

NIDM

# **Haryana**

*National Disaster Risk Reduction Portal*



Map of Haryana State<sup>1</sup>

## 1. STATE PROFILE<sup>2, 3</sup>

### 1.1 General<sup>2,3</sup>

Haryana is a State in the northwest of India and was carved out of the Indian State of Punjab on 1st November 1966. With capital at Chandigarh which is administered as a Union Territory, this north Indian land locked state is located between 27° 39' and 30° 35' N latitude and between 74°27' and 77°36' E longitude with just 1.37% of the total geographical area and less than 2% of India's population. Almost 1/3 of the total area of the state falls in the National Capital Region. Haryana is an agrarian state whereas 85% of its area is under cultivation, engaging about 78% of its population in agriculture. Haryana has carved a place of distinction for itself during the past three decades, whether it is agriculture or industry, canal irrigation or rural electrification. Haryana is among the most prosperous states in India, having one of the highest per capita incomes in the country.

## 1.2 Administration <sup>2</sup>

The State is divided into four divisions for administrative purposes- Ambala, Rohtak, Gurgaon and Hissar. Within these four divisions there are 21 districts viz. Ambala, Kurukshetra, Panchkula, Yamuna Nagar, Faridabad, Palwal, Gurgaon, Mahendragarh, Mewat, Rewari, Bhiwani, Fatehabad, Hisar, Kaithal, Sirsa, Jhajjar, Karnal, Panipat, Rohtak, Sonapat and Jind.

## 1.3 Geography

Haryana has four main geographical features.

- Shivalik Hills to the north east
- Ghaggar Yamuna Plain forming the largest part of the state
- Semi- desert sandy plain in the south west
- Aravalli hills in the south.

## 1.4 Socio - Economic indices - Haryana <sup>2</sup>

| Sr.No. | Particulars                       | Haryana          |
|--------|-----------------------------------|------------------|
| 1      | Population(2011)                  | 253.53 lakh      |
| 2      | Rural population(2011)            | 65.21 %          |
| 3      | Urban population(2011)            | 34.79 %          |
| 4      | Growth rate (2001-2011)           | 19.90 %          |
| 5      | Literacy rate overall             | 76.64 %          |
| 6      | Birth rate                        | 23.4 per/000     |
| 7      | Death rate                        | 6.6 per/000      |
| 8      | Infant mortality rate             | 55 per/000       |
| 9      | Population density                | 573 per/sq km.   |
| 10     | Sex ratio                         | 877 per/000      |
| 11     | Per capita income(current prices) | Rs.1,01,681      |
| 12     | Population below poverty line     | 13 %             |
| 13     | Gross State Domestic Product      | Rs. 2,57,793 cr. |

## 1.5 Physiographic Characteristics <sup>3</sup>

Haryana as a whole is a plain area except some hills of Shivalik system in the northern and Aravalli system in the southern parts of the state. For regional divisions, Haryana plain is a part of the great plain namely Indo Gangetic plain which was formed by the deposition of Alluvium brought by the Himalaya & Rivers. In this region i.e. Haryana plain three sub divisions have been delineated.

**The eastern Haryana plain** Consisting the districts of Panchkula, Ambala, Yamuna Nagar, Kurukshetra, Kaithal, Karnal, Panipat, Sonapat, Rohtak, Jhajjar & Jind is bordered by low hills of shivalik system & Himachal Pradesh in the northeast, Punjab in the west, by the Southern Haryana plain in the south by western Haryana plain in the west and by Uttar Pradesh across the

Yamuna river and Delhi U.T. in the east. Shivalik tract consists of a broad tabled land, which is composed of silt, sand, clay and conglomerates ranging in age from the middle Eocene to lower Pleistocene. The slope is generally from north east to south west in which direction most of the rivers flow. A large number of rain fed torrents flow down the outer slopes of the Shivalik and spread much gravels and rebbles in their beds of these rivers and streams, the Yamuna, the Ghaggar, the Markanda, the Chautang and the Shivalik are the important ones. The region is divided of any perennial eastern part of the region. The rivers Ghaggar, Markanda, Saraswati and Yamuna have their flood plains commonly known as khaddar or Bet areas. The soils of these flood plains are river borne sand, silt.

**The Western Haryana Plain** makes its limits with Punjab in north, Rajasthan in the west and southwest, southern Haryana plain in the south and the eastern Haryana plain in the east. It covers the districts of Sirsa, Fatehabad, Hisar and Bhiwani. The region is different from eastern Haryana plain & southern Haryana plain because of the presence of number of sand dunes of varying heights & magnitudes wind erosion is active and water table in deep. The region is also geographically known as “ Bhiwani Bagar ”. Only Ghaggar River drains the northern part of the region and its flood plain bifurcate the Sirsa district. The region is important & cotton, grains & oil seeds.

**The Southern Haryana Plain** comprising the districts of Mahendergarh, Rewari, Gurgaon and Faridabad. Delhi is bounded by U.P. in east, by Rajasthan in the south and west and by western Harayana Plain & eastern Harayana Plain in the north. It differs from the western Haryana Plain because of the presence of Aravalli off shoots and its slopes towards the north in its western parts and undulating character of the surface. The region also has dunes of varying size with Aravalli offshoots in Mahendergarh & Rewari. While in Gurgaon or Faridabad, Aravalli off shoots are responsible for undulation in the region. Number of small rainy seasonal rivulets carries the water in Rajasthan in to southern Haryana. They represent the inland drainage. In view of the small volume of water carried by them, they lack in potentialities for utilization on an extensive scale. Sahibi valley project over Sahibi River is coming up. Here the litho logical diversity in alluvial monotony has a strong bearing upon the distributional pattern of land use, cropping pattern and crop production the undulating sandy plain of the southern Haryana is a scene of dramatic development which will bring prosperity in the region.

### Haryana at a Glance <sup>2</sup>

|    | Particulars            | State Position |
|----|------------------------|----------------|
| 1  | Area                   | 44212 Sq. Km   |
| 2  | Districts              | 21             |
| 3  | Divisions              | 04             |
| 4. | Sub-divisions          | 54             |
| 5  | Tehsils                | 74             |
| 6  | Sub-tehsils            | 44             |
| 7  | Blocds                 | 119            |
| 8  | Towns                  | 154            |
| 9  | Villages {census 2011} | 6841           |

|    |                        |       |
|----|------------------------|-------|
| 10 | Area under forest      | 6.6%  |
| 11 | Net Area sown          | 82.2% |
| 12 | Net irrigated area     | 84.2% |
| 13 | Total panchayats       | 6155  |
| 14 | Municipal Corporations | 9     |
| 15 | Municipal Councils     | 14    |
| 16 | Municipal Committees   | 51    |

## 2. DISASTER RISK PROFILE <sup>4, 5</sup>

Haryana State is vulnerable to a multitude of disasters and is categorized as a multi hazard prone state. The state experiences various kinds of disasters of recurrent nature which result in loss of life, livelihood and property (public and private), and disruption of economic activity, besides causing immense misery and hardship to the affected population. Haryana is vulnerable to Earthquake, Industrial & Chemical Disaster, Floods, Drought, Accidents, Fire, Health related Disaster, Hailstorm, Bio Terrorism etc.

### 2.1 Earthquakes <sup>4</sup>

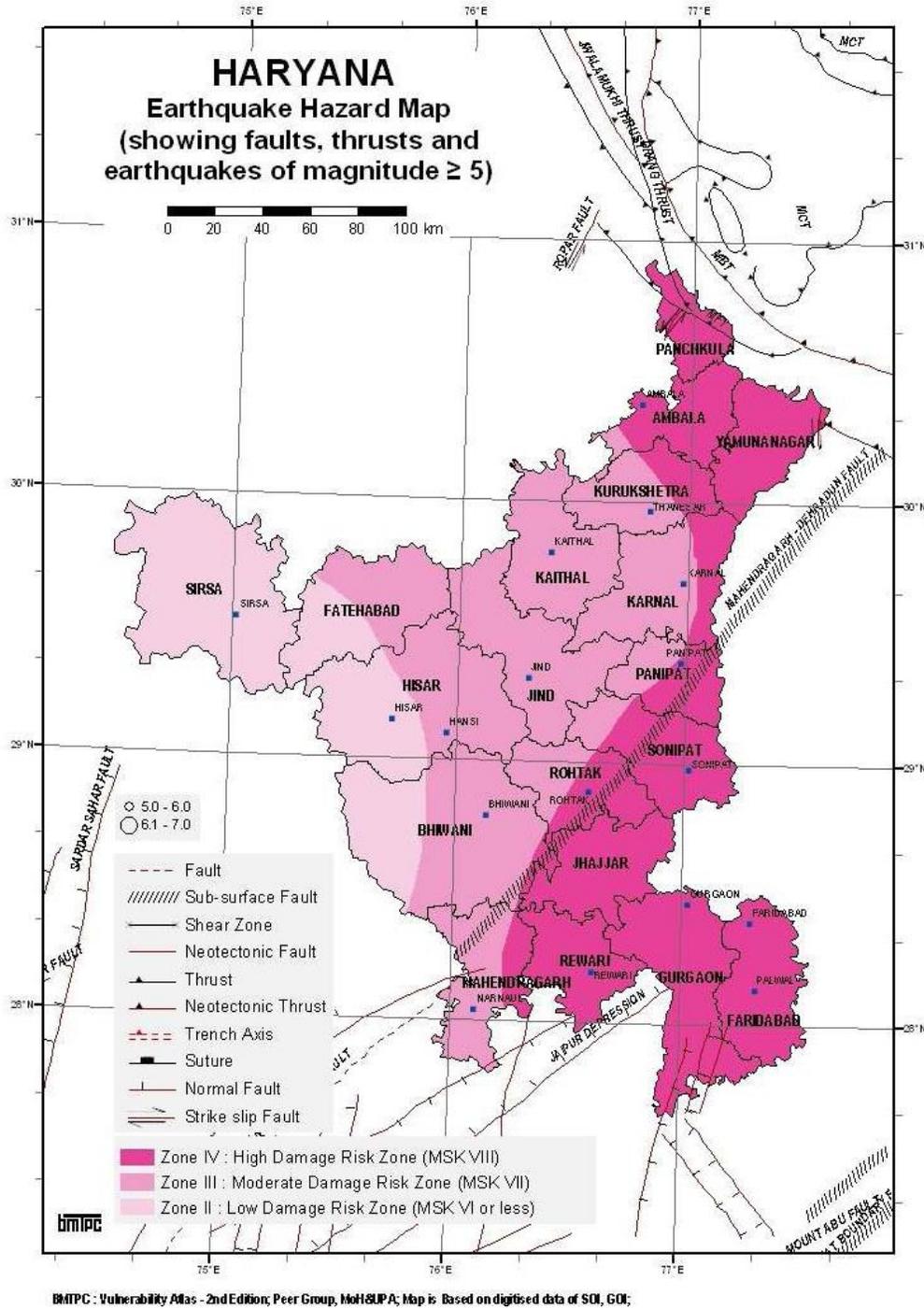
**Haryana falls in the seismic zone IV, III, & II** and therefore, the region is vulnerable to earthquakes. Although, in recent past, no major earthquakes have occurred in Haryana, yet tremors have been felt whenever there is an earthquake in the Himalayan foot-hills.

The feet remains that the region is not free from potential affecting the region are:-

- 1.The hidden Moradabad fault
- 2.The Sohna fault
- 3.Junction of Aravali and Alluvium near Delhi
- 4.Mathura fault
- 5.Delhi Haridwar fault

Earthquakes have occurred during 1820-1988 with their epicenter between latitude 26.00 to 33.00 North and longitude 73.00 to 79.00 East within which the state of Haryana falls are around 125 of magnitude varying between 4.0 – 8 .0 on Richer Scale. In the last decade, towns of Faridabad and Gurgaon being in proximity of Delhi have grown in the major residential-industrial towns whereas the town of Panchkula has emerged as a major residential city of the state. And all of them lie in earthquake zone IV. As a result of this, an unplanned development which is not corrected and mainstreamed by means of preparedness /prevention/mitigation measures will pose a greater challenge if an event occurs. The combination of moderate to high hazard, high vulnerability and high exposure results in high level of disaster risk. It is understood that a majority of inhabitants in Haryana and sectoral agencies involved in mainstream development are not aware of the existing studies, hazards, risk and vulnerability and therefore are not in a position to undertake suitable measures for preparedness and mitigation. In addition

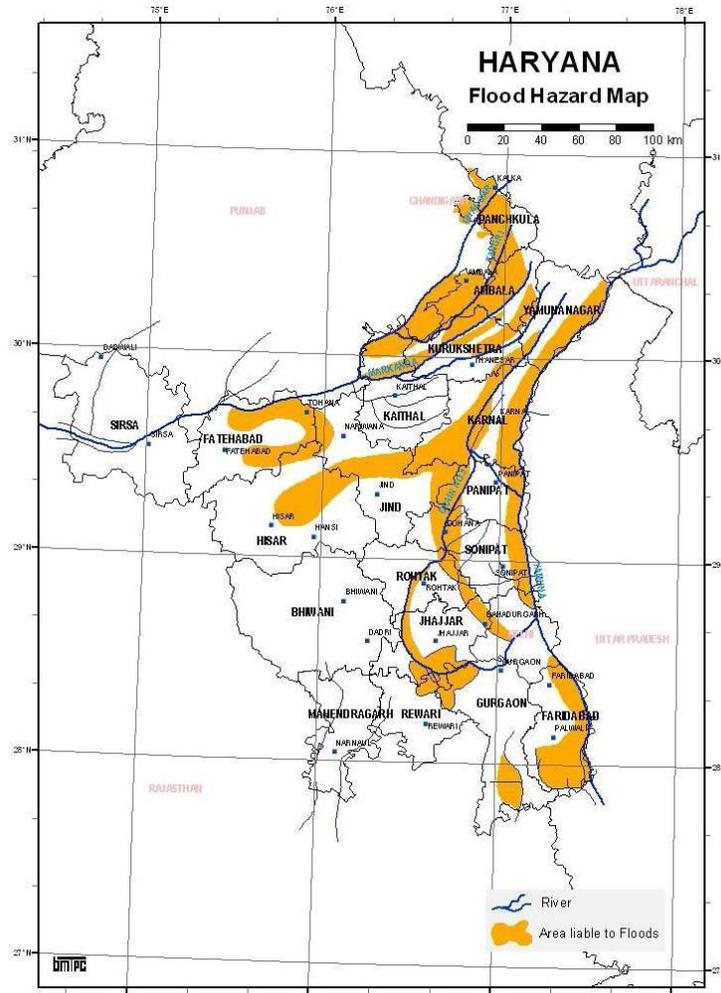
there is a lack of sharing of information amongst stakeholders and at times the existing maps are not available for public use.



## 2.2 Floods <sup>4</sup>

Floods have been a recurrent phenomenon in Haryana from time immemorial. Many part of the state of Haryana are prone to flooding. The devastating floods hit Haryana many times. In 1977, 1978, 1980, 1983, 1988, 1993 and 1995, 1996 floods occurred in Haryana. Floods have been causing extensive damage not only to standing crops but also loss of lives and cattle. The floods in Haryana can occur because of some natural reasons such as its physiographic situation which makes a depressional **saucer shape** zone around the Delhi-Rohtak-Hisar-Sirsa axis and it has a poor natural drainage system and sometimes the heavy precipitation becomes a major contributing factor in causing flood as such in case of Rohtak flood, 1995. The state receives an average rainfall of about 650 mm. The average annual rainfall varies from less than 300mm in the western and south western parts of Sirsa, Hisar and Bhiwani districts along the Rajasthan border to over 1100mm in the north-eastern Shivalik hilly tracts of Panchkula and Yamunanagar districts along Himachal Pradesh border The problem of floods is further accentuated by the existence of human-made barriers like the networks of roads and canals, which obstruct the natural flow of water and sometimes Drainage systems back up because they cannot cope up with the volume of water or are blocked by rubbish and garbage. On the other hand indiscriminate use of water for irrigation and deve lopment of low-lying areas and depressions has also created problem of drainage congestion and water logging which create a havoc of flooding.

According to assessment of Rashtriya Barh Ayog and as reported by states to the 11th plan working group, **flood prone area in Haryana is 23.50 lakh hectares**. In flood manual of Haryana, there are 102 vulnerable points in Haryana which need special attention during monsoon.'



### 2.3 Drought <sup>4</sup>

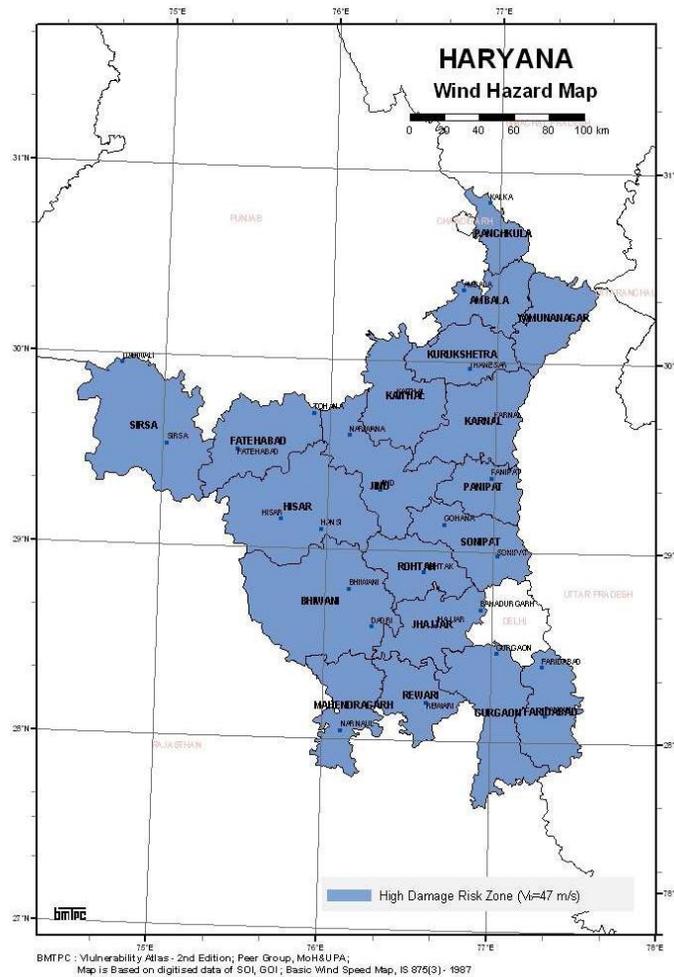
Where some parts of Haryana state is prone to flood, its some parts have been prone to drought also. According to the October 1994 guidelines, 9 Blocks of Districts Mahendergarh and Rewari and 28 Blocks of another 4 districts ( Bhiwani, Rohtak, Hisar and Sirsa) all falling on the western and south-western side, and in all constituting **about 1/3 of the state, fall in the DDAP/DDP region**. The reason behind this is that topography of the state is such that the districts of Gurgaon, Mahendergarh, Rewari and part of Bhiwani and Jhajjar cannot be brought under gravity canal commands. To overcome this difficulty, lift canal system with a total length of 1665 km, has been developed. The drought affected South-Western parts of the state occupied sand dunes and Aravalli hills and not suitable for gravity flow irrigation, are provided with lift irrigation system namely the Jui, Indira Gandhi, Jawaharlal Nehru, Birendra Narayan Chakarvarti, Sahlawas and Jhajjar lift canals. There are four irrigation systems in the state, namely Western Yamuna Canal, Bhakra Canal, Agra Canal and Ghaggar Canal. The Western Yamuna Canal and Bhakra Canal system irrigate the major part of the state.

**2.4 Hailstorms** are also common phenomena in Haryana.

## 2.5 Winds <sup>4</sup>

The state experiences **gusty winds, dust storms and thunderstorms** during March to June. The wind velocity recorded at Ambala and Hisar shows that from October to September, it is higher (6.7 to 10.6 km/h) around Hisar than around Ambala (6.1 to 7.1 km/hr) but during post-monsoon and winter.

Out of total geographical area of 44.23 lakh hectares in the state, about 50% area is severely affected with the problems of **erosion, alkalinity, salinity and water logging**. Soil erosion occurs mainly due to water and wind. The soil erosion through water occurs mainly in the areas falling in Shivalik foothills and in Aravalli ranges. It is estimated that about 5.50 lakh hectare area is affected with this problem. About 12 lakh hectare area is affected with wind erosion which occurs mainly in sandy and dry belt areas of the state. An area of 2.32 lakh hectares is affected with the problem of alkalinity and 2.55 lakh hectares with salinity and water logging.



## **2.6 Other forms of Disasters <sup>4</sup>**

High pollution levels, Contamination of ground water and surface water, and heavy metals and pesticide contamination of soil etc. are emerging classes of man-made and environmental hazards. About **3766 sq km area in Haryana is underlain by saline groundwater**. Hisar, Kaithal, Gurgaon have been identified as endemic to fluorosis due to abundance in natural occurring fluoride bearing minerals.

Haryana has also a history of **industrial and road/rail/air accidents** such as Air Accident (Charkhi-Dadri 1995), Rail Accident at Ballabgarh, Dabwali Fire (1995), Sonipat Fire (1998), and recent Bomb explosion caused fire in Samjhota Express 2007. In addition to this the threat of **Global Warming and its resultant climatic variations** such as inter seasonal variations in rainfall; environmental issues and effect on wheat and rice production increase the vulnerability of the state. Issues related to rapid urbanization and waste disposal are assuming a gigantic proportion.

## **3. INSTITUTIONAL SETUP <sup>6</sup>**

### **3.1 Haryana State Disaster Management Authority and District Disaster Management Authorities**

Haryana State Disaster Management Authority and District Disaster Management Authorities have been constituted on 9-10-2007 as per provisions of Disaster Management Act, 2005. As per provisions of this Act Executive Committee has been constituted. Regular meetings of SEC are being held for approval of issues related to DM and monitoring of the decisions. The state has notified DM Rules in August 2010. The State Advisory Committee has been constituted and first meeting of the Committee is proposed. State and District Crisis Group has been formed and first meeting of the State Crisis Group was held on 15 th November, 2011. At the district level, District Crisis Group meets at regular intervals.

### **3.2 Emergency Operation Centre**

In Faridabad, first Emergency Operation Centre of the State has been inaugurated. The foundation stone of Multi Purpose Hall which have Emergency Operation Centre, Control Room & Training/conference hall, Civil Defence store room, has been laid down by Dr. Rakesh Gupta, Deputy Commissioner, and Faridabad on 7th May, 2012. The initiative was a result of a collaborative approach. Civil Defence, revenue Department, Fire Department, District Information Office will play a significant role in its establishment. It has staff includes Chief Controller (Fire Deptt), Tech. Assistant (DIO), Operator (Fire Deptt), Store keeper (Civil Defence) and other Clerical staff. Besides this, the District will make effort to establish DDMA Website, 08 specialized search and rescue teams, a robust alarm system for a close to zero response time and release of District Disaster Management Plan, Flood Management Plan and the EOC Manual.

### **3.3 Centres for Disaster Management**

Centre for Disaster Management was established at the Haryana Institute of Public Administration (HIPA) as its integral part on 1st July 1994 under the Central Sectoral scheme of the Natural Disaster Management Division of the Ministry of Agriculture, Government of India. The aim of the Centre is to promote prevention, mitigation, and preparedness, Emergency Response and recovery among the state officials and other stakeholders in the field of Disaster Management.

## **4. INITIATIVES <sup>7</sup>**

The state has developed District Disaster Management Plans and other manuals.

### **4.1 District Disaster Management Plans**

The below link has the list of District Disaster Management Plans for the Gurgaon , Jhajjar, Kaithal ,Kurukshetra , Mohindergarh, Panchkula, Yamuna Nagar, Fatehabad, Mewat, Panipat, Rewari , Rohtak, Karnal and Palwal districts of the Haryana state.

[http://revenueharyana.gov.in/html/disastermgmt/district\\_dm\\_plans.htm](http://revenueharyana.gov.in/html/disastermgmt/district_dm_plans.htm)

- State Flood Manual <sup>8</sup>

### **References:**

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