

1. Story of NavIC: crucial indigenous SatNav system, a few hurdles in development path**Indian Regional Navigation Satellite System**

The Indian Regional Navigation Satellite System (IRNSS), operationally referred to as the Navigation with India Constellation (NavIC) system, was conceived in 1999 following the war in Kargil. During this war, India's military could not use the American Global Positioning System (GPS) in the conflict zone. (India and the US now cooperate in many fields, and Washington has approved the system.)

The construction of seven-satellite constellation serving both defence and civilian needs started with the launch of first satellite in 2013.

Eleven years later, however, only five of the 11 satellites launched in the NavIC program – including replacements for failed satellites – are fully operational.

What went wrong recently?

India's space agency reported the partial failure of its NVS-02 navigation satellite due to the non-firing of its engines in space. As a result, the satellite was left in a sub-optimal orbit around Earth. Sub-optimal orbit means that the satellite could not be placed in the intended orbit. This satellite was launched on 29th January, 2025.

What happened to other failed satellites?

Mid-2016 onward, there were reports of failures of the rubidium atomic clocks used in several navigation satellites. There are three atomic clocks on each IRNSS satellite.

Satellites rely on highly accurate atomic clocks like rubidium clocks to precisely time the signals they send, which is essential for calculating distances and thus, locations on Earth.

If the rubidium clocks on a satellite fail, the satellite's ability to accurately pinpoint location data is significantly compromised, leading to inaccurate GPS readings and potentially major disruptions in navigation systems reliant on that satellite.

Few other satellites launched were lost in the accidents during their journey itself.

Why is the IRNSS/ NavIC system important for India?

The NavIC satellites provide two types of services – Standard Positioning Service which is for general and commercial use, and Restricted Service which is meant for the defence forces – over the Indian landmass and neighbouring regions.

A primary reason to develop an indigenous satellite navigation system like the IRNSS despite the existence of global systems such as the GPS (US), GLONASS (Russia), Galileo (Europe), Beidou (China), and QZSS (Japan), is the reliability that it offers in defence use.

Relevance: GS Prelims & Mains Paper III; Science & Technology

Source: Indian Express

2. Proposed new scoring system for Badminton

Introduction

A new scoring system could be in place for badminton, as the Badminton World Federation has said this week that its chief decision-making body (BWF Council) has endorsed the 3×15 scoring system to replace the current 3×21 system.



What is the 3×15 system?

The 3×15 is already defined as part of the 'Alternative Laws of Badminton' – in simple terms, a match will consist of the best of three games. The game shall be won by the side that first scores 15 points (instead of the current 21).

What happens at 14-14? We will continue to play on till one side gains a two-point lead first. In the current scoring system, 29-29 becomes the decisive point in a game, which will now change to 20-all. So the side scoring the 21st point will win the game.

Will this rule change be immediate?

There is some time yet. The BWF Council has only approved a plan where the 3×15 will be tested at selected Continental Championships, Grade 3 tournaments, national and international leagues, and national tournaments. The testing period is set to be approximately April to September/October 2025.

What are the reasons for this proposed change?

The BWF has listed three main factors. a) more exciting points and a higher probability that each point is more exciting; b) Getting to more exciting points sooner; c) the shorter matches will lead to better scheduling and help sustain fan interest while also helping with player health and longevity.

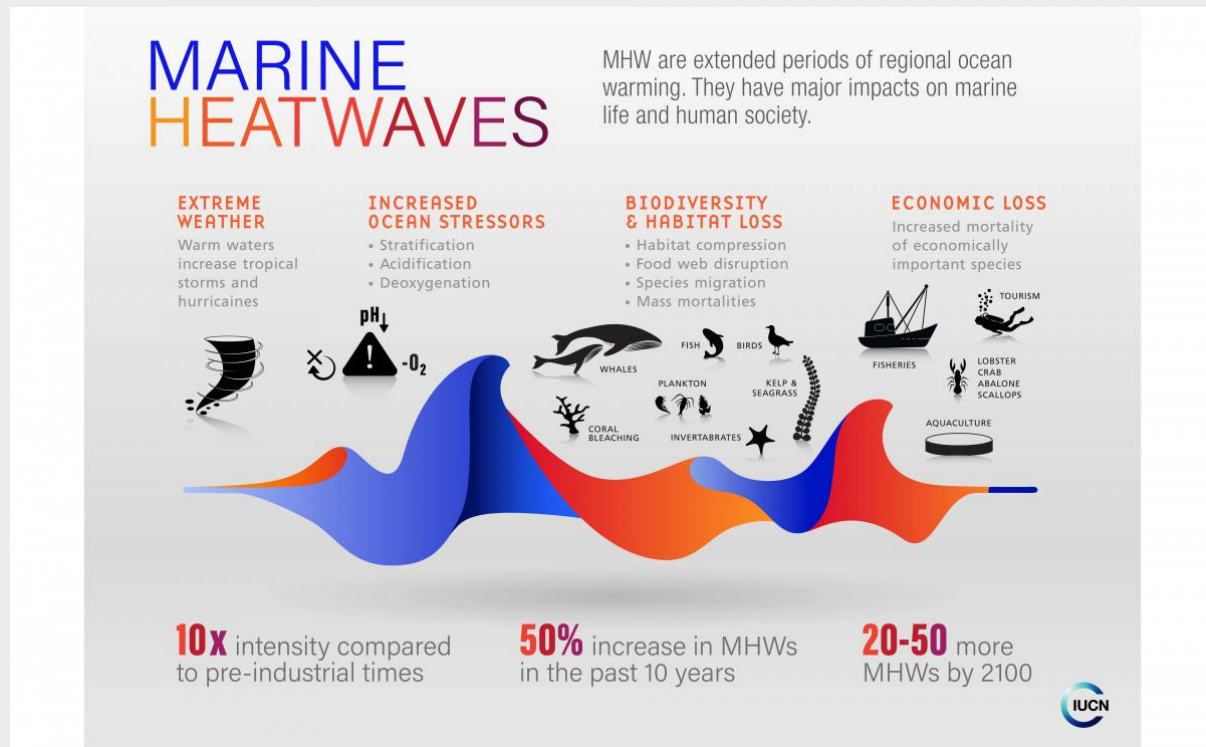
Relevance: GS Prelims

Source: Indian Express

3. How the climate crisis has intensified marine heatwaves across the world

Why in News?

The marine heatwaves (MHWs) are linked to the death of more than 30,000 fish off the coastal Western Australia in January 2025.



What are marine heatwaves?

A marine heatwave is an extreme weather event. It occurs when the surface temperature of a particular region of the sea rises to 3 or 4 degrees Celsius above the average temperature for at least five days. MHWs can last for weeks, months or even years. In the past few decades, MHWs have become longer-lasting, more frequent, and intense.

Why have marine heatwaves intensified?

The primary reason is the climate crisis. As global temperatures have soared to 1.3 degrees Celsius above the pre-industrial levels, 90% of the extra heat has been absorbed by the ocean. This has increased the global mean average sea surface temperature (SST) by close to 0.9 degrees Celsius since 1850, and the rise over the last four decades is around 0.6 degrees Celsius. As a result, MHWs have become more frequent, long-lasting, and severe.

What is the impact of marine heatwaves?

Marine heatwaves (MHWs) can be devastating for marine life. For example, the 2010-11 MHWs in Western Australia caused large-scale fish kills — the sudden and unexpected death of many fish or other aquatic animals over a short period and mainly within a particular area. It also destroyed kelp forests and fundamentally altered the ecosystem of the coast. Kelps usually grow in cooler waters, providing habitat and food for many marine animals.

These heatwaves contribute to coral bleaching, which reduces the reproductivity of corals and makes them more vulnerable to life-threatening diseases. Thousands of marine animals depend on coral reefs for survival and damage to corals could, in turn, threaten their existence.

Relevance: GS Prelims & Mains Paper III; Environment

Source: Indian Express

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