DAILY CURRENT AFFAIRS ANALYSIS

09 JANUARY 2025

1 - Green Hydrogen:

GS III

Environmental Conservation:

- **India's Energy Needs Are Expected to Soar:**

- In terms of energy requirements, India's economy is currently the third largest in the world, and by 2030, demand for energy is expected to increase by 35%.
- India's energy import bill, which was USD 185 billion in 2022, is expected to rise if the nation keeps using conventional means to fulfil its expanding energy needs.
- Simultaneously, at the 2021 United Nations Climate Change Conference in Glasgow (COP26), India committed to achieving Net Zero by 2070.

- **The importance of green hydrogen:**

- In order to assist India achieve net zero emissions and meet its energy security demands, green hydrogen is essential. It also helps reduce emissions in hard-to-abate industries.
- In 2022, the Indian government initiated the National Green Hydrogen Mission after realising this.
- The objective is to promote the production and use of green hydrogen by means of approximately USD 2.3 billion in incentive financing, which will be disbursed between 2022 and 2030.
- The present state of India's hydrogen production:
- India now generates 6.5 million metric tonnes per annum (MMTPA) of hydrogen, primarily for use in the manufacturing of fertiliser and crude oil refineries.
- Grey hydrogen, which is created primarily from fossil fuels in a process that releases CO2 petrol emissions, makes up the majority of India's present hydrogen supply.
- For the electrolysis process, the production of green hydrogen necessitates a plentiful supply of renewable energy.

- India's renewable energy potential can help it achieve its goals for growing its green hydrogen industry, but it needs to quickly build capacity in order to fulfil its electricity needs and produce green hydrogen.
- Green hydrogen is not very popular in the nation; most people are just "waiting and watching." Many anticipate that significant green hydrogen generation will start in 2027 and continue after that.

- **The limitations of green hydrogen:**

- The cost of production and delivery, on the supply side, and the willingness of Indian actors to use green hydrogen in conventional industrial processes, on the demand side, are significant barriers to the growth of green hydrogen in India.

- **What is the report's blueprint for India's development of green hydrogen?**

- **Lower the Expense of Manufacturing Green Hydrogen:**

- Today, the cost of producing green hydrogen in India is about USD 4-5/kg, which is about twice as much as that of producing grey hydrogen.
- The demand for continuous (RTC) renewable electricity drives 50–70% of the manufacturing costs of green hydrogen.
- A green energy ecosystem in India must grow if green hydrogen prices drop to a benchmark of USD 2/kg.

- **This can be accomplished by:**

- Increasing direct incentives for early adopters: the United States of America has announced a tax credit of up to USD 3/kg of hydrogen under the Inflation Reduction Act (IRA).
- facilitating lengthy capital investment cycles for innovations while maintaining long-term policy and incentive clarity
- promoting the creation and testing of domestic electrolyzer technologies.

- **Cut Expenses for Transport, Storage, and Green Hydrogen Conversion:**

- Although the cost of producing green hydrogen and its derivatives is minimal, the total cost can be greatly impacted by infrastructure costs, such as storage, transportation, and conversion facilities.
- Reducing the expenses associated with setting up this infrastructure will lower delivery costs and boost uptake.

- Creating green hydrogen production clusters in the near to medium future, when a cooperative atmosphere for production and offtake takes place nearby.
- making long-term infrastructure investments, such as building pipelines to move renewable hydrogen across the nation.
- One initiative to do this is the European Hydrogen Backbone programme, which intends to build a pipeline network throughout the EU.

- **Assistance Sectors most Likely to Use Green Hydrogen:**

- Some sectors are more equipped than others to adopt green hydrogen usage.
- To raise the domestic demand for green hydrogen in India, incentives, subsidies, and other forms of support should be directed towards potential users.
- The most prominent of these are current users of grey hydrogen. By raising direct subsidies, stakeholders can boost the home green energy demand of grey hydrogen users.
- This will boost long-term demand for the new energy source and lower short-term expenses associated with green hydrogen.

- **Profit from India's Export Possibilities:**

- India has the potential to develop into a hub for the export of green hydrogen derivatives due to its abundance of land for the expansion of renewable energy sources, trained workforce, and comparatively cheap renewable energy.
- Through the enhancement of export infrastructure at ports, stakeholders can take use of India's export potential.
- Exporting green hydrogen derivatives requires conversion at the production site or ports.
- Port terminal storage and shipping facilities are also necessary for export.

- **Disincentives for Energy Sources High in Carbon:**

- India needs to disincentivize the use of carbon-intensive energy sources in addition to encouraging the usage of green hydrogen.
- India has the ability to reallocate subsidies from sources of high emissions to the transition to green energy.
- India could be able to meet its growing energy demand without sacrificing the population's ability to pay energy if a comprehensive carbon price policy were implemented.

- **Green hydrogen: what is it?**

- Hydrogen is an essential industrial fuel used in steel, refineries, electricity generation, and the manufacture of ammonia, a crucial fertiliser.
- However, because it is made from coal, all of the hydrogen that is created today is referred to as "black" or "brown" hydrogen.
- The most common element in the universe is hydrogen. Pure hydrogen, on the other hand, is extremely rare.
- In practically all compounds, such as those that combine with oxygen to make water, it occurs.
- However, water undergoes electrolysis, which separates it into elemental oxygen and hydrogen, when an electric current is applied to it.
- Additionally, the hydrogen created in this way is known as "green hydrogen" if the electricity utilised for the process originates from renewable resources like solar or wind energy.
- Hydrogen is coloured to represent the source of power that was utilised to create the hydrogen molecule.
- For example, brown hydrogen is the term used when coal is employed.

- **Requirement for Green Hydrogen Production:**

- Because of its high energy content per unit of weight, hydrogen is employed as rocket fuel and is a tremendous source of energy.
- With almost no emissions, green hydrogen stands out as one of the most environmentally friendly energy sources.

- It can be utilised in energy-hungry industries like steel and fertiliser production, as well as in automobile fuel cells.
- Building green hydrogen capability is a global endeavour since it may contribute to carbon emission reduction and energy security.
- With the world experiencing its worst-ever energy crisis and the prospect of climate change becoming a reality, green hydrogen has gained international attention.

Source → The Hindu

2 - India-Nepal Power Accord:

GS II

International Issues:

- **What Are the Main Lessons Learned From the Nepal-India Joint Commission's Seventh Meeting?**

- Power Export Agreement: A bilateral agreement was reached by India and Nepal to export 10,000 MW of power over the following ten years.
- Cross-Border Transmission Lines Inauguration: The 132 kV Raxaul-Parwanipur, 132 kV Kushaha-Kataiya, and New Nautanwa-Mainahiya lines are three of the cross-border transmission lines that were jointly inaugurated.
- Cooperation in Renewable Energy: The National Thermal Power Corporation Limited of India and the Nepal Electricity Authority signed a Memorandum of Understanding (MoU) to cooperate in the field of renewable energy.
- Agreement for Satellite Service: Nepal Academy of Science and Technology and NewSpace India Limited launched the Service Agreement for Munal Satellite that was created by the academy.
- This student-built satellite from Nepal will be launched on an Indian launch vehicle for free.

- **What are the main areas where Nepal and India collaborate?**

- As close neighbours, India and Nepal share unique ties of friendship and cooperation characterised by an open border and robust family and cultural ties between the people.
- Nepal and five Indian states—West Bengal, Bihar, Uttar Pradesh, and Uttarakhand—share a border spanning more than 1850 kilometres.
- The foundation of the unique ties that exist between India and Nepal is the 1950 Treaty of Peace and Friendship.
- Economic Cooperation: India not only provides transit for nearly all of Nepal's trade with third countries, but it is also the country's biggest trade partner and foreign investment source.
- Approximately two thirds of Nepal's commerce in goods and one third of its trade in services are with India.
- The Treaties of Transit and commercial, suggested modifications to current agreements, investment-boosting tactics, standardisation of standards, and the coordinated construction of commercial infrastructure were recently agreed upon by India and Nepal.
- Defence Cooperation: India has been providing equipment and training to support the Nepal Army's modernization initiatives.
- The battalion-level joint military exercise, "Surya Kiran," is held alternately in India and Nepal. In 2023, it took place at Pithoragarh, Uttarakhand.

- **Collaboration Across Cultures:**

- The first-ever India-Nepal Cultural Festival took place at Lumbini in December 2023, thanks to the efforts of the Indian Embassy in Nepal, Lumbini Development Trust, and Lumbini Buddhist University.
- With an emphasis on Buddhism, the festival highlighted the rich cultural traditions and legacy of India and Nepal.
- Water Sharing: The first major agreements that promoted India-Nepal collaboration in the water resources sector were the Koshi Agreement (1954, revised in 1966) and the Gandak Agreement (1959, revised in 1964).
- Another important agreement, the Mahakali Treaty (1996), guarantees both nations' equitable use of the Mahakali River's waters.

- Connectivity: Ten roads in the Terai region have been upgraded by India in support of Nepal. Additionally, cross-border rail lines have been established at Jaynagar-Bardibas and Jogbani-Biratnagar, and integrated check posts have been established at strategic places like Birgunj, Biratnagar, Bhairahawa, and Nepalgunj.
- Additionally, in 2021, India exported roughly 2200 MUs of power to Nepal.

- **What are the main obstacles to relations between India and Nepal?**

- Boundary issue: With regard to the Kalapani-Limpiyadhura-Lipulekh trijunction area in western Nepal and the Susta area in southern Nepal, the boundary issue has grown to be a major cause of friction in recent India-Nepal ties.
- China's Growing Footprint: In the areas of infrastructure, industrialization, human resources, health, education, and water resources, China has given Nepal financial and technical support. Growing collaboration between China and Nepal may jeopardise Nepal's status as a buffer state between China and India.
- Because of worries over India's new Agniveer system, Gorkhas, who have traditionally served in the Indian Army, may decide to enlist in China's People's Liberation Army (PLA).

- **The Way Ahead:**

- Handling Urgent Concerns: To foster goodwill and trust, give top priority to resolving urgent issues pertaining to the Agniveer Scheme.
- Create cooperative initiatives that will benefit border regions and promote a shared sense of growth.
- Diplomatic Dialogue: To resolve the boundary dispute and other difficult issues, have lengthy and transparent diplomatic talks.
- Encourage the use of Track-II diplomacy to give India-Nepal Cooperation a new direction by bringing in academia, civil society, and non-governmental organisations.

Source → The Hindu

3 - NITI Aayog's Multidimensional Poverty Index:

GS II

Government Policies and Interventions:

- **The National Multidimensional Poverty Index: What is it?**

- Twelve indicators that are associated with the Sustainable Development Goals represent the three equally weighted dimensions of health, education, and standard of living that are simultaneously deprived of in the National Multidimensional Poverty measure.
- Nutrition, maternal health, child and adolescent mortality, years of education, school attendance, fuel for cooking, cleanliness, drinking water, electricity, housing, possessions, and bank accounts are a few of these.
- The solid Alkire and Foster (AF) technique, which defines individuals as poor based on widely accepted criteria intended to assess acute poverty and offers a complementary viewpoint to traditional monetary poverty measures, is the foundation of MPI's worldwide methodology.
- On the other hand, the global MPI covers 10 indicators, and the national MPI covers 12.
- International MPI Indicators Domestic MPI Indicators
- What are the most noteworthy findings from India's Multidimensional Poverty Index for the years 2005–2006?

- **Decline in Multidimensional Poverty Overall:**

- Multidimensional poverty in India has significantly decreased, falling from 29.17% in 2013–14 to 11.28% in 2022–23—a decrease of 17.89% points.
- In the nine years between 2013–14 and 2022–23, around 24.82 crore individuals have been lifted out of multidimensional poverty. The government is credited with several steps for this improvement.

- **State-by-State Drop:**

- The states with the greatest decrease in the proportion of the population categorised as impoverished according to the MPI are Uttar Pradesh, Bihar, Madhya Pradesh, and Rajasthan.
- With 5.94 crore people emerging from multidimensional poverty, Uttar Pradesh saw the biggest drop, followed by Bihar with 3.77 crore, Madhya Pradesh, and Rajasthan.

- **Gains for Every Indicator:**

- The MPI's 12 indicators have all significantly improved, demonstrating advancements in the areas of standard of living, health, and education.

- **Deprivation Severity:**

- Compared to 2005–06 and 2013–14, the Severity of Deprivation (SoD) decreased at a marginally slower rate between 2015–16 and 2019–21.
- Deprivations that the typical multidimensionally impoverished individual experiences are measured by SoD.
- In addition, because fewer years had passed since 2015–16, the decline in the proportion of MPI poor people in the overall population was faster than it had been during the previous ten years.
- The percentage of MPI poor people in India's overall population in 2005–06 was 55.34%.

- **Reaching the SDG Target:**

- Target 1.2 of the Sustainable Development Goals (SDG) is expected to be accomplished by India well before 2030. Its goal is to "at least by half the proportion of men, women, and children of all ages living in poverty in all its dimensions according to national definitions."
- Significant progress was seen in indicators pertaining to the standard of life component, including less deprivation in cooking fuel, access to banking services, and sanitary amenities.

- **Drivers Contributed to the MPI Decline:**

- Deprivation has dramatically decreased as a result of initiatives like Poshan Abhiyan and Anaemia Mukt Bharat, which have greatly improved access to healthcare facilities.
- Under the National Food Security Act, the Targeted Public Distribution System, one of the biggest food security programmes in the world, serves 81.35 crore beneficiaries by supplying food grains to both urban and rural areas.
- The government's dedication is demonstrated by recent choices like the five-year extension of the Pradhan Mantri Garib Kalyan Anna Yojana's free food grain distribution.
- Maternal health initiatives, the distribution of clean cooking fuel under the Ujjwala Yojana, increased electricity coverage through Saubhagya, and revolutionary campaigns like Swachh Bharat Mission and Jal Jeevan Mission have all contributed to an improvement in people's quality of life and general well-being.
- Furthermore, major initiatives like the PM Awas Yojana and Pradhan Mantri Jan Dhan Yojana have been essential in promoting financial inclusion and giving the poor access to safe housing.

Source → The Hindu

4 - Evaluation of the Himalayan Wolf by the IUCN:

GS III

Environmental Conservation:

- **Which Are the Most Important Himalayan Wolf Facts?**

- **Regarding:**

- A strange predator of wolves, the Himalayan Wolf lives at great altitudes in the Himalayas.
- Its mitochondrial DNA reveals a genetic background that predates the Holarctic grey wolf, and it is distinguished by unique genetic markers.

- **Habitat:**

- At heights of 10,000 to 18,000 feet, it usually inhabits alpine meadows and grasslands. It is found in portions of China, Nepal, India, and Bhutan.
- They hunt wild sheep and goats and occasionally even prey on birds, hares, and marmots. Typically, they wander in small packs.

- **Status of Population:**

- An estimated 2,275–3,792 mature individuals make up this population, which is distributed among a subpopulation in Nepal, India, and the Tibetan Plateau.
- There are 227–378 mature people in the Indian sector, mostly in Ladakh and the Spiti Valley.

- **Status of Conservation:**

- IUCN Status: Precarious
- Schedule I of the Wildlife Protection Act of 1972

- **The IUCN Red List: What Is It?**

- The most important worldwide tool for determining the risk of extinction for plant, fungal, and animal species is the IUCN Red List.
- It is widely accessible, acts as a critical gauge of the health of the world's biodiversity, provides in-depth information on the traits, threats, and conservation strategies of each species, and is essential in forming well-informed conservation policies and decisions.
- The categories of the IUCN Red List specify the species' evaluated risk of extinction. There are nine categories: NE (Not Evaluated) through EX (Extinct). Species classified as Endangered (EN), Vulnerable (VU), and Critically Endangered (CR) are at risk of going extinct.
- It is also a crucial metric for both the Aichi Targets and the Sustainable Development Goals.
- The IUCN Green Status of Species, which evaluates population recovery and quantifies the effectiveness of conservation efforts, is a part of the IUCN Red List.
- Extinct in the Wild, Critically Depleted, Largely Depleted, Moderately Depleted, Slightly Depleted, Fully Recovered, Non-Depleted, and Indeterminate are the eight categories of Green Status.
- An evaluation of the present Red List status's impact from conservation efforts is called a Green Status assessment.

- **Why is the Himalayan wolf population always declining?**

- Habitat Destruction: The area, extent, and quality of Himalayan wolf habitat are continuously decreasing, according to the IUCN Red List Assessment.
- Depredation Conflict: Depredation conflict is a major conservation concern, given a seasonal or permanent high livestock abundance in wolf habitats that often form summer pastureland for livestock grazing.
- These conflicts result in a negative attitude towards wolf conservation and often trigger retaliatory killing.

- Hybridization with Dogs: The report pointed out that a growing problem for Himalayan wolves in Ladakh and Spiti is interbreeding with domestic dogs. This is becoming more challenging because there are more feral dogs in these areas.
- Hybridization can contribute to increased competition for resources, such as territory and prey, between wolves and wolf-dog hybrids.
- Illegal Hunting: The wolf is also illegally hunted for trade in its fur and body parts including paws, tongues, heads, and other parts. However, hunting of these wolves is not legal in all range states.

- **What Measures Should be Taken to Protect the Himalayan Wolves?**

- Secure and Restore: Securing and restoring healthy wild prey populations and landscapes and setting aside wildlife habitat refuges.
- Improve Guarding Methods: Improving livestock guarding methods, such as predator-proof corral pens and using sustainable livestock herding practices, including reduced livestock loads, adapted herding, and developing novel but tradition-based holistic management practices will enhance the conservation of wolves.
- Management of Feral Dog Populations: By managing the populations of federal dogs,the ecological balance in wolf habitats can be preserved.
- Transboundary Efforts: This trans-boundary interconnectedness is vital for the unimpeded movement of wolf populations and the safeguarding of their natural behaviors, achieved through coordinated research and monitoring initiatives.

Source → The Hindu