' N latitude and between 74°28' and 77°36' E longitude. It is bordered by Punjab and Himachal Pradesh to the north and by Rajasthan to the west and south. The river Yamuna defines its eastern border with Uttar Pradesh. Haryana surrounds the country's capital Delhi on three sides, forming the northern, western and southern borders of Delhi. Consequently, a large area of south Haryana is included in the National Capital Region for purposes of planning for development. It stands 21st in terms of its area, which is spread about 44,212 km sq which is 1.3% of the geographical area of the country. As of 2011 census of India, the state is eighteenth largest by population with 25,353,081 inhabitants. GDP of Haryana is 3.89 lakh crore.

Haryana is one of the most economically developed regions in South Asia, and its agricultural and manufacturing industries have experienced sustained growth since the 1970. There are two agro climatic zones in Haryana. The north-western part is suitable for rice, wheat, vegetables and temperate fruits, and the south-western part is suitable for high-quality agricultural produce, tropical fruits, exotic vegetables and herbal and medicinal plants. The cultivable area is 3.7 m ha, which is 84% of the geographical area of the state. 3.64 m ha, i.e. 98% of cultivable area, is under cultivation development of agriculture has been the major factor behind superior performance of Haryana. It was

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one of the early adopter of green revolution in the country. Moreover, growth rate in agriculture is less than 2 percent in comparison to above 10 percent growth rate in non-agricultural sectors of the state. Therefore keeping above discussion in mind the present study is an attempt to measure the rank of districts in agriculture infrastructure development in Haryana over the period of 2018-2019.

## **2. OBJECTIVES AND METHEDLOGHY OF THE STUDY**

The main objective of the study is to measure the rank of districts in agricultural infrastructure development in Haryana. For the purpose, we have computed the agricultural development level attained in certain indicators at district by using Deprivation Index Method. A vector of 9 indicators (List of the indicators is at Appendix-I) encompassing dimensions of agricultural development is used for ranking districts in agricultural infrastructure development.

### **2.1 CONSTRUCTION OF COMPOSITE INDEX**

Development is a multidimensional phenomenon. Each of these dimensions is measured in different units. Given the difficulties in analyzing development with respect to each of this dimension, researchers generally prefer to aggregate them—what one calls composite index, to depict the overall status of region. For reduction of this dimensionality problem many methods have been suggested in the literature. While some are weighted others are weight free. The literature is silent vis-à-vis superiority of any method over others. Keeping the limitation in mind, a weight free index has been constructed.

### **2.2 DEPRIVATION INDEX METHOD**

The Deprivation index (DI) is constructed in following steps...The first is to define a measure of deprivation that a region suffers in each of its variables. The notion of deprivation used by the UNDP (United Nation Development Programme) is one of absolute deprivation. In order to get an index of deprivation, the measure of regions is divided by the difference between the maximum and minimum value. Mathematically,  $D_{ij}$  is the deprivation indicator for the  $Z_{th}$  region with respect to the variable is defined as



$$\text{Max}_i \dots P_{ij}$$

$$D_{ij} = \frac{\dots}{\dots}$$

$$\text{Max}_i \dots \text{Mini}_i$$

The second step is to define an average deprivation index by taking a simple average of all the indicators

$$D_j = \frac{\sum_{i=1}^n D_{ij}}{n}$$

Finally, the Development index (DI) is defined as absence of deprivation.

Mathematically

$$(DI)_j = (1 - \sum D_{ij} / n)$$

### 2.3 CATEGORIZATION OF DISTRICTS

For the sake of easy comparison among development dynamics across different districts over time the study classified all the districts into three categories namely; developed, moderately developed and underdeveloped. This categorization for both method used in study is made by assuming that the worked out composite index follows a normal distribution with mean ( $\mu$ ) and standard deviation  $\sigma$ . The groups are categorized by using the following cut-off points.

Developed  $(D) \geq \mu + 0.5 \sigma$

Moderately Developed (MD)  $\mu - 0.5 \sigma \leq \text{and} < \mu + 0.5 \sigma$

Less Developed (LD)  $LD = \leq \mu - 0.5 \sigma$

### 2.4 SOURCES OF DATA

The nature of study dictates the requirement of the secondary sources of information. Accordingly, all the required data has been obtained from various authentic sources. Some indicators have been manipulated by taking two and more different variables related with parent variable. The main source of data is as follow:



- Statistical Hand Book of Haryana issued by Economic and Statistical Organization, Planning Department, Government of Haryana.
- Economic Survey of Haryana issued by Economic and Statistical Organization, Planning Department, Government of Haryana, (various issues).

## FINDING OF THE STUDY

The results pertaining to the agricultural development are depicted in the table 1. The table 1 demonstrates that in 2018-19 Karnal stands first in agricultural development followed by Kaithal Panipat, Faridabad, Kurukshetra. Table shows that thirteen districts are in the category of developed districts. While five districts namely Hisar, Palwal and Rohatk are moderately developed and remaining four districts are in less developed category. Charkhi Dadri stands in last position in agricultural infrastructure.

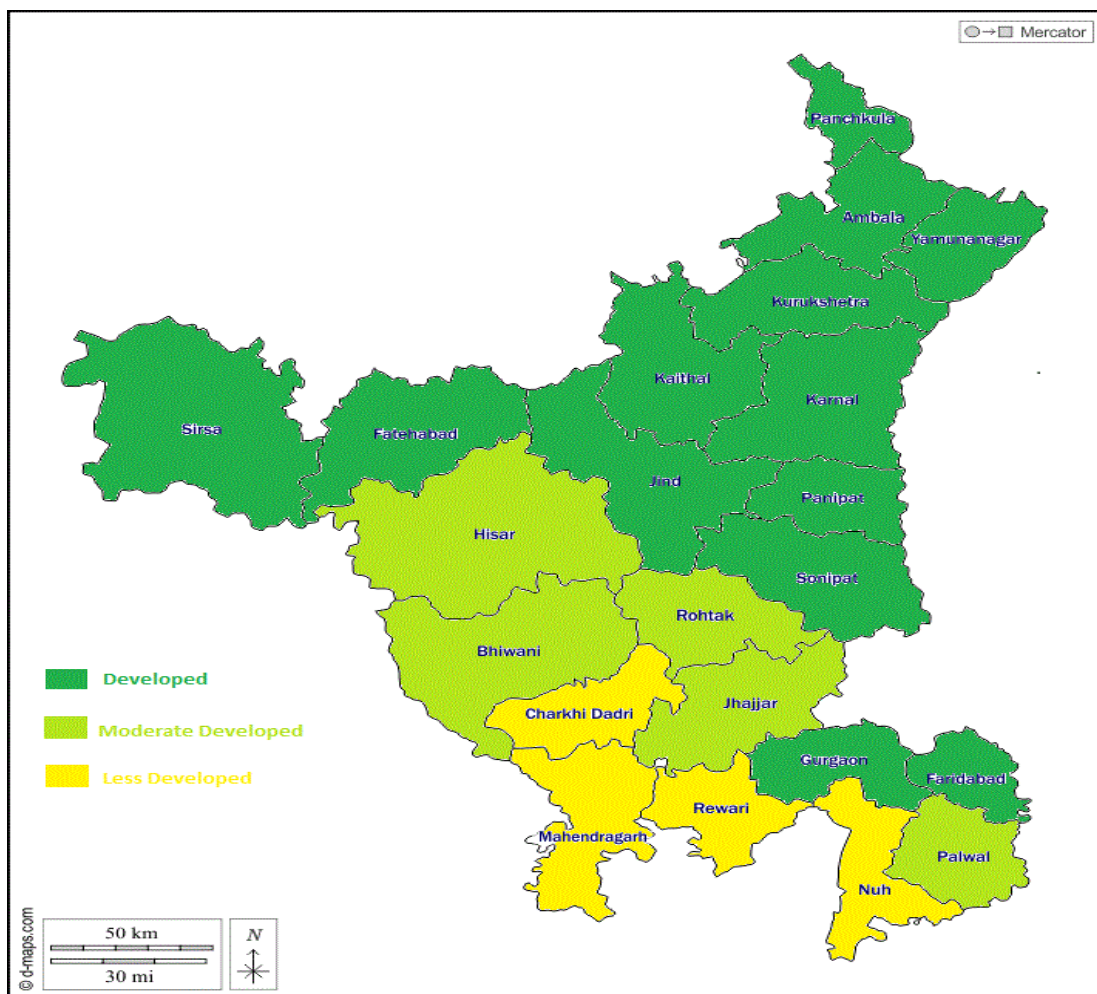
**Table 1. Agricultural Infrastructure Development Index 2018-19 (Deprivation Method)**

District	Index	Rank	Status
Ambala	0.591	6	DD
Bhiwani	0.446	17	MD
Charkhi Dadri	0.137	22	LD
Faridabad	0.612	4	DD
Fatehabad	0.567	8	DD
Gurugram	0.552	9	DD
Hisar	0.486	15	MD
Jhajjar	0.470	16	MD
Jind	0.521	13	DD
Kaithal	0.637	2	DD
Karnal	0.664	1	DD
Kurukshetra	0.592	5	DD
Mahendragarh	0.258	21	LD
Nuh	0.346	19	LD



Palwal	0.487	14	MD
Panchkula	0.587	7	DD
Panipat	0.622	3	DD
Rewari	0.324	20	LD
Rohtak	0.426	18	MD
Sirsa	0.523	12	DD
Sonipat	0.531	11	DD
Yamunanagar	0.538	10	DD

Note: (1) Where, D =  $\geq 0.497$ , MD =  $> 0.366$  &  $< 0.497$  and LD =  $\leq 0.366$





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## **4. CONCLUSION**

The present study was an attempt to measure the rank of districts in agricultural development of Haryana in the year of 2018-2019. Further, developed and moderately developed category values of indices indicate that in some extent agricultural development in the state is concentrating on north eastern and middle part of Haryana. This proves the unbalanced agricultural development in the state and is issue of concern and need to attention.

## **5. Appendix-I**

### Agriculture Development Indicators

- (i) Percentage of net irrigated area (N.I.A.) to net sown area (N.S.A.).
- (ii) Number of pump sets per hectare of N.S.A.
- (iii) Length of metalled roads per 100 sq. km. of area as proxy for transport infrastructure.
- (iv) No. of tractors per hundred hectare of net sown area (N.S.A.).
- (v) Number of banks per lakh of population.
- (vi) District-wise Credits - Deposits ratio of Schedule Commercial Banks.
- (vii) Warehouse capacity in tone per lakh hectare of net sown area (N.S.A.).
- (viii) Regulated market per lakh hectare of net sown area (N.S.A.).
- (ix) District-wise number no. of hospital beds per lakh of population available in each district as a proxy for health infrastructure.

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