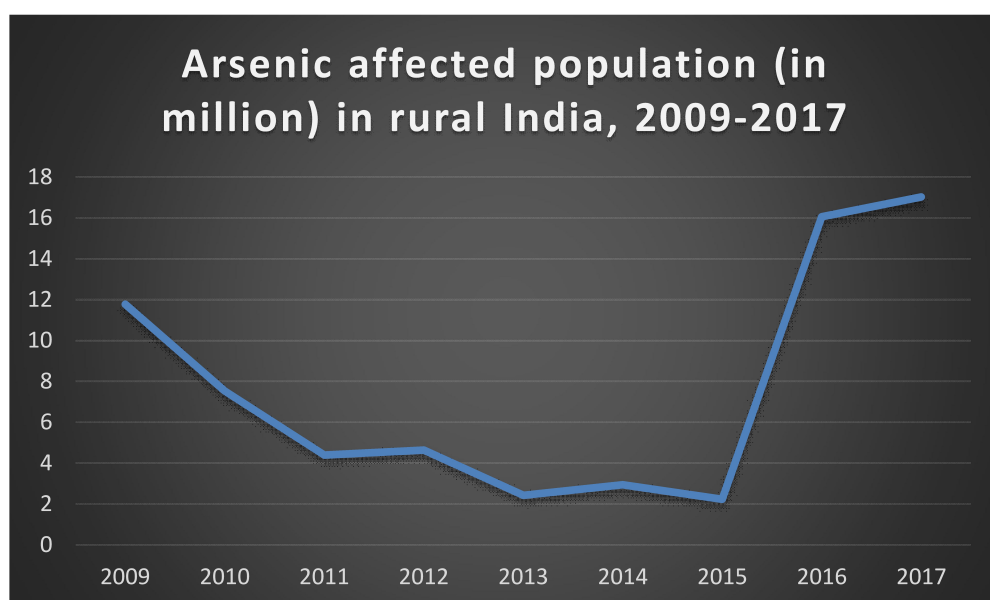


Mapping Arsenic affected habitations A Spatio-temporal lens

Arsenic Knowledge and Action Network

February, 2018



Data Source: Ministry of Drinking Water and Sanitation

South Asia Consortium for Interdisciplinary Water Resources Studies

Hyderabad, India

SaciWATERS

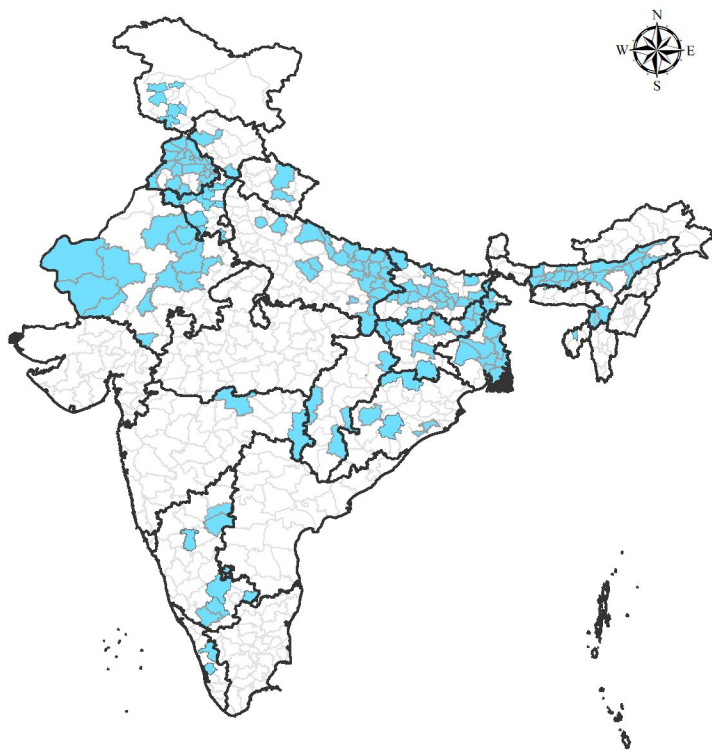
SOUTH ASIA CONSORTIUM FOR INTERDISCIPLINARY
WATER RESOURCES STUDIES


Arghyam
Safe, sustainable water for all

Spatial distribution of Arsenic in India

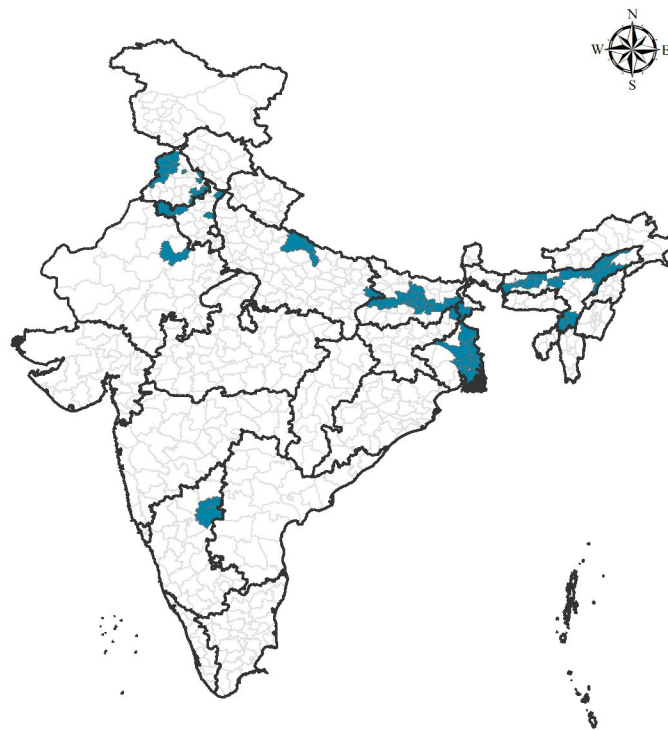
(a district level mapping)

Districts representing habitations affected with Arsenic in any year between 2009 - 2017



(Data source: Ministry of Drinking Water and Sanitation)

Districts representing more than 1% habitations affected with Arsenic in any year between 2009 - 2017

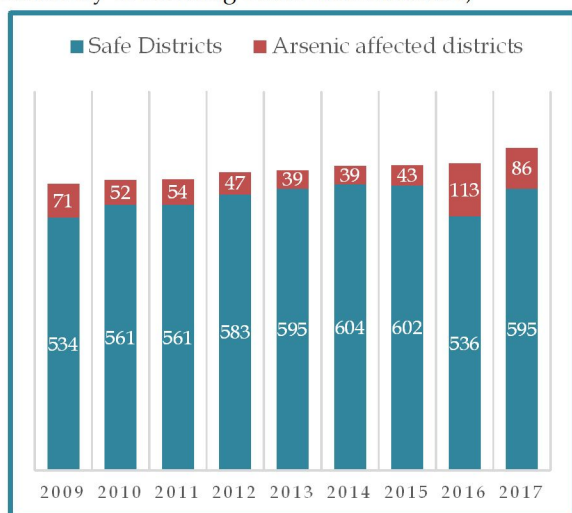


(Data source: Ministry of Drinking Water and Sanitation)

Habitation level non-spatial data from MDWS has been downloaded at district level and even if single habitation reports high arsenic, the district has been shown as affected.

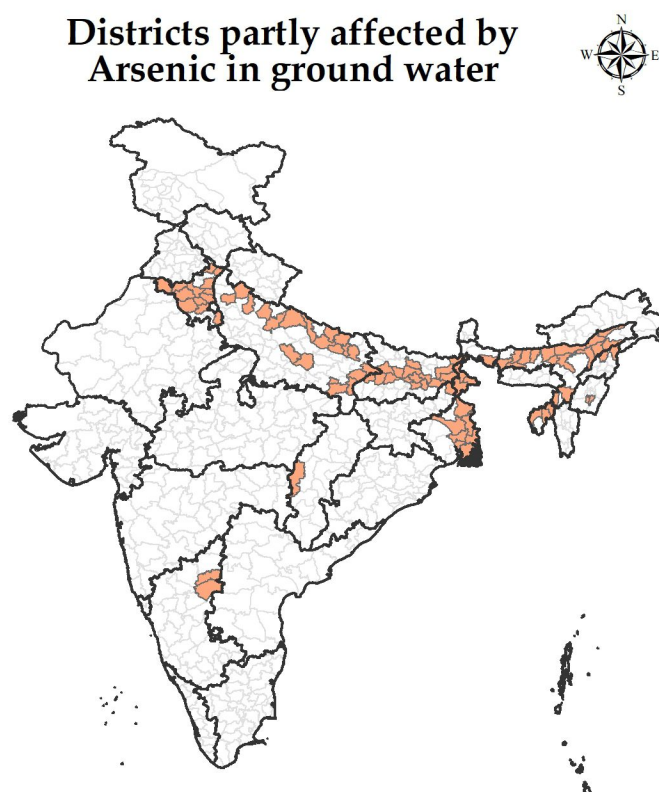
Graph showing total number of districts affected across years versus safe districts

(Source: Ministry of Drinking Water and Sanitation)



The chemical quality of shallow ground water is being monitored by Central Ground Water Board once a year through a network of 15640 observation wells located all over the country. Based on this Arsenic affected districts has been demarcated for the year 2009 as per the report published in 2014-15.

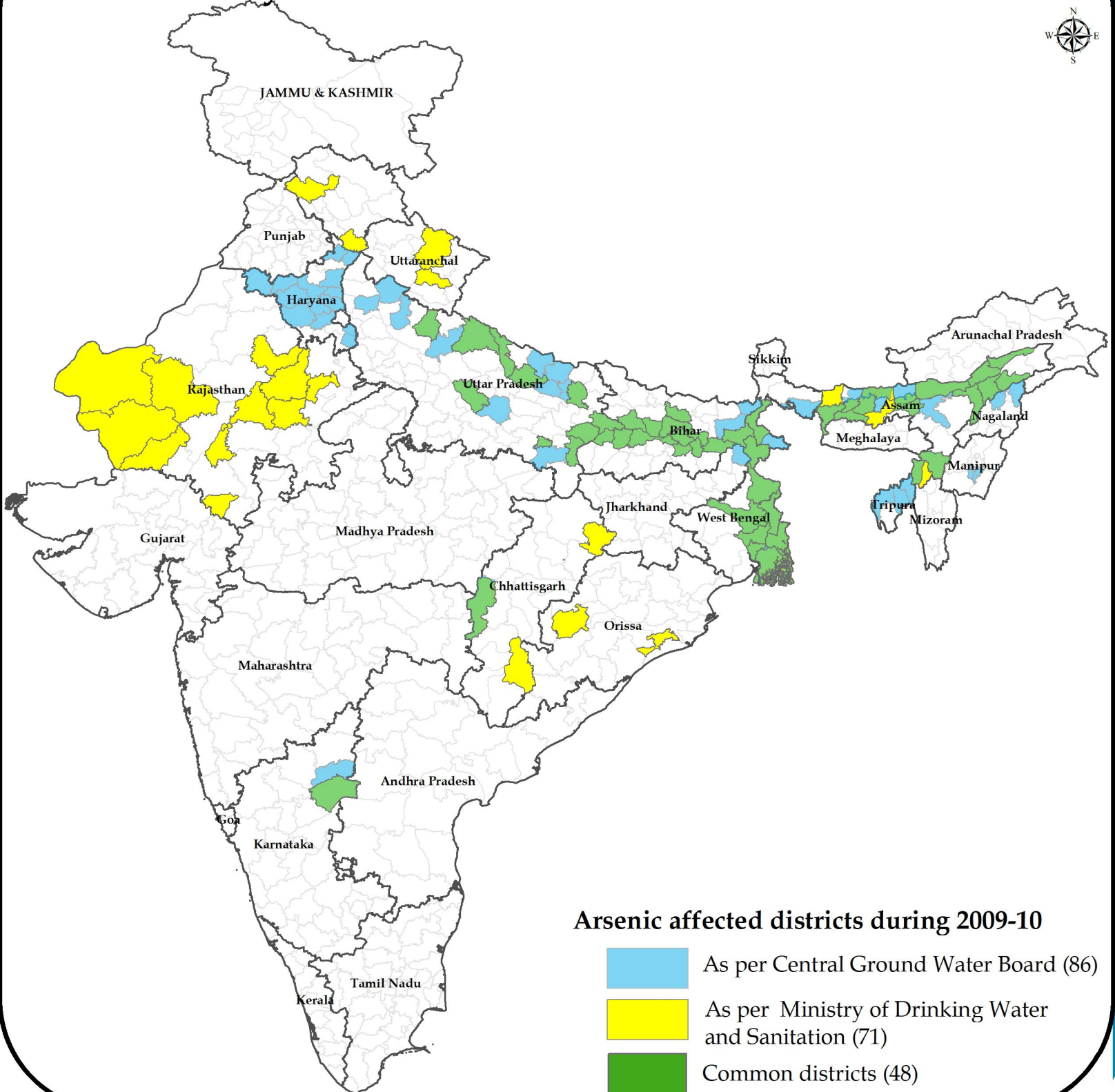
Districts partly affected by Arsenic in ground water



Affected districts (arsenic in ground water above 0.05 mg/l)

(Data source: Ministry of Water Resources, River Development and Ganga Rejuvenation, 2014-15)

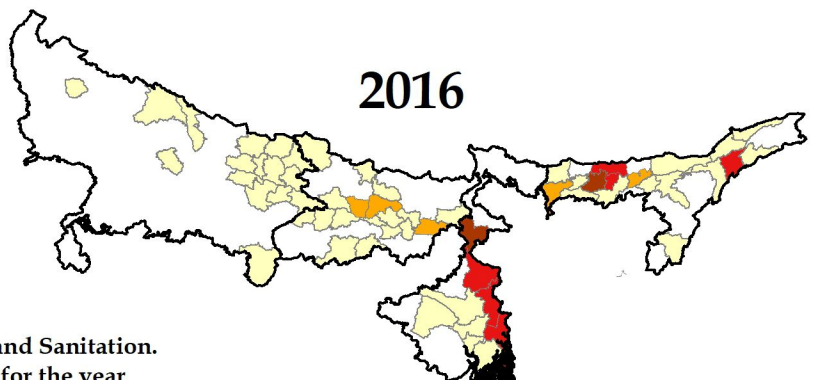
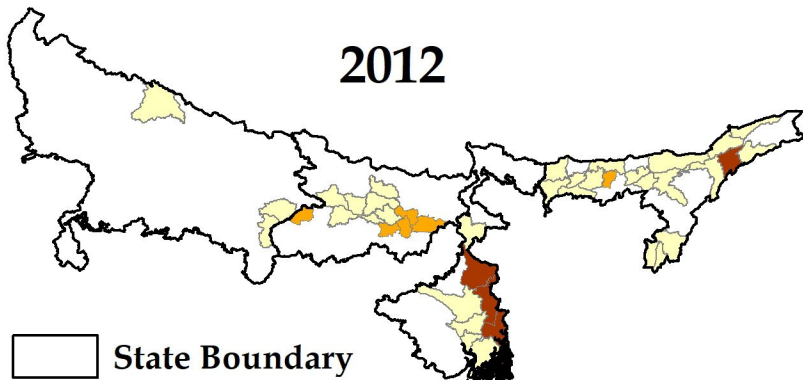
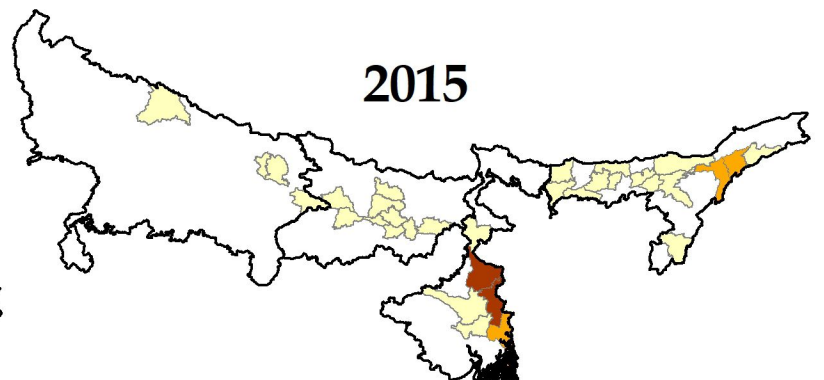
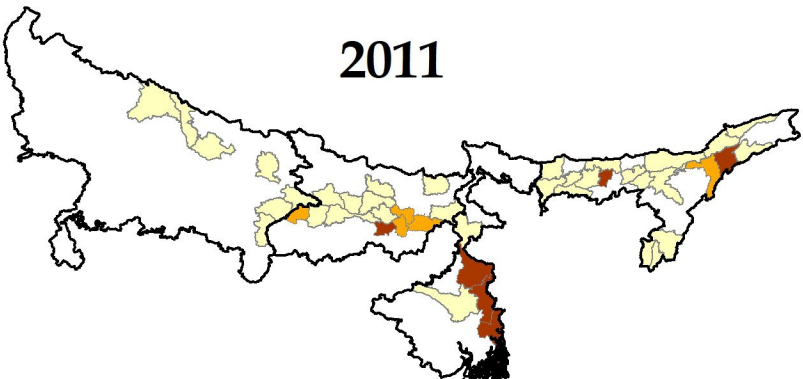
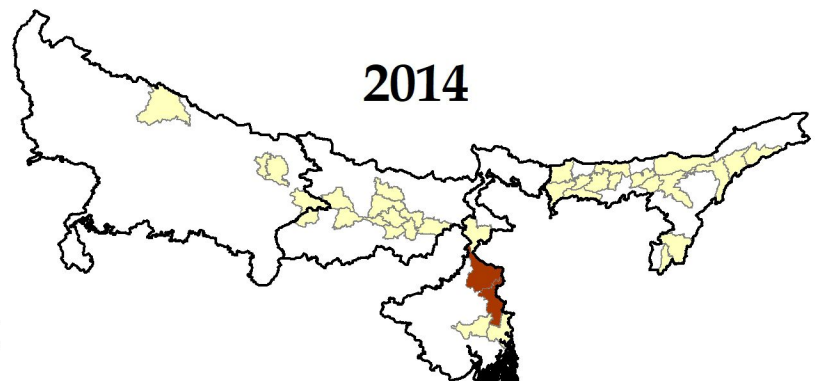
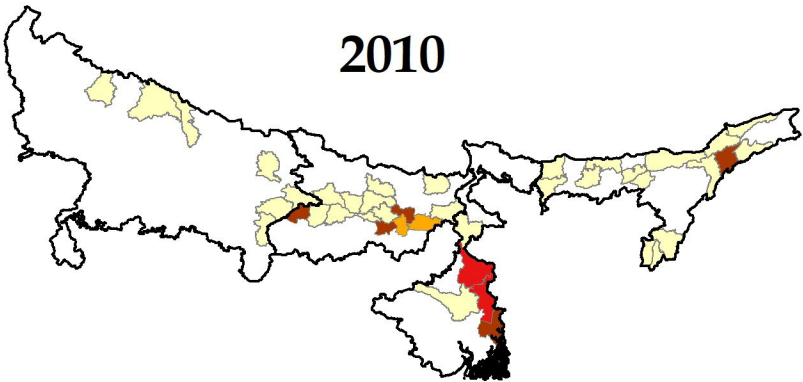
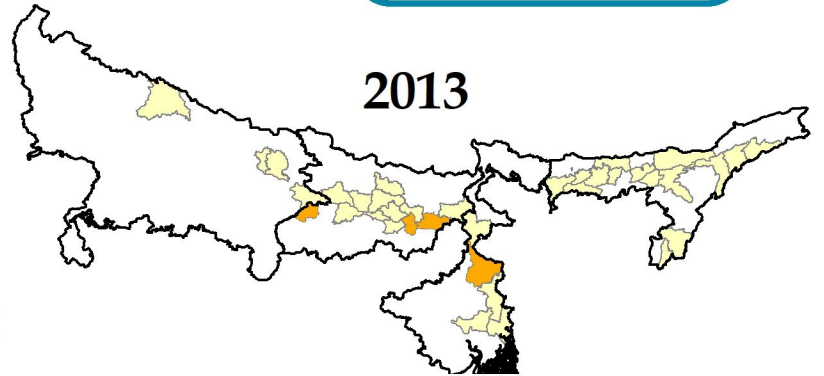
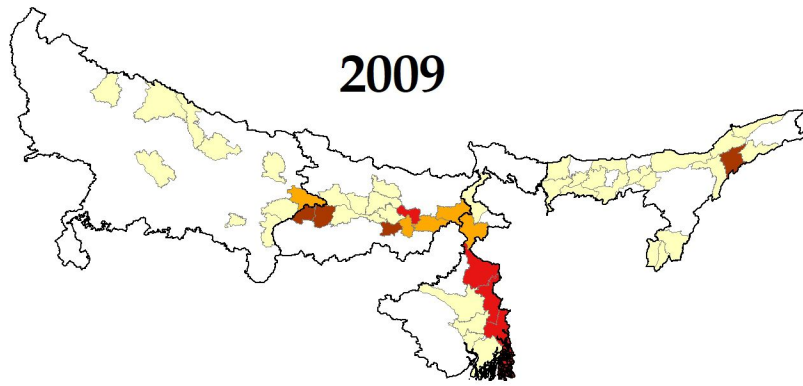
A composit map showing total districts affected with Arsenic by different set of sources for 2009 - 10



In India, the arsenic contamination has been found in 18 states between the year 2009 and 2017. During the same period, a more regular trend of high level of arsenic contamination has been reported in the region characterized as middle and lower gangetic plains, particularly in states of West Bengal, Assam, Bihar and parts of Uttar Pradesh.

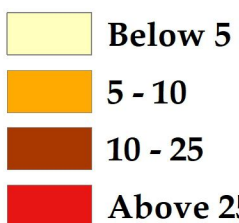
The two different sources of data viz. Ministry of Drinking water and Sanitation and Ministry of Water Resources, River Development and Ganga Rejuvenations shows variation in data. As per former there were habitations in 71 districts affected with Arsenic while from the later source there are 86 districts which are partly affected during 2009-10.

Percentage of Arsenic affected habitations out of total habitations



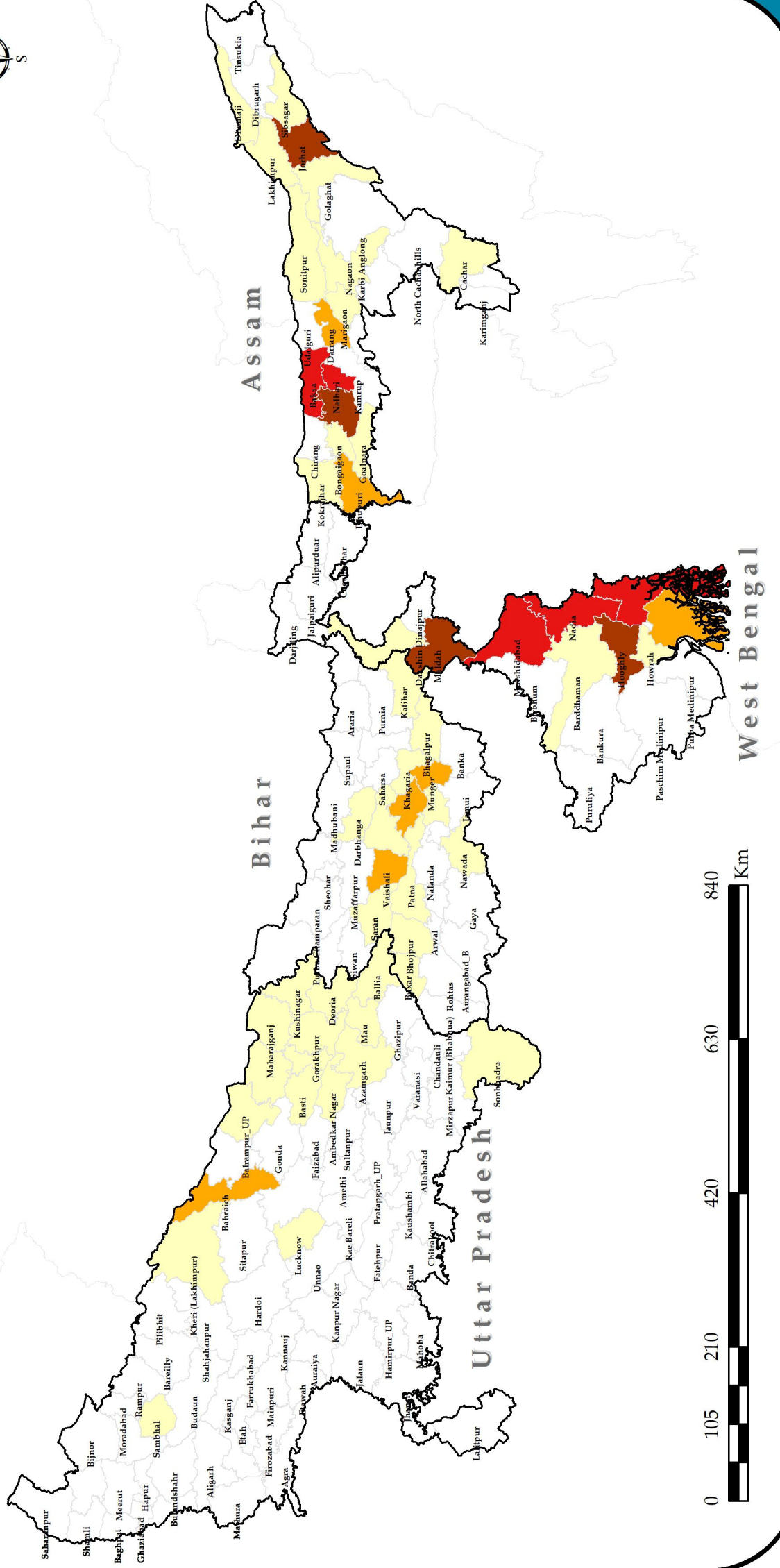
State Boundary

Arsenic affected habitations (%)



Data Source: Ministry of Drinking Water and Sanitation.
Affected habitations status as on 1st April for the year

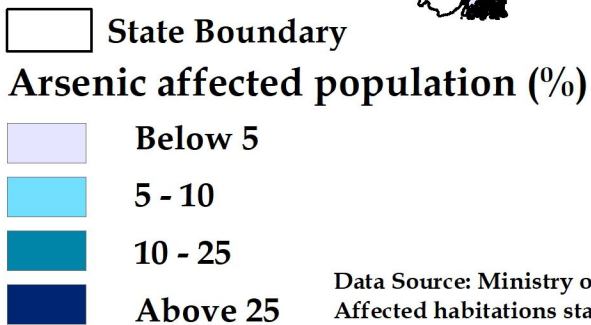
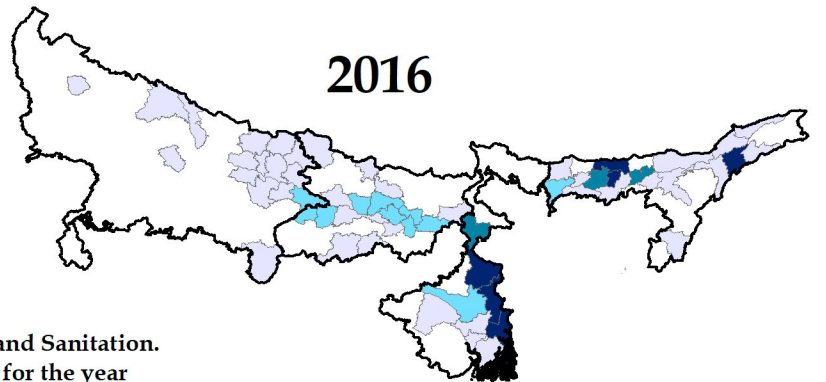
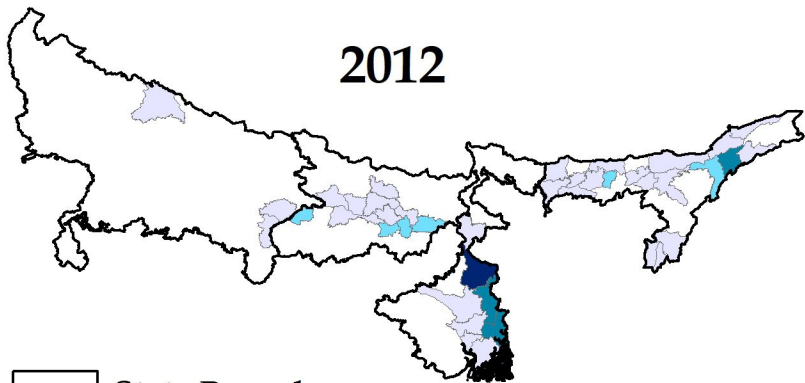
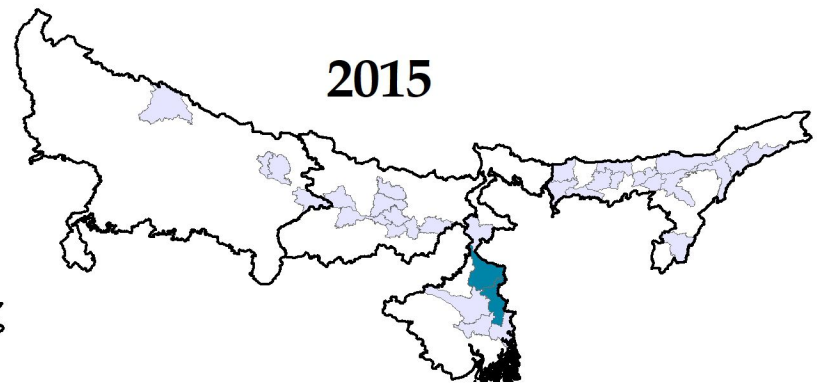
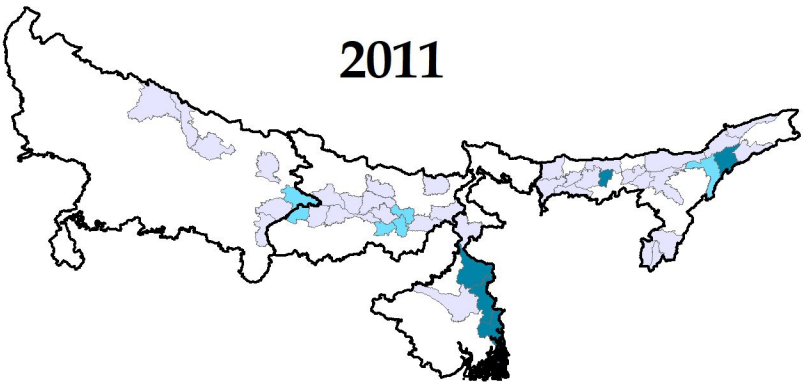
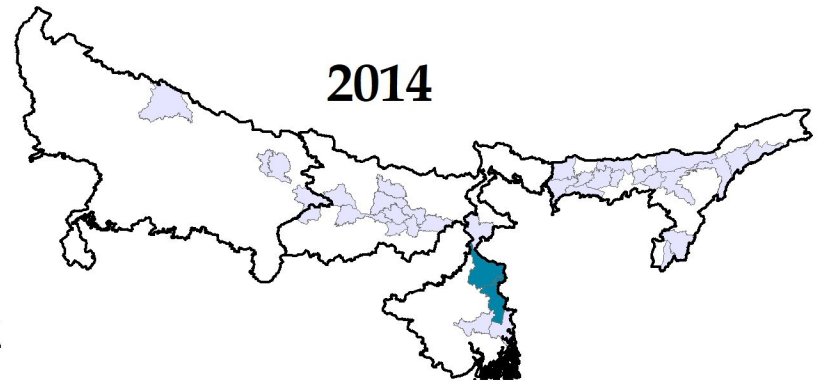
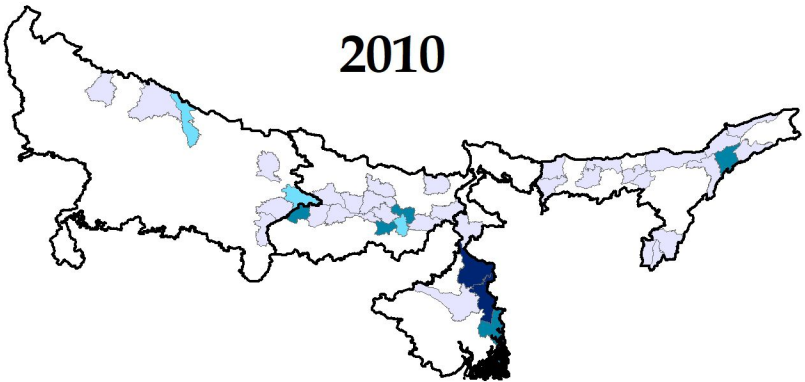
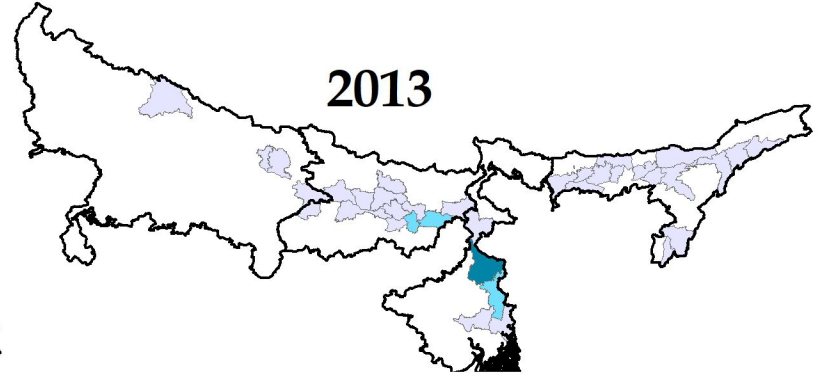
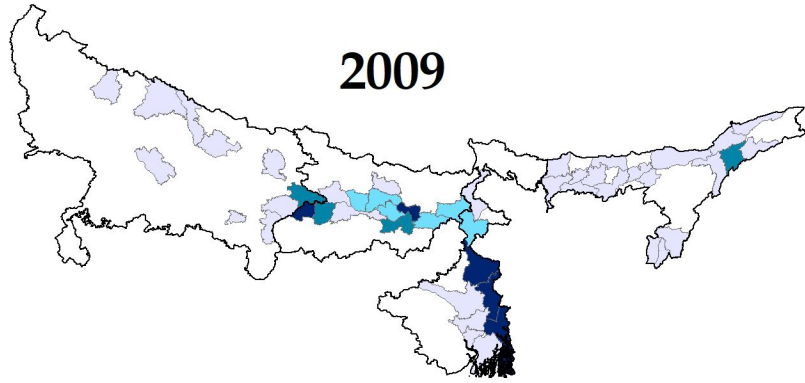
2017



Under National Rural Drinking Water Program (NRDWP), water quality monitoring and surveillance sample data is available for each year from 2009 to 2017. It indicates that there has been inconsistent reporting of arsenic concentration in ground water. Data from year 2012 to 2015 has shown a lower reporting compared to previous and post years.

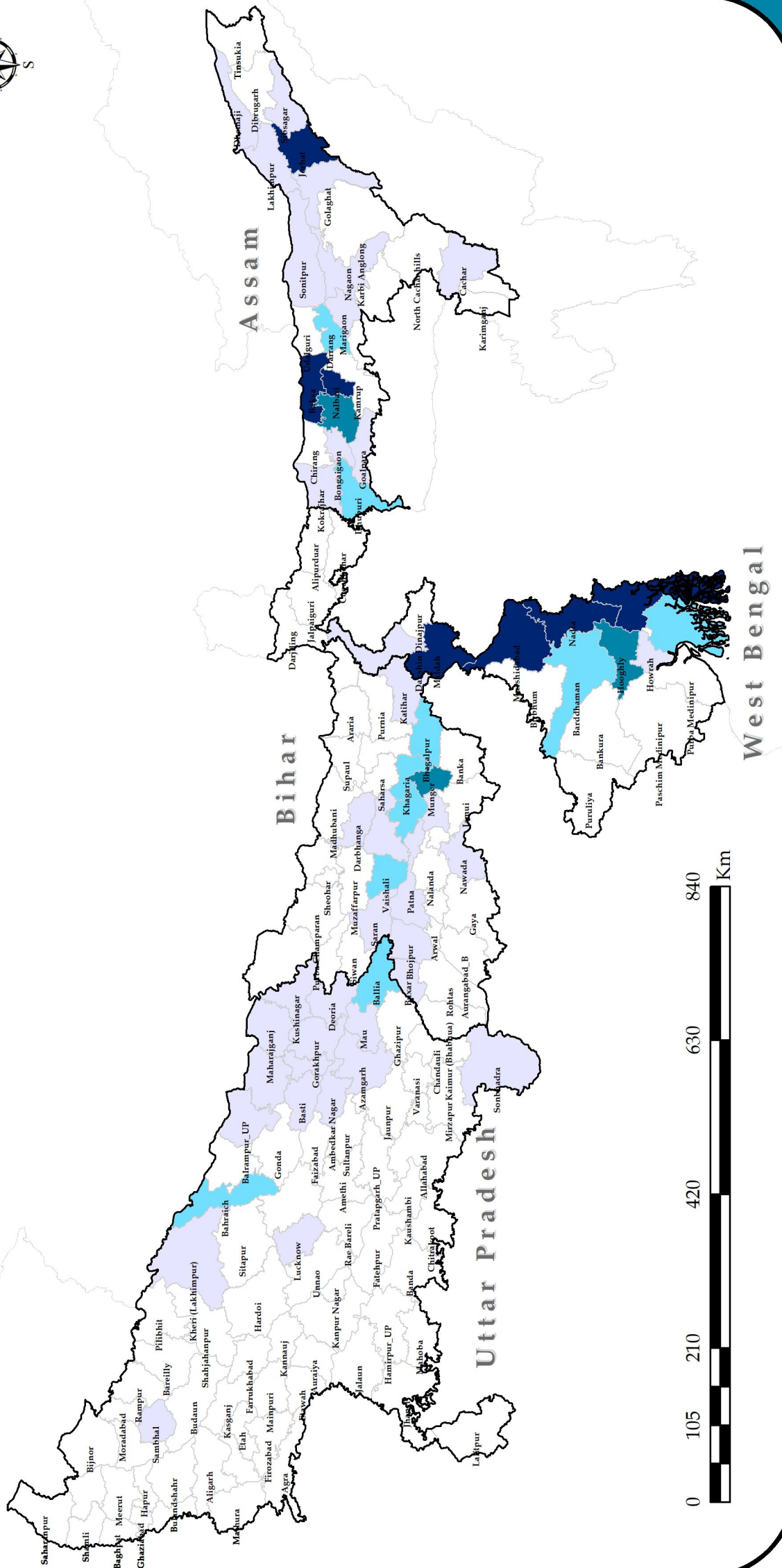
In the year 2017, out of total 17.5 lakhs habitations in rural India, around 18000 (1 percent) were found affected by arsenic. West Bengal has the highest share (61.5) in the total affected habitations followed by Assam (24.8), Bihar (4.8), Uttar Pradesh (4.1) and Punjab (4.1). Note: The year mentioned shows the status as on 1st April.

Percentage of Arsenic affected population out of total population



Data Source: Ministry of Drinking Water and Sanitation.
Affected habitations status as on 1st April for the year

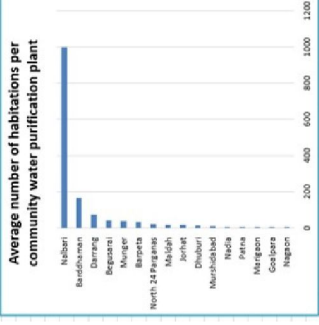
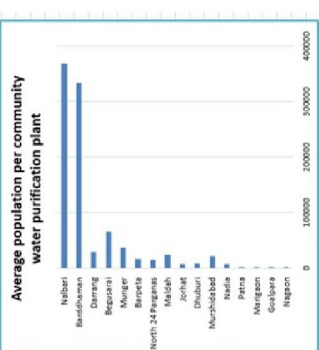
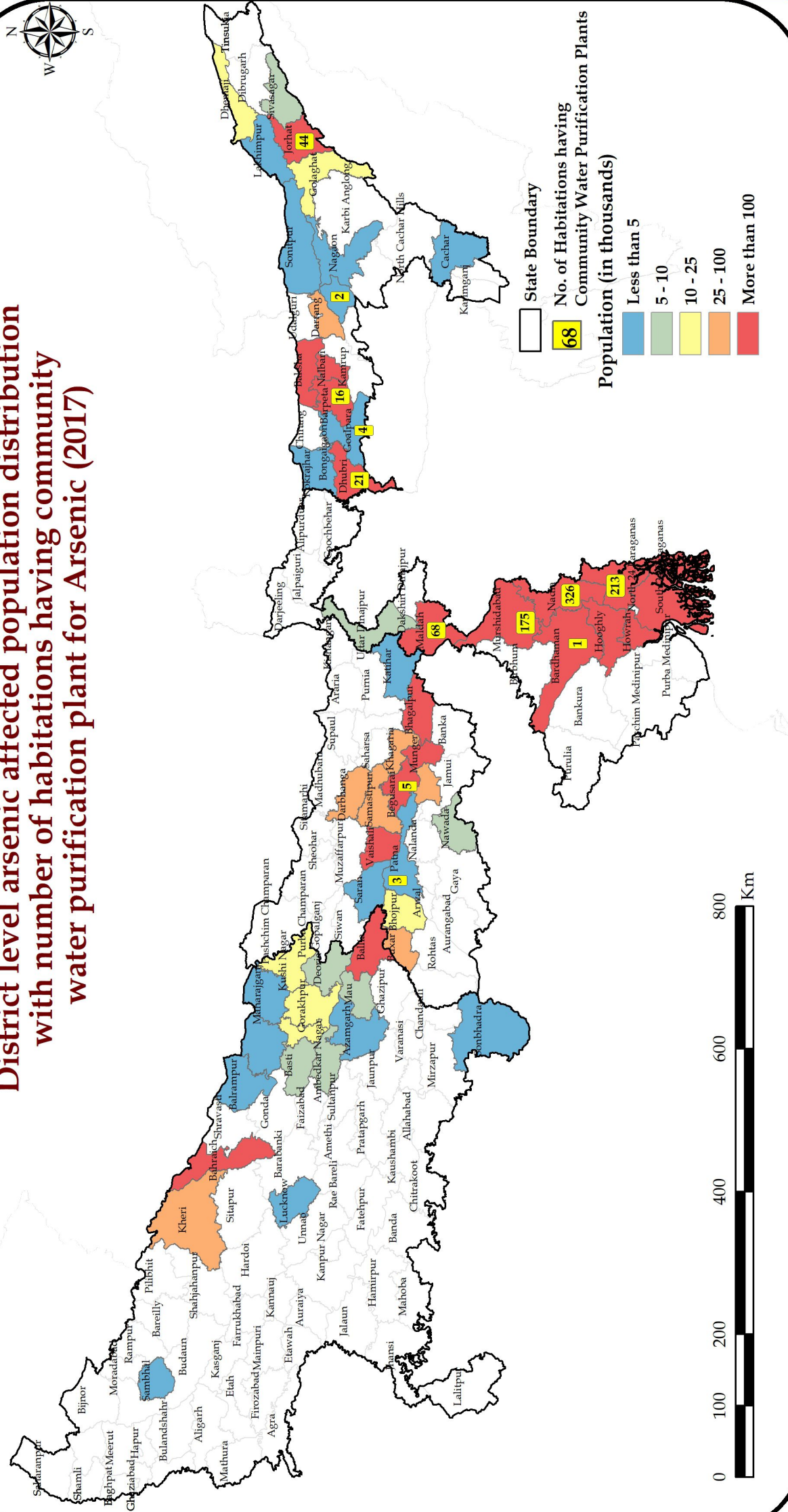
2017



In eight states affected by arsenic, it is estimated that about 17 out of total 182 million (9.4 percent) people are at risk of consuming arsenic affected water for drinking as on 1 April 2017. Of the 17 million population, 72.6 percent is living in West Bengal alone, 10 percent in Assam, 7.8 percent in Bihar, 5.6 percent in Punjab, and 3.4 percent in Uttar Pradesh.

Conventionally, areal extent of the arsenic contamination has remained highest in West Bengal. In the year 2017, the density of arsenic affected population was reported at 139 persons per sq. km. area in the state. Assam is the second most contaminated state wherein the density was reported at 22 persons per sq km.

District level arsenic affected population distribution with number of habitations having community water purification plant for Arsenic (2017)



The community water purification plant facility is very poor in many of district of Assam, Bihar and Uttar Pradesh where arsenic affected population is high although it is better in West Bengal.