



## Mission on Advanced and High-Impact Research

**For Prelims:** Purpose, Objectives and Structure of the mission, [E-cooking](#), [Alternatives to Lithium-Ion storage batteries](#), [Green hydrogen](#)

**For Mains:** Significance of the MAHIR

### Why in News?

Recently, the **Ministry of Power** and the **Ministry of New and Renewable Energy** have **jointly launched** a National Mission named “**Mission on Advanced and High-Impact Research (MAHIR)**”.

- The Mission is planned for an initial period of five years from 2023-24 to 2027-28 and **will follow the technology life cycle approach of Idea to Product.**

### What are the Key Details of the National Mission MAHIR?

#### ▪ Objectives of the Mission:

- To **identify emerging technologies and areas of future relevance for the global power sector** and develop them indigenously.
- To provide a **platform for collective brainstorming** and synergetic technology development among power sector stakeholders.
- To **support pilot projects of indigenous technologies** developed by Indian start-ups and facilitate their commercialization.
- To leverage foreign alliances and **partnerships for research and development of advanced technologies and technology transfer.**
- To promote **scientific and industrial R&D** in the power sector and create an innovative ecosystem.
- To **position India among the leading countries in power system-related technologies** and applications development.

#### ▪ Funding:

- It will be funded **by pooling resources from the Ministry of Power, Ministry of New & Renewable Energy, and Central Public Sector Enterprises** under these ministries.
- **Additional funding**, if required, will be mobilized from the Government of India's budgetary resources.

#### ▪ Areas Identified for Research under MAHIR:

- [Alternatives to Lithium-Ion storage batteries](#)
- Modifying [electric cookers/pans](#) to suit Indian cooking methods
- [Green hydrogen](#) for mobility (High Efficiency Fuel Cell)
- [Carbon capture](#)
- [Geo-thermal energy](#)
- Solid state refrigeration
- [Nano technology for EV battery](#)
- Indigenous CRGO technology

## What is the Structure of the Mission?

- **Two- Tier Structure:**
  - It has a two-tier structure consisting of a **Technical Scoping Committee and an Apex Committee.**
    - **The Apex Committee:**
      - It **deliberates on technology and product development, approves research proposals**, and looks into international collaborations.
      - The Apex committee will look also into international collaborations. The final approval of all the research proposals / projects shall be given by the Apex Committee.
      - It is **chaired by the Union Minister for Power & New and Renewable Energy.**
    - **Technical Scoping Committee:**
      - It **identifies research areas, recommends potential technologies**, and monitors approved research projects.
      - It is **chaired by the Chairperson of the Central Electricity Authority.**
  - Central Power Research Institute (CPRI), Bengaluru **will provide all necessary secretarial assistance** to the Apex Committee and Technical Scoping Committee.

## What is the Scope of the Mission?

- Once research areas are identified and approved, **outcome-linked funding proposals will be invited globally.**
- **Quality cum Cost-Based Selection (QCBS) basis will be used** for selecting the proposals.
- Pilot projects of technologies **developed by Indian start-ups will be funded**, and their commercialization will be facilitated.
- **International collaboration and technology transfer will be encouraged.**

## What is the Significance of the MAHIR?

- **Indigenous Development:**
  - By developing advanced technologies within the country, India can **reduce its dependence on imports, enhance self-reliance**, and promote domestic innovation and manufacturing capabilities.
  - It aligns with the **"Make in India"** initiative and contributes to the growth of indigenous technology-driven industries.
- **Energy Transition and Net Zero Emissions:**
  - MAHIR can support the **adoption of cleaner and greener energy sources**, energy storage solutions, and carbon capture techniques.
  - This contributes to India's commitment to combating climate change and transitioning towards a sustainable energy future.
- **Economic Growth and Manufacturing Hub:**
  - MAHIR aims to make India a manufacturing hub for advanced power technologies. By developing and deploying cutting-edge technologies, it can **attract investments, foster innovation-driven industries, and create job opportunities.**

### UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. Which of the following best describes/describe the aim of 'Green India Mission' of the Government of India? (2016)**

1. Incorporating environmental benefits and costs into the Union and State Budgets thereby implementing the 'green accounting'.
2. Launching the second green revolution to enhance agricultural output so as to ensure food security to one and all in the future.
3. Restoring and enhancing forest cover and responding to climate change by a combination of adaptation and mitigation measures.

Select the correct answer using the code given below.

- (a) 1 only
- (b) 2 and 3 only
- (c) 3 only
- (d) 1, 2 and 3

Ans: (c)

Exp:

- **National Mission for a Green India, also known as Green India Mission (GIM), is one of the eight missions outlined under India's National Action Plan on Climate Change. It was launched in February 2014.**
- **Goals of Mission**
  - To increase forest/tree cover to the extent of 5 million hectares (mha) and improve quality of forest/tree cover on another 5 mha of forest/nonforest lands. Separate sub-targets existing for different forest types and ecosystems (eg.,
  - wetland, grassland, dense forest, etc.). Hence, 3 is correct.
  - Improvement in quality of forest cover and ecosystem services of forests/non-forests, including moderately dense, open forests,
  - degraded grassland and wetlands (5 mha).
  - Eco-restoration/afforestation of scrub, shifting cultivation areas, cold deserts, mangroves, ravines and abandoned mining areas (1.8 mha) with separate sub-targets for each one of those.
  - Improvement in forest and tree cover in urban/peri-urban lands (0.20 mha).
  - Improvement in forest and tree cover on marginal agricultural lands/fallows and other non-forest lands under agro-forestry/social forestry (3 mha).
  - To improve/enhance eco-system services like carbon sequestration and storage (in forests and other ecosystems), hydrological services and biodiversity; along with provisioning services like fuel, fodder, and timber and non-timber forest produces (minor forest produces or MFPs) etc., which are expected to result from the treatment of 10 mha.
  - To increase forest based livelihood income for about 3 million households in and around these forest areas; and enhanced annual CO<sub>2</sub>sequestration by 50 to 60 million tonnes by the year 2020. Launching 2nd Green Revolution and incorporating green accounting in the Union and State budget are not the objectives of Green India Mission. Hence, 1 and 2 are not correct.
  - Therefore, option (c) is the correct answer

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