

Dams, Rivers & People

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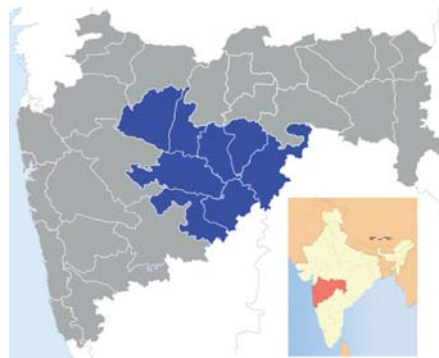
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Drought and Marathwada: An Oft Repeated Tragedy

Marathwada, a region known more for its routine and severe droughts in the recent years, now showing the highest rainfall deficit in the country at 48%[1].

Marathwada (which coincides with Aurangabad Division of Maharashtra) consists of 8 districts in the heart of Maharashtra: Aurangabad, Beed, Latur, Osmanabad, Parbhani, Jalna, Nanded and Hingoli.



Index Map Marathwada Source: <http://www.wikiwand.com/en/Marathwada>

The region has a population of about 1.87 Crores and a geographical area

of 64.5 Thousand sq. kms. Nearly the entire region, barring parts of Beed, Latur and Osmanabad, falls in Godavari basin. This has historically been a rain shadow region with average rainfall of about 700 mm, but in districts like Beed, it dips down to 600 mm. Apart from Godavari, no major rivers originate or flow through Marathwada except rivers like Purna, Shivna, Dudhna, Velganga, Sindhphana, Bindusara, etc. These are modest rivers, which carry little water as the harsh summer approaches. This is unlike Vidarbha (to the east of Marathwada) which has mighty rivers like Penganga, Wainganga, Wardha etc., or Khandesh and Western Maharashtra to its north and west, which have bigger rivers, denser watersheds and more rainfall.

Since the past 4 years, Marathwada has been facing exceptionally cruel weather. June-September Monsoon, which is the lifeline of most of this

Since the past 4 years, Marathwada has been facing exceptionally cruel weather. June-September Monsoon, which is the lifeline of most of this rainfed region, has been playing truant. Last year, the region experienced highest rainfall deficit in the past 10 years at -42%. In two districts it was much more than 40%, leading to a severe water crisis. To give you an example, the JJAS (June, July, August, and September) rainfall in Parbhani in 2014 was just 346 mm, barely 4 mm more than rainfall during the horrifying 1971 drought! These two are the lowest rainfall figures for Parbhani since 1902, for more than 113 years!

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rained region, has been playing truant. **Last year, the region experienced highest rainfall deficit in the past 10 years at -42%.** In two districts it was much more than 40%, leading to a severe water crisis.[2] To give you an example, the JJAS (June, July, August, and September) rainfall in Parbhani in 2014 was just 346 mm, barely 4 mm more than rainfall during the horrifying 1971 drought!**These two are the lowest rainfall figures for Parbhani since 1902, for more than 113 years!**



Dry Mehekari River bed in Beed Photo: ParineetaDandekar

This is compounded by the fact that for the month of July this year (main month of Kharif sowing) **Parbhani has received an unbelievable 24.2 mm rainfall[3] which is 88.6% below its average July rainfall of 210.8 mm[4].** Looking at the rainfall figures, I suspect that Marathwada has received historically lowest rainfall for the month of July this year. The impact of all this on a rainfed farmer has been catastrophic and nearly all of Marathwada practices rainfed farming due to natural condition and historic inequity meted out to the region.

In addition to the dismal rainfall, Marathwada, like the neighbouring Vidarbha, has been battered by **unseasonal rainfall and hailstorms in 2013 and 2014** in February, March and November, destroying Rabi plantations. For example, Ausa Taluk (Administrative block) in Latur District of Marathwada received 146% of its highest recorded rain-

fall and higher than 100 year recorded rainfall in March 2014[5], within a matter of days, destroying standing crops.

One of the most tragic consequences of these interrelated issues is mounting farmers' suicides in the region. In the six months between January-June 2015, at least 418 farmers in Marathwada have committed suicide. And the absentee monsoon is making problems more acute.

Politicians are making a beeline to the region like they have been making in the past, looking for very political brownie points, as are news channels, Central Drought Inspection Panels and bore rig owners reminding one of Everybody Loves a Good Drought.

Marathwada's recurring strife is a touchstone for the advanced universities, weather prediction institutes like IMD, NGOs, researchers, agricultural colleges and departments, water management professionals etc., around the country. What measures, whether policy, governance, infrastructural or managerial, can help this region which is repeatedly facing misery and strife? What are the root causes of these problems? Are they all only weather-related? Is there anything that is worsening the meteorological crisis? Are we responding to the challenge amply? Are we deploying state of art technology, resources and governance mechanisms to address the issues of this region? How best can we help in this situation now?

The beginning can be made with a snapshot of the current picture of Marathwada and neighbouring regions in light of the dismal Monsoon so far.

Rainfall: After a satisfactory June 2015 rainfall of about 81%, Kharif crop sowing (monsoon plantation: rainfed and not irrigated) was undertaken by farmers on approximately 33 lakh hectares of the region[6]. Main crops were cotton, soyabean, pulses and some limited oilseeds. Most of the sugarcane (Yes, Marathwada is a major sugarcane cultivator) was already planted in October-November 2014. The satisfactory rains were indeed welcome as compared to last year. In 2014, the June rainfall was barely 20% of the normal.

But satisfactory June rainfall this year was not a boon. Although it led to record Kharif crop sowing, almost all of this is lost in face of extended dry spell that lasted



Source: Indian Meteorological Department

nearly all of July. July rains in the region were dismal with about 75% [7] and more deficit. In August too, this spell has continued, not only drying up Kharif, but also putting farmers in dilemma: Should they undertake second cropping for Kharif in the expectation of rain, or keep fields fallow for Rabi plantation? That dilemma is partly solved by now as the time window for almost all of Kharif planting, except some Bajra, is already past. Kharif crop is almost lost for Marathwada.

Last year too Kharif crop was severely affected in the region due to delayed onset of 2014 Monsoon which meant losses for more than a million farmers. More farmers suffered losses following October 2014 and Feb-March 2015 unseasonal rains and

In the neighbouring Solapur, Ujani Dam has reached 0% Live Storage. Water Trains are being deployed from Warna Basin in Western Maharashtra for fulfilling drinking water needs of Latur City which has completely run out of water. Section 144 of the Indian Penal Code was clamped, possibly for the first time in the history of the country in Latur and Parbhani to control conflicts happening due to water scarcity. (<https://sandrp.wordpress.com/2016/04/20/latur-drinking-water-crisis-highlights-absence-of-water-allocation-policy-and-management/>)

hailstorms. As expected, the official compensation is yet to reach many of the farmers. [8]

Reservoir Storage So far, the overall large reservoir storage for the whole of Marathwada has come down to 61 MCM (Million Cubic Meters), which is just 1% of its Live Storage of 11 large dams in the region. Of the 11 large projects, **live storage of 8 projects is now 0.**



Dry Mehekari Dam in Beed, Marathwada. April 2015
Photo: ParineetaDandekar

Significantly, last year, on 12th of August, 2014, **five of these 8 dams were also at 0 live storage.** But things were slightly better then. Jayakwadi was then at 16% Live Storage (as against just 5% now) and the total storage of large projects was 23%, as against 9% now (1189 MCM as against 442 MCM now). Even with a slightly better picture, farmers in Marathwada were in a very poor state last year. This year seems to be equally, if not more problematic.

At the same time it needs to be remembered that Marathwada has one of the most poorly developed irrigation systems in the state (which itself has

lowest percentage of irrigated area in the country). Of the 50.3 Lakh hectares of culturable area, irrigation potential has been created for barely 10.5 lakh hectares, ie. 17.7% of the culturable area [10]. Only a 4.4 lakh hectares [11], **8.7% of culturable area is actually irrigated.** Out of this a minimum of 2.5 Lakh hectares is under sugarcane. **That**

means barely 1.9 lakh hectares of the 50.3 lakh hectares is irrigated for crops other than sugarcane! Going by the state averages, about 70% of

this area would irrigated by groundwater and NOT surface water, which means dams irrigate a miniscule part of the region.

On Aug 11, 2015, the Revenue Minister of Maharashtra EknathKhadse announced that serious measures[12] are now being adopted to tackle the rainfall deficit in Marathwada. The cabinet subcommittee[13] formed to address the impending drought problem has made some announcements which include setting up cattle camps, reserving water in dams for drinking water purposes on priority and not for agriculture and industries. Possibility of deploying trains to supply drinking water is also mentioned.

Groundwater The Groundwater levels in the region had reached alarming levels [14]early this year itself. The entire region sits above impermeable basaltic strata and there are limitations to groundwater extraction. In as many as 247 villages, groundwater draft has exceeded recharge to such an extent that the aquifer has gone completely dry. According to wells monitored by GSDA, in all districts of Marathwada, the trend[15] is steeply falling groundwater as compared to 5 year averages. In some parts (Basmat taluk, Hingoli District) the fall is over 7 meters of the 5 year averages!

No.	District	Number of Critical or overexploited watersheds	Total Villages affected
1.	Aurangabad	55	
2.	Latur	136	
3.	Osmanabad	41	
4.	Jalna	14	541

Source: MWRRRA (<http://www.murra.org/Districtwise%20MINI%20village%20list%202024.4.2015.pdf>)

DISTRICT	JAN 2012	JAN 2013	JAN 2015	CHANGE FROM FIVE-YR AVERAGE
Aurangabad	8.38 m	11.95 m	9.46 m	-0.94 m
Jalna	7.27 m	10.69 m	8.02 m	-0.40 m
Parbhani	7.28 m	10.07 m	11.19 m	-2.87 m
Hingoli	7.80 m	6.33 m	7.89 m	-4.35 m
Nanded	6.23 m	6.57 m	7.62 m	-1.60 m
Osmanabad	5.33 m	10.79 m	6.87 m	-4.13 m
Latur	4.17 m	5.80 m	8.18 m	-2.52 m
Beed	6.02 m	8.59 m	7.76 m	-0.34 m

Above: Comparison of groundwater levels in Marathwada districts with 2012 and change from 5 year averages Source: Indian Express, based on GSDA data. **Currently, there is no regulation of groundwater: whether for limiting draft or for encouraging recharge.**

*Tata Hydropower Dams, at the origin of the Mula-Mutha sub-basin of Bhima basin, have been diverting water of the Bhima Basin to water surplus Konkan for the past century for power generation. Such water transfer from a water-deficit basin like Bhima-Krishna to water surplus basin like Konkan, in such a terrible drought is reprehensible. **This water stored in Tata dams rightfully belongs to Bhima basin and if it is released, it can directly come to Ujani Reservoir, raising it from current 0% live storage.** The water from here then can be taken to Beed and Osmanabad in Marathwada through pipelines already in place for drinking water supply.*

Although the road ahead is uncertain and tough and there are no quick fixes, some quick steps are needed to be taken now. Some of these are complementary to long term drought proofing works for the region.

Immediately stopping Westward Water diversion from Tata Dams: Tata Hydropower Dams, at the origin of the Mula-Mutha sub-basin of Bhima basin, have been diverting water of the Bhima Basin to water surplus Konkan for the past century for power generation. Such water transfer from a water-deficit basin like Bhima-Krishna to water surplus basin like Konkan, in such a terrible drought is reprehensible.

This water stored in Tata dams rightfully belongs to Bhima basin and if it is released, it can directly come to Ujani Reservoir, raising it from current 0% live storage. The water from here then can be taken to Beed and Osmanabad in Marathwada through pipelines already in place for drinking water supply. Through the Bhima-Seena Link Tunnel, it can flow into Seena River and can be used by bordering parts of Marathwada and Solapur District for drinking water, provided it is possible to ensure that it does not get used up for sugarcane and sugar factories. Very strict restrictions on the proper use of this water based on priorities of drinking water and livelihood agriculture have to be maintained. This will have to be ensured by communities, block level, Tehsil level elected representatives and officials and the Divisional Commissioner.

Section 11 of the Electricity Act of 2003 gives legal powers to the government to change the operation of any power project in response to various situ-

ations, which includes “Natural calamity”. Severe drought indeed qualifies as Natural calamity. The government should urgently stop diversion of water from Tata dams from the Bhima basin.

Former Union Minister for Agriculture Sharad Pawar toured Marathwada to understand the drought scenario[16] and in his address talked about “diverting west flowing rivers to the east for Marathwada.” Before attempting anything like that, we can simply secure that east flowing rivers flow to the east, at least in drought situations!

An Order of the Hon. Bombay High Court dated 24th May 2016 has given some respite by stating that Private Dams cannot hold water in the times of Drinking water scarcity and water should be released from these dams for the drought hit region. Though late, this can hold some respite for drought affected region. (<https://sandrp.wordpress.com/2016/05/25/water-is-not-a-private-property-of-some-groups-bombay-high-court-directs-release-of-water-from-private-dams-like-tata/>)

Stop new sugarcane cultivation: Unbelievable as it may sound, not only did Marathwada plant record sugarcane (a highly water intensive crop) on its very meagre water resources last year,[17] it's doing so this year too! According to Sugar Commissionerate, new cane plantations have taken place on more than 2 lakh hectares (2,06,777 hectares[18]) in just 5 districts of the region (Nanded, Parbhani, Osmanabad, Latur and Hingoli). I have personally discussed this with the Assistant Sugar Commissioner of Nanded Division. **This water guzzling cane was planted in Marathwada when it had received one of the lowest rainfalls in the entire century, knowing fully well that cane will continue to demand water during this monsoon and even after!**



Gangakhed sugar factory in severely drought affected Parbhani. Not only takes water, but also pollutes it. Source: <http://www.gangakhedicpp.com>

Assuming 187.5 lakh litres water per hectare cane as per the Price Policy for Sugarcane Report of the Commission on Agricultural Costs and Prices, Ministry of Agriculture (2014-15), this area under sugarcane needs **3877 MCM** (Million Cubic Meters) of water in the entire season and during the most critical season of October 2015-March 2016. In the monsoon months, sugarcane needs assured water to boost growth and sugar content. Water needed for crushing and due to pollution of water sources caused by sugar factories, is additional.

Where will this water come from?

This demand from sugarcane has already severely jeopardized the available groundwater and surface

water resources which need to be safeguarded for drinking water supply and livelihood supporting crops needing least water. In addition, new cane may be planted in October-November 2015 which will need further water. This has been happening for the past many years in the region: **This is the reason why dams like Lower Terna, Manjara and**

All over Marathwada thousands of borewells are being sunk every month. The estimate is about 10,000 borewells per month in the region. This, coupled with concentrated irrigation to crops like Sugarcane is severely affecting water security now and for months to come. This needs to be regulated starting at community level and MWRRA should immediately take up its duty as the Groundwater Regulator as per the Groundwater Act of 2009. There are several issues to be addressed while doing this. We have tried to outline this here: <https://sandrp.wordpress.com/2015/05/08/maharashtra-groundwater-authority-can-it-save-the-state-from-deep-trouble/>.

Mazalgao, SeenaKolegaon which are surrounded by sugar pockets, have been consistently at 0 Live Storage even in August for the past 3 years in a row![19]

The State Government and MWRRA need to urgently disincentivise this sugarcane cultivation, explore the possibility of compensating the existing sugarcane farmers in Marathwada and convince them to replace sugarcane with drought resistant Rabi crops and not diverting any irrigation water, including groundwater to it. Preferential treatment and a weak stand in front of the sugar lobby only means injustice and inequity towards a far greater number of farmers who do not get even protective irrigation for their crops as all our surface water resources, groundwater, political will and sympathies go only with sugarcane.

As is reported in agricultural reports, cattle fodder is becoming a huge issue in Maharashtra and Marathwada, which is feeding dry sugarcane to the cattle in the absence of green fodder. There are about 50 lakh cattle in the region. The irony of cattle in camps sustaining on sugarcane is not lost on anyone.

Releasing water from upstream Dams: Nashik, Nagar and Pune regions upstream of dams in Marathwadawere in comparatively better condition than Marathwada. To avoid conflicts, a water sharing plan had to be made immediately and water released so that it maximizes benefits to crops and people. MWRRA is entrusted with this responsibility of equitable water sharing. Unfortunately, MWRRA's decision was long drawn and of the ordered 12.54 TMC, only 10 TMC was released for Jayakwadi.

Existing Projects in Marathwada need to be used optimally and transparently

Decisions need to be taken if any of the last remaining water should be released or allowed to be lifted by sugarcane irrigators, distilleries (e.g. Radico NV Distilleries[20]), owned by the politicians from the ruling party. Marathwada holds 70% of Maharashtra's brewing capacity for Beer. The Beer industries in Aurangabad use minimum of 35 million litres of water every day (MLD). This needs to stop immediately. By the admission of Beer

manufacturers themselves[21], they can use treated water for their product and should do so immediately. Unfortunately, the Supreme Court did not uphold a petition in this regard and referred it back to the state government.

Urgent Groundwater Regulation All over Marathwada thousands of borewells are being sunk every month. The estimate is about 10,000 borewells per month in the region. This, coupled with concentrated irrigation to crops like Sugarcane is severely affecting water security now and for months to come. This needs to be regulated starting at community level and MWRRA should immediately take up its duty as the Groundwater Regulator as per the Groundwater Act of 2009. There are several issues to be addressed while doing this. We have tried to outline this here:<https://sandrp.wordpress.com/2015/05/08/maharashtra-groundwater-authority-can-it-save-the-state-from-deep-trouble>.

The efforts of the government through watershed missions like JalYuktaShivarYojana and watershed works through MGNREGA are indeed noteworthy. Funds should not be allocated to

unviable schemes like **Krishna Marathwada Lift Irrigation Project**. The KMLIS **does not** have water availability in order to transfer water to Marathwada. Working on storages in Marathwada, without securing water first is misleading the people of the region, in addition to spending thousands of crores of financial resources which can be used in a much better manner. There are many good avenues for the government to spend funds to help the water-scarce region and the state. Pouring public money down the drain for unviable projects is definitely not one of them.

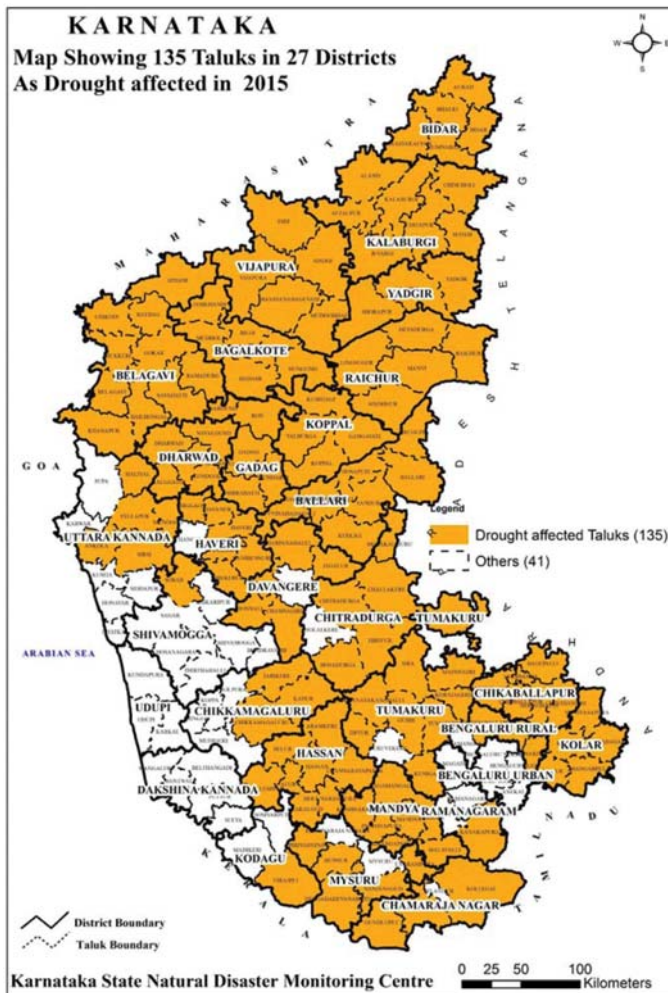
Desperate times need desperate measures and wisdom of any government will be gauged on how it responded to an emerging crisis. Drought in Marathwada, if the rains continue to fail, promises to reach epic proportions. This is a result of compounding issues: natural as well as man-made. As we hope for good rains, we need to be equipped to deal with a water stressed situation, which is unfortunately not new either to Marathwada or Maharashtra.

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END NOTES:

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- [14] The Water Shed areas having more than 100 percent of exploitation and with the trend of diminishing ground water level are classified as ‘over exploited’ area. The water shed regions with 90-100 percent exploitation or the areas where either pre-monsoon or postmonsoon water levels have declining trend are classified as ‘critical’ areas. The areas with either pre-monsoon water levels with declining trend and 70-90 percent of ground water utilization are classified as ‘semi-critical’ areas. The areas with less than 70 percent exploitation and neither pre-monsoon nor post-monsoon water levels reflecting declining trend are deemed as ‘safe water shed areas’
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Karnataka: Profile of 2015-16 Drought



Karnataka is witnessing drought for the third successive year; rainfall has been deficient since 2012-13. Because of the rainfall deficit, reservoirs did not fill up completely. Coupled with the hot summer temperatures in March and April 2016, the stored water has now almost depleted. Groundwater, the saviour in times of failure of rainfall, has dipped severely because of years of reckless exploitation for irrigating water guzzling crops in semi arid soils. With even drinking water becoming scarce, agricultural activity has come to a standstill in the region. The drought in 2015 was preceded by unseasonal

rainsdamaging the previous harvest. The monsoon deficit led to a dip in kharif output throughout the State in 2015. The drought spread even to the normally lush Cauvery basin prompting digging and deepening of borewells. While southern Karnataka received some heavy rains in November, districts in Northern Karnataka again saw failure of rains with some districts such as Kalaburagi, Koppal and Yadgir registering over 70% deficiency in rainfall. There has been a near complete failure of crops in Northern Karnataka, with both rabi and kharif crops being wiped out, even as area under sugarcane has gone up! The northern region, which also lags in development indices, is in the clutches of rural distress – over a thousand farmers have committed suicide. Mass migration to cities is being witnessed.

Drinking Water Crisis

- As of April 2016, villages in the 12 districts of northern Karnataka are in the grip of a severe drinking water crisis. District administrations have been supplying limited water through **tankers** but they do not cover several villages. Moreover the tankers visit every village only once in 2-3 days.
- For the women in Yadgir, Bidar and Dharwad districts, the entire day revolves around **standing in queues** to obtain sufficient water from borewells and other available water sources which are fast drying up. Dalit families have alleged that the panchayat officials deny them clean water. The drinking water problem has further worsened in Kalaburagi district adjacent to Latur in Maharashtra. The number of villages in Kalaburagi, getting drinking water through tankers has increased to 210 from 180 in the last 3 days of April. In some villages, young girls are risking life and limb climbing 30 feet down into wells stepping on narrow stones jutting out of the walls to collect a few cups of water from the bottom

Storage levels in reservoirs of Cauvery and Krishna basins have plummeted. In the Cauvery basin, the level in all four major reservoirs – Hemavati, Kabini, Krishnaraja Sagar (KRS), and Harangi, is lower than last year. The water available in the reservoirs is only half of what was available last year at this time. The Krishnaraja Sagar reservoir that supplies water to Bengaluru, Mysuru, parts of Bengaluru Rural, Mandya and Ramanagaram districts of Karnataka has also dipped to alarming levels.

of the well. In many northern districts such as Belagavi, all kinds of private enterprises selling water have surfaced, initiated by people having access to water. Some villages are forced to buy drinking water from private suppliers. Those who can not afford are drinking hard borewell water.

- People are scrapping riverbeds of dry rivers for water. Taps at temples and charitable institutions have turned into sources of drinking water for some.
- Many are drinking hard water and rationing the water they drink. There is chance of outbreak of epidemics due to shortage of water. People are also skipping bathing and washing clothes.
- Districts in South Karnataka are also suffering from water shortages and borewells are now being sunk as deep as 1,300 feet in Kolar and Chikkaballapur. In Chitradurga district, water is being supplied through tankers to 22 villages where groundwater has totally dried up and the situation has become worrisome.
- Midday meals hit: Apr 24 2016: In Chamarajanagar district, though the schools have adequate rations, they have no water for cooking and the mid-day meal scheme is about to stop in the region. Schools have toilets but teachers and students defecate in the open, as water is in short supply. Most wells have dried and women have to walk long distances to fetch water. In the protected forest areas covering much of the district, the law forbids borewells, roads, and even power connections.

Cities on verge of crisis as water in reservoirs depletes

- As of Apr 2016, major cities and towns are facing water crisis as the water level in major dams is nearing dead storage. Cities are in greater danger than villages because of their high density of population and complete dependence on dam water. Bengaluru and Mysuru, are assured of supply till June end. Davangere is on the verge of a drinking water crisis as the reservoirs have water only to supply for another 30 days.
- On Apr 29, 2016, the Water Resources Minister said that the government is ready to use the dead storage in reservoirs to supply drinking water across the state. This is usually a measure to be taken only in emergency circumstances. If it does not rain in June, the state will completely run out of drinking water.
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- Reservoirs did not fill up sufficiently because of the scanty rains during the South West Monsoons in 2015. Towards the end of the monsoon, the KRS reservoir had not even filled up to half the quantity of water that it had the previous year. Similarly, Almatti dam in Vijayapura district was only half full at the end of Aug 2015 while it was full the previous year in August. The water level in the Almatti dam is coming down rapidly because of high evaporation rates in the searing heat. The current storage of water could barely last till June.
- On March 28, 2016 the Mangalore city corporation got the hydropower project at Shambhoo on the upstream of Thumbe dam to release water to fill up Thumbe dam fully. This became necessary after Thumbe had water left only to last 10 days. Again in April, the level fell dangerously because of the hot weather and use for domestic and industrial purposes. On Apr 25, officials announced that there was water for only another 12 days. Beyond that the only hope is on rains.
- On May 6, 2016, another new low was reached this drought: Nethravati has dried up, leading to water crisis for Mangalore refinery, it has starting shutting down phase III of its operations, leading to reduction of diesel and petrol production by 50 and 30%. MRPL was using 3 MGD of sewage from Mangalore to treat and reuse.

• In March 2016, districts depending on the Krishna River such as Belagavi, Vijayapura and Bagalkote in Northern Karnataka were facing a water crisis,

as Maharashtra had still not released the state's share of water from its dams. In mid March, the state government requested Maharashtra to release 4 tmcft water from its reservoirs into the Krishna and the Bhima river course to mitigate acute water shortage. In mid April, Maharashtra started releasing water to Karnataka and released 2 tmcft of water. The government has asked farmers to not

draw water for irrigation and use it only for drinking.

- Here it should be noted that Maharashtra continues to divert over 3 BCM of water from Bhima and Krishna basins to high rainfall Konkan area even in this drought year. SANDRP had repeatedly written to the Maharashtra Chief Minister and others to stop that in this drought year, without any impact. If this diversion was stopped it would also benefit the downstream Krishna basin states of Karnataka, Telangana and Andhra Pradesh.
- The fisheries industry has been affected as reservoirs have reached dead storage levels and rivers have dried up. Livelihoods of around 3 lakh fishermen have been hit according to the figures of the state fisheries department. Price of fish has gone up drastically.



People bring drinking water after trekking up a hill at Mansalapura village

- **Depleting groundwater has worsened the crisis:** Comparing the current drought to the 1972 famine, local farmers say that the impact is more severe now as the groundwater is dwindling.
- Karnataka farmers have been switching from paddy and millets to cash crops such as cotton and sugarcane over the last decade. Cane cultivation has increased 103%, from 2.21 lakh hectares to 4.5 lakh hectares. These crops also consume huge amounts of water which is sourced by the farmers from the groundwater in districts such as Belagavi, Bagalkot and Koppal.
- The back to back drought of 3 years

Karnataka farmers have been switching from paddy and millets to cash crops such as cotton and sugarcane over the last decade. Cane cultivation has increased 103%, from 2.21 lakh hectares to 4.5 lakh hectares. These crops also consume huge amounts of water which is sourced by the farmers from the groundwater in districts such as Belagavi, Bagalkot and Koppal. The back to back drought of 3 years has further increased exploitation of groundwater. But there have been negligible efforts to recharge the aquifer by planting trees or rainwater harvesting.

has further increased exploitation of groundwater. But there have been negligible efforts to recharge the aquifer by planting trees or rainwater harvesting. In Kalaburagi, the district administration is making efforts to emulate the Jal Yukta Shivar program of Maharashtra government, a program for water conservation projects based on people's participation in neighbouring Latur. As the Karnataka government has not undertaken any such program, the district panchayat CEO has initiated such water conservation works under MGNREGA. On May 5, 2016, the state government announced a new scheme, 'Kere Sanjeevini' to rejuvenate lakes and clean their feeder channels specially the ones that supply drinking water.

- Over-exploitation of groundwater and increased water pollution has also been caused by rapid urbanization, population growth, agricultural expansion, industrial growth and poor water governance. Indiscriminate sand mining has also reduced the water holding capacity.

Agriculture:

- **Kharif failure:** The southwest monsoon season started well in the month of June. But the rains were deficient in following months. As a result, the kharif crop that farmers planted in response to the early monsoon, withered away. Of the 74 lakh ha of land under kharif crops, seeds weren't sown on 8 lakh ha and the drought wiped out 37 lakh ha of crops. Farmers suffered kharif damage of Rs. 14471 crore.
- **Rabi:** In the Rabi season, cultivation of every major crop other than sugarcane went down. The sowing area of wheat, one of the major winter crops, shrunk by 30% from normal. But, sugarcane was planted in over 60,000 ha in the state, which is 134% more than the usual area in which it is cultivated! Rainfall in Sept 2015 persuaded some farmers to take up Rabi sowing which failed because of deficient rains later in the season.
 - Out of the 13.58 lakh ha under Rabi cultivation in the Belagavi revenue division comprising Bagalkot, Belagavi, Dharwad, Gadag, Haveri, Uttara Kannada and Vijayapura, the crop loss was over 33% in over 10 lakh ha.

- The Rabi failure shows lack of planning and management by the state. Rabi depends on moisture but by the end of 2015, there was absolutely no moisture. The districts of north interior Karnataka which suffered the most extensive damage of rabi crops lie in an arid area and have poor irrigation facilities. According G.R. Chintala, Chief General Manager, National Bank for Agriculture and Rural Development (NABARD), Bengaluru drought-prone area in State has also increased from 63% to 72% of the total area owing to erratic monsoon and lack of drought-proofing methods. Farm ponds could have helped in storing water and making it available for irrigation but they have been dug at very few places. The Rabi crop was bound to fail.

Karnataka is the third largest sugar grower in the country. In March 2016, cane was reportedly being cultivated in Bidar district even though there was shortage of drinking water and farmers had suffered crop loss due to poor rainfall during the previous monsoon. A majority of the farmers who committed suicide in well-irrigated districts are said to be sugarcane growers who fell into a debt trap. Sugar mills in Karnataka owe farmers roughly Rs. 4000 crore as arrears since 2013 as sugar is being over produced bringing down prices.

- **Reduced cultivation in 2016:** Pre-monsoon rain has been deficient in April 2016. Even large landowners with fields partly irrigated by groundwater have not taken up summer planting fearing that the groundwater might run out.
- **No water for irrigation:** In Sept 2015, the State government decided to impose ban on using water for irrigation or release of water for irrigation from the barrages constructed across rivers in drought-hit areas in the State. The available water in the barrages was set aside to meet drinking water requirements. Again in March 2016, the state Water Resources Minister said that the department has stopped releasing water into canals for summer crops. Water for drinking was to be given priority over irrigation and industries. To prevent use of water for irrigation, electricity supply was being disconnected along the riparian areas of Ghataprabha and Malaprabha and Krishna rivers in Apr 2016.
- **Sugarcane behind suicides:** Karnataka is the third largest sugar grower in the country. In March 2016, cane was reportedly being cultivated in Bidar district even though there was shortage of drinking water and farmers had suffered crop loss due to poor rainfall during the previous monsoon. The farmers use tubewells for irrigation. Sugarcane assures good returns, rates do not fluctuate, harvest, transportation are all easy and it has political backing. While the government needs to restrict and eliminate sug-

arcane cultivation for the equitable and sustainable water use, long-term benefits of farmers, it has in fact cleared six new sugar factories with investment in crores in drought-hit areas of the state such as Belagavi, Bagalkot and Kalaburagi.

- A majority of the farmers who committed suicide in well-irrigated districts are said to be sugarcane growers who fell into a debt trap. Farmers have not been paid their dues by sugar mills. Sugar mills in Karnataka owe farmers roughly Rs. 4000 crore as arrears since 2013 as sugar is being over produced bringing down prices. Hence the farmers have to borrow for the next crop and are trapped in debt because of crop loss.
 - The hot weather and lack of rains in March and April

2016 is likely to reduce coffee Almost 70% of coffee plantations are yet to receive their first rainfall and the soil moisture is also poor because of the extended hot and dry spell. Crops are likely to wilt and dry.

- The absence of pre-monsoon showers has shrunk the size of mangoes. Mangoes are also falling off the trees before ripening. Karnataka is among the top mango-growing states in the country. Mango is cultivated in 1.7 lakh ha in 16 districts, including Kolar, Chikkaballapur, Dharwad and Ramanagaram.
- In Chitradurga and Dakshina Kannada districts, several acres of arecanut and coconut **plantations** are getting destroyed due to lack of water, causing irreparable losses.
- As crops are drying up, vegetable prices are increasing as of Apr 2016.

Fodder shortage:

- Fodder has to be bought at high prices or cattle have to walk long distances in search of pastures.
- Apr 19 2016: Farmers are putting their cattle up for sale at throwaway prices and taking them to slaughter houses even along the Cauvery basin.
- Apr 2016: The state has opened goshalas in the Belagavi revenue division to provide fodder for cattle but these are too few in number. The CM inaugurated two fodder banks in Yadgir district in Apr 2016

but they have not started functioning yet. Local farmers complained that while the government sourced the fodder from big farmers free of cost, it was charging the locals Rs 3 per kg.

Unemployment

- Apr 2016: The water scarcity crisis has been compounded by lack of employment. There is no employment to be found in northern Karnataka, which has been an under developed region. There are no jobs in farms as there are no crops in the fields. In Ballari and Raichur districts, there is no farming or industry and mining has also stopped.
- The loss of crops has left farmers in debt and at the mercy of moneylenders.
- NREGA work is also not provided although villagers are on the register. Villagers in Raichur district, allege that the officials use earthmovers, dig up trenches, and pocket the money.
- The daily wage under NREGA is Rs 234 but the workers receive much lesser wage. The income is insufficient to meet the increased expenditure from having to purchase water. There have been reports of labourers falling ill from consuming unsafe water provided at work sites. The wages are also delayed by months.

Power Crisis due to unreliable hydropower and impact of water crisis on thermal projects:

- In Sept 2015 it was reported that the State was facing a major power crisis. 70% of Karnataka's power comes from hydropower. The scarce rains were not enough to fill the reservoirs in the state. The 3 major reservoirs of Linganmakki, Mani and Supa were generating just 46% of their capacity. In Mar 2016, four units of the 1720 MW Raichur Thermal power plant were shut down due to lack of water in the Krishna River. By March 2016, the gap between demand and supply had come up to 2600 MW. The hydel power plant in Almatti dam has generated the lowest ever quantum of electricity this year because of the acute water shortage.
- Almost 25% of the state's power generation goes to Bengaluru where technology and start up companies are affected by the power crisis. The city is seeing load shedding of over 4 hours daily.
- Rural areas have power cuts for 8-12 hours daily. The long hours of load shedding causes difficulties in operating pumps to draw water. For many their entire day is spent on waiting for procuring water from the available sources. Farmers dependent on groundwater-based pump-sets for irrigation are hit due to erratic power supply.

- On Apr 30 2016, it was reported that the Almatti Dam had reached dead storage level after the little water it had was released to the Raichur Thermal Power Station (RTPS). Officials have said that the the dead storage water will be used to provide drinking water to Vijayapura and parts of Bagalkot district until June. Power generation at the RTPS is accorded high priority as the state is heavily dependent on it for its power generation. However, it is questionable whether power generation, which would benefit distant industries and cities more, should take precedence over drinking water needs of the local people and how democratically these decisions are made. This is particularly since Union Power Minister has declared that India is POWER SUPPLUS, as declared by Union Power Minister Piyush Goyal to NDTV on May 6, 2016.



Almatti, one of the major reservoirs of Karnataka and the lifeline of Vijayapura district, reached dead storage level over a month before the arrival of monsoon

In such times, what do the people do?

Suicides: There were 978 farmer suicides in Karnataka, the highest ever in the state, between April and December 2015. Suicides continue to be reported in 2016. Surprisingly, well-irrigated districts such as Mandya, Mysuru, Hassan and Belagavi saw higher numbers of suicide. The state government has increased the compensation for bereaved families from Rs 2 lakh to Rs 5 lakh.

Migration:

- Migration from the drought-affected regions started as far back as November from Raichur, Yadgir, Vijayapura and Kalaburagi districts. Villagers are migrating in search of water and employment. In some cases, entire families have migrated. At other places, the entire working population has left, leaving the

elders to face the hardships of searching for water and surviving on meager amounts.

- In March 2016, it was reported that most of the villages in rain-fed areas were deserted as people left for cities such as Bengaluru and Pune to make a living as unskilled labourers in the construction sector. They were rendered jobless, as they could not take up farming in their villages because of drought.
- Following the announcement by the Water Resources department that it would not release any water from reservoirs for irrigation, people from many villages even in irrigated belts along the Tungabhadra and Krishna left for big cities in search of work.
- Apr 29 2016: Newspapers reported that houses are locked and hundreds of families have deserted their villages from the drought-hit Chamarajanagar district to work as labourers in Tamil Nadu and Kerala. Tribals of the district blame the Forest Department for the large-scale migration as the department has banned collecting gooseberry, honey and other forest produce in the last few years.

Protests: On Mar 3 2016, the Police lathicharged a large group of farmers who came to Bengaluru in tractors when they tried to move towards the State Legislature. They had come to agitate against the water problems in the drought-hit districts like Kolar, Chikkaballapur and Bengaluru rural. The farmers called for a bandh in Kolar and Chikkaballapur the following day to protest the lathicharge.

Child marriages: In Yadgir district, many are getting their daughters married, many of them below 18 years of age, before they migrate to big cities in search of jobs to be assured of the girls' "safety" back home.

Efforts by State government to counter drinking water crisis

- In Aug 2015, while declaring drought, the state government released Rs 150 crore to supply drinking water to drought-hit talukas and fodder for livestock. Water was being supplied in tankers to 813 villages and 61 urban local bodies.
- On Apr 25 2016, the CM directed taking over all the live private borewells located in and around the drought-hit areas on rental basis to sort out the water problem. The CM also promised to hike rates to

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contractors drilling borewells for the government.

- Apr 30 2016. In Hassan district, the district authorities are trying to convince the owners of private borewells to share water to combat

drinking water woes in the worst hit areas of the district.

Splurging in times of scarcity

- **IPL Cricket matches:** The IPL final has been moved from Mumbai to Bangalore after the Bombay HC intervened to shift the cricket matches out of Maharashtra. In view of the drought conditions, the Karnataka HC directed the Bangalore Water Supply and Sewerage Board (BWSSB) to ensure no water is wasted during the match. The Chinnaswamy cricket stadium in Bengaluru uses 70,000 litres/day on match days.
- **Washing off dust for the CM:** In Apr 2016, about 5000 litres of water were emptied to prevent dust from rising from a road that the CM was visiting as part of his tour of drought-hit areas. at Bilagi

State declared drought (Kharif and Rabi); assistance sought from Centre

- In Aug 2015, 27 out of the 30 districts were declared drought-hit by the state government becoming the first state to declare drought. An extreme situation was being faced for the fifth consecutive year – groundwater levels dipped, storage of water in reservoirs too was poor. The severity of the drought was highest in the 12 districts of North Interior Karnataka.
- Karnataka asked the Centre for an assistance of Rs. 3050 crore in September 2015. According to the state government's assessment, Karnataka suffered a damage of Rs. 14,471 crore in over 3.2 million ha of crop area because of the drought.
- The Centre on Nov 9, 2015 approved Rs. 1540 crore for drought relief for Karnataka.
- In late Jan 2016, the Karnataka government declared the 12 districts of North interior Karnataka – Ballari, Raichur, Koppala, Kalaburagi, Yadgir, Bidar, Belagavi, Bagalkot, Vijayapura, Gadag, Haveri and Dharwad – as drought affected for the Rabi season. The Karnataka government reported drought impact on Rabi crops in 22.33 lakh ha. Karnataka was the

only state to declare widespread damage to the rabi crop and seek central assistance. The State reported an estimated crop loss in 70% of sown area. The actual crop loss could be worse as reports were based on “visual data” gathered from the fields. Scientific crop assessment had not been conducted, as agricultural department was short staffed and busy with distributing subsidy.

- The state sought 1417 crore towards mitigating crop failure amounting to a loss of Rs. 1290 crore, Rs. 74.67 crore animal husbandry damage and roughly Rs. 52 crore to provide water assistance to rural and urban settlements.
- On Apr 22 2016, the Centre approved Rs. 723.23 crore for drought relief in Karnataka.
- On Apr 30, 2016, the state government released funds adding up to Rs 100 crore to all the districts of the state for providing drinking water and fodder and to open goshalas as per the guidelines of the Union Government. The highest amount of Rs 10 crore was released to Kalaburagi, Belagavi and Vijayapura districts while Bidar, Yadgiri, Chikkaballapur and Kolar districts were given Rs. 5 crore each.

Why ‘drought-relief’ brings no real relief

- Though the government claims that the farmers have suffered damage of Rs. 14,471 crore, the state received only Rs. 1,540 crore for relief.
- Officials said that farmers who lost crops due to poor rains during Kharif 2015 are expected to get relief only by May 2016 due to delays in gathering farmers’ bank account details. Upcoming local body elections are also delaying relief distribution.
- There are contradictory reports on the dispersal of the Kharif relief. Some reports claimed the relief had been distributed to 80% of farmers in Belagavi revenue division by Feb 2016.
- In Raichur district, most claim that they have not received a single paisa even four months after applying for crop loss compensation. Some have received amounts in the range of Rs. 1,200 to Rs. 2000 which is just a pittance.
- In Bidar district, the government has granted drought compensation of Rs. 2800 for farmers having up to 5 acres of land and Rs. 4000 to those with higher landholding. But those amounts are way less than the expenditure on cultivation and inputs.

NREGA (NREGA statistics based on data from <http://nrega.nic.in/>)

- Amount over Rs. 20 crore is unpaid from NREGA wages for 2015-16 and the total NREGA expenditure

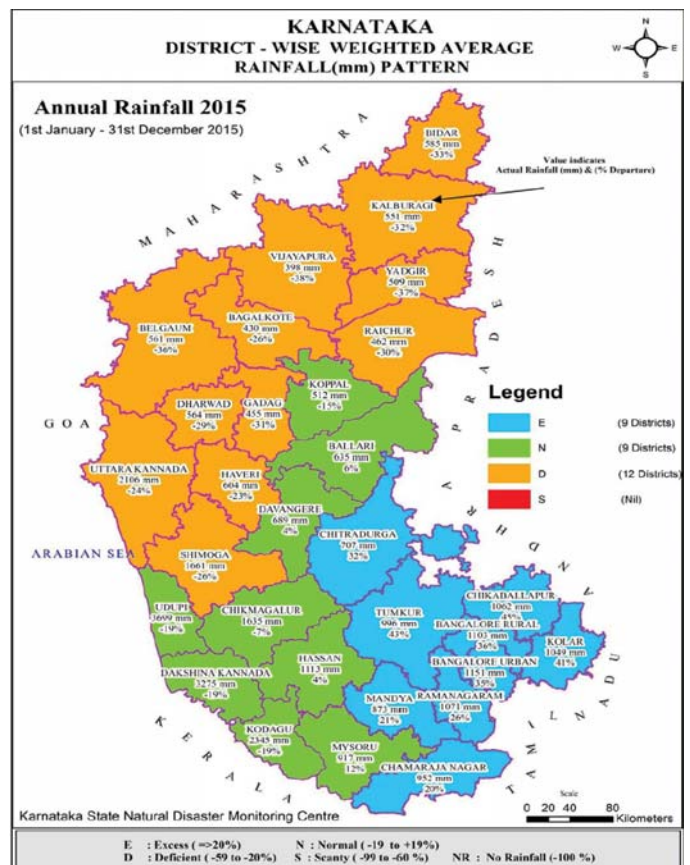
from 2015-16, which has not been paid yet, is over Rs. 94 crore.

- The average wage per day for 2015-16 was Rs 203.69 and for 2016-17 so far has been Rs 222.88.
- In the financial year 2015-16, the expenditure on wages was a poor 61.38% of the total expenditure on NREGA.
- The average number of employment days per household in 2015-16 was 48.45 although the entitled number of workdays per household had been increased to 150 in the drought-hit districts. Of the households that worked under NREGA in 2015-16, 10.78% were employed for 100 days or more.

RAINFALL Karnataka Rainfall (in mm) this year –

Season	Normal	Actual	Deviation
Pre Monsoon (Mar-May 2015)	123.4	184.6	50%
Southwest Monsoon (June-Sept 2015)	832.3	679.9	-18%
Northeast Monsoon (Oct-Dec 2015)	188.1	174.1	-7%
Winter (Jan-Feb 2016)	4.3	2.4	-43%

District wise rainfall during monsoons



District	SW Monsoon (June-Sept 2015) Deviation		NE Monsoon (Oct-Dec 2015) Deviation	
Coastal Karnataka				
Dakshina Kannada	-23%	Deficit	20%	Excess
Udupi	-15%	Normal	29%	Excess
Uttara Kannada	-33%	Deficit	-23%	Deficit
North Interior Karnataka				
Bagalkote	-16%	Normal	-51%	Deficit
Belagavi	-38%	Deficit	-41%	Deficit
Bidar	-38%	Deficit	-55%	Deficit
Dharwad	-34%	Deficit	-37%	Deficit
Gadag	-22%	Deficit	-46%	Deficit
Haveri	-20%	Deficit	-32%	Deficit
Kalaburagi	-34%	Deficit	-72%	Scanty
Koppal	-6%	Normal	-72%	Scanty
Raichur	-16%	Normal	-55%	Deficit
Vijayapura	-29%	Deficit	-49%	Deficit
Yadgir	-45%	Deficit	-74%	Scanty
South Interior Karnataka				
Ballari	-2%	Normal	-39%	Deficit
Bengaluru Rural	11%	Normal	13%	Normal
Bengaluru Urban	-8%	Normal	48%	Excess
Chamarajanagar	-4%	Normal	30%	Excess
Chikaballapura	11%	Normal	82%	Excess
Chikkamagaluru	-30%	Deficit	7%	Normal
Chitradurga	33%	Excess	11%	Normal
Davangere	2%	Normal	-26%	Deficit
Hassan	-10%	Normal	-4%	Normal
Kodagu	-14%	Normal	-20%	Deficit
Kolar	0%	Normal	111%	Excess
Mandya	15%	Normal	38%	Excess
Mysuru	27%	Excess	8%	Normal
Ramanagara	4%	Normal	13%	Normal
Shivamogga	3%	Normal	-11%	Normal
Tumakuru	23%	Excess	54%	Excess

RESERVOIR STATUS

(as of Apr 28, 2016; The average of last 10 years is taken as 'normal')

Reservoirs having less than 50% of normal storage:

Malaprabha: 31%

Tungabhadra: 34%

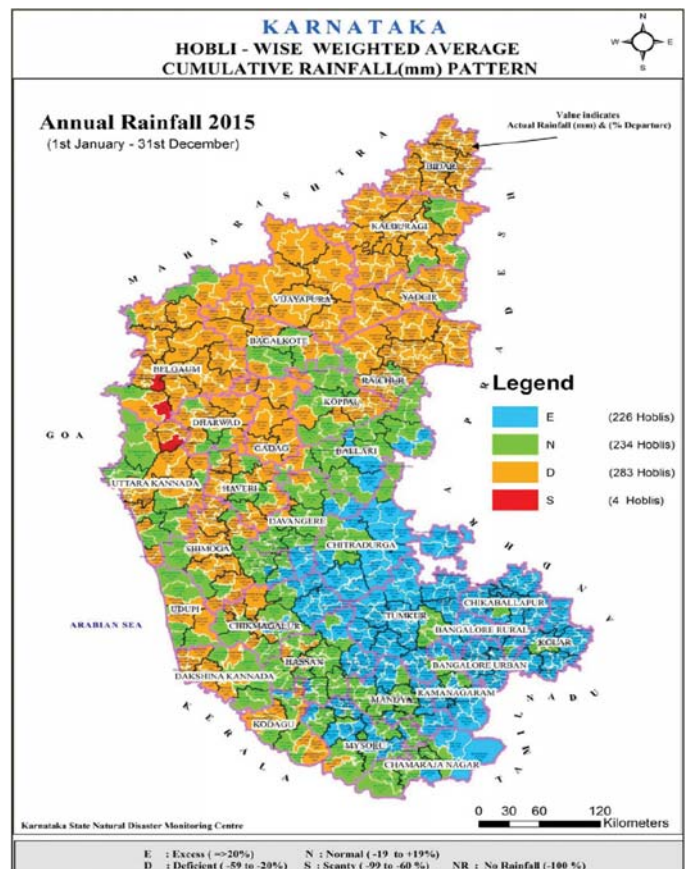
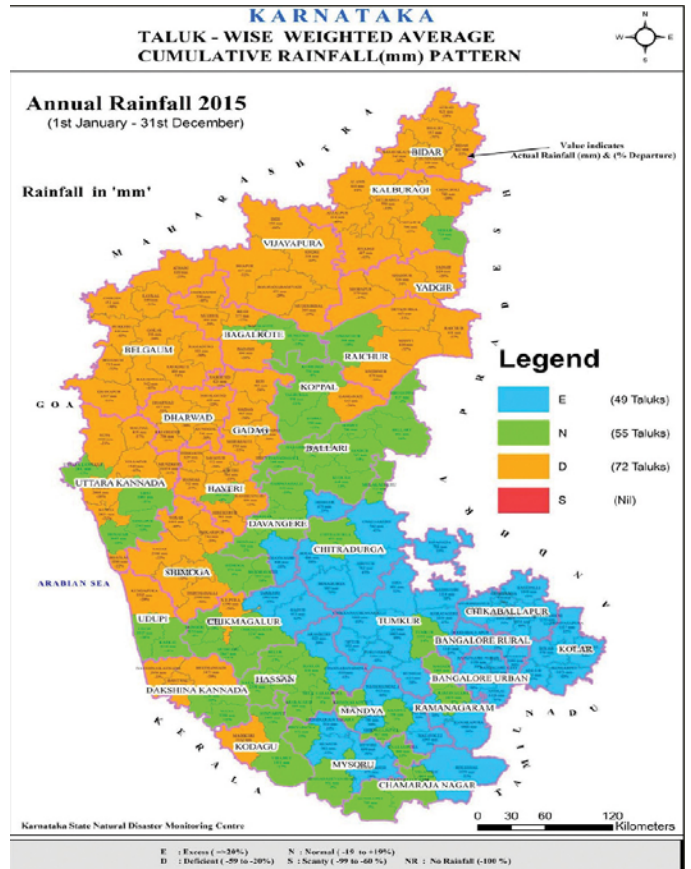
Kabini: 38%

Ghataprabha: 40%

Harangi: 47%

Bhadra: 49%

Vanivilas Sagar: 50%



Source: <http://www.imdbangalore.gov.in/>

Storage as % of live capacity at full reservoir level (FRL):

Reservoir	Present	Last year	Normal
Krishnaraja Sagar	16	25	21
Tungabhadra	2	2	6
Ghataprabha	4	13	9
Bhadra	19	42	39
Linganamakki	24	23	26
Narayanpur	22	22	33
Malaprabha	2	10	8
Kabini	4	48	10
Hemavathy	11	13	12
Harangi	7	10	15
Supa	23	41	31
VaniVilas	7	5	13
Almatti	5	8	8
Gerusoppa	73	85	88

Source: CWC

River Basins (as of Apr 28, 2016)

Water levels (in BCM) in river basins: (Source: CWC)

- Krishna: 32.831 (FRL); 6.266 (Apr 2015); 2.169 (Apr 2016); 67.05% below normal
- Cauvery and East Flowing Rivers: 8.359 (FRL); 2.033 (Apr 2015); 1.685 (Apr 2016); 37.87% below normal

The villagers of Channapatna taluk in Ramnagram district, Karnataka which used to suffer from acute drinking water shortage, are finding this summer much more comfortable than the previous ones in the last 17-18 years. This transformation happened owing to a project taken up in Dec, 2014 that recharged the groundwater in the parched area by filling up tanks in the villages with water from Shimsha river, which is a tributary of the Cauvery. Under the project, 65 tanks, including Kanva reservoir and 17 major tanks, were filled from the Iggaluru barrage on Shimsha.

- West flowing rivers of South: 14.766 (FRL); 5.047 (Apr 2015); 3.842 (Apr 2016); 16.33% below normal

Seeds of success in dealing with Drought: Like in most other states, in Karnataka too we can see examples of how the people have dealt with the drought in manner that has some seeds of success for others to learn from. We have compiled some here:

Dharward Dist, Navalgund taluk	20 Villages	How Some Karnataka Farmers Are Defeating The Drought About 20 villages in the drought-hit Navalgund taluk of Dharward district stand as a stark contrast to the calamity prevailing in the neighbourhood. A majority of farmers in these villages are unaffected by the drought. They are able to cultivate crops and keep them healthy by sufficiently watering them, and are making profits. Their insurance, so to speak, against the natural disaster, are the farm ponds they have dug with the help of the Deshpande Foundation. The Foundation is supporting the digging of farm ponds in Navalgund taluk. The farm ponds dug in low-lying areas allow farmers to harvest occasional rainfall, store water and use it to provide timely irrigation to their crops. The result: farmers are able to irrigate and harvest three crops in a year. Their income has more than doubled and they are experimenting with commercial crop like papaya, beyond traditional ones like cotton, maize, onion, chilly, pulses.
Ramanagaram District	Channapatna taluk	Tackling drought, the Channapatna way When most of the areas in the State are reeling under the worst drought in decades, Channapatna taluk presents a contrasting picture. There are no signs of drought in its villages, despite being drought prone. In fact, the Channapatna MLA, who used to haggle with the government earlier to get drought assistance, has categorically told authorities that his constituency does not need any relief. The villagers of this taluk, which used to suffer from acute drinking water shortage, are finding this summer much more comfortable than the previous ones in the last 17-18 years. This transformation happened owing to a project taken up in Dec, 2014 that recharged the groundwater in the parched area by filling up tanks in the villages with water from Shimsha river, which is a tributary of the Cauvery. Under the project, 65 tanks, including Kanva reservoir and 17 major tanks, were filled from the Iggaluru barrage on Shimsha.
Mandya District		Former IT Engineer Is Using A Brilliant Plan To End Farmer Suicide The farmers of Mandya district which is notorious for farmers' suicides is presently experiencing an agricultural revolution of sorts as farmers are now selling organic produce for a profit. To make farming more professional and profitable using organic methods, Madhuchandan SC, fondly called 'Madhuanna' left a lucrative career in the US in August 2014 and started the Mandya Organic Farmers Cooperative Society with 270 farmers, who produce and sell their own organic farm products.

Anuradha UV, SANDRP (uv.anuradha@gmail.com, with inputs from Bhim Singh Rawat and Himanshu Thakkar)

Telangana Drought 2016

The severe drought in Telangana has caused acute shortage of drinking water and worsened the agriculture crisis in the state.

On Nov 24, 2015, the Telangana government declared drought in 7 out of 10 districts. It declared 231 out of 443 rural

mandals (blocks) in the State as drought-affected and sought an immediate assistance of Rs. 1000 crore from the Centre. All the mandals in Mahabubnagar (64), Medak (46) and Nizamabad (36) districts were declared drought-hit. Other mandals declared drought-hit included 33 out of 37 in Ranga Reddy, 19 of 57 in Karimnagar, 22 of 59 in Nalgonda, and 11 of 51 in Warangal. None of the mandals in Adilabad (52) and Khammam (41) districts were on the list.

In Jun – Sept 2015 monsoon, 216 of 459 mandals in Telangana recorded scanty rainfall. According to IMD, rain in June 1 – Sept 30 period was 20% deficit in Telangana. Around end of June 2015, Telangana received good rain, but then it dried up.



Assessing the agricultural drought situation of Telangana up to Oct 2015, the Ministry of Agriculture's Mahalanobis National Crop Forecast Centre assessed Mahabubnagar and Nizamabad districts as facing 'moderate drought'. The 'moderate drought' category

is the most severe drought category under the assessment. Medak and Rangareddy districts were assessed as facing mild drought while the situation in the rest of the districts was assessed as normal.

The delayed declaration of drought came for criticism – the agricultural department knew that a drought like situation was prevailing in Mahabubnagar, Medak, Nizamabad, Karimnagar and Rangareddy districts and a few parts of Nalgonda, Warangal and Adilabad districts since early Sep-

tember. It also knew that over 50 per cent of the rain-fed crops were affected badly. In all likelihood, the farmers would lose even the investment made on cultivation. Yet, it waited to prepare a detailed report despite being well aware of farm

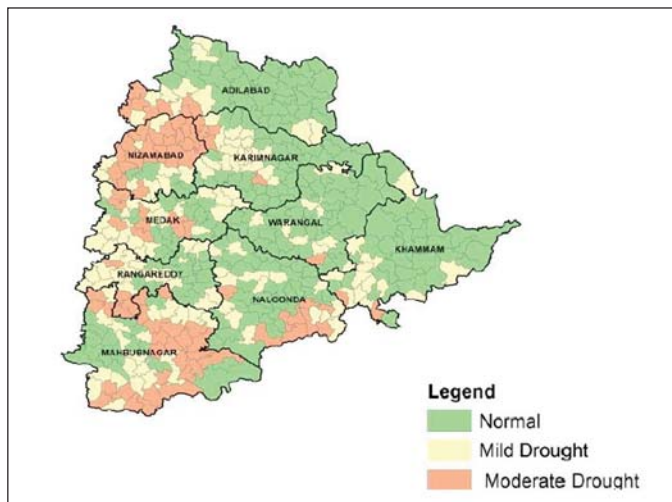
The list of mandals declared drought-hit has led to allegations of discrimination on political grounds. The government overlooked reports submitted by the collectors and included some mandals with normal rainfall while missing out several that were drought-hit. The opposition has accused the government of favouring mandals in assembly constituencies held by the ruling party.

suicides that drought-induced crop failures and other hardships trigger. Deficit rainfall along with severe dry spells caused withering and drying up of crops leading to reduced yield.

The list of mandals declared drought-hit has led to allegations of discrimination on political grounds. The government overlooked reports submitted by the collectors and included some mandals with normal rainfall while missing out several that were drought-hit. The opposition has accused the government of favouring mandals in assembly constituencies held by the ruling party.

The state faced a drought in 2014-15 also, just when it was formed, and the government did not declare drought that year. As a result, farmers did not receive any assistance with input subsidy or loan rescheduling from the Centre.

Agricultural drought assessment - October 2015



Plummeting Ground water

Officials from the Telangana Ground Water department describe the drought as unusual. The groundwater levels in the state have plummeted by 2.78 metres during 2015. Borewells are drying up at most places. Even the borewells in tank command areas and project command areas have gone dry. Because of drought in back to back years and reservoirs going dry, people are desperately relying on groundwater. But groundwater reserves take thousands of years to accumulate. Despite restrictions on sinking new borewells, rig operators are continuing illegally.



People wait for electricity to pump water from a public well in Medak

District	Depth to water level in mbgl in Jan 2016	Decrease compared to Jan 2015, in m.
Nizamabad	18.35	-6.22
Medak	23.82	-7.37
Warangal	10.15	+0.17
Karimnagar	12.00	-2.05
Adilabad	9.46	-1.33
Ranga Reddy	17.03	-3.73
Hyderabad	9.79	+0.12
Mahbubnagar	15.27	-3.92
Nalgonda	13.12	-2.94
Khammam	8.55	-0.53
State	13.75	-2.78

Source: <http://agrisnet.tg.nic.in/weeklyreport.jsp?mode=rep>

RAINFALL District wise rainfall data (Jun 1, 2015 to Feb 17, 2016)

District	SW Monsoon Deviation	NE Monsoon Deviation	Cumulative (1-6-2015 to 17-2-2016) deviation	Status
Nizamabad	-45%	-80%	-50%	Deficit
Medak	-35%	-83%	-43%	Deficit
Warangal	13%	-83%	-1%	Normal
Karimnagar	-18%	-91%	-28%	Deficit
Adilabad	-18%	-91%	-27%	Deficit
Ranga Reddy	-27%	-79%	-37%	Deficit
Hyderabad	-11%	-50%	-20%	Normal
Mahbubnagar	-25%	-62%	-33%	Deficit
Nalgonda	-1%	-77%	-17%	Normal
Khammam	12%	-81%	-2%	Normal
State	-15%	-76%	-25%	Deficit

Source: Agriculture Department, Telangana

Normally, in Telangana, 14% of the annual rainfall comes from North East Monsoon.

RESERVOIR STATUS (as of Apr 13, 2016; The average of last 10 years is taken as 'normal')

Reservoirs having less than 50% of normal storage:

- Srisaillam: 39%
- Lower Manair: 40%
- Nagarjuna Sagar: 0%

Storage as % of live capacity at full reservoir level (FRL):

Reservoir	Present	Last year	Normal
Sriramsagar	6	16	12
Lower Manair	13	22	31
Srisaillam	8	30	19
Nagarjuna Sagar	0	4	23

Source: CWC

The Nagarjunasagar reservoir is dry. Due to the rainfall deficit during Southwest monsoons, the inflow from upstream into the Krishna basin dams was severely reduced.

River Basins (as of Apr 13, 2016; Source: CWC)

Water levels (in BCM) in river basins: Godavari: 15.394 (FRL); 5.068 (Apr 2015); 3.078 (Apr 2016); 32.35% below normal Krishna: 32.831 (FRL); 6.914 (Apr 2015); 2.639 (Apr 2016); 63.95% below normal

NREGA

- For the year 2015-16, the average number of days of work provided per household was 50.34 (Based on data from <http://nrega.nic.in/>) and 53.93 as per <http://www.nrega.telangana.gov.in/>
- Only 12.13% of the households that got employment under NREGA in 2015-16 were employed for 100 days or more. (Note: This is not saying about households that were not employed at all.)
Based on data from <http://nrega.nic.in/>
- In 2015-16, the average wage received per person per day was Rs. 131.03. NREGA wage rate was Rs 180 per day in 2015. Now, it is Rs 194 per day.
- Amount over Rs. 211 crore is unpaid from NREGA wages for 2015-16. In 2015-16, no more than 45% of wages were paid on time. Based on data from <http://nrega.nic.in/>
- In the financial year 2015-16, the expenditure in wages was 74.55% of the total expenditure of Telangana on NREGA. <http://www.nrega.telangana.gov.in/>
- Feb 27, 2016: Telangana is among the top recipients of Central funds for MGNREGA. The government claims it has already provided the maximum of 100 wage days for three lakh people this year and was giving work for 150 days in 231 drought mandals with the permission of the Centre. Medak, Nizamabad, Adilabad and Nalgonda topped in works. Women constituted 57 per cent of the work force.

Government Action

Centre:

- **Sep 14, 2015:** People in drought-hit areas will get additional 50 days of work under the MGNREGA scheme.

- **Jan 14, 2016:** The government approved a central assistance of Rs 791 crore for Telangana in order to help the state cope with the drought situation. The state had sought assistance of over Rs 3000 crore.
- **Mar 21, 2016:** Centre released first installment of Rs 55 crore for drought relief to Telangana.

State:

- **Dec 28, 2015** CM KCR held a 5 day 'yagam' costing Rs 7 crore to provide relief to drought hit Telangana.
 - **Feb 16, 2016:** Drinking water being supplied through tankers to some places in Medak, Nizamabad and Karimnagar districts.
- **Feb 16, 2016:** State government has recently released Rs. 55 crore from State Disaster Response Fund (SDRF) to Collectors of Mahabubnagar, Medak, Nizamabad, Ranga Reddy, Nalgonda, Karimnagar and Warangal districts to mitigate drinking water problem in drought hit mandals
- **Mar 30, 2016:** The state government has said that it will disburse input subsidy amount to farmers before the commencement of Kharif season in June. The state will also give input subsidy to small and marginal horticultural farmers.
 - **Apr 14, 2016:** Data from the Centre's rural development ministry shows that Telangana has not utilised the funds provided under the national rural drinking water programme. Telangana has around Rs 20 crore of unspent funds despite being hit by an acute water shortage. It has not utilised even the flexi-fund – provided to use for emergency measures for immediate relief.
- While the entire Karimnagar district is under the spell of drought, only 19 of the 57 mandals were declared drought-affected.
- State government is only blaming previous AP government for failed irrigation projects and is carrying out works on them which can at best provide relief in

The state faced a drought in 2014-15 also, just when it was formed, and the government did not declare drought that year. As a result, farmers did not receive any assistance with input subsidy or loan rescheduling from the Centre.

State government is only blaming previous AP government for failed irrigation projects and is carrying out works on them which can at best provide relief in the long run. Govt. claims that over 2-lakh acres could be irrigated in Khammam district this year purely with the help of minor irrigation tanks restored under Mission Kakatiya – its pet project.

the long run. Govt. claims that over 2-lakh acres could be irrigated in Khammam district this year purely with the help of minor irrigation tanks restored under Mission Kakatiya – its pet project.

IMPACT

- Mar 29, 2016:** Godavari river has become totally dry for the first time in half a century. Due to lack of rainfall in its catchment areas. Farmers in the area used to raise three crops a year till recently utilising the river water. Paddy, maize and chilli are the main crops. They never experienced irrigation problem. Hundreds of villages in Nizamabad and Adilabad are dependent on the perennial river for their drinking water needs.
- Apr 7, 2016:** 178 people as per official figures and possibly even more have died from the heat wave in Telangana. The highest number of sunstroke deaths, were reported from Nalgonda (53 deaths) and Mahbubnagar (33) district. Many are vulnerable without access to water. Officials said a majority of the sunstroke victims are agricultural labourers and daily wage workers who have no other option than to toil under the scorching sun. Kin of the dead are eligible to receive Rs 50,000. Officials contest the cause for the death with specificities of the definitions and the unofficial death toll is much higher. On Apr 18, 2016, the State government officials backtracked the figure from 66 and said that the number of heatwave deaths was 19.
- Apr 18, 2016:** Greater Hyderabad area, which gets the highest priority in the state for water supply, is facing a water crisis. Hyderabad's four captive reservoirs – Singur, Manjira, Himayatsagar and Osmansagar – which used to meet 40-50% of the city's drinking water needs, have all reached dead storage levels, and supplies stopped more than a month ago. Its two main river-based water systems are functioning at reduced levels. If rains are delayed past mid-July, it would be a disaster for Hyderabad. Borewells going deeper than 500 ft have also gone dry in Greater Hyderabad area. Residents have to get permission to sink a borewell and it costs

around Rs. 40,000 to drill a borewell with depth over 300 ft. Chances of getting water are also bleak yet people are sinking borewells every night illegally. Hyderabad Revenue department admitted that they are not able to deny permission for new borewells

due to pressure from applicants. Many are turning to packaged water in the wake of acute shortage of drinking water. There are around 7,000 mineral water plants in the state out of which only 113 are BIS certified. The uncertified ones are selling their product at a cheaper price.

Migrant workers in the cities are worst-hit as they have no access to the water supplied by the water utilities. A good part of their earnings go into buying water. Because of the drought, the prices of 20-litre water cans have inched up to Rs 50-70 per can in Hyderabad.

- Mar 30, 2016:** Drinking water shortage is also being felt in the twin towns of Warangal and Hanmakonda in Warangal district which are now receiving tap water once in three days. The towns receive water from the Bhadrakali Cheruvu which gets water from the Lower Manair Dam in Karimnagar, now at dead storage levels. By the end of April, all water tanks supplying water to Nizamabad city dried up except for Ali Sagar reservoir.



Dried up Godavari exposing flood basalt river bed as seen from the back of Changdev temple in Puntamba

- **May 15, 2016:** Due to severe drought fewer migratory birds are reported to have arrived in the State as the second year of consecutive drought has left many wetlands in Hyderabad drying up or with unusually hot water. Four reservoirs catering to drinking water requirements of Hyderabad include Osmansagar, which used to attract a good number of Pelicans and other migratory birds every year have also dried up. Gandipet, as Osmansagar is popularly known and Shameerpet Lake were among the stopover points in Hyderabad for migratory birds on their way from Ladakh to Sri Lanka.

Agriculture: (Data obtained from the agriculture department website.)

- Total cultivated area during Kharif 2015-16 season is 35.78 lakh ha which is 86% of the normal 41.43 lakh ha. Medak showed the highest deviation of 29% lesser area under cultivation. While paddy was planted in only 58% of the normal area, cotton was cultivated at normal levels. However, the crop coverage report of the state agriculture department does not report the yield of the cotton and other crops cultivated.
 - Total cultivated area during Rabi season is 6.75 lakh ha which is 54% of the normal 12.53 lakh ha. Cultivated area in every district except for Adilabad is under 60% of the area normally under cultivation.
 - Half the area is normally cultivated with paddy. Area under paddy cultivation during Rabi 2015-16 is only 35% of the normal. By April 2016, around 1000 of the 2500 rice mills in Telangana had shut down because of shortage of paddy production and increasing costs to maintain the mills. Usually, the mills directly or indirectly employ at least 75,000 people. These mills are the primary suppliers to the government for the public distribution systems (PDS).
 - **Apr 29, 2016:** There is a drastic fall in food grain production this year because of the drought conditions and lack of irrigation water. The grain production is estimated to be around 48.63 lakh tonnes. In 2014-15, 72.2 lakh tonnes of food grains were produced which was also less than normal. Price of rice in the open market is likely to increase because of the production shortfall.
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- Large number of farmers did not repay loans last year, and banks have refused loans this year. Many did not repay in anticipation of the debt waiver that was promised by the ruling TRS party at the time of elections. But the waiver was restricted to loans up to a maximum of Rs 1 lakh per farmer that too for bank loans only while many had taken private loans.*
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- **Apr 8, 2016:** Khammam and Nalgonda districts have come under the grip of heat wave. Apart from rice, spices such as chillies and turmeric, and cotton are the principal commodities grown here. Chilli prices are already racing to a new high at Rs 125 per kg with 20-30% fall in production.
 - Cotton is cultivated in about 2.4 million hectares in Andhra Pradesh and Telangana put together. This accounts for 17 per cent of the cultivated area in both the states. Telangana has become the third largest cotton producer, with 1.6 million hectares under cultivation. The cost of cultivation is high and MSP announced by the Centre are lower than the costs incurred. This year, the cost estimation of paddy per quintal is Rs 2,100 in Telangana. The MSP announced is Rs 1,400 a quintal. Cotton is grown in Mahabubnagar and Nizamabad districts in Telangana where rainfall deficit was as high as 60% in the monsoons. Half the crop has failed.
 - At many places, cultivated paddy fields, which should have been harvested now, have turned into grazing ground for cattle.
 - **Apr 6, 2016:** Drought conditions across Telangana and Andhra Pradesh and rising scarcity of fodder have begun to affect milk production. Back-to-back droughts have led to at least 10% fall in milk procurement over the past few weeks. The leading player in the market, Vijaya Dairy, saw its procurement falling by a third to 4 lakh litres a day now from a peak of 6 lakh litres in December.
 - **Apr 13, 2016:** In Mahbubnagar district, a fish farmer lost all the prawns and fish in his tank due to non release of water from the canal supplying the tank. Appealing to the State government to come to his rescue with financial aid, as fish farming is not covered under drought-hit commodities.
 - Lack of access to institutional credit and low crop insurance. Large number of farmers did not repay loans last year, and banks have refused loans this year. Many did not repay in anticipation of the debt waiver that was promised by the ruling TRS party at the time of elections. But the waiver was restricted to loans up to a maximum of Rs 1 lakh per farmer that too for bank loans only while many had taken private loans. Consecutive crop failures have forced

poor farmers to borrow money at high interest rates for buying inputs and also for subsistence with many mortgaging their lands. Unable to repay loans, many distressed farmers have been driven to suicide.

- Poor rainfall, depleting land fertility, dependence on chemicals and fertilisers, expensive inputs, low MSP have pushed farmers into distress. Crop failure because of drought has been the final straw for many. As per Agriculture Ministry reports, 342 farmers committed suicide in 2015 in Telangana. The true number would only be larger. Some farmers took their lives in Hyderabad or in big cities such as Warangal at important places in the city to draw the attention of the government and people to their plight. Under pressure from the media and citizens the government hiked the ex gratia paid to farmers' families to Rs 6 lakh.
- **Apr 25 2016:** According to farmers' organisations, nearly 14 lakh people have migrated from the worst affected districts of Mahabubnagar, Ranga Reddy, Medak and Nizamabad. People are migrating to Hyderabad and other cities in Telangana and to Pune, Mumbai, Ahmedabad and Surat looking for work. While migration is an annual phenomenon, the numbers this year have gone up due to the severity of the drought.
- **Rural drinking water crisis:** In Khammam, hundreds of borewells have dried up and the water level in the Wyra reservoir is down to 7 ft against the maximum mark of 18.3 ft. Water scarcity is felt the most in the tribal areas of Bhadrachalam as the administration only reaches into some of the villages. Women are forced to travel long distances to fetch potable water. In Nalgonda and Nizamabad districts, the administration has leased hundreds of private borewells to supply water to habitations while water tankers partially meet the water demand in some of the worst hit hamlets. While digging of borewells is banned in Nizamabad district, the Rural Water Supply department itself is digging new borewells down to 500 feet. About 90 water bodies in Nalgonda district used to be filled with water for drinking purpose from the Nagarjunsagar project which has now gone below dead storage level. Drinking water problem is getting worse in Karimnagar district as water level in the 2 reservoirs in the district – Lower Manair

Poor rainfall, depleting land fertility, dependence on chemicals and fertilisers, expensive inputs, low MSP have pushed farmers into distress. Crop failure because of drought has been the final straw for many. As per Agriculture Ministry reports, 342 farmers committed suicide in 2015 in Telangana. The true number would only be larger.

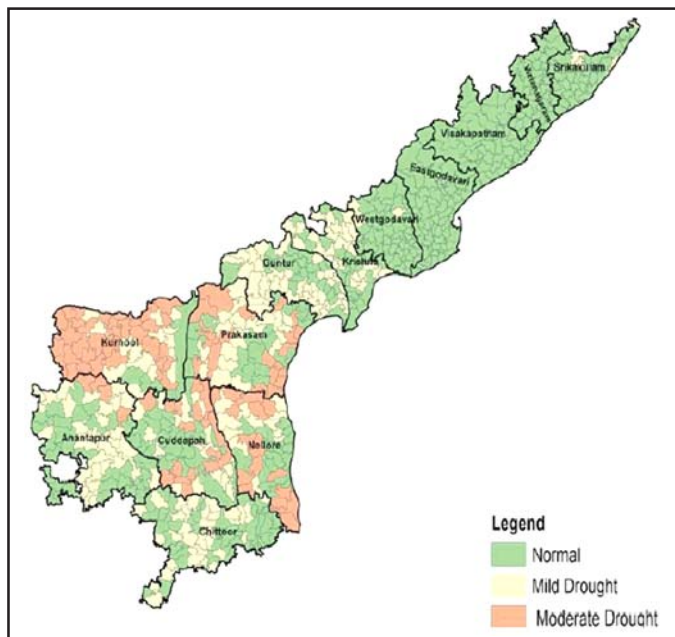
Dam and the Yellampalli irrigation project – are approaching dead storage levels. Despite the scarcity of water in the district, water from Yellampalli project is being pumped to Hyderabad.

- **Borewells for irrigation:** Digging borewells to pump out ground water is mostly the only option for farmers in Telangana. Despite bans and restrictions, many farmers are engaging rig operators, spending a huge amount of money to deepen their existing borewells and or dig new ones. The money spent on digging borewells increases indebtedness and suicide. In Ranga Reddy district, most of them fail as the ground water level has dropped very low. In Oct 2015, it was reported that the govt. was unable to meet the unusual demand for drip and sprinkler irrigation units in Nizamabad district, which increased because of the drought and depleting ground water.
- **Apr 20, 2016:** 65,000 to 68,000 cattle in Goshalas are in poor condition due to severe scarcity of water and non-availability of fodder. The state government is not able to supply water and has failed to supply fodder to the goshalas at the subsidized rates notified by the government. Government agencies admitted that there was a 50% shortage of fodder almost everywhere. The animal husbandry department has announced water troughs for cattle but the number of troughs available is not even a tenth of the required number. Lack of water in the rivers has hit the livestock badly. They do not have sufficient green grass on the river banks. Farmers are struggling to provide fodder and water to the cattle and are forced to sell them to slaughter houses. This has increased since the start of April in Adilabad district. Distress sales of cattle have been reported in Medak district where 50 cattle deaths were reported until the end of March and also in Karimnagar district. In Nalgonda district, only half the fodder requirement is being met. In Nizamabad, officials have distributed fodder seeds to farmers. Only, there is no water to sow them. In Mahbubnagar district, the number of heads of cattle has decreased by 2%. Wild animals like peacock and deer are dying of thirst in the forests and leopards are straying into neighboring villages in search of food and water.

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Andhra Pradesh Drought 2016

Agricultural drought assessment - October 2015



On Oct 28, 2015, the Andhra Pradesh government declared 196 mandals in seven districts, as drought-affected during the Kharif season 2015. The districts were Srikakulam (10 mandals), Prakasam (21), Nellore (14), Chittoor (39), Kadapa (33), Anantapur (39) and Kurnool (40). Consequent to the declaration of drought, the government directed the concerned district Collectors to notify the specific drought-hit areas in the District Gazette to enable farmers to avail credit facilities. On Nov 22, 2015, the Govt. added 163 mandals to the list of drought hit bringing the number up to 359 mandals. This included mandals in Guntur, Krishna, Vizianagaram. Drought was declared in 10 out of 13 districts. Crop loan and relief measures were to be taken up in these mandals as per guidelines. The state demanded central assistance of Rs 2,000 crore.

- In Rayalseema region, except for Kurnool, groundwater has improved over the year and Apr 2016 levels are better than May 2015.

- However, Kurnool district saw a drop from 10.09 mbgl to 15.37 mbgl – a drop of 5.28m.
- Coastal Andhra (except Nellore) has seen a drop in groundwater levels compared to May 2015.
- Guntur district has seen a drop from 8.59 mbgl in Apr 2015 to 12.26 mbgl in Apr 2016 – a drop of 3.67 m.
- In West Godavari district, ground water has dropped by 3.38 m to 19.30 mbgl.
- The groundwater level is dangerously low in the districts of Prakasham (18.84 mbgl) and Ananthapur (19.64 mbgl) not because of the ongoing drought alone but also because of over exploitation of groundwater in these places in the preceding years. More groundwater data here.

RESERVOIR STATUS (as of Apr 13, 2016; The average of last 10 years is taken as ‘normal’; Source: CWC)

Reservoirs having under 50% of normal storage:

Srisailem: 39%

Nagarjuna Sagar: 0%

Storage as % of live capacity at full reservoir level (FRL):

Reservoir	Present	Last year	Normal
Somasila	40	15	43
Srisailem	8	30	19
Nagarjuna Sagar	0	4	23

In Oct 2015, it was reported that 32 farmers had committed suicide in the preceding three weeks in Anantapur district. At least half the kharif crop failed because of the delayed and deficit rains in the South west monsoon season of 2015. Anantapur is not suited for cotton because it a very dry area. Yet, cotton is cultivated in about 2.4 million hectares in Andhra Pradesh and Telangana put together. This accounts for 17 per cent of the cultivated area in both the states.

Ground water Status: (mbgl)

Area	Apr '15	May '15	Nov '15	Mar '16	Apr '16
Coastal Andhra	9.71	10.23	8.54	10.55	11.08
Rayalseema	21.62	21.95	13.62	14.92	15.83
Andhra	13.38	13.83	10.10	11.89	12.54

- The Nagarjunasagar reservoir has no water in live storage.

River Basins (as of Apr 13, 2016; Source: CWC)

Water levels (in BCM) in river basins:

Godavari: 15.394 (FRL); 5.068 (Apr 2015); 3.078(Apr 2016); 32.35% below normal

Krishna: 32.831 (FRL); 6.914 (Apr 2015); 2.639(Apr 2016); 63.95% below normal

- Mar 29, 2016: As per CWC, most deficient river basin was Krishna, which caters to Karnataka, Maharashtra, Telangana and Andhra, where levels were 63% below the 10-year average. Water level in the Godavari basin was also below normal.

Rainfall status (Jun 1 2015 to Apr 17 2016)

District	Deviation (in %)	Status
Srikakulam	-29.6	Deficient
Vizianagaram	-7.9	Normal
Vishakapatnam	-1.5	Normal
East Godavari	-10.2	Normal
West Godavari	-16.4	Normal
Krishna	-16.3	Normal
Guntur	-20.8	Deficient
Prakasham	-26.2	Deficient
Nellore	23.8	Excess
Chittoor	26.6	Excess
Kadapa	20.3	Excess
Anantapur	3.8	Normal
Kurnool	-33.1	Deficient
State	-8.0	Normal

Source: <http://core.ap.gov.in/CMDashBoard/UserInterface/Rainfall/RainfallMonthlyReport.aspx>

- From Jun 1, 2015 till Apr 9, 2016, the rainfall status is deficient for districts - Srikakulam, Guntur, Prakasham, Kurnool. For the entire state, deficit is 8% because of heavier rain in Chittoor, Nellore.
- According to IMD, rain in June 1 - Sept 30 2015 period was 10% deficit in Rayalseema and 10% excess in coastal Andhra.
- Rains in Dec 2015: Heavy rainfall in Nellore, Chittoor and Kadapa districts flooded villages, disrupted transport networks, flooded paddy fields. Heavy agricultural losses were reported in Rayalaseema, Kadappa, Nellore, Chittoor, Prakasam, East and West Godavari districts.

NREGA

- Jan 8, 2016: Andhra Pradesh has a negative balance of MGNREGA funds for the current financial year, resulting not only in pending payment of wages of workers but also allegedly leading to denial of jobs to many in need, thus threatening the very nature of the demand-based legal employment guarantee of the scheme.
- Apr 3, 2016: NREGA daily wage hiked to Rs 194 in Andhra Pradesh from Rs 180.

NREGA statistics based on data from state government:

- The average number of employment days per household is a paltry 8 days! The state only targeted to provide 37 days of work when the number of allowed workdays under MGNREGA is 100 and it had been increased to 150 following the declaration of drought.
- The average wage rate per day was Rs 136 per day although the full rate was Rs 180 in 2015-16.
- Of the total expenditure of the state on NREGA in 2015-16 only 52.4% went towards wages while 44.8% went towards material. (The opposition has also criticized the state government for misusing the NREGA funds by enhancing the percentage of machinery components and reducing the human interface accentuating the problems of people in the drought-hit areas)
- The state has close to Rs. 418 crore of negative balance in NREGA funds in 2015-16.

Impact

- Aug 3, 2015: In Srikakulam district, around 45 per cent deficit rainfall in July has forced people to leave for faraway places. Srikakulam has a population of around 25.6 lakh and about 4.3 lakh people have migrated to other places.
- Apr 4, 2016: Kadapa city has been facing a severe water crisis for the last 25 days. The corporation is supplying salty water in several areas of the town. As the water in the Pennar River has completely dried up there was no supply of water from there. Drinking water is being supplied only once in a week. Drinking water crisis was also reported in Vishakapatnam city.
- Apr 8, 2016: In Kurnool district, the rains are deficient by 30% and over 1 lakh hectares of rice cultivation have been affected.
- Apr 8, 2016: Death toll from heat related ailments is 45 in Andhra - highest is in Kadappa (16) and Prakasham (11) districts.



Srikakulam farmers are fanning out to other States owing to drought-like situation in all 38 mandals of the district

There are reports of huge corruption in awarding contacts for constructing irrigation projects in Andhra Pradesh. The Rs. 5,150 crore Veligonda project suffering from cost and time overruns is one such large irrigation project which proposes to transfer Krishna waters from the foreshore of Srisailem project to ensure irrigation water for 4.5 lakh acres and drinking water supply to 15.25 lakh people in the fluoride-affected areas of in Prakasham, Nellore and Kadappa districts.

Agriculture

- Assessing the agricultural drought situation of Andhra Pradesh up to Oct 2015, the Ministry of Agriculture's Mahalanobis National Crop Forecast Centre assessed Kadapa, Kurnool, Nellore and Prakasham districts as facing 'moderate drought'. The 'moderate drought' category is the most severe drought category under the assessment. Anantapur, Chittoor, Guntur and Krishna districts were assessed as facing mild drought. The situation in the rest of the districts was assessed as normal.
- Lack of access to institutional credit and low crop insurance add to farmers' woes. Large number of farmers did not repay loans last year, and banks have refused loans this year.
- In Oct 2015, it was reported that 32 farmers had committed suicide in the preceding three weeks in Anantapur district. At least half the kharif crop failed because of the delayed and deficit rains in the South west monsoon season of 2015. Anantapur is not suited

for cotton because it a very dry area. Yet, cotton is cultivated in about 2.4 million hectares in Andhra Pradesh and Telangana put together. This accounts for 17 per cent of the cultivated area in both the states. Undivided Andhra Pradesh was the third largest cotton producing state in India. Now Andhra Pradesh is at fifth position, with 736,000 hectares. The cost of cultivation is high and MSP announced by the Centre are lower than the costs incurred. This year, the cost estimation of paddy per quintal is Rs 2,400 in Andhra Pradesh. The minimum support price announced is Rs 1,400 a quintal.

Based on data from the state agriculture department:

- The area sown during Rabi 2015-16 for sugarcane is 46.4% of normal, for cotton 44.4% of normal, for sunflower 21% of normal.
- Paddy, which is sown in over 30% of the area, reflects the water scarcity across districts. While, in Guntur the area under paddy is 10.56% of the normal, in Krishna it is 25.25% of the normal. While in Kadapa it is 211.3% of normal and Chittoor has 187% of the normal area under paddy. But even the districts that received rains during the northeast monsoon have since turned dry. So the paddy harvested would give a truer picture of the impact of drought.

Government Action

Centre

- Sep 17, 2015: People in drought-hit areas will get additional 50 days of work under the MGNREGA scheme.
- Jan 7, 2016: Centre allocated Rs 433.8 crore for Andhra for drought relief.
- Feb 15, 2016: Centre approved Rs 280.19 crore for Andhra Pradesh for drought assistance.
- Apr 2, 2016: Centre released Rs.140.5 crore for taking up drought relief measures in Andhra Pradesh.

Acute shortage of Laskars - who ensure checking and cleaning of canals at the village-level and ensuring release of water to the farms - is causing difficulties in the water distribution. As of Dec 2015, only 376 Laskars were working in the entire Godavari delta; 1,076 posts are vacant. Non-recruitment of staff in the vacancies owing to retirement has hit the system. Only 10% of the vacancies are being filled that too on temporary basis.

State

- Apr 13, 2016 Minister for Rural Development of Andhra announced that around 1,24,349 borewells will be dug across the state under the NTR Jalasiri-2 scheme by June-end this year to ensure adequate supply of water during the Kharif season.
- Apr 16, 2016: The Rural Water Supply (RWS) department has sanctioned Rs 175 crore to supply drinking water regularly to rural areas. Collectors of all the districts have been instructed to start supplying water through tankers to areas where there is shortage of drinking water. Apart from this, the government says that it has started recharging bore wells and tanks in the rural areas. The RWS department has set up a state-level monitoring cell to address the issues related to drinking water supply.
- Apr 17, 2016: Andhra CM addressed officials to work on drought relief. He said - fodder banks would be set up in 50 acres of land in every village; Agriculture and civil supplies officials have to ensure that farmers get the MSP for their produce and the district collectors should monitor it; officials of water resources, NREGA and agricultural departments should work to achieve 10 lakh farm ponds target in the State to preserve rain water. During the address, the CM also asked for computerization of crop area and pattern of crops to monitor cultivation and asked the horticulture officials to upload the data of horticulture online. (Earlier this year, the Andhra CM signed MoUs with leading retail chains and Walmart has announced plans of sourcing horticultural and other products from farmers in Andhra. Some of the agricultural initiatives taken up as part of drought relief seem to have other motivations!)
- The State is busy with construction of Polavaram dam, river linking project, Pattiseema and the latest is inland waterway.
- Dec 3, 2015: CM Chandrababu Naidu, released a white paper on irrigation saying river-linking, rain-water harvesting and drip irrigation system will make the state drought free and achieve 20% agricultural growth.
- There are reports of huge corruption in awarding contacts for constructing irrigation projects in Andhra Pradesh. The Rs. 5,150 crore Veligonda project suffering from cost and time overruns is one such large irrigation project which proposes to transfer Krishna waters from the foreshore of Srisailem project to ensure irrigation water for 4.5 lakh acres and drinking water supply to 15.25 lakh people in the fluoride-affected areas of in Prakasham, Nellore and Kadappa districts.
- The State government has started pumping water from the Godavari to the Krishna through the Pattiseema lift irrigation project. Farmers in the Godavari districts have objected this move as the rabi season crop in the Godavari districts is put in risk.
- However when it comes to effective functioning of the irrigation system, the state has shown neglect. Every year, low water levels pose a challenge to farmers undertaking rabi crop of paddy in the Godavari delta. Acute shortage of Laskars - who ensure checking and cleaning of canals at the village-level and ensuring release of water to the farms - is causing difficulties in the water distribution. As of Dec 2015, only 376 Laskars were working in the entire Godavari delta; 1,076 posts are vacant. Non-recruitment of staff in the vacancies owing to retirement has hit the system. Only 10% of the vacancies are being filled that too on temporary basis.

Irrigation Projects



Pattiseema Google Earth Map (Bhim Singh Rawat, SANDRP)

Other

The State government has acquired close to 33,000 acres of fertile farmland adjacent to the Krishna basin for the construction of the new capital city of Amaravati. On the one hand, the State wants to spend on increasing irrigated land and on the other hand it is destroying rich farmlands for the new capital when it could have easily avoided that.

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Odisha Drought- 2016

Odisha has many rivers, vast forest cover and it receives above average rainfall annually. But, greed for minerals beneath the land and destruction wreaked by industries hungry to exploit the resources of the state have slowly choked the natural environment of the state. Most farm holdings are small or marginal dependent on the rains for irrigation. The deficit rains in 2015-16 pushed the state over the edge. The state is facing extensive crop loss and severe water shortage. Even after exploiting its resources to the hilt, the people of the state have not been provided with piped water supply. In many ways, the drought in Odisha is man made.

A total of 27 out of total of 30 districts have been affected by the drought of 2015-16. The food grain production in the state is likely to drop by more than 43% because of the drought.

Ground water level is going down rapidly due to excessive use for irrigation especially in rain fed Sundargarh and Balasore districts. Thousands of deep borewells are being operated by well-off farmers and also by the Odisha Lift Irrigation Corporation (OLIC). The Rural Water Supply and Sanitation (RWSS) also operates piped water projects using tubewells and deep borewells. Many water bodies have dried up and many have been built over.

The state is heading towards massive degradation of land because of loss of forest lands, agricultural land taken away for other purposes, increase in fallow land and loss of tree cover in plantations. The total degraded land of the state in 2005-2015 is almost 30 per cent of its geographical area.

Decrease in moisture of land led to loss of paddy crop in the state. However, as part of drought relief, the government has again announced to provide pump set and deep bore wells for irrigation. Contrary to logic, on May 5, 2016, the Agriculture Department officials announced a plan to increase cotton cultivation in the upcoming Kharif season. Cotton is known to be a water-guzzling crop.

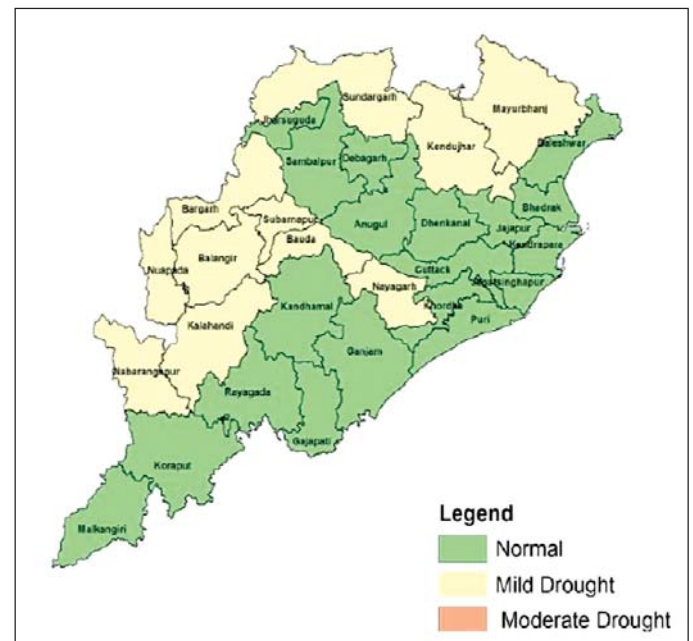
Since the failure of the Kharif crop, farmers in the state have been in a very critical phase. Many farm areas of the state, especially in western and interior Odisha are rain fed.

The damage might have been lesser if the areas had irrigation facilities. Lack of irrigation leaves the farmers in distress when the monsoon is deficient or even if the

rains are unevenly distributed. Most farmers skipped the Rabi crop because of lack of water in reservoirs and canals.

Agrarian crisis – Crop loss, indebtedness leading to suicides and migration

Agricultural drought assessment - October 2015



On Oct 29, 2016, the Special Relief Commissioner of the state informed that the government had received 41 reports of farmer suicides from across the state. An inquiry into the suicides reported “mainly family disputes and excessive liquor consumption” for causing the deaths of the farmers. The Odisha government refused to link the suicides to crop failure. By mid March 2016, the official number of farmer suicides since the kharif season of 2015 had gone up to 174. However, the government continued to insist that none of the suicides was linked to crop loss and they were due to causes like illness,

heart attack, mental disturbance, drug addiction and family quarrel.

Failure of crops due to drought and growing indebtedness are the main reasons for farmer distress.

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Over 3600 farmers have committed suicide in Odisha between 1999 and 2013. Farm distress in Odisha worsened this year after the kharif crop was severely im-

ected by scanty rainfall in July and August. According to the official records, crop area of 21.6 lakh ha is affected, out of which at least 14.82 lakh ha in 233 blocks in 27 districts have suffered losses over 33%. The worst affected district is Mayurbhanj followed by Bargarh, Balangir, Keonjhar and Nayagarh districts.

Unlike suicides in Karnataka, Andhra Pradesh, Telangana and Maharashtra that are known to be related to cash crops such as sugarcane and cotton, Odisha farmers mainly grow paddy and the suicides have been by paddy cultivators.

Yet indebtedness is one of the major reasons behind farmer suicides. Moneylenders charge rates of interest as high as 25-40% and shame the indebted farmers publicly on failing to repay; the loss of self-esteem often pushes the farmer to take his life. Most of them had taken loans from private and non-government agencies without access to bank or cooperative loans.

Suicides have been reported from across the state, but a large percentage (70% as of Nov 2015) occurred in the western Odisha districts such as Bolangir, Nuapada and Sambalpur and the maximum, 26 at Bargarh. Western Odisha districts lack irrigation facilities. Erratic monsoon destroys the crop leaving the farmer with nothing for sustenance and a mountain of debt that he is unable to repay.



Farmers' suicide cases spread throughout western Odisha

Most of the farmers committing suicide were marginal farmers and sharecroppers. Because the Orissa Land Reforms Act, 1974 explicitly bans tenancy, sharecroppers don't get any benefits such as compensation or re-

lief announced for farmers which goes directly to the landlords. Tenants cultivating the agricultural land on lease cannot access loans through credit institutions or insurance and other support services provided by the Government. They are not assured of the Minimum Sup-

port Price (MSP) without the farmer's Identity card and remain at the mercy of middlemen and the corrupt procurement agencies.

Fearing inability to repay private moneylenders after deficit rainfall, farmers of rainfed and drought areas of western Odisha were reportedly falling into the

clutches of labour sardars in Sep 2015. By the end of Feb 2016, over 30,000 people had migrated from Kalahandi, Nuapada and Bolangir district. Many migrated to neighbouring states as labourers to work in brick kilns. Delayed payment of wages and insufficient employment kept people from working under NREGA.

Pollution, Industrialization, Ecological damage

Odisha has ignored the farm sector and has welcomed industries and mining companies to the state without proper checks and balances in place. In many cases it has given away water resources to industries at the expense of farmers and drinking water needs of village. Over exploitation of water resources and spoilage of rivers and land by industries and mining has contributed to the scarcity of fresh water during the current drought.

On Feb 26, 2016, the state government brought out a guideline allowing diversion of irrigated command area for the purpose of industrialization. The concerned industry can make up for the loss by bearing the cost of creating compensatory irrigation. Activists said that the guideline would open the floodgate for proposals of acquiring irrigated land. At a time when impact of drought is getting worse due to absence of assured irrigation, the diversion of irrigated land would spell doom for farmers. Indeed this is most objectionable and against the rights of farmers and also national water policy.

The civil society of Balasore has been opposing a project sanctioned by the Industrial Infrastructure Development Corporation (IDCO) to draw water from Budhabalanga and Sono rivers to supply to industries. Massive amounts of water drawn by industries would make water scarce for human and agricultural use and could lead to ecological disturbances.

Groundwater and surface water are being exploited excessively for commercial, agricultural and domestic purposes in the industrial and mining district of Sundargarh. About 60 industries have taken licences to use ground and surface water. Unauthorised packaged water supply plants are also drawing water.

Odisha has ignored the farm sector and has welcomed industries and mining companies to the state without proper checks and balances in place. In many cases it has given away water resources to industries at the expense of farmers and drinking water needs of village. Over exploitation of water resources and spoilage of rivers and land by industries and mining has contributed to the scarcity of fresh water during the current drought.

ter scarcity in the area.

There have been no efforts to arrest exploitation of water resources, recharge them or prevent their spoilage - all of which have been revealed to be direly needed by the crisis

emerging from the current drought.

Failure of rural and urban water supply and drinking water scarcity

Rising temperatures have dried up surface water sources. Ground water levels have been falling rapidly because of which many tubewells across the state are lying defunct.

Hundreds of families are dependent on 1 or 2 tubewells in some villages in districts such as Balangir. In many water stressed areas, tube well water is laced with minerals. Villagers in Nuapada district are consuming water from tubewells marked for having fluoride beyond permissible limits.

Villagers in Dhenkanal district staged a road blockade protesting water shortage. RWSS water projects in the villages are defunct and tankers are failing to meet the demand.

In all these places, the people have no alternative, as piped water supply has not been provided by the state. Rural water supply infrastructure is lying defunct for a

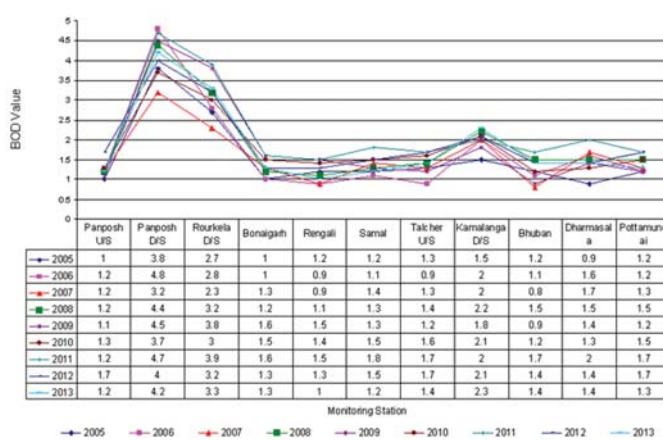
range of reasons such as no power supply, disrupted power supply due to non-payment of dues or shortage of staff. Work on new projects and repair of defunct projects has not started due to want of funds. Where

funds have been release by the state government, work is suspended due to lack of coordination among panchayat officials and block authorities.

Reservoirs have also dipped causing water shortages in areas where they supplied water. Reports of acute water crisis from Rayagada, Kalahandi and Ganjam districts.

Urban water supply is also dismal. Last year, the CAG found that Odisha was unable to supply adequate drinking water to people in 95 out of 106 urban areas. This year, the water supply is only worse.

Annual Average of BOD Value of Brahmani River



Source CPCB

The Brahmani, Odisha's second-largest river, is the state's most polluted because of excessive hexavalent chromium (a carcinogen) - a fact admitted by the state pollution control board itself. Heavy mining for Chromite ore in Sukinda valley in Jajpur district over 70 years has contaminating the river water. Surveys have indicated that chromite-related diseases caused more than 80% deaths in heavily mined areas.

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The Brahmani River has been further polluted by industrial waste in Dhenkanal district. Several diseases have afflicted the people and livestock on the banks in the district that depend on the river for water for domestic use.

On May 5 2016, villagers in Dhenkanal district complained against illegal use of river and ground water and also discharge of industrial pollutant in the water course by a company in the vicinity causing severe wa-

The drought has increased migration to slums in the city from rural areas worsening the shortage. Parts of Bhubaneswar saw a jaundice outbreak in March 2016 due to contaminated drinking water. In Keonjhar, two children allegedly died after drinking contaminated

The drought has increased migration to slums in the city from rural areas worsening the shortage. Parts of Bhubaneswar saw a jaundice outbreak in March 2016 due to contaminated drinking water. In Keonjhar, two children allegedly died after drinking contaminated water. Rourkela is facing a water crisis since mid-April after the river Koel, the city's only source of water dried up. In Apr 2016, Paradip reported an acute drinking water shortage, especially in the slums housing half the town's population.

water. Rourkela is facing a water crisis since mid-April after the river Koel, the city's only source of water dried up. In Apr 2016, Paradip reported an acute drinking water shortage, especially in the slums housing half the town's population. Companies have overexploited groundwater. Water tankers have been deployed but they have not been enough. Making matters worse, people are struggling with the water crisis in the middle of an intense heatwave.

Water supply project works flagged off in cities such as Rourkela, Sonepur, Jambhira are pending even while the people are facing acute water crisis. The CAG audit found that water supply works have remained incomplete even after 47 months of their starting. The state has not utilized 70% of the central fund in time. However the Odisha government has blamed the Centre for drastically cutting assistance for drinking water supply schemes. In 2014-15, the Centre had provided Rs 230.66 crore financial assistance under NRDWP. However, the assistance was reduced to Rs 89 crore in 2015-16 and an estimated Rs 24 crore in 2016-17.

Rainfall:

While the state experienced surplus rainfall in June, rainfall was deficient in July-October. The State experienced prolonged dry spells during the months of South West monsoons.

Month	Rainfall in mm		Deviation in %
	Normal	Actual	
June	216.5	234.6	8.4
July	339.9	308.4	-9.3
August	356.0	266.5	-25.1
September	231.9	221.5	-4.5
October	114.7	25.3	-77.9

Source: Drought report of the state government

District wise rainfall status (Jun 1 2015 to Sept 30 2015)

District	SW Monsoon Deviation from normal
Angul	-20%
Balasore	-13%
Bargarh	-19%
Bhadrak	-18%
Bolangir	-27%
Boudhgarh	-13%
Cuttack	-14%
Deogarh	-18%
Dhenkanal	-20%
Gajapati	-10%
Ganjam	-4%
Jagatsinghpur	-13%
Jajpur	-17%
Jharsuguda	7%
Kalahandi	-12%
Kandhamal	-31%
Kendrapara	-13%
Keonjhar	-21%
Khurdha	-28%
Koraput	4%
Malkangiri	45%
Mayurbhanj	-16%
Nabarangpur	9%
Nayagarh	-19%
Nuapada	2%
Puri	-23%
Rayagada	-4%
Sambalpur	-13%
Subarnapur	-29%
Sundargarh	-1%

Source: IMD

Blockwise rainfall: <http://as.ori.nic.in/balangir/rainfall/login.asp>

Reservoir Status (as of Apr 28, 2016; The average of last 10 years is taken as 'normal'; Source: CWC)

Reservoir	Storage in % of live capacity at FRL		
	Current	Last year	Normal
Hirakud	32	29	34
Balimela	37	54	26
Salanadi	4	39	26
Rengali	26	63	30
Machkund	42	39	44
Upper Kolab	29	52	30
Upper Indravati	34	50	29

Salanadi reservoir has only 14% of normal storage.

Mar 28, 2016: Live storage capacity of Odisha's large and medium reservoirs dropped from 87.3% to 68.9% of full reservoir level during the past 10 years. Some of the medium reservoirs are likely to become dead in the near future. Reservoirs with reduced water-holding capacity were of little help in providing irrigation water to fields at several places during the 2015 drought.

River Basins (as of Apr 28 2016; Source: CWC)

Water levels (in BCM) in river basins:

Mahanadi and other east flowing: 13.181 (full reservoir level); 6.454 (April 2015); 3.977(April 2016); 17.81% below normal

NREGA

- Sept 20, 2015: The State Government on Saturday decided to provide 200 days of work under MGNREGA in drought hit areas to prevent migration of people. It came two days after the Centre announced 150 days of work under MGNREGA in drought hit areas across the country. State Government will bear the additional expenditure to be incurred for extension of 150 days' work to 200 days.
- As of Dec 1, 2015, only 276 households in the drought-hit blocks had been provided 150 days of work. Not a single household had got 150 days of work in Bargarh district which saw the most farmer suicides.
- Jan 8, 2016: At present, Odisha has a negative balance of MGNREGA funds for the current financial year, resulting not only in pending payment of wages of workers but also allegedly leading to denial of jobs to many in need, thus threatening the very nature of the demand-based legal employment guarantee of the scheme.
- As of Jan 25, 2016 January, only 4.6% of rural households in Odisha, had availed 100 days of employment under NREGA in 2015-16.
- Apr 3, 2016: NREGA daily wage remains at Rs 174. This is despite Odisha government's request to the Centre to raise it at least to Rs 200 per day. With the state facing a drought, CM Naveen Patnaik had in November last year written to Prime Minister Modi requesting him to increase the MGNREGA wages to Rs 200, which was the minimum wage in the state for unskilled labour.

NREGA statistics based on data from <http://nrega.nic.in/>

- In 2015-16, close to 90% of the households that de-

manded employment were employed. But the average number of days of employment in the year was only 44.64 days. Only 9% of the households that got employment were employed for more than 100 days although the limit had been extended to 200. There was a surge in demand for employment after December 2015.

- Amount over Rs. 93 crore is unpaid from NREGA wages for 2015-16 and the total NREGA expenditure from 2015-16, which has not been paid yet, is over Rs 231 crore.
- In the financial year 2015-16, the expenditure in wages was 77% of the total expenditure of Odisha on NREGA.

Government Action Centre:

- Jan 7, 2016: Centre allocated Rs 815 crore for Odisha for drought relief. A senior officer in Revenue department said on Feb 18, 2016 that till date not a single rupee has been released for the purpose.
- Mar 31 2016: Odisha received Rs.276.54 crore central assistance towards drought. The ruling BJD government alleged that poll-bound states had received much more assistance in comparison. Credence is lent to that claim by the fact that in Feb 2016, Rs 1,737.65

crore was approved for drought relief for Tamil Nadu which had not even declared drought.

State:

- Oct 15, 2015: The Odisha government declared 16 districts in the state as drought affected. (Later on, more districts were declared drought hit bringing the total number to 27 districts.) The government declared a Rs 1,000 crore package for drought-affected farmers. Input subsidy was promised to be provided at the rate of Rs 6,800 per hectare in rain-fed areas, and Rs 13,500 per hectare in irrigated areas. Drought affected farmers would be provided loans for Rabi crop. It also included relaxation in the repayment of agricultural loan and subsidised food for affected farmers for two months.
- Nov 19, 2015: The CM announced a series of measures to tackle the drought. He announced crop loan at 1% interest and a provision of drought assistance of Rs 100 per quintal of paddy for affected peasants in 21 districts. Work for the mega lift irrigation project

Continued on page 34

Land Mark Supreme Court Order on Govt failure on Drought

IA PIL under Art 32 was filed by the NGO, Swaraj Abhiyan praying for directions for declaration of drought and relief in affected areas. The apex court came out with a 3 part judgment earlier this month - the first one dealt with the issue of drought and the latter judgments took up the poor implementation of the National Food Security Act, 2005¹³ (NFSA) and the Mahatma Gandhi National Rural Employment Guarantee Act, 2005 (NREGA). These directions largely signify the failure of the governance in tackling drought and we need to be thankful to the petitioners and apex court for this. We also hope the apex court continues to monitor the implementation of the directions.

SC Directions for dealing with the drought

1. Implementation of Disaster Management Act 2005 The SC noted that drought is a disaster and its assessment and management is covered under the provisions of the Disaster Management Act 2005. It directed implementation of the provisions of the Disaster Management Act 2005 which provides for constituting a National Disaster Response Force, establishing a National Disaster Mitigation Fund and formulation of a National Plan relating to assessment and management of disasters. The Court noted that the aforementioned provisions of the Act had not been implemented even a decade after coming into force. The media latter on reported that the notification about NDMF has not been notified, but that also shows the failure of the governance of disasters.

2. Revision of Drought Manual The Ministry of Agriculture has published a Manual for drought management (Drought Manual) in 2009. The Court commended the Drought Manual and directed its revision based on recent experience and new technology.

Indices for drought declaration The drought manual recommends rainfall deficiency, the extent of area sown, normalized difference vegetation index (NDVI) and moisture adequacy index (MAI) as the four standard monitoring tools which could be applied in combination for drought declaration. Rainfall is the most important indicator and the manual recommends declaration of drought if rainfall for June and July is less than 50% of the average or if the total rainfall in the rainy season from June to September (the south-west monsoon) or from December to March (north-east monsoon), is less than 75% of the average accompanied by reduction in vegetation and soil moisture.

The SC observed that many states have their own procedure for declaring drought and there has been little observance of the Manual. But the Central government claimed that the manual does not have any binding force and is only for reference. Moreover the Centre claimed that it would go against the principles of federalism for

it to overrule the decision of the states or to issue binding guidelines for all states to declare drought. State Governments could face situations under which they may need to deviate from the guidance given in the Manual as some states are more irrigated than others, availability of water and type of crops differ.

During the proceedings, the decision of the states of Bihar, Haryana and Gujarat to not declare drought came into question.

Bihar: Bihar's denial of drought was based on the overall rainfall deficiency figures for the state that too only until August 2015. It had not looked at district or block level information. However, rainfall in June and July 2015 in 10 out of 38 districts and by the end of October 2015 the state wide rainfall was deficient to the extent of falling within the drought range.

While deviation in the sown crop area was within normal limits, there was no assessment of crop failure from subsequent lack of rain and performance. Bihar had also ignored the NDVI and MAI for determining the extent of drought. The Court observed that taking all information into account, some districts in Bihar were facing drought, yet the state was denying it.

Haryana: Although agricultural productivity in Haryana was unaffected, the state had deficient rainfall. The state has been tapping ground water through lakhs of tube wells to supplement water from canals for irrigation. However the MAI - reflecting the moisture available for crops - at the end of Sept 2015, was observed by the SC as indicative that most of the state was in the grip of a severe or moderate or mild drought. Indicators of drought recommended by the drought manual were ignored and a completely different set of factors such as wages, supply of essential commodities and prices (which, we feel, might not reflect the situation at the micro level) were being used by Haryana for not declaring drought.

Gujarat: Districts in Central Gujarat and South Gujarat and two districts of Saurashtra had received inadequate rainfall but the state wide rainfall was relied upon the State to deny deficiency in rainfall.

The SC directed that the Manual should specify the weightage to be given to each of the four key indicators as far as possible. This would make the State governments consider all factors appropriately rather than only focussing on area of crop sown.

Standardization of drought declaration The SC directed that the nomenclature and methodology for declaring drought be standardized. The Gujarat government was seen using the term 'semi-scarcity' instead of 'drought'.

Traditionally, declaration of drought was recommended through the *annewari* / *paisewari* / *girdawari* system

which provides an estimate of agricultural losses after crop production. The Drought Manual has recommended discarding the *annewari* system. Yet, Gujarat and Maharashtra continue to use the *annewari* system; the cutoff for drought in Maharashtra is 50% decrease in crop, while in Gujarat, 'scarcity' is declared if the crop produce is less than 33% and the state government uses its discretion when it falls between 33-50% to declare 'semi-scarcity'. Gujarat ignores NDVI and MAI in favour of the traditional *annewari* system citing that the moisture indices are low because of the type of the soil. (But it is the deviation of the NDVI from the normal value in the area which is used for drought assessment. MAI also takes soil characteristic into account.)

The SC directed that the manual should include more relevant factors and reduce the flexibility available to states in declaring drought.

Timely drought declaration Declaration of drought was inordinately delayed in Gujarat - the state declared semi-scarcity in 526 villages on Apr 1 2016 and subsequently declared another 468 villages as affected by drought. Maharashtra, which also uses the *annewari* system, completed estimation exercise and declared drought hit districts in October 2015. All states that declared drought completed their assessment exercise between August 2015 and December 2015. Final figures of the Kharif crop are available in December and there is nothing to wait for until March of the following year to declare drought.

The SC directed that the drought manual should mandate a time limit for declaring a drought. The Manual currently recommends that States declare drought in October as the complete rainfall figures, reservoir storage and crop conditions are known by then. Timely drought declaration is necessary to provide relief and assistance required to the drought affected people in near real time. The SC came down on the delayed declaration by Gujarat government saying that the declaration was too late for the people in distress and can only facilitate crisis management rather than preventive management of risk to avoid distress.

Regarding declaration of drought The SC observed that drought need not be declared in the entire state or even in an entire district as the manual allows that state government may declare drought even at the level of Taluka / Tehsil / Block as the information on the recommended indices for drought declaration are available at that level.

While the final decision to declare a drought is of the State Governments, the Centre is also responsible for upholding the right to life of the people under Article 21 of the Constitution. The Central government has maintain a balance between its constitutional responsibility to the people and the principle of federalism preventing the Centre from trudging in the domain of the states

3. Other Directions The Court directed considering

social factors such as migrations, suicides and extreme distress in assessing and managing drought.

Water conservation techniques should be considered to prevent and prepare for droughts.

Drought Relief While the petition had also sought directions for drought relief for farmers including compensation for crop loss, input subsidy for next crop, restructuring crop loans and subsidizing cattle fodder, the court did not give any such direction.

The drought manual recommends that relief measures should be implemented as soon as distress signs of drought are visible even before a drought is formally declared. The manual recommends organizing of relief measures for Contingency crop planning providing alternatives that withstand drought conditions, Relief employment to check migration and provide livelihood, Water resource management for supply of drinking water, Food Security, provision of fodder for cattle, containing health issues arising from contaminated water and poor levels of nutrition and assistance to dependent population such as the aged, children etc.

Formal declaration of drought is necessary only for the state to seek assistance from the Central Government and for providing relief through tax waivers and concessions.

Directions regarding NREGA The government admitted that funds released are not adequate and delayed. It was admitted that for the financial year 2015-16 the liability was in excess of Rs.12,000 crore. The Court observed that delayed payments act as a disincentive to work under the Scheme. It directed the government to release adequate funds in a timely manner and ensure that compensation is made to workers whose wages have been delayed beyond 15 days. In view of the poor performance of the scheme, the Court directed the government to ensure that the provisions of the Act are faithfully implemented.

Directions for implementation of the National Food Security Act The NFS Act has not been implemented in some states although the legislation was passed in July 2013.

The Court directed that in the States in which drought is declared, all households should be provided with their monthly entitlement of food grains in terms of the NFS Act regardless of whether they fall in the category of priority household or not. In case the household does not have a ration card, it should be provided food grains under the NFS Act using alternate identification or residence acceptable to the State Government. The Court also directed extension of the Mid-Day Meal Scheme for children during the summer vacation period in schools in drought-affected areas.

The petitioner suggested that households affected by the drought be provided 2 kg of dal per month and one litre

of edible oil per month at subsidized rates through the Public Distribution System.

The Central government declined claiming that it was faced by fiscal constraints to subsidize dal and oils. While the Court found that it was unable to direct the government to subsidize dal and oils, it drew the attention of the government to the Directive Principle under Art 47 enjoining the State to raise the level of nutrition and the standard of living of the people. It held that relief to persons in drought affected areas cannot be denied on grounds of fiscal constraints. The Court buttressed with case law the view that plea of financial inability cannot be used to abdicate constitutional obligations such as provision of free legal services, adequate medical services etc. The principle extends to the obligation of upholding the right to food, which is a constitutional right.

Conclusion: Agriculture is facing a crisis because of wrong policies and programs prioritising new big irrigation projects that are delivering only impacts and no new benefits, poor water management, wrong cropping patterns, lack of support for appropriate crops and farmers, degradation of land, over exploitation of ground water, high prices of inputs, poor support for farmers. Farm incomes are unsustainably low and are in a precarious condition. In such a scenario, a drought pushed them over the verge. Farmers talk of earlier times when they were not so hard pushed and they could still rely on ground water and water in the wells when rains failed. In many ways it is the policies adopted by successive

governments which have led to the extreme impact of the present drought.

The drought hit in the states which have declared drought have not received much by way of relief. The Centre has approved amounts much smaller than what has been sought by states for drought assistance and only a fraction of the approved amount had been released until Mar 2016 for the drought suffered in the Kharif crop season of 2015. The compensation amounts which are yet to make their way to the farmers after months are lesser than the cost of cultivation.

In the past the drought relief was a source of income for money and states were over zealous in declaring droughts. Funds were made over for plans to mitigate impacts of lean rainfall in drought prone areas and yet these areas saw no change. However the recent trend of states refusing to declare drought seems an outcome of the pressure on governments from investors and market forces to decrease social spending and commit to austerity and also continue to flog growth horse by hook or by crook. Expenditure on the agricultural sector is seen as wasteful and subsidies for farmers as market distorting, where as subsidies for industry and commerce as incentives. Reluctance of governments to implement the National Food Security Act or to encourage employment under NREGA is also an outcome of this pro business bias in policies.

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Continued from page 31

near Indravati river in Kalahandi district would begin within 15 days. He also announced Aung Medium Irrigation Project worth Rs 1500 crore and Jeera Medium Irrigation Project (Rs 300 crore) to enhance the irrigation potential in Bargarh district.

- In Mar 2016, the CAG reported that farmers were deprived of timely compensation for crop loss due to natural calamities in 2010 and 2013 as the government delayed assessment. Likewise, farmers will get compensation and crop insurance for the current drought only when crop cutting reports come in while immediate relief is what is needed to prevent distress migration and further suicides.
- Apr 8, 2016: The state government cut the quantum of water allocated originally to Jindal Stainless Ltd (JSL), NTPC Ltd and Jindal Steel & Power Ltd (JSPL) to conserve water. Water allocation has been scrapped

to some projects that haven't started or have delayed a lot.

- Apr 19 2016: The Odisha Government announced that it would continue mid-day meal scheme in the drought affected 27 districts through the summer holidays.
- The forest officials of Sundargarh district have been working for the preceding 3 years to set up and renovate water bodies in forest areas to provide for the wild animals through the hot season.
- The government had submitted a memorandum to the centre demanding Rs 2,344.99 crore for drought relief. Officials claimed that Rs.333 crore had been disbursed to 7.87 lakh drought-affected farmers as of May 2016.

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