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Mission Integrated Biorefineries

India announces the launch of the "Innovation Roadmap of the Mission Integrated Biorefineries" at the first-ever Global Clean Energy Action Forum-2022 at Pittsburgh, in the United States.

> *The "Innovation Roadmap of the Mission Integrated Biorefineries" was developed by the co-leads of the Mission Integrated Biorefineries (India and Netherlands) with active inputs from Brazil, Canada, EC and the UK.*

- The Mission Integrated Biorefineries was launched by the Mission Innovation, and is co-led by **India and the Netherlands**.
- Its core members are Brazil and Canada, and the supporting members are the European Commission and the United Kingdom.
- The Mission aims at greater international collaboration and the need for increased **financing for Energy RD&D** (Research, Development & Demonstration) during next 5 years through public-private investment.
- The Mission's goal is to develop and demonstrate innovative solutions to accelerate the commercialisation of integrated biorefineries.
- This will be essential to
    1. Reduce greenhouse gas emissions,
    2. Improve supply chain resiliency and diversification, and
    3. Support the global transition to a net-zero economy.
- It has the **target of replacing 10% of fossil-based fuels**, chemicals and materials with bio-based Sustainable Fuels, Chemicals, and Materials (SFCM) by 2030.
- The Mission will focus on the following three pillars to achieve the goal:
    1. Supporting Research, Development & Demonstration,
    2. Accelerating Pilots and Demonstrations
    3. Improving Policy and Market Conditions

Mission Innovation

- Mission Innovation (MI) is the inter-governmental platform addressing clean energy innovation through action-oriented cooperation.
- It is a global initiative catalysing a decade of action and investment in research, development and demonstration to **make clean energy affordable, attractive and accessible for all**.
- This will accelerate progress towards the Paris Agreement goals and pathways to net zero.

- Mission Innovation is a global initiative of **22 countries** and the **European Commission** (on behalf of the European Union).
- India is a member of Mission Innovation.
- Mission Innovation 1.0 was launched alongside the Paris Agreement in 2015.
- Mission Innovation 2.0 was launched in 2021.

Reference

1. https://www.pib.gov.in/PressReleasePage.aspx?PRID=1861671
2. https://explore.mission-innovation.net/mission/integrated-biorefineries/#]
3. http://mission-innovation.net/wp-content/uploads/2022/09/Integrated-Biorefineries-Mission-Innovation-Roadmap.pdf
4. http://mission-innovation.net/
5. https://gceaf.org/about-page/

AgriAdapt

A free online tool named 'AgriAdapt' was launched to help farmers plan their activities based on climatic conditions.

- AgriAdapt was developed by the World Resources Institute (WRI) and National Agro Foundation (NAF).
- The aim of the tool is to direct farmers towards potential farming activities that change in climate.
- This tool make farmers to understand the conditions that impact their farm, so to make more business.
- It communicates the data's to farmers through **maps** in the regional language.
- This maps allow users to visualise datasets with a single click on a specific region and gets information on its climate and conditions.
- **Satellites and International organisations** deliver data's from collecting information on climate and land suitability.
- The tool's feature is to target three crops :
    1. Rice (Tamil Nadu)
    2. Cotton (Andhra Pradesh)
    3. Coffee (Colombia)

Reference

1. https://www.thehindu.com/news/cities/chennai/chen-social/tool-to-help-farmers-prepare-for-climate-change-launched/article65941773.ece

VSHORADS Missile

The DRDO completes two successful test flight of Very Short Range Air Defence System missile from a ground based portable launcher.

- It is a Man Portable Air Defence System (MANPAD).
- It was designed and developed by the Research Centre Imarat (RCI), Hyderabad, a laboratory of the Defence Research and Development Organisation (DRDO).

- It is a **Short Range Air Defence** with a 20kg missile, 25 kg tripod stand and 20-25 NG (National Guard).
- It contains many technologies including small-sized **Reaction Control System (RCS) and Integrated avionics**.
- It is meant for balancing low altitude aerial threats at short ranges by a dual thrust solid motor.
- The design of the missile including launcher has been highly enhanced to ensure for easy usage.

Reference

1. https://pib.gov.in/PressReleasePage.aspx?PRID=1862617
2. https://economictimes.indiatimes.com/news/defence/drdo-conducts-successful-test-flight-of-vshorads-missile/articleshow/94486305.cms

Nilgiri Sholakili

Recently found in high altitudes of the Shola forests, wildlife biologist seeks more support for research on Nilgiri Sholakili.

- Nilgiri blue robin (*Sholicola major*) or Nilgiri Sholakili is a dumpy little bird, slat-blue with a tan belly.
- It is highly restricted and spread over, found at 900-2100 m of elevation in shola forests in upper Nilgiris.

Sholas are patches of stunted montane forest separated by open grassy areas.

- **Habitat** - It prefers to live in highly threatened habitats and near streams.
- Any change to these areascould bring trouble in the future.
- **Threats** - Habitat loss and climate change.
- **Protection Status** - Endangered (IUCN)
- Other endemic bird in the Nilgiris - Nilgiri laughing thrush (Montecincla cachinnans), which is an '**endangered'** species.

Reference

1. https://www.thehindu.com/news/cities/Coimbatore/the-disappearing-song-of-the-nilgiri-sholakili/article65941180.ece
2. https://ebird.org/species/whbsho1?siteLanguage=en_IN

Thermokarst Lake

Newly formed thermokarst lakes in Alaska are releasing methane bubbles.

- **Methane** is the primary contributor for formation of ground-level ozone and a

hazardous air pollutant.
- It is a greenhouse gas and 80 times more powerful at warming than carbon dioxide.
- It has a shorter atmospheric lifetime than carbon dioxide, methane is responsible for 30% rise in global temperatures.
- **Formation of Thermokarst Lakes** - In Alaska, new lakes are emerging due to permafrost and release of methane into the atmosphere like Big Trail Lake.
- Permafrost can also form under-lake chimneys that allow methane to escape from underground.

Permafrost is a massive wedges of ice locked within the ground that stays frozen all year around.

- When ice melts the surface collapses and forms a sinkhole that is filled with water, creating a thermokarst lake.
- The methane bubbles emerging from these newly formed lakes are caused by microbial activity.
- The microbes digest the dead plants and organic matter in the frozen ground, which produces carbon dioxide and methane.
- As it is a flammable gas by lighting the collected gas sample from the lake we can test if the lake is emitting methane or not.
- These types of lakes are abundant in the Arctic where the lakes are hundreds or thousands of years old.

Reference

1. https://www.thehindu.com/sci-tech/energy-and-environment/newly-formed-lakes-in-alaska-is-releasing-bubbles-full-of-methane/article65937494.ece
2. https://blogs.nasa.gov/earthexpeditions/2022/09/22/alaskas-newest-lakes-are-belching-methane/

IOR+ Conclave

Alongside the DefExpo 2022, scheduled to be held in Gandhinagar, a separate Indian Ocean Region plus (IOR+) conclave will also be held.

- Indian Ocean Region plus (IOR+) will consist of approximately 40 countries.
- IOR+ Conclave is an initiative to promote dialogue in an institutional, economic and cooperative environment that can foster the development of peace, stability and prosperity in the Indian Ocean Region.
- **Related Links** - Indian Ocean Rim Association, Indian Ocean Naval Symposium, Indian Ocean Commission

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