

Briefing Note – 06 July 2017

# INDIA

## Floods in Assam

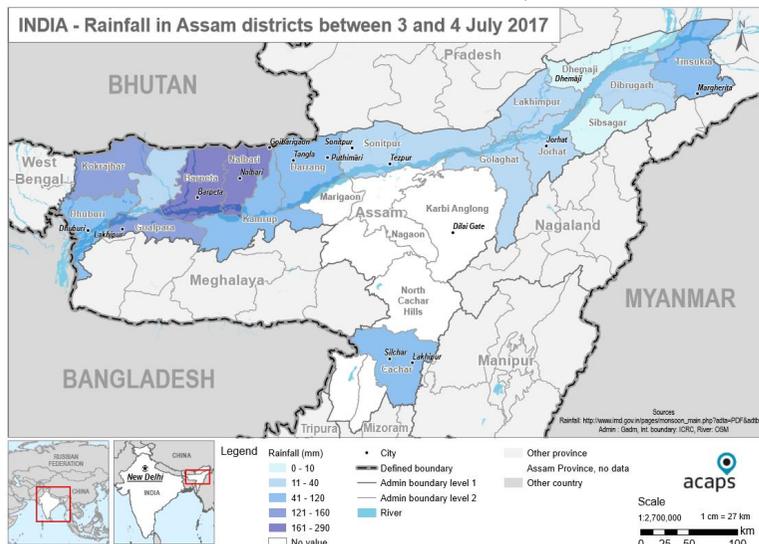


Need for international assistance	Not required <b>X</b>	Low	Moderate	Significant	Major
Expected impact	Very low	Low <b>X</b>	Moderate	Significant	Major

### Crisis overview

India's northeastern state of Assam has been hard-hit by monsoon rains and flooding in the past days (for full map see page 5). Flooding worsened in Assam on 2 July, when new areas were submerged by the rising waters of the Brahmaputra River and its tributaries. As of 5 July, official figures show over 390,000 people have been affected in over 850 villages across 15 out of 32 districts. At least one person has died. Just under 45,000 people are reported to be sheltering in 160 temporary relief centres. 31,000 more than on 2 July. More than 16,000 hectares of agricultural land have been flooded

Heavy rainfall has occurred across much of India since June, as is typical during the June–September monsoon. Rainfall across the state, however, is still at normal regional levels for the season. Heavier rain is expected in the coming days and weeks.



### Key findings

#### Anticipated scope and scale

More rain is expected over the coming days with a peak expected early next week. Most river levels are already above the danger level and water levels can be expected to rise further in the coming days. The number of affected people is likely to increase. Over the coming days it is likely that a higher number of people will become trapped by flood waters and require assistance. When the water recedes, an increase in WASH and health needs can be expected.

#### Key priorities

- **WASH** needs – access to safe water and to sanitation – are likely to increase due to the destruction of shelters and contamination of water sources.
- **Health:** Contaminated water sources and stagnating floodwater are likely to increase the risk of waterborne disease outbreaks.
- **Shelter:** Over 853 villages have been affected by flooding and homes have been submerged. Extent of damage is unknown.

#### Humanitarian constraints

- Many roads are closed across the state, either due to flooding or debris from landslides and erosion.
- Damage to infrastructure, including bridges, is further hindering humanitarian assistance.

#### Limitations

- The situation is evolving rapidly, making an accurate assessment of the situation challenging. It is difficult to identify the total number of people affected and to what extent, as numbers continue to change over the past few days.
- Shelter needs are unclear: only a limited number of people in need are in evacuation shelters and assessment of damage to shelter is extremely limited at this time.

## Crisis impact

### Population affected by flooding, Assam, 5 July 2017

District	Resident pop.	Total affected	% of pop. affected
Karimganj	1 217 000	180 766	14.85%
Lakhimpur	1 040 644	79 354	7.63%
Golaghat	1 058 674	45 943	4.34%
Cachar	1 736 000	25 102	1.45%
Sonitpur	1 924 110	22 510	1.17%
Nagaon	2 823 768	9 722	0.34%
Biswanath	580 000	8 679	1.50%
Dhemaji	688 077	7 501	1.09%
Nalbari	769 919	5 105	0.66%
Manjuli	167 304	3 782	2.26%
Jorhat	1 091 295	3 133	0.29%
Jorhat	1 091 295	3 133	0.29%
Barpeta	1 693 190	2 519	0.15%
Sivasagar	1 151 000	465	0.04%
Hojai	347 627	208	0.06%
<b>Total</b>	<b>17 379 903</b>	<b>397 922</b>	<b>2.29%</b>

Source: ASDMA, 05/07/2017

By 5 July, over 394,000 people had been affected by floods in Assam state. This is a 45% increase since reports of flooding began on 2 July.

According to the Assam State Disaster Management Authority (ASDMA), the worst-hit of the 15 affected districts is Karimganj, with over 180,000 people affected. Moderate impacts are reported in Lakhimpur and Goalpara, with over 45,000 and 79,000 people affected, respectively. More rainfall is anticipated in the coming days and river levels remain above the danger level, and increase is expected in the population in need. Needs are, however, unlikely to change significantly (ASDMA, 05/07/2017).

**Shelter and NFIs:** Over 850 villages across 15 districts have been affected by flooding. Homes have been entirely submerged across 200 villages, although the extent of damage is unclear. Reports suggest 27 homes have been damaged, but this number is expected to rise when floodwaters drop and more detailed assessments can be made. 160 relief centres have been opened, servicing around 40,000 individuals (ASDMA, 05/07/2017; The Business Standard, 05/07/2017; The India Express, 04/07/2017).

**Food:** Over 16,000 hectares of agricultural land have been damaged, including paddy fields, tea gardens, and horticultural fields. This will have an immediate impact on livelihoods in the region: close to 85% of the population depend on agriculture for their livelihoods. Over 40,000 livestock and over 7,000 poultry have been affected, although no losses have been reported so far (ASDMA, 05/07/2017; Assam State Agricultural policy 2016).

**WASH:** WASH needs are to be expected due the destruction of shelter and highly likely contamination of water sources, with a high proportion of the population dependent on wells and bore holes.

**Education:** With roads flooded across Assam, access to education is expected to be restricted while floodwaters remain high. Some schools are reported to be flooded and not functional (ASDMA, 05/07/2017; The Business Standard, 05/07/2017).

**Health:** With contaminated water sources and as floodwater stagnates there is an increasing risk of waterborne disease epidemics. The latest health watch reports indicate that the district of Sontipur had an acute diarrheal disease outbreak at the end of May. Flooding could aggravate the outbreak (IDSP, 28/06/2017).

### Vulnerable groups affected

- Some areas have become islands, as roads have been blocked or damaged and this population has been trapped and therefore is in particular need (India West, 04/07/2017).
- Floods disproportionately affect the poor, who generally live in more vulnerable areas and in housing that is more susceptible to damage (ACAPS 01/2012).

### Humanitarian and operational constraints

- Floodwater has cut off road access in many urban and rural areas of Assam state. Further to this heavy rainfall has caused a number of landslides. Erosion has caused river embankments to collapse. A number of bridges have also collapsed. The situation is likely to worsen as rains continue (ASDMA, 05/07/2017; The Business Standard, 05/07/2017; Skymet Weather, 04/07/2017; The India Express, 04/07/2017).
- Heavy rain and fog grounded state emergency helicopters on 4 July.
- Ferry services have been suspended on some parts of the Brahmaputra River, including services to the island district of Majuli from Jorhat (First Post, 04/07/2017).
- As of 5 July, there are no reports suggesting the floods have impacted the rail network in the State. (Hindustan Times 06/05/2013; Madal 2010). Outside of the monsoon

season access across the state is relatively good as there is a functioning rail network and roads are mostly adequate.

## Aggravating factors

### Continuing monsoon season

The heavy rainfall across a number of districts between the 3 and 4 July can be expected to continue to impact water levels for another 48hrs. Over the coming days an Orange rain alert (Be prepared) will remain for Assam state, and heavy rainfall is forecast over the next week (Windy, 05/07/2017; IMD, 05/07/2017). With already saturated groundwater levels, any further rainfall will have a fast and direct impact on water levels across the state.

The monsoon, which traditionally lasts from June–September, causes seasonal flooding. Adverse weather is expected to continue over the coming months. Monsoon activity in Assam is reported to be at normal levels, while the whole northeast region of India is reporting less than 10% of the usual rainfall.

### Location and type of housing

In rural areas, Assam dwellings are often single-storey, made of wood with mud and cow dung. They are not particularly flood resistant (archinomy 2014; The Indian Express 15/04/2015).

Assam is particularly prone to flooding during the monsoon season because it is a basin for a large amount of run-off water from higher ground – it is surrounded by the hills of neighbouring Arunachal Pradesh state. The majority of Assam state is within the valley of the Brahmaputra river, making it further prone to flooding (The Indian Express 13/07/2016; Reuters 29/07/2016).

### Waterborne diseases

Stagnant floodwater will create new breeding grounds for mosquitoes and likely exacerbate the spread of disease. Dengue, malaria, chikungunya, and Japanese encephalitis are all active in the paddy belts of Assam. Records of dengue fever cases have increased markedly since 2014. Areas of Assam are especially prone to Japanese encephalitis (Business Standard 16/07/2016; The Hindu Times 23/07/2016; HT, 16/05/2017).

### Agricultural dependency

The most severe impact of flooding can be the long-term effects. Each year vast areas of agricultural land are lost or damaged during the monsoon season. This significantly affects livelihoods in the state. Around 85% of the population of Assam depend on agriculture for their income (Assam State Agricultural policy 2016).

## Key characteristics of Assam state

**Demographic profile:** Population of Assam: 31,205,576; 49% female; 86% rural and 14% urban; 15% under six years old (Census 2011). Religion: Hindu 61.5%, Islam 34%, Christian 3.75% (Census 2011).

**Food security and livelihoods:** Poverty ratio: 38%. (IJHSS 2014/Census 2011) 60% of urban population and 84% of rural population are eligible for subsidised rice under the National Food Security Act (Government 2013; The Economic Times 19/12/2015).

**Nutrition:** 40% of infants are underweight at birth; 36% of children under five are underweight (2006) (IJHSS 2014).

**Health:** Infant mortality: 54 deaths per 1,000 live births (2013). Maternal mortality: 328 per 100,000 live births (2012) (Statewise Info).

**WASH:** Access to tap water: 10.5%; access to wells: 19%; access to tube wells: 60%. Access to toilet/WC: 28.5%; pit latrine: 34.5%; no toilet: 35% (ENVIS 2012).

**Lighting and cooking sources:** Firewood/chips: 85%; LPG: 14.2%; kerosene 0.05% (Government 2010).

**Literacy:** 72% (male 78% female 67%) (Census 2011).

## Contextual information

### Past flooding events

In August 2016 over 1 million people were affected by floods in Assam state. The worst-hit of the 21 affected districts were Barpeta, Morigoan and Goalpara, with over 100,000 people affected in each district. Over 3,000 villages across 21 districts were affected by floodwater. 229,500 people sheltered in relief camps and over 100,000 hectares of agricultural land was flooded. (ASDMA 25/07/2016)

## Response capacity

### Local and national response capacity

The government is responding to the crisis via the Assam State Disaster Management Authority (ASDMA). The government has opened 148 temporary relief centres and is providing food relief to those affected. (ASDMA, 05/07/2017)

### International response capacity

No international assistance has been requested (OCHA, 03/07/2017).

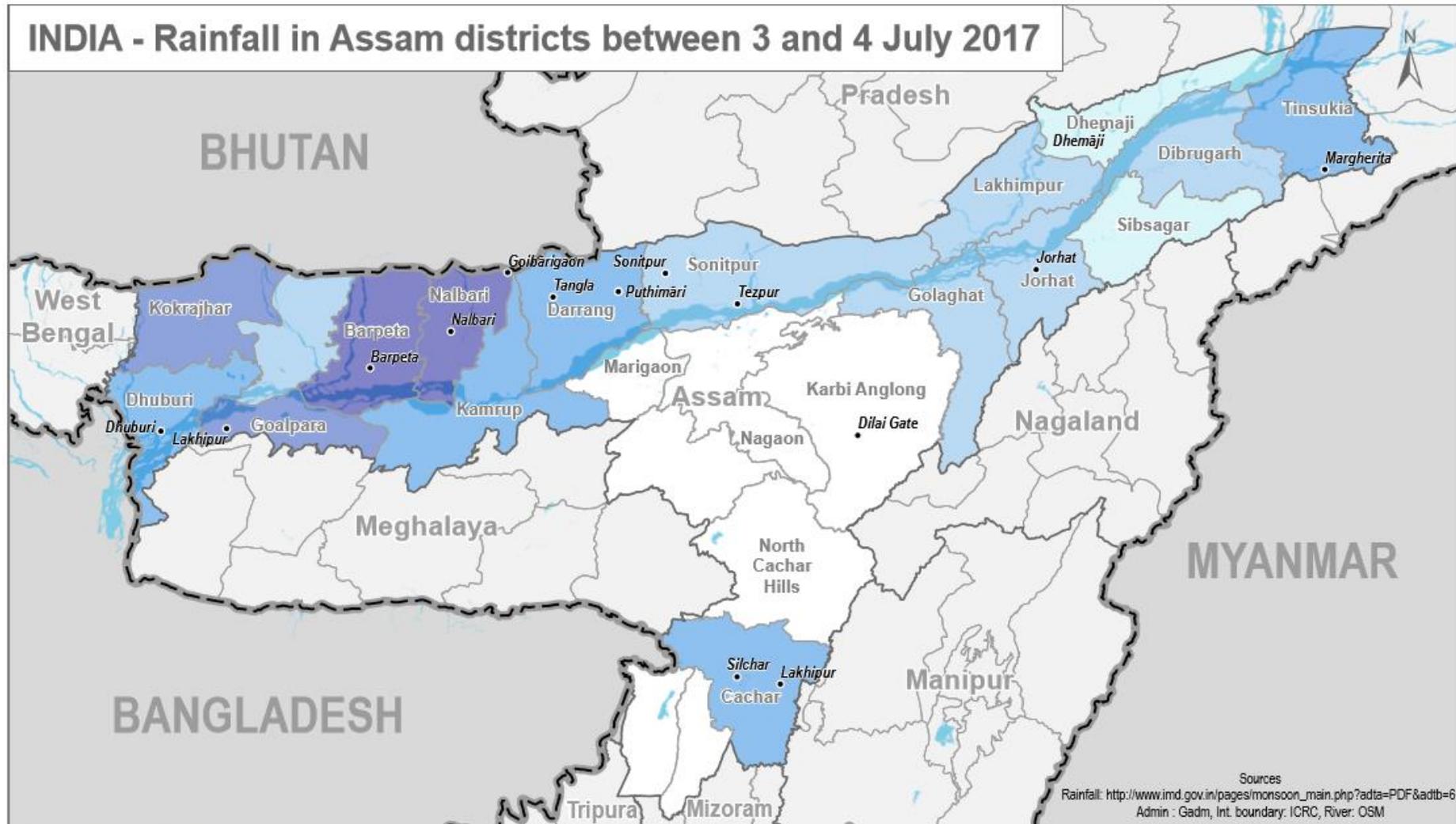
- Regular drills help to inform people of what to do if an alert is issued: lock up their homes, keep their cattle in a safe place, and take few clothes and important documents with them (First Post 14/10/2013).
- Different means of communication have proved essential in reaching a large population: constant news coverage before and throughout the event (emails, fax, telephone, print media, online news networks, loudspeakers) to communicate warnings and alerts, as well as distribution of satellite phones to representatives of the most vulnerable districts, to ensure that communications continue during the storm (UNEP 11/2013).

## Information gaps and needs

- There is no information available on sectoral needs. There is no available data on damage or contamination to water sources.
- There is no information regarding the specific needs of people across different districts.
- Data regarding the number of damaged or destroyed houses is extremely limited.
- Besides the 25,000 people in relief centres it is unclear where the remaining population affected by floods are currently sheltering

## Lessons learned

- Floods are usually followed by epidemics. An increased amount of stagnant water increases the risk of mosquito- and waterborne diseases and a speedy response is crucial to prevent the spread of diseases (ACAPS 07/2011).
- Indirect losses, such as livelihood impact, are often much higher than direct damage (ECLAC 2003).
- Implementing an improved real-time flood and drought control warning system can reduce the damage caused by floods. Improved forecasting, early warning system, and preparedness measures have helped to reduce the number of lives lost and impact on livelihoods (WFP 19/20/2014, JNA ACAPS 04/2014).



Sources  
 Rainfall: [http://www.imd.gov.in/pages/monsoon\\_main.php?adta=PDF&adtb=6](http://www.imd.gov.in/pages/monsoon_main.php?adta=PDF&adtb=6)  
 Admin : Gadm, Int. boundary: ICRC, River: OSM



**Legend**

<b>Rainfall (mm)</b>	• City	Other province
0 - 10	Defined boundary	Assam Province, no data
11 - 40	Admin boundary level 1	Other country
41 - 120	Admin boundary level 2	
121 - 160	River	
161 - 290		
No value		

**acaps**

Scale  
 1:2,700,000    1 cm = 27 km