Daily News Juice 2nd Oct, 2024

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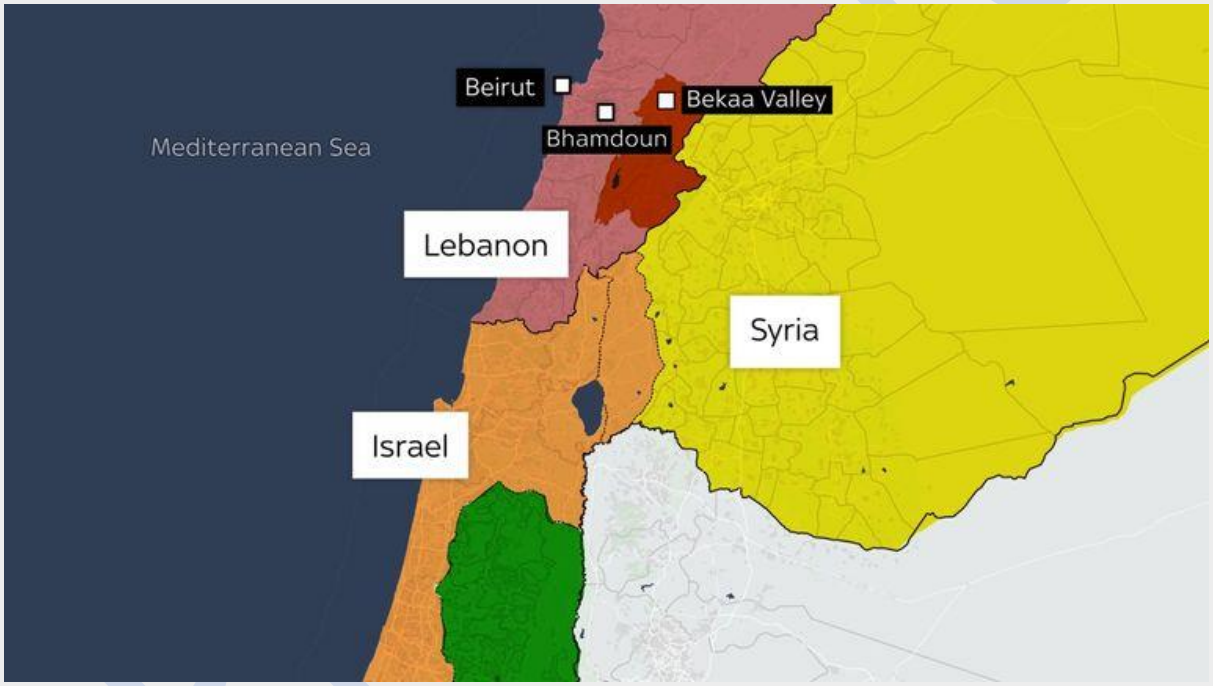
1. After Nasrallah's assassination: Key points from Israel's attack on Hezbollah's leader

1. Nasrallah's Assassination: Hasan Nasrallah, Hezbollah's leader for over 30 years, was killed in an Israeli airstrike in Beirut. This is seen as a major victory for Israel, comparable to the killing of Osama bin Laden.



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2. Impact on Hezbollah: Nasrallah's death weakens Hezbollah significantly, especially after Israel already targeted many of its senior leaders, damaging its command and control structures.

3. Iran's Role: Hezbollah, Iran's strongest proxy in the region, has been hit hard. Its future depends largely on Iran's next steps and how it supports the group moving forward.

4. Lebanon's Situation: Hezbollah's influence in Lebanon may weaken as the group faces internal challenges, including declining support from the Lebanese public.

5. Regional Dynamics: Nasrallah's killing could either escalate the conflict or lead to a reduction in tensions, depending on Iran's response. Saudi Arabia, UAE, and Qatar are monitoring the situation closely.

6. India's Concerns: India wants stability in the region to ensure the safety of its citizens and secure energy supplies, as two-thirds of its energy needs come from West Asia.

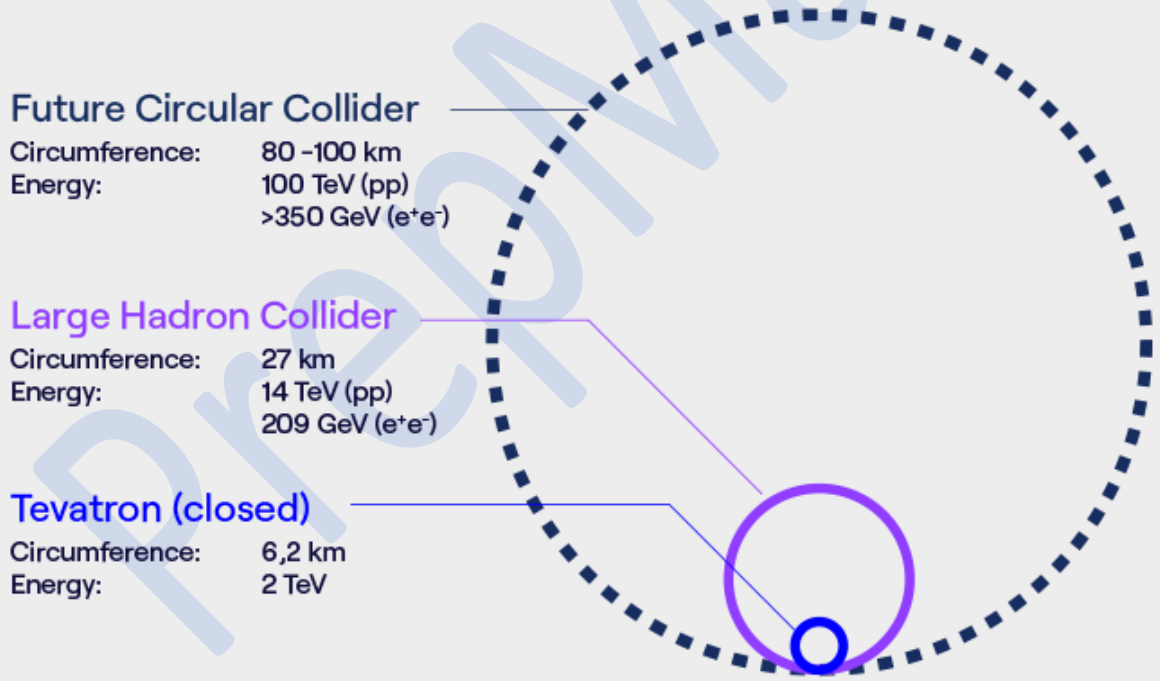
7. Uncertain Future: The conflict could continue depending on Iran's actions and the status of ongoing issues, like the release of hostages held by Hamas.

Relevance: GS Prelims & Mains Paper II; International Relations
Source: Indian Express

2. CERN's Ambitious Plan: Future Circular Collider (FCC)

Overview

CERN plans to build a 90 km-long particle accelerator, the Future Circular Collider (FCC), three times the size of the current Large Hadron Collider (LHC). It aims to further explore the Higgs boson and other fundamental particles.



Cost and Criticism

The estimated $17 billion cost has sparked debate, with some arguing the money could be better spent on urgent global issues like malaria or climate change. Critics, like physicist Sabine Hossenfelder, see it as a high-risk, low-reward project.

Importance of the Higgs Boson

Discovered in 2012, the Higgs boson, often called the "God particle," explains why particles have mass and reveals insights into the universe's origins. Its study is key to understanding fundamental forces and dark matter.

Unanswered Questions
Despite the 2012 discovery, scientists believe the Higgs boson still holds secrets about the universe's formation, the nature of dark matter, and the imbalance between matter and antimatter.

Global Competition
CERN faces competition from China, which proposed a larger collider, while the U.S. and Japan have scaled back their own plans. CERN's research remains globally significant.

Environmental and Technical Challenges
If approved, the FCC will take decades to build and will generate large amounts of excavated materials. CERN is focused on minimizing environmental impact and exploring ways to reuse energy for local communities.

Broader Scientific Impact
CERN's research has driven advancements in fields like big data, quantum computing, and superconducting magnets. It also birthed the World Wide Web, showing the broader value of basic research.

Relevance: GS Prelims; Science & Techology
Source: Indian Express

3. The Problem of Farm Fires in Punjab and Haryana

Introduction
Farm fires in Punjab and Haryana are caused by the narrow window between paddy harvesting and wheat sowing. Farmers often burn crop stubble to quickly prepare fields, contributing to severe air pollution in northern India. A long-duration rice variety, Pusa-44, is a major contributor to this issue due to its late harvest.

Pusa-44: A High-Yield but Problematic Variety
Pusa-44 is a popular rice variety due to its high yield of 35-36 quintals per acre, outperforming competitors like PR-126. However, Pusa-44 takes 155-160 days to mature, leaving farmers with little time to prepare for wheat sowing. As a result, many resort to burning stubble, which is quicker and cheaper than using expensive machines to clear the fields.

The Search for a Solution: Pusa-2090
To address this problem, the Indian Agricultural Research Institute (IARI) has developed a new rice variety, Pusa-2090, which matures in 120-125 days—much faster than Pusa-44. This early maturity reduces the need for stubble burning by giving farmers more time to prepare their fields for wheat or other crops.

Benefits of Pusa-2090

Pusa-2090 has several advantages:

• It yields 34-35 quintals per acre, almost as high as Pusa-44, but matures 35 days earlier.
• Early maturity leads to water savings, requiring 5-6 fewer irrigations compared to Pusa-44.
• The variety has a strong stem, making it resistant to lodging (bending over or falling due to wind or rain).
• It is highly responsive to nitrogen, similar to Pusa-44, which helps maintain high productivity.

Farmer Feedback

Farmers like Harpreet Singh have begun planting Pusa-2090 and are optimistic about its potential. Singh, who previously grew Pusa-44, has switched to Pusa-2090 on 10 acres, expecting a yield of 35 quintals. The earlier harvest gives him time to plant other crops like potatoes or wheat.

The Future of Pusa-2090

Farmers and seed entrepreneurs believe Pusa-2090 could replace Pusa-44, especially since the latter is banned due to its environmental impact. If Pusa-2090 can consistently deliver high yields and meet milling quality standards, it could help reduce farm fires and improve air quality in northern India.

Relevance: GS Prelims & Mains Paper III; Environment
Source: Indian Express