# Enviro Monitor

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## Water stress

**Cauvery dispute: timeline**. River Cauvery, which originates from Kodagu's Talakaveri region in Karnataka and flows down through Tamil Nadu into the Bay of Bengal, has been an apple of discord between the two states for ages. Given below is a timeline of the dispute between Karnataka and Tamil Nadu.

| Cauvery dispute: Timeline | |
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| **1960s** | Under the interstate agreements of 1872 and 1924, Tamil Nadu and Karnataka used to share Cauvery. But then, in the 1960s, Karnataka proposed to build new reservoirs along Cauvery's tributaries, which was rejected by the Planning Commission and the Centre.<br><br>However, Karnataka government is said to have gone ahead with the project with its own funds, building four reservoirs. This diverted water from Cauvery and triggered protests by Tamil Nadu. |
| **1970s** | In 1970s, a 'Cauvery Fact Finding Committee' was set up to inspect the ground realities and formulate a report. The final report came in 1973 and inter-state discussions were held on the basis of that.<br><br>In 1976, a final draft was prepared on the basis of the committee findings. The draft was accepted by all states and the central government also made an announcement on it. But when Karnataka began construction of the Harangi dam in Kodagu, Tamil Nadu went to court and demanded a Tribunal under the Interstate River Water Disputes Act (ISWD) of 1956. |
| **1980s** | Tamil Nadu withdrew its case but demanded the constitution of a tribunal and the two states started negotiating again. The negotiations continued till April 1990 and have not yielded any results so far.<br><br>After the Supreme Court (SC) directed the then prime minister Mr V P Singh government to constitute a tribunal, a three-member tribunal was formed and headquartered in New Delhi. All the states presented their demands. Karnataka asked for 465 tmcft (thousand million cubic |

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| | feet), Tamil Nadu wanted that the flow should be in accordance with the terms of the agreements of 1892 and 1924.<br><br>After the tribunal was set up, Tamil Nadu demanded a mandatory injunction on Karnataka for the immediate release of water and other relief. In June 1991, Tamil Nadu was given an interim award and Karnataka was forced to accept it. This led to widespread demonstrations and violence in parts of Karnataka and Tamil Nadu.<br><br>Many Tamil families fled from Bangalore in fear of being attacked by pro-Kannada activists. |
| **1990** | SC directs Centre to constitute Cauvery Water Dispute Tribunal.<br><br>Centre notifies Cauvery Water Disputes Tribunal (CWDT). |
| **1991** | The CWDT rejects Tamil Nadu government's plea for interim relief. Tamil Nadu appeals the rejection in Court.<br><br>SC directs the CWDT to entertain Tamil Nadu's petition for interim relief.<br><br>The CWDT announced an interim award: Karnataka ordered to release 205 tmcft. In a move to nullify the interim awards, Karnataka government passes an Ordinance. SC intervenes, strikes down Karnataka's ordinance and upholds the interim award of the CWDT. Karnataka refuses to oblige.<br><br>The interim award is published in the Government of India gazette. |
| **1995** | In 1995, when the monsoons failed badly in Karnataka, the state found it difficult to comply with the interim order. Tamil Nadu took the issue to SC but the court asked the state government to approach the tribunal. Meanwhile, the SC also asked the then prime minister, Mr Narasimha Rao to find a political solution.<br><br>The prime minister met the chief ministers of the two states and got Karnataka to release 6 tmcft water.<br><br>However, Karnataka maintained that the Interim award was not 'scientific' and was flawed because it was ambiguous on distress sharing (failure of monsoon). |
| **1997** | In 1997, Cauvery River Authority was formed to ensure that the implementation of the Interim order is successful. Karnataka opposed the power given to the authority, which was to take over the dams if the interim order was not fulfilled.<br><br>The government then came up with another plan and set up two bodies -- Cauvery River Authority and Cauvery Monitoring Committee. While the Authority consisted of the PM and the chief ministers of all the court states, the Committee was an expert body which consisted of engineers, technocrats who would take care of the ground realities and submit reports. |
| **2002** | It was in 2002 that the tribunal realised that it had overlooked a major point while deciding interim- distress sharing. After the monsoon failed in Karnataka and Tamil Nadu, the reservoirs in both the states fell to low levels and Karnataka refused to release any water. |

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| | The Karnataka government was asked by SC to release 1.25 tmcft water every day and the state pressed for another meeting. The state government refused to release any water because of the protests in the Cauvery district. Tamil television channels and screening of Tamil films were blocked in Karnataka, buses entering from Tamil Nadu were barred from entering the state. |
| **2005** | Karnataka refused to implement the distress sharing formula, cutting out Cauvery water to Tamil Nadu. However, after six rounds of talks the following year, Karnataka and Tamil Nadu farmers tried to come up with a solution. |
| **2007** | After 16 long years, Cauvery Water Disputes Tribunal gave its final order. It ordered allocation of 419 tmcft of the water of Cauvery to Tamil Nadu, 270 tmcft to Karnataka, 30 tmcft to Kerala and 7 tmcft to Puducherry.<br><br>This order, however, did not sit well with the people, and the dispute continued as the states filed petitions to review the decision. |
| **2012** | In 2012, the then prime minister, Dr Manmohan Singh, directed Karnataka to release 9000 cubic feet of water per second (cusecs) of Cauvery water to Tamil Nadu. This directive, too, did not impress either of the chief ministers of the two states – Ms Jayalalithaa and Mr Jagadish Shettar who termed it as "unacceptable". |
| **2013** | The Centre notified Cauvery Water Disputes Tribunal's final award in February 2013. In March that year, Tamil Nadu approached the SC to direct to the Water Ministry's constitution of the Cauvery Management Board.<br><br>Tamil Nadu government had also sought Rs 2480 crore compensation from Karnataka that year for "not following CWDT orders".<br><br>As the Union water resources secretary chaired the supervisory committee's first meeting, Tamil Nadu government demanded its share of Cauvery water for June as per the Tribunal's award.<br><br>To that, Karnataka Chief Minister Mr Siddaramaiah responded that water cannot be released "as and when" Tamil Nadu demands. Tamil Nadu, then, filed contempt plea with the SC against Karnataka. |
| **2016** | In September 2016, the SC asked the Karnataka government to release 15,000 cusecs of Cauvery water to Tamil Nadu on a daily basis for the following 10 days. However, as the government began releasing water, protests against the SC directive became intense in the state.<br><br>Hit with the wave of outrage and protests, Karnataka government filed a plea asking SC to modify the order. In response, SC pulled up both states, asking the people "to behave", and turned down the plea.<br><br>The court, however, reduced the quantity of water to be released from 15,000 cusecs to |

12,000 cusecs.

Curfew is imposed in seven police station limits of Bengaluru. The violence virtually paralyses the Bengaluru-Mysuru highway. Prohibitory orders under Section 144 are imposed in Bengaluru and Mysuru, areas around four reservoirs in the Cauvery basin, and Pandavapura in Mandya district.

A technical body, empowered by the SC, slashes by three-fourths the quantum of Cauvery water that Karnataka is required to release downstream between September 21 and September 30. The Cauvery Supervisory Committee orders Karnataka to release 3,000 cusecs for the rest of the month.

**Water shortage triggers paradigm shift in cultivation in delta region.** From what was once a three-season mono crop paddy cultivation in the Cauvery delta region for over 2,000 years, things have changed rather dramatically for the farmers in the last few years. The vagaries of water availability have now forced the farmers to shift their cultivation pattern to ensure that they reap at least one harvest during the current year. While Kabini, Harangi and Hemavathy reservoirs in Karnataka put paid to the hopes of kuruvai paddy cultivation in delta, samba is under threat from the proposed Mekedatu and Rasimanal reservoirs, say delta farmers who fear complete loss of livelihood resources.

**Bengaluru staring at a severe water crisis, warns study.** An ongoing study by a team of researchers from the Indian Institute of Science (IISc) has indicated that Bengaluru will soon face a huge water crisis. The study that is likely to be out soon says that if no immediate steps are taken, the city will go dry. The Cauvery water dispute with the neighbouring Tamil Nadu will also have a bearing on the city's water needs because of increasing dependence on piped water. This apart, the study points out that wastage due to leakages and indiscriminate use by people is also adding to the growing problem.

**Study findings**

- **City has lost 79% water bodies.**
- **925% increase in concretisation**
- **75% of city land paved**
- **98% lakes encroached upon**
- **90% lakes are sewage-fed**

**Vembanad lake may vanish in 50 years**. Vembanad Lake, the hub of backwater tourism in Kerala and the largest wetland system in the country, may cease to exist in another 50 years as climate change aggravates the complex threats posed by land use changes, according to a study conducted by the National Centre for Earth Science Studies. 55,000 hectares of backwaters had been reclaimed and converted into polders for paddy cultivation. The carrying capacity of the lake had gone down from 2.45 to 0.56 cubic km, registering a decline of 78 per cent, while the urban agglomeration had increased five times over the last 50 years. The study found that the inflow of sediments to the lake had gone up over the years.

India Today, 14 September 2016 | Deccan Herald, 19 September 2016 | The Hindu, 26 September 2016 | The Hindu, 28 September 2016 | The Hindu, 29 September 2016


**India becomes 62nd country to ratify Paris climate accord.** With India ratifying the agreement, 62 countries accounting for 51.89% of the global greenhouse gas emissions have joined the Paris Agreement. India's decision to ratify the Paris agreement has come after ensuring compliance of domestic legal requirements, internal discussions and after obtaining clarity from UNFCCC with regard to transparency and participation of parties in the future processes.

**Study finds 91% of Bengaluru is at the mercy of climate change**. Most environmental studies on Bengaluru have repeatedly stated that intense urbanisation has taken a toll on the city's environment. Now, a ward-wise vulnerability assessment of the city concludes that approximately 91 per cent of the Bengaluru metropolitan area is facing high degree of climate vulnerability. Bengaluru was chosen for the study as it is one of the fastest growing cities in the world. The paper, published in *Land Use Policy* journal, evaluated vulnerability across 198 wards of the city and how well they were equipped to cope with the changes and adapt to them. The vulnerability profiles were categorised into three classes: very high, high and medium, based on a scale of 0-1.

**Fast food chains largest contributors of carbon emissions.** Rapidly growing multinational fast food chains in India are the largest contributors to hydrofluorocarbons (HFC) emissions and could add the equivalent of nearly one million tonnes of carbon emissions by 2020, says a new international study. US-based McDonald's, Starbucks, Subway and Dunkin Donuts as well as India-based company Cafe Coffee Day and Britain-based Hindustan Unilever are among the eight fast food chains that could add the equivalent of nearly one million tonnes of carbon emissions by 2020, the Environmental Investigation Agency said in its report Transitioning HFCs in India: The opportunity for climate-friendly cooling in the fast food industry, which was released recently.

- **While the majority of companies highlighted in the report were found to have sustainability commitments based on decreasing their GHG emissions by improving the energy efficiency of their equipment, only a few of the companies specifically stated their intention to transition to low-Global Warming Potential (GWP) technologies.**
- **None of the companies have made explicit statements related to investing in low-GWP refrigeration technologies in their operations in India.**

**India takes R&D route to find alternatives to climate-damaging refrigerants HFCs.** The environment ministry has announced an ambitious collaborative R&D programme to develop next generation sustainable refrigerant technologies as alternatives to the climate-damaging hydrofluorocarbons (HFCs). The announcement indicates India's commitment to phase down HFCs by taking its domestic industries on board so that the refrigerant sector does not get affected by it until they find cost-effective cutting edge technology as alternative to HFC which is used in air-conditioners, refrigerators and insulating foam.

The Times of India, 16 September 2016 | The Times of India, 17 September 2016 | Bangalore Mirror, 19 September 2016 | The Times of India, 22 September 2016 | Business Standard, 22 September 2016 | The Telegraph, 28 September 2016 | Mint, 3 October 2016


**Cabinet gives Clean Ganga Mission power to fine polluters.** The Union Cabinet has approved changes allowing the National Mission for Clean Ganga to fine those responsible for polluting the river. Earlier this power was vested solely with the Central Pollution Control Board (CPCB). The Union Cabinet has approved the River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016. It has been decided to grant a Mission status to the Authority with corresponding powers under Environment (Protection) Act, 1986 to take cognizance of the provision of the said Act and follow up thereon. At the State level, it is proposed to create the State Ganga Committees in each of the defined States as Authority, to function as Authorities in respect of each State and perform the superintendence, direction and control over the District Ganga Protection Committees under their jurisdiction.

**The government order lays down a new institutional structure for policy and implementation in fast track manner and empowers National Mission for Clean Ganga to discharge its functions in an independent and accountable manner.**

The Rs 20,000-crore National Mission for Clean Ganga is among the flagship initiatives of the government and though at least 230 projects have been sanctioned this year there is very little progress on the ground in various states along the river such as Uttar Pradesh, West Bengal, Bihar and Uttarakhand among others. The bulk of the river cleaning projects involve setting up of sewage treatment plants, installing trash skimmers and beautifying the ghats.

**Ganga water has heavy metal, pesticide traces.** Water quality of river Ganga shows the presence of bacterial contamination besides traces of pollutants like heavy metals and pesticides, according to CPCB. In a detailed report covering various aspects of contamination in the river, the CPCB has informed the National Green Tribunal that the Ganga, spanning a distance of 543 km between Haridwar and Kanpur, was affected by 1072 seriously polluting industries which are releasing heavy metals and pesticides.

**63% of sewage flows into rivers untreated every day.** In a report submitted to National Green Tribunal, the CPCB has said that 63% of all sewage flowing into rivers every day is untreated in urban centres. Out of 62,000 million litres per day (MLD) of sewage generated, the treatment capacity developed so far is only 23,277 MLD from 816 sewage treatment plants spread across the country, which is just not equal to the task.

The water quality assessment has further indicated that there are 302 polluted river stretches on 275 rivers which are along the 35 metropolitan cities and 615 other urban centres. The increase of pollutants has been observed in the downstream stretches of rivers passing through the urban centres.

The Times of India, 15 September 2016 | Business Standard, 21 September 2016 | The Hindu, 22 September 2016 | The Times of India, 27 September 2016


**Bad air kills 6.2 lakh Indians every year: WHO.** More than 6,20,000 Indians are killed by air pollution every year, making India the world's second worst country to live in after China, the World Health Organisation (WHO) has noted. The report, Ambient air pollution: A global assessment of exposure and burden of disease, calls for strengthening measures against inefficient modes of transport, household fuel and waste burning, coal-fired power plants and industrial activities some of the major sources of air pollution. China tops the list with an annual death count of 10,32,833 followed by India and the Russian Federation (1,40,851). The WHO air quality model confirms that 92% of the world's population lives in places where air quality levels exceed WHO limits. According to the report, Gwalior is the most polluted city in India in terms of air pollution.

**6,21,138 people died in India of air pollution due to acute lower respiratory infection, chronic obstructive pulmonary disorder, ischemic heart disease and lung cancer.**

| PM2.5 | |
|---|---|
| **Gwalior** | 176 |
| **Allahabad** | 170 |
| **Patna** | 149 |
| **Raipur** | 144 |
| **Delhi** | 122 |
| **Ludhiana** | 122 |
| **Kanpur** | 115 |
| **Khanna** | 114 |
| **Lucknow** | 113 |
| **Firozabad** | 113 |

| PM10 | |
|---|---|
| **Gwalior** | 329 |
| **Allahabad** | 317 |
| **Raipur** | 268 |
| **Delhi** | 229 |
| **Ludhiana** | 228 |
| **Kanpur** | 215 |
| **Khanna** | 213 |
| **Firozabad** | 212 |
| **Lucknow** | 211 |
| **Amritsar** | 202 |

*Source*. Indian Express, 27 September 2016

WHO prescribed safe limits for PM2.5 and PM10 are 10 microgrammes per cubic metre and 20 microgrammes per cubic metre, respectively. On the other hand, India's prescribed limits for the same are 20 microgrammes per cubic metre and 60 microgrammes per cubic metre, respectively.

**Delhi: Neighbours to blame for stubble burning.** Responding to the high court's direction that there should be no biomass burning this year, Delhi government has decided to file an affidavit explaining that NASA images have proved that pollution levels in the city increase every November due to crop stubble burning in neighbouring states. Since Delhi has no agricultural land, it cannot do anything about controlling crop stubble burning in neighbouring states.

**IITM, Pune to monitor air quality of Ahmedabad**. The Indian Institute of Tropical Meteorology (IITM) Pune will soon set up 12 high-tech ambient air quality monitoring stations in Ahmedabad city. The stations are being set up as part of the nationwide System of Air Quality and Weather Forecasting and Research (SAFAR) under the Union Ministry of Earth Sciences.

**Indian government makes real world emission testing mandatory**. As a part of the crackdown against the increasing menace of pollution in India, the government has now made it mandatory to randomly test at least half of the cars produced from a manufacturer's plant. The move is a step in the direction of implementing the BS VI emission norms in the country by April 2020. The real world emission testing, set to come into effect from 1 April 2023, will be carried out under a process called the Conformity of Production. Under the Central Motor Vehicles (11th Amendment) Rules, 2016, the government has also made provisions for testing agencies to start collecting data on real-time emission of on-road vehicles from 1 April 2020.

| Air Pollution and Health | |
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| **Air pollution and diabetes risk**<br>Researchers have found that exposure to air pollution increases the risk of developing insulin resistance as a pre-diabetic state of Type-2 diabetes.<br><br>*Journal Reference*<br>Kathrin Wolf, Anita Popp, Alexandra Schneider, Susanne Breitner, Regina Hampel, Wolfgang Rathmann, Christian Herder, Michael Roden, Wolfgang Koenig, Christa Meisinger, Annette Peters. Association Between Long-Term Exposure to Air Pollution and Biomarkers Related to Insulin Resistance, Subclinical Inflammation and Adipokines. Diabetes, 2016; db151567 DOI: 10.2337/db15-1567 | **Air pollution and Alzheimer's disease**<br>A team of scientists has, for the first time, discovered tiny magnetic particles from air pollution lodged in human brains in cities such as Manchester and Mexico City – and researchers think they could be a possible cause of Alzheimer's disease.<br><br>*Journal Reference*<br>Barbara A Mahera, Imad A M Ahmed, Vassil Karloukovski, Donald A MacLaren, Penelope G Foulds, David Allsop, David M A Mann, Ricardo Torres-Jardón, and Lilian Calderon-Garciduenas. Magnetite pollution nanoparticles in the human brain. Proceedings of the National Academy of Sciences. 2016; vol. 113 no. 39, 10797–10801, doi: 10.1073/pnas.1605941113 |

The Times of India, 9 September 2016 | Hindustan Times, 9 September 2016 | The Statesman, 20 September 2016 | The Times of India, 21 September 2016 | Indian Express, 27 September 2016 | The Times of India, 27 September 2016 | Deccan Herald, 28 September 2016 | The Times of India, 29 September 2016


**Two ministries sign MoU to promote organic farming on the banks of river Ganga.** The Ministry of Agriculture & Farmers Welfare signed a Memorandum of Understanding (MoU) with Ministry of Water Resources, River Development and Ganga Rejuvenation to promote organic farming on the banks of river Ganga. According to this agreement, villagers situated on the banks of river Ganga will be encouraged for organic farming.

As per agreement under the Namami Gange project, 1657 gram panchayats situated along the course of river Ganga starting from Uttarakhand to West Bengal, organic farming will be developed in 1657 clusters under the Paramparagat Krishi Vikas Yojana. Under this project, Ministry of Agriculture along with

**According to the Paramparagat Krishi Vikas Yojana, farmers will be encouraged to form groups or clusters and take to organic farming methods over large areas in the country.**

cluster formation, will provide training on Integrated Nutrient Management and micro-irrigation techniques.

**Terra Greens adopts 4000 farmers in Tamil Nadu to meet growing demand for organic staples.** Terra Greens, a Hyderabad-based startup engaged in organic food business, has announced its move to adopt 4000 farmers in Tamil Nadu to meet the growing need for organic staples and encourage organic food cultivation.

**Horticulture department in Gurgaon to lease out land for organic farming.** The horticulture department in Gurgaon is launching an organic farming unit near Garethpur Bass village area, where residents can grow organic vegetables on a patch of land that they can get on lease from the horticulture department.

**CAZRI organic farm draws scores of farmers.** Every year, since the CAZRI organic farm was opened for the farmers, 500-600 farmers from nearby districts have been making visits to this farm, which is the only certified organic farm in the government sector, to draw inspiration. Enthused by the response, CAZRI has been developing a village Dantiwara near Jodhpur as a model organic village, with about 400 hectares of land already dedicated to organic farming.

The Hindu Business Line, 4 September 2016 | The Times of India, 6 September 2016 | Business Standard, 17 September 2016 | Hindustan Times, 22 September 2016