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### 1. The Green Hydrogen Microgrid Project

**Related to Developing new technologies, GS III**

**Prelims:** About the Green hydrogen microgrid project, Fuel cells, Green hydrogen

**Mains:** The impact of green hydrogen energy on energy efficiency and a sustainable future

**Context:** India's first and world's largest Green Hydrogen Microgrid Project will be set up at Simhadri near Visakhapatnam by the National Thermal Power Corporation Limited. This is considered to be the precursor for large scale hydrogen energy storage.

**About the Project:**

- This hydrogen energy storage project will employ electrolyzers for the production of hydrogen energy along with the deployment of multiple microgrids at various strategic locations of the country.
- Microgrids are a group of energy sources that are found in solar panels, wind turbines and combined heat and power generators.
- Hydrogen will be produced using advanced 240 kW solid oxide fuel cells which would obtain input power from nearby solar projects.
- Solid oxide fuel cells use chemical reactions to produce electrical energy by the process of electrolysis. This minimizes the release of pollutants and harmful emissions which are prevalent in the power plants.
- The production of hydrogen will be in the sunshine hours and hydrogen produced will be stored under high pressure.
- The stored hydrogen will be electrified using a 50kW solid oxide fuel cell and the system will operate in a standalone mode from 5 PM to 7 AM.
- The project will ensure decarbonisation of the regions of Ladakh and Jammu & Kashmir which are dependent on diesel generators making the region carbon neutral.

**What is Green Hydrogen?**

- Green hydrogen is a clean fuel that facilitates the generation of energy by using renewable sources like electrolysis of water, wind energy and solar energy without involving carbon dioxide emission.

- The production of hydrogen by using fuel cells will be a welcoming step towards carbon neutrality and a sustainable future.
- This would reduce the dependency on fossil fuels and with the onset of the landmark project on Green Hydrogen India is a step closer to its vision of self reliance in the energy sector.

Read more about [National Hydrogen Energy Mission](#) in the linked article

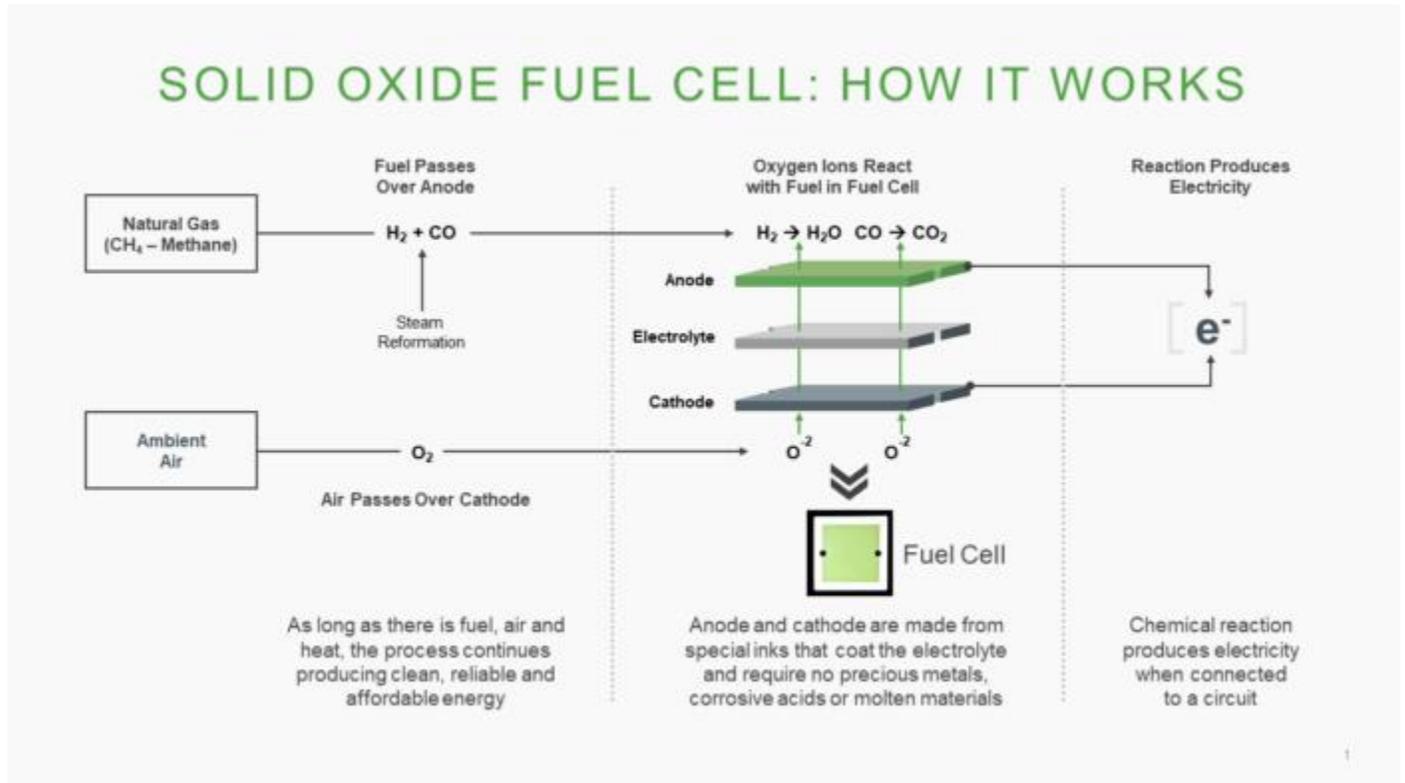


Image Source: Bloom Energy

## 2. Treaty on Mutual Legal Assistance

Related to Bilateral agreements involving India's interests

**Prelims:** About the treaty

**Mains:** Significance

**Context:** The treaty between India and Poland on Mutual Legal Assistance has been approved by the cabinet.

**Aim of the Treaty:** The treaty on Mutual Legal Assistance between the Government of the Republic of India and the Republic of Poland aims at increasing the effectiveness of investigations and prosecution of crimes.

### Significance of the Treaty:

- Enhance cooperation between India and Poland in the context of tackling transnational crimes and crimes related to terrorism.
- It will broaden the legal framework and speed up the process of investigation involving tracing, restraint and confiscation of instruments of crime.
- The treaty will embolden the internal security of the countries and will assist in the betterment of mitigating crimes and policies to deal with crimes.

### Important Facts:

- The gazette notification will be issued after the signing and ratification of the treaty.
- It will be effective in India under the provisions of the [Code of Criminal Procedure](#) of 1973.
- The gazette notification will be available and accessible to the public in order to increase awareness about the legal framework related to criminal activities.

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### 3. Durga Puja of Kolkata: 'An Experience everyone must have'

#### Related to Indian Culture, GS I

**Prelims:** About UNESCO, Heritage sites of India

**Mains:** Role of Indian festivals in the promotion of cultural heritage of India in International platforms

**Context:** Under the 'Intangible Cultural Heritage' list of [UNESCO](#), the Durga Puja festival of Kolkata has been added. India presently has a total of 14 events that expound our cultural richness and vibrant traditions.

#### Important Facts:

- The decision to recognise the Durga Puja festival as the Intangible Cultural Heritage was taken during the sixteenth session of the annual convention of UNESCO. The intangible cultural heritage list of humanity has 492 elements at present.
- The annual convention includes the Intergovernmental Committee for safeguarding intangible cultural heritage and it was organized on a virtual platform.
- This committee meets annually to assess the nominations made by States Parties to the 2003 Convention and decides to inscribe the best cultural practices.
- Durga Puja is beyond festival for every inhabitant of Kolkata and it signifies “home-coming” to one’s roots.
- The festival involves a 10 day worship of goddess Durga that is accompanied by the coming together of several artists and artisans which is an embodiment of the spirit of unity.

#### **The 2003 Convention:**

- This convention was enforced in 2006 with the ratification of 30 states after the deposit of its instruments of ratification, acceptance and approval.
- The convention intends to promote the Intangible Cultural Heritage for the protection of knowledge and skills that facilitate the traditional artisanship and cultural practices over the generations.

Read more about [Intangible Cultural Heritage Sites in India](#) in the linked article

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#### **4. VIHANGAM**

##### **Related to Advancement in the fields of IT, GS III**

**Prelims:** Salient features of the portal

**Mains:** Significance in sustainable mining

**Context:** VIHANGAM is an internet-based platform that was discussed in the Lok Sabha.

##### **Salient Features:**

- It is an internet-based platform that is integrated with a Remotely Piloted Aircraft System (RPAS) at the Mahanadi Coalfields.
- The system includes a Ground Control Station (GCS) along with internet connectivity with 40 Mbps speed and the VIHANGAM portal.
- The system enables real-time transmission of aerial images and videos of mining activities which can be accessed through the portal by an authorized person possessing an ID and the password.
- This portal was developed by a Mumbai based start-up of drone manufacturing, robotics and automation and designed by Mahanadi Coalfields Limited.
- This offers the state-of-the-art facility for the implementation of pollution free first mile connectivity projects ensuring sustainable mining.

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**5. Sardar**

**Vallabhbhai**

**Patel**

**Related to the Freedom struggle and Post-Independence consolidation and reorganization within the country, GS I**

**Prelims:** Facts about Sardar Patel

**Mains:** His role in the freedom struggle and contribution towards uniting the country

**Context:** The Prime Minister paid tribute to the historic character of Sardar Vallabhbhai Patel on his 71st death anniversary this year.

Sardar Patel has left an indomitable mark through his contributions in the freedom struggle of India and uniting India.

