DAILY CURRENT AFFAIRS

8th July 2025

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Topics Covered

- Rising seas, shifting lives and a test of democratic values
- Fostering a commitment to stop maternal deaths
- Women MSMEs still struggle for credit despite schemes
- Air pollution tied to preterm births, low birth weight in India: Study

Rising seas, shifting lives and a test of democratic values

Syllabus:

GS Paper I – Indian Society
GS Paper II – Governance, Constitution & Rights
GS Paper III – Environment & Disaster Management

Rising seas, shifting lives and a test of democratic values

The intensifying impacts of climate change are reshaping India's coastline resulting in an environmental phenomenon and also profound social and economic rupture. Across the eastern and western seaboards, communities that are historically dependent on agriculture, fishing, and coastal ecosystems are being displaced by rising seas, saltwater intrusion, and the cumulative effects of unregulated development. This has triggered migration, pushing displaced populations into precarious urban labour markets without legal protection or adequate state support.

In Odisha, once thriving coastal settlements such as Satabhaya have been swallowed by the sea, forcing villagers to relocate to government resettlement colonies that often fail to provide sustainable livelihoods. In Karnataka's Honnavar taluk, traditional fishing communities face dispossession as ports, tourism projects, and mangrove destruction accelerate coastal degradation. Similar patterns are unfolding in Tamil Nadu's Nagapattinam, Gujarat's Kutch region, and the flood-prone lowlands of Kerala.

Projects and environmental degradation

Industrial and infrastructural expansion along coastal zones – from port development under the Sagarmala programme to energy projects and commercial aquaculture – have compounded ecological degradation. Mangrove forests, sand dunes and wetlands that historically buffered coastal communities have been systematically cleared.

Environmental clearances for many projects have overlooked cumulative climate risks, leading to a development model that intensifies ecological and social vulnerabilities. The displaced populations are increasingly getting absorbed into the informal economy as construction workers, brick kiln labourers and domestic workers in urban centres such as Bhubaneswar, Chennai, Hyderabad and Mumbai.

These migration patterns often result in systemic labour exploitation, which include debt bondage (displaced families take wage advances to survive, tying them into exploitative labour conditions); lack of legal protections (informal workers have little or no access to rights under India's labour laws, such as the Building and Other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996) and gendered exploitation (displaced women entering domestic work face heightened risks of abuse, underpayment, and trafficking).

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Climate change is affecting India's coastal communities with a deep social and economic impact

Legal lacunae on climate displacement

The absence of a coherent legal framework on climate-induced migration exacerbates this crisis. While Article 21 of the Constitution guarantees the right to life and dignity, there is no specific legislation that addresses the rights of those displaced by slow-onset climate disasters. Existing frameworks such as the Disaster Management Act, 2005, the Environment (Protection) Act, 1986, and the Coastal Regulation Zone (CRZ) Notifications, including the diluted CRZ 2019, are limited either to disaster response or environmental conservation, without adequately factoring in the socio-economic dimensions of displacement.

The National Action Plan on Climate Change (NAPCC) and State Action Plans recognise vulnerability, but lack targeted strategies for the rehabilitation of displaced populations or integration into labour markets.

The CRZ Notification, 2019, intended to streamline clearances and promote sustainable coastal management, has often been critiqued for prioritising tourism and industrial development over the rights of coastal communities. Across States, the dilution of zoning regulations has led to a surge in commercial projects in fragile coastal belts, displacing traditional fishing communities without their informed consent – a principle enshrined in national law and international environmental standards. Even India's landmark Labour Codes are silent on extending specific protections to climate migrants.

Environmental justice jurisprudence from the Supreme Court of India – in *M.C. Mehta vs Union of India* (1987) and *Indian Council for Enviro-Legal Action vs Union of India* (1996) – has recognised the intrinsic link between the environment and fundamental human rights. Yet, the translation of these principles into robust, community-centric legal frameworks on climate displacement remains lacking.

The story of displacement is also the story of resilience. Coastal communities, particularly fisherfolk unions and indigenous groups, have resisted ecologically destructive projects with remarkable tenacity. The protests against the Adani ports expansion at Ennore Creek, Tamil Nadu, the Pattuvam Mangrove Protection Movement in Kerala, and the Save Satabhaya campaign in Odisha underscore how grass-roots mobilisations have challenged mainstream development narratives.

However, environmental defenders face intimidation, surveillance and criminalisation which are antithetical to India's constitutional commitment to protect the rights to protest and association. New challenges also emerge as climate change is weaponised to justify "managed retreat" without participatory planning or safeguards for the displaced.

Towards a rights-based framework

Recognition of climate migrants within national migration and urban planning policies is essential. There is a need for a rights-based approach that guarantees decent work, housing, education and health care. Labour codes must be revised to explicitly extend protections to climate migrants, especially in sectors such as construction and domestic work where informality is rampant. Similarly, coastal zone management must be revisited to prioritise ecological sustainability and community rights over commercial interests. India's commitment to achieving Sustainable Development Goal Target 8.7 – eliminating forced labour and ensuring decent work for all – is contingent upon addressing the new vulnerabilities created by climate displacement.

If climate change is the defining challenge of our era, responding to climate-induced displacement must be at the core of India's adaptation strategy. Protecting the rights, dignity, and livelihoods of those most impacted is not just an environmental necessity. It is a test of India's democratic and constitutional values.

Key points from article

Climate Impact on Coastal Communities

- Sea level rise, saltwater intrusion, and ecosystem loss displacing **fishing and farming communities**
- Cases from **Odisha (Satabhaya), Karnataka (Honnavar), Tamil Nadu (Nagapattinam), Gujarat (Kutch)**

Development vs Ecology Conflict

- Industrialization under **Sagarmala programme**, tourism, aquaculture destroying mangroves and sand dunes
- **Environmental clearances** ignore cumulative ecological and climate risks
- **Migration & Labour Exploitation**
  - Climate-induced displacement pushing people **into informal labour:**
  - Sectors: construction, domestic work, brick kilns
  - Issues: **debt bondage**, no legal protection, **gender-based exploitation**

Legal Gaps

- No dedicated legislation for **climate-induced displacement**
- Existing laws (Disaster Management Act, EPA 1986, CRZ 2019) lack **socio-economic rehabilitation** components
- CRZ 2019 **diluted zoning norms**, favoring commercial interests

Judicial & Constitutional Context

- Article 21: Right to life with dignity
- SC verdicts: M.C. Mehta (1987), Enviro-Legal Action (1996) — link between environment & fundamental rights
- **Labour Codes** fail to cover rights of displaced informal workers

Grassroots Resistance

- **Adani Port protests – Ennore Creek, Pattuvam Mangrove Protection – Kerala, Save Satabhaya – Odisha**
- Environmental defenders face **intimidation and criminalisation**

Critical Analysis

- **Climate-induced displacement** is a slow-onset disaster being under-recognized by legal and policy frameworks
- Current development models prioritize shortterm economic gains over **long-term ecological sustainability**
- **Displaced communities are falling through the cracks** of labour, urban, and environmental policies

Way Forward

- **Legal & Policy Reforms**
  - **Dedicated law on climate migration** addressing rehabilitation, resettlement, and labour rights
  - Revise **CRZ norms** to restore **community consent, ecological zoning**, and limit commercial projects
  - **Amend Labour Codes** to explicitly **cover informal climate migrants**, especially women
- **Rights-Based Approach**
  - Integrate **decent work, health, education, and housing** into urban and climate policies
  - Ensure **participatory planning** in resettlement and "managed retreat" operations

- **Strengthening Institutions**
  - Create a Climate Displacement Authority under NDMA or MoEFCC for coordinated action
  - Mainstream climate risk assessments into all infrastructure projects
- **Support Civil Society Movements**
- Recognize and protect **environmental defenders** as part of India's constitutional commitment to the right to protest and association

Fostering a commitment to stop maternal deaths

Syllabus :

GS Paper II – Governance, Social Justice and Health Sector
GS Paper I – Society Issues related to women: Maternal health, Genderbased health disparities

Fostering a commitment to stop maternal deaths

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The Maternal Mortality Ratio for India is on the decline, but there are States that need to focus on basic and systemic issues

In childbirth in India, why should 93 women lose their life while one lakh women have a safe delivery? For the time period 2019-21, the Maternal Mortality Ratio (MMR) estimate for India was 93, in other words, the proportion of maternal deaths per 1,00,000 live births, reported under the Sample Registration System (SRS). "Maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes". But the MMR in India has declined over the years – it was 103 in 2017-19, then 97 in 2018-20 and now 93 in 2019-21.

To understand the maternal mortality situation better, States have been categorised into three: "Empowered Action Group" (EAG) States that comprise Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Odisha, Rajasthan, Uttar Pradesh, Uttarakhand and Assam; "Southern" States which include Andhra Pradesh, Telangana, Karnataka, Kerala and Tamil Nadu; and "Other" States that cover the remaining States/Union Territories.

In the group of "Southern" States, Kerala has the lowest MMR (20) and Karnataka the highest (63). The rest of the data is Andhra Pradesh (46) Telangana (45) and Tamil Nadu (49). In the EAG States, Assam has a very high MMR (167); the rest of the data is Jharkhand (51), and Madhya Pradesh (175). Bihar, Chhattisgarh, Odisha, Rajasthan, Uttar Pradesh and Uttarakhand are in the 100-151 range. In the category of "Other" States. Maharashtra is 38 and Gujarat 53; the rest of the data is Punjab 98, Haryana 106 and West Bengal 109.

We need to have a differential approach in strategy to reduce maternal deaths in the different clusters of States. In this, addressing three issues is fundamental. There are "three delays" that lead to a mother dying, according to Deborah Maine of Columbia University – I had incorporated this in the training module on 'Safe Motherhood in India' in 1992.

Key factors that endanger a life

The first delay is in recognising impending danger and making a decision to rush and seek expert care. The husband and other family members often experience inertia, thinking that all deliveries are a natural process and so the mother-to-be can wait. Or they may not have enough money or other issues at the family level that prevent them from going to a hospital. If the educational level of family members and their financial position are weak, delaying decision making is detrimental. But empowered, neighbourhood mothers and women's self-help-groups have resulted in a remarkable change; no longer is a mother-to-be neglected by lethargic family members. Ever since Accredited Social Health Activists (ASHA) began networking with Auxiliary Nurse Midwives (ANM) since 2005 (when the National Rural Health Mission (NHRM) was launched), institutional over home deliveries have become the better option. The financial incentives for the mother and ASHA were the turning point.

The second delay is in transportation. From remote rural hamlets and forest settlements or faraway islands it may take many hours, or an overnight journey for a mother-to-be to reach a health facility with a skilled birth attendant (midwife/staff nurse) or a doctor or an obstetrician. Many women die on the way. However, the 108 ambulance system and other Emergency transport mechanisms under the National Health Mission has made a difference.

Other problems

The third delay, an unpardonable one, is in initiating specialised care at the health facility. The excuses are plenty and difficult to justify – a delay in attending to a woman in the emergency room; a delay in reaching the obstetrician; a delay in getting a blood donor, in laboratory support, the operation theatre not being ready, an anaesthetist not being available is a list that can go on. The concept of the operationalisation of a 'minimum four FRUs [first referral units] per district of two million population, is crucial. The "first level referral unit" with specialists such as an obstetrician, anaesthetist, paediatrician, blood bank and operation theatre was aimed at preventing maternal death at the doorstep of a hospital.

Unfortunately, this has not worked out as expected since 1992. There are problems such as 66% vacancies of specialists in 5,491 community health centres out of which 2,856 are supposed to be FRUs in 714 districts. The lack of blood banks or blood storage units in these designated FRUs was another reason for many mothers not receiving adequate blood transfusion within two hours of the onset of massive bleeding after delivery, leading to fatalities.

The biggest killer is bleeding after delivery. This could be due to inadequate and timely contraction of an overstretched uterus with a baby of three-kilogram weight floating in amniotic fluids. When the placenta is separated after delivery, the raw opened surfaces of the uterine wall will bleed profusely unless it immediately contracts. From a total reserve of five litres of blood, more than half is lost in such a short duration, resulting in the mother going into shock and death. If there is underlying anaemia, which has not been treated with iron folic acid supplements in pregnancy, it will also result in tragedy. Thus, there is a need for immediate blood transfusion and emergency surgical care.

The next emergency is obstructed labour where the contracted bony pelvis of an already stunted young mother (who is also malnourished and has low body mass index) does not allow the normally grown baby to emerge. Prolonged labour can lead to foetal distress and a lethal rupture of the uterus. This can be avoided by a Caesarean section. Thus, there is a need for a well-equipped operation theatre and obstetrician/ surgeon and an anaesthetist on call.

The third medical cause is hypertensive disorders of pregnancy that are not recognised and treated on time. They can result in a dire emergency with convulsions and coma and very little time to medically control high blood pressure. There are some home deliveries by untrained birth attendants which lead to trauma and puerperal infection, resulting in sepsis and death. Antibiotics could have saved their lives, but the patient is admitted to hospital late. A failure of contraceptive devices, resulting in unwanted pregnancies and crude abortion techniques by quacks, also leads to sepsis and death. In EAG States, associated illnesses such as malaria, chronic urinary tract infections and tuberculosis are also high risk factors.

The focus areas for States

The prescription for averting maternal deaths is early registration and routine antenatal care and ensuring institutional delivery. Many of these systemic deficiencies will be highlighted in the mandatory reporting and audit of all maternal deaths under the NHM. While the EAG States have to focus on the implementation of basic tasks, the southern States group and probably Jharkhand, Maharashtra and Gujarat need to fine tune the quality of their emergency and basic obstetric care.

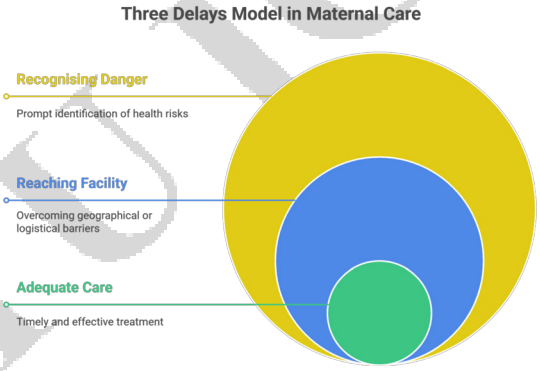
The Kerala model of a Confidential Review of Maternal deaths, initiated by Dr. V.P. Paily, has some analytical leads on how Kerala can further reduce its already low MMR of 20. It is a model other southern States can emulate. The use of uterine artery clamps on the lower segment, application of suction canula to overcome atonicity of the uterus, and a sharp lookout for and energetic management of amniotic fluid embolism, diffused intravascular coagulation, hepatic failure secondary to fatty liver cirrhosis are strategies taught to obstetricians, which even developed countries have yet to practise routinely. They even address antenatal depression and post-partum psychosis as there were a few cases of pregnant mothers ending their life.

Finally, if there is a commitment and a will to stop preventable maternal deaths there is no limit to the varieties of proactive interventions.

The writer acknowledges inputs on the Confidential Review of Maternal Deaths in Kerala from Dr. Smithy Sanel, a Spokesperson of the Kerala Federation of Obstetrics and Gynaecology

Key points from article

- **MMR (Maternal Mortality Ratio) Trends:**
  - India's MMR declined from 103 (2017-19) → 97 (2018-20) → **93 (2019-21)**
  - Defined as maternal deaths per 1,00,000 live births
- **State-wise MMR Distribution:**
  - Southern States: Kerala (20), Karnataka (63), Tamil Nadu (49)
  - EAG States: Madhya Pradesh (175), Assam (167), Jharkhand (51), others: 100–151
  - Other States: Maharashtra (38), Gujarat (53), Punjab (98)



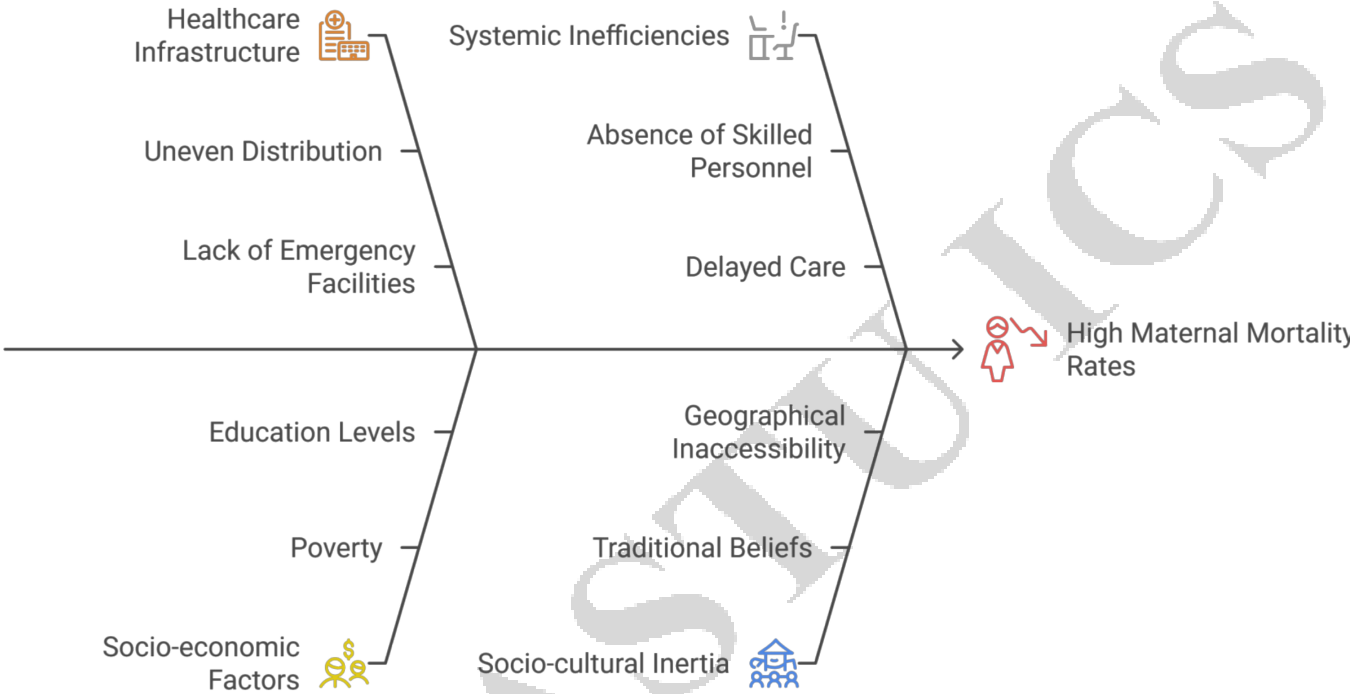
Key Government Interventions:

- **NRHM (2005)** → ASHA + ANM workers, promoting institutional deliveries
- **NHM** → Emergency transport services (108 Ambulance), maternal death audits
- **Financial incentives** for institutional delivery and maternal care
- **FRUs (First Referral Units):** Target - 4 per district for 2 million population
- **Systemic Deficiencies:**
  - 66% vacancies of specialists in CHCs
  - Shortage of **blood banks**, anaesthetists, operation theatres
  - Delayed or absent emergency obstetric care
- **Major Medical Causes:**
  - **Postpartum haemorrhage (bleeding):** leading cause of maternal deaths
  - Obstructed labour, hypertensive disorders, sepsis, unsafe abortions
  - Underlying anaemia and **malnutrition**, especially in EAG states

Kerala Model:

- Confidential Review of Maternal Deaths (CRMD) Use of modern obstetric interventions like uterine clamps, suction cannula
- Addressing **mental health** – antenatal depression & postpartum psychosis

Analyzing Maternal Mortality Crisis



Maternal care strategies range from basic to advanced interventions.

Women MSMEs still struggle for credit despite schemes

Syllabus :

Women MSMEs still struggle for credit despite schemes

Limited access to formal credit and the widening credit gap continue to prevent women entrepreneurs from achieving their financial goals

DATA POINT

B. Renuka Ramakrishna

Micro, Small and Medium Enterprises (MSMEs) have become instrumental in shaping India's generating employment, creating revenue, and in global outreach. In 2024, MSMEs contributed nearly 30% to the GDP. The aim is to raise this to 35% in the current year. This vast sector also provides opportunities for many women-led enterprises. The government has implemented several financial schemes specifically designed to promote women's participation.

However, the issues and challenges faced by women-led MSMEs are often inadequately addressed. The problems of limited access to formal credit and the widening credit gap continue to prevent these entrepreneurs from achieving their financial goals. While ensuring adequate credit availability to MSMEs has long been a key policy objective, gaps between banks and beneficiaries often persist at the implementation stage.

Women-owned businesses account for up to 20% of all MSMEs registered in India. This level of female participation remains low despite the handful of schemes aimed at encouraging self-employment and financial independence. What is more striking is that women-led MSMEs contribute only about 10% of the total turnover, while receiving around 11-15% of the total investment in the sector **(Chart 1)**. These numbers highlight the persistent gaps in both financial inclusion and credit accessibility for women in the MSME ecosystem.

According to reports by the Small Industries Development Bank of India (SIDBI), women face significant discrimination in fund disbursement, with a credit gap of around 35% – meaning that over a third of their financial requirements go unmet – compared to a the 20% credit gap faced by men **(Chart 2)**. The credit gap refers to the difference between the amount of credit requested by the borrower and the amount actually received. These inadequate funds are one of the major challenges for women in the MSME sector, affecting about 26% of them, followed closely by the challenge of high competition.

The Pradhan Mantri MUDRA Yojana (PMMY), launched nearly a decade ago to support individuals seeking self-employment, has also enabled women to open loan accounts and fund their MSMEs. PMMY offers collateral-free loans to MSMEs operating in the non-farm sector. As of 2024, women owned 42,492,281 loan accounts under PMMY out of a total of 66,777,013 accounts, which is approximately 64%. This shows that women form a significant group seeking financial assistance.

However, the sanctioned amount tells a different story. Of the total ₹5,41,012.86 crore allocated for that year's target, only ₹2,25,887.08 crore (about 41%) was directed towards women-led MSMEs. This disparity points to an economic inefficiency in delivering highly liquid, low-cost, and easily accessible loans to the underserved sections of the sector.

These underperforming schemes are pushing women to rely on informal sources of credit, which are often riskier and unreliable. These challenges are not confined to MSMEs alone; they also affect informal micro-enterprises (IMEs) run by women. Informal businesses are typically excluded from formal credit processes due to the lack of legal documentation and collateral. To address this gap, the government launched the Udyam Assist Portal, which helps such IMEs become eligible for priority sector lending by facilitating their formal recognition.

This year, over 1.86 crore IMEs have been registered through the portal. Notably, 70.5% of these are owned by women. This achievement has significantly boosted employment, with women-led IMEs contributing 70.8% to employment generation within this segment **(Chart 3).**

However, despite being registered, these businesses continue to face challenges in accessing formal credit. Dr. Ashwin Ram, Professor at RV University, said the main reasons for this are lack of awareness and limited access to formal credit. He said, "A majority of first-generation women entrepreneurs, particularly in smaller towns and rural areas, have low financial literacy and are not well informed about various government schemes and their benefits. There is also little support from traditional commercial banks and local government agencies to educate and assist women entrepreneurs in availing financial subsidies."

Women entrepreneurs are also often perceived as risky borrowers, largely because they lack adequate collateral or property ownership. In India, a significant proportion of women run micro and small businesses predominantly in the informal sector, which further discourages them from seeking finance through formal institutions. According to the International Finance Corporation, it takes a man an average of two visits to a bank to get a loan sanctioned, whereas women typically need to make at least four.

Amid these discriminatory barriers, the Reserve Bank of India has cut the repo rate to 5.50%, the lowest since 2022, and reduced the Cash Reserve Ratio by 100 basis points. This policy is aimed at injecting more liquidity into the economy, leaving commercial banks with greater funds to extend as loans to the public. Both banks and women entrepreneurs are in a favourable position, with increased liquidity at their disposal.

The government's schemes have been launched with a strong intent, but their implementation has often fallen short due to administrative inefficiencies.

Chart 1: The share of women-led MSMEs, share of women employed in MSMEs, share of investment attracted by women-led MSMEs and share of turnover of women-led MSMEs

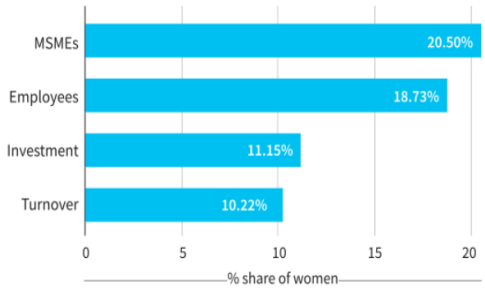


Chart 2: The credit gap across genders. Credit gap refers to the difference between the amount of credit requested by the borrower and the amount actually received

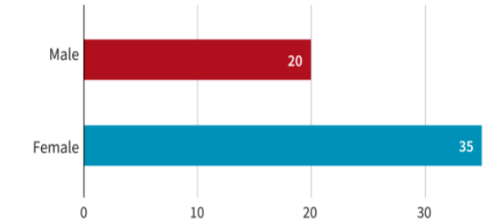
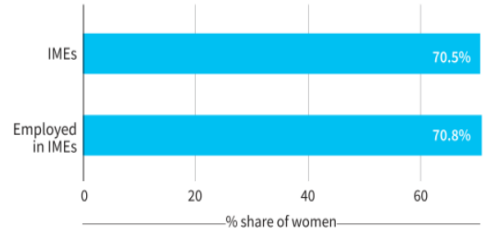
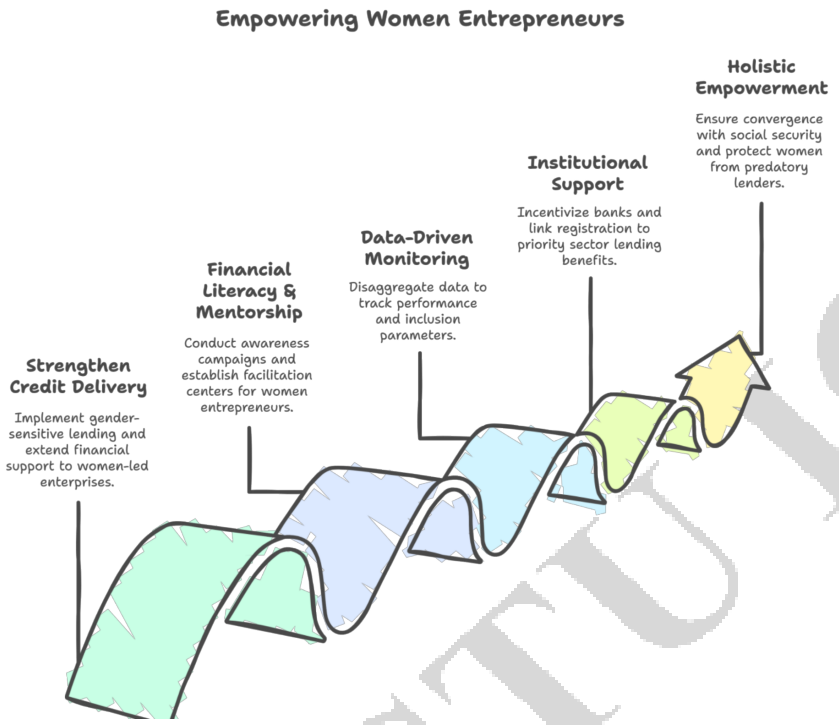


Chart 3: The share of women-led informal micro-enterprises (IMEs) and share of women employed in IMEs



B Renuka Ramakrishna is interning with The Hindu Data Team

- **MSME Contribution to the Economy**
  - MSMEs contribute **~30% of India's GDP** (target: 35% in 2024)
  - Women-owned MSMEs = **20% of total registered units**
  - Women-led MSMEs contribute only **10% to total turnover**
  - Investment received by women: **11–15% of total MSME credit**
- **Credit Gap**
  - Women face a **35% credit gap** vs. 20% for men **26% of women-led MSMEs cite inadequate funds** as the top challenge
  - High reliance on **informal credit sources**
- **PM MUDRA Yojana (PMMY)**
  - Offers **collateral-free loans** to non-farm MSMEs
  - Women hold **64% of total PMMY accounts (42.5 million)**
  - Yet, they receive only **41% of the total sanctioned amount**
  - ₹2.25 lakh crore out of ₹5.41 lakh crore
- **Udyam Assist Portal**
  - Created for **formal recognition of Informal**
- **Micro Enterprises (IMEs)**
  - 1.86 crore IMEs registered in 2024
  - **70.5% owned by women**
  - **70.8% of IME employment generated by women**
- **Barriers to Credit Access**
  - **Low financial literacy** in rural/small-town women
  - **Lack of collateral or property ownership** Institutional perception of women as **risky borrowers**
  - **Discriminatory banking practices:** Women require 4 visits vs. 2 for men (IFC report)
- **Policy Responses**
  - **RBI liquidity measures:** Repo rate cut to **5.50%** (lowest since 2022)
  - CRR cut by **100 basis points** Aim: **Increase lending capacity of banks**



Air pollution tied to preterm births, lowbirth weight in India: Study

Syllabus :

GS Paper II – Governance / Health Issues related to Health and Nutrition
GS Paper III – Environment Environmental Pollution and Health

Sanitation workers clearing a road are enveloped by smog in Gurugram, on

Air pollution tied to preterm births, low birth weight in India: study

Geetha Sriimathi

Air pollution, a hazard endured everyday by millions across India in varying degrees, has long been associated with a range of health issues, including lung conditions and a growing list of health issues. Now, a new study reveals the damaging effects of air pollution extend far beyond the lungs and heart, affecting the health of babies in the womb.

Published in *PLoS Global Public Health*, the study was carried out by researchers from institutions in India, Thailand, Ireland, and the UK, with data from the National Family Health Survey (NFHS) along with satellite data. The team assessed the influence of ambient air pollution on preterm births (PTB) and low birth weight (LBW). The dataset included children aged 0 to 5 years, 52% were female and 48% male.

The results suggest that exposure to fine particulate matter (PM2.5) during pregnancy significantly increases the likelihood of these adverse outcomes. PM2.5 consists of airborne particles less than 2.5 micrometres in diameter.

According to the study, mothers exposed to increased levels of PM2.5 had a 22% higher risk of delivering babies prematurely compared to those who weren't exposed. The odds of giving birth to a baby with low birth weight rose by 40% for mothers who faced higher air pollution levels.

Northern states at higher risk

A previously significant finding in the study is the heightened risk in states, specifically, Delhi, Punjab, Haryana, Uttar Pradesh, and Bihar bear the brunt of the consequences of air pollution. These states are densely populated, highly industrialised with high vehicular emissions and the widespread use of solid

Higher PM2.5 during pregnancy increased the likelihood of both LBW and PTB by 3.37% and 1.45%, respectively, with even a slight rise in temperature linked to an increase in LBW cases

fuels for cooking.

This conclusion aligns with previous research. For instance, a 2019 study in *Lancet* reported that the average PM2.5 concentration in Delhi was 11.8 times higher than that in Kerala.

PTB was most prevalent in Himachal Pradesh (12%) and Punjab (11%), while LBW was most common in Punjab (22%) and Delhi (19%). Female children were more likely to be born with LBW (16%) compared to males (15% – although both conditions were found to be more frequent among children of illiterate and poorer mothers.

The study found that rural solid fuel to cook also reported higher rates of both LBW and PTB.

Higher levels of PM2.5 during pregnancy significantly increased the likelihood of both LBW and PTB by 3.37% and 1.45%, respectively, with even a slight rise in temperature linked to an increase in LBW cases, the study said.

Higher temperatures have previously been linked to maternal dehydration, heat stress, and increased cardiovascular strain, all of which impair placental function and fetal development. Conversely, excessive rainfall, especially during the monsoon, raises the risk of waterborne diseases, which can further hinder foetal growth, the study suggests.

Flooding and displacement associated with heavy rains can also disrupt healthcare access, leading to delayed medical interventions and increasing the likelihood of pregnancy complications.

Key points from article

Study Overview

- Published in **PLoS Global Public Health**
- Carried out by researchers from **India, UK, Ireland, and Thailand**
- Based on **NFHS data + satellite-based PM2.5 estimates**
- Focus: Impact of **air pollution on pregnancy outcomes –**
  - **Preterm Births (PTB)**
  - **Low Birth Weight (LBW)**
- Sample: Children aged **0–5 years,** 52% female

Major Findings

- **Health Impact of PM2.5 Exposure**
  - **70% increased risk** of **preterm births** (PTB)
  - **40% increased risk** of **low birth weight** (LBW)
- **Regional Disparities**
  - Highest risks in:
  - **Delhi, Punjab, Haryana, UP, Bihar** – heavily polluted industrial belts
- **PM2.5 in Delhi** is **13.8x** higher than in Kerala (The Lancet report)

Specific Outcomes

- PTB most common in:
  - Himachal Pradesh (39%), Delhi (17%)
- LBW highest in:
  - Punjab (22%), Delhi (19%)
- Female children more likely to be born with LBW (20%) than males (17%)

Household and Socio-economic Correlates

- Higher prevalence in:
- Households using **solid fuels** (biomass, wood)
- **Illiterate, poorer mothers**

Environmental Correlates

- **Slight temperature rise linked to increase in LBW**
  - Causes: Maternal heat stress, dehydration, cardiovascular strain
- **Heavy rainfall & flooding:**
  - Increase risk of **waterborne infections**
  - Disrupt **healthcare access**
  - Lead to **pregnancy complications**

Analysis

- Air pollution is **not just a respiratory issue** — it affects maternal and child health, impacting India's **demographic dividend**
- Underscores the **interconnectedness of environment and public health**
- Regional disparity reflects **inequality in pollution control and healthcare infrastructure**
- High impact on **women and children from poor households** = issue of environmental justice

Way Forward

- **Policy & Healthcare Interventions**
  - Integrate **air quality risk assessment into maternal health programmes**
  - Prioritise **awareness drives and outreach** in high-risk states and districts
  - Expand **access to clean cooking fuel (LPG)** under **Ujjwala 2.0**
  - Improve **rural and peri-urban healthcare infrastructure**

Environmental Action

- Implement **National Clean Air Programme (NCAP)** with strict targets
- Accelerate **PM2.5 monitoring and early warning systems**
- Strict enforcement of **vehicular and industrial emission standards**

Data-driven Governance

- Use **NFHS, remote sensing, and climate-health mapping** to inform policy
- Mandate **inter-ministerial coordination** between Health, Environment, and Urban Development ministries

Practice Question

Q. "Air pollution in India is not only an environmental issue but also a public health crisis with intergenerational consequences." (250 words)