

Q-1 -What are the economic technological and regulatory barriers to the successful implementation of India's national green hydrogen mission, and how can they be overcome to promote the growth of a sustainable hydrogen economy in the country? Analyse .

Approach -

In this question candidates need to write about what are technological and technical barriers to implementing India's national green hydrogen mission. In the second part write about how they can overcome to promote sustainable hydrogen economy in the country .

Introduction -

The National Green Hydrogen Mission is an initiative by the Government of India to promote the production and use of green hydrogen in the country. Green hydrogen is produced using renewable energy sources such as wind and solar power, which makes it a clean and sustainable alternative to conventional hydrogen production methods that rely on fossil fuels.

Body -

The implementation of a national hydrogen mission can face several economic, technological, and regulatory barriers, including:

- **Economic Barriers:** One of the main economic barriers for implementing a national hydrogen mission is the high cost of producing, storing, and transporting hydrogen.
- The production of hydrogen using renewable energy sources is currently more expensive than conventional methods. Additionally, the infrastructure needed to transport and store hydrogen is expensive and requires significant investment.
- **Technological Barriers:** The production, storage, and transportation of hydrogen require advanced technology, and current technologies are not yet mature enough to be used at a large scale. Additionally, there are technological challenges related to the use of hydrogen in various applications, such as fuel cells, which require further development.
- **Regulatory Barriers:** The implementation of a national hydrogen mission can face regulatory barriers related to safety, standards, and certification. The safety regulations for hydrogen storage and transportation are not yet fully developed, and there is a need for standards and certifications to ensure the quality and safety of hydrogen products.
- **Market Barriers:** The development of a hydrogen market requires the establishment of a demand for hydrogen and the creation of a supply chain. At present, there is a lack of widespread demand for hydrogen, and the infrastructure to supply and distribute it is limited.
- To overcome these barriers, governments, industries, and stakeholders need to collaborate and invest in research and development, incentivise the deployment

of hydrogen technologies, and establish regulatory frameworks to support the growth of a hydrogen economy.

- How to overcome these challenges to promote sustainable hydrogen mission Ten sentences.
- To promote a sustainable hydrogen mission and overcome the economic, technological, and regulatory challenges, the following strategies can be implemented:
- Government support: Governments can provide funding, tax incentives, and subsidies to support the development of hydrogen technologies and infrastructure.
- International cooperation: International cooperation can facilitate the sharing of knowledge, resources, and technologies to support the development of a sustainable hydrogen mission.
- Research and development: Continued research and development can lead to the advancement of hydrogen technologies, making them more efficient, cost-effective, and safer.
- Regulations and standards: Regulations and standards can ensure the safety, quality, and reliability of hydrogen technologies, which will increase public confidence and promote the adoption of hydrogen.
- Public awareness and education: Public awareness and education can promote the benefits of a sustainable hydrogen mission and encourage consumer demand.
- Partnerships and collaboration: Partnerships and collaboration between government, industry, academia, and other stakeholders can facilitate the sharing of resources, knowledge, and expertise, leading to more effective and efficient deployment of hydrogen technologies.
- Infrastructure development: The development of infrastructure, including production facilities, storage facilities, and transportation systems, will support the growth of a hydrogen economy.
- Business models: The development of sustainable business models can create economic opportunities for hydrogen, making it more attractive for investment.
- Integration with renewable energy: Integration with renewable energy sources, such as wind and solar power, can improve the sustainability of hydrogen production and support the transition to a low-carbon economy.
- Pilot projects: Pilot projects can test the feasibility of hydrogen technologies in different applications, providing valuable information for further development and deployment.

Conclusion -

The Green hydrogen mission aims to develop a framework for the production, storage, and use of green hydrogen in various sectors such as transportation, power generation, and industrial processes. The objective is to establish India as a global leader in the production and use of green hydrogen, which is expected to play a significant role in India's transition to a low-carbon economy.

2. What do you understand by the concept of circular economy? Explain. With the help of suitable examples, discuss some of the best practices of the circular economy model.

Approach

Candidates can start the answer with basic idea about circular economy highlight some best practice world over and also some at India level.

Introduction

Circular economy is an economic model designed to minimize waste and maximize the use of resources by emphasizing the circular flow of materials and products. It is based on the principles of reduce, reuse, and recycle.

Body

There are several best practices associated with the circular economy model that have been successfully implemented by businesses, governments, and communities worldwide. Here are some examples:

- **Product design for durability and repairability:** Companies like Patagonia and Eileen Fisher have introduced take-back programs to repair, refurbish, and resell their products, thereby reducing waste and extending the life of their products.
- **Resource efficiency in manufacturing:** Philips has implemented a closed-loop recycling system for the plastic used in their products, enabling them to reuse 90% of the material.
- **Sharing platforms for products and services:** Shared mobility services such as Zipcar and bike-sharing schemes like Mobike have enabled users to access transportation on a pay-per-use basis, reducing the need for individual ownership and associated resource use.
- **Zero waste initiatives:** Some companies, such as Unilever and Nestle, have set targets to eliminate waste in their operations and supply chains. For instance, Unilever's Sustainable Living Plan aims to achieve zero waste to landfill from their factories by 2020.

Best practice at India level:

- **Reliance Industries:** Embraced the circular economy model by implementing a Zero-Waste Campus initiative. The company has also set up a plastic recycling plant that converts plastic waste into fuel.
- **E- Waste Management:** Attero Recycling is a company that specializes in recycling electronic waste, and it has set up several recycling centers across India
- **Waste-to-Energy Projects:** Plant has been set up in Okhla, Delhi, which converts waste into electricity. The plant processes over 2,000 tons of waste every day and generates 16 MW of electricity.

Conclusion

These best practices demonstrate that a circular economy can be realized through various approaches and strategies, tailored to specific sectors and contexts. The examples above provide a roadmap for businesses, governments, and communities to adopt more sustainable practices and contribute to a more circular economy.

3. The implementation of India's new industrial policy of One Nation-One Standard will foster innovation, entrepreneurship, and economic competitiveness, while addressing the concerns of workers, consumers, and the environment. Elucidate.

Approach

Candidates can start the answer with giving basic idea about recent ONOS policy simply highlight the benefits of the policy and then how its addressing the problems of workers and consumers can be elucidated.

Introduction

The One Nation-One Standard policy is based on the principle that can promote efficiency, entrepreneurship, competitiveness, and innovation in the industrial sector. By establishing a common set of standards, the policy aims to eliminate confusion, inefficiencies, and market barriers that arise from variations in product standards and specifications across different states.

Body

The policy is expected to have several benefits for Indian industry, including:

- Improved quality of products and services: Standardization can help to ensure consistent quality of products and services, which can enhance customer satisfaction and improve market competitiveness.
- Increased efficiency and productivity: Standardization can lead to greater efficiency and productivity by reducing the time and cost required to produce and distribute products.
- Enhanced innovation: Standardization can encourage innovation by providing a common framework for the development of new products and services.
- Reduced trade barriers: Standardization can reduce trade barriers by promoting the acceptance of Indian products and services in global markets.

While also addressing the concerns of workers, consumers, and the environment.

Here are some ways in which the policy can achieve these objectives:

- Workers: The policy can address concerns of workers by promoting the adoption of standardized safety, health, and environmental regulations. The uniform standards can help to ensure that all workers are protected by the same level of regulations, regardless of where they work in the country.

- **Consumers:** The uniform standards can ensure consistent quality and safety of products and services, which can benefit consumers. This can increase consumer confidence and lead to greater demand for Indian products and services, both domestically and internationally.
- **Environment:** The policy can address concerns about the impact of industrialization on the environment by promoting the adoption of standardized environmental regulations. The uniform standards can help to ensure that all industries follow the same environmental regulations, leading to a more sustainable and environmentally friendly industrial sector.

Conclusion

Overall, the One Nation-One Standard policy has the potential to transform the Indian industrial sector. However, the successful implementation of the policy will require coordination and collaboration between different stakeholders, including the government, industry associations, and standardization bodies.