

India's Protein Sovereignty

Mains: GSII – Health

Why in News?

The recently released Protein Sovereignty Index, developed by Full Circle Biotechnology, highlights vulnerabilities in countries' protein supply chains.

What is Protein Sovereignty?

- **Protein sovereignty** – A country's ability to ensure reliable, affordable and sustainable protein supplies despite trade, production and input disruptions.
- **Importance of protein** – Protein supports growth, tissue repair, and muscle maintenance and hormone production; deficiency can cause malnutrition, especially in children.

Protein Sovereignty Index (PSI)



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Classification of Countries	
Category	Countries
Sovereign	Canada
Resilient	Argentina, USA, Australia, Russia, Brazil, New Zealand, Norway
Exposed	India, China, UK, Chile, South Africa, Vietnam, Peru, Indonesia
Dependent	Japan, South Korea, Egypt
Critically exposed	Gulf states

Key Facts



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Assessment
Evaluates 43 countries and regions on their ability to maintain an affordable and reliable protein supply during disruptions.



India's Rank
17th, with a score of 62.1/100; classified as '**Exposed**'.



Top performer
Canada ranked first with a score of 82.8 and was the only country classified as '**Sovereign**'. Argentina ranked second and the United States third.



What are the Major Vulnerabilities in India's Protein Supply?

- **Dependence on Imported Fertilisers** –

- **Import dependence** - 68.6% of fertiliser supply by value comes from foreign sources.
- India imports over 90% of its rock phosphate and depends on imported natural gas for urea production.
- **External shocks** - Strait of Hormuz disruptions, global price volatility and rising fishmeal costs threaten agricultural and aquaculture production.
- **Rising Pulse Import Dependence -**
 - India imported a record 7.34 million tonnes of pulses in 2024-25, accounting for about one-fifth of domestic supply.
 - Pulse cultivation declined from 30.6 million hectares (2021-22) to 26.9 million hectares (2024-25), increasing import dependence.
- **Water Stress and Unsustainable Agriculture -**
 - Groundwater supports nearly 60% of irrigation, increasing vulnerability to groundwater depletion.
 - Renewable freshwater availability is 1,014 cubic metres per person, below the water-stress threshold of 1,700 cubic metres.
- **Affordability and Nutritional Inequality**
 - 520.1 million Indians (35.5%) could not afford a healthy diet in 2025, according to SOFI 2026.
 - The richest 10% consumed 1.5 times more protein than the poorest 10%, whose egg, fish and meat intake reached only 38% of recommendations.

What are the Implications for India?

- **Food security** - Import disruptions and price shocks can affect the availability and affordability of protein-rich foods.
- **Agricultural resilience** - Dependence on imported fertilisers and energy exposes domestic production to geopolitical and global market uncertainties.
- **Environmental sustainability** - Groundwater depletion threatens long-term agricultural productivity and the stability of food supplies.
- **Public health** - Inadequate access to diverse protein sources can worsen malnutrition and nutritional deficiencies.
- **Economic inequality** - Rising food prices disproportionately affect low-income households, widening nutritional disparities.

What measures can be taken?

- **Diversify fertiliser supplies** - Strengthen domestic fertiliser production, improve supply-chain resilience and diversify import sources.
- **Promote pulses** - Expand pulse cultivation through improved seeds, assured procurement, better storage and remunerative prices.
- **Adopt sustainable agriculture** - Promote micro-irrigation, rainwater harvesting, groundwater management and climate-resilient farming.
- **Diversify protein sources** - Encourage pulses, dairy, eggs, fish and other locally available nutritious foods according to regional dietary preferences.
- **Improve affordability** - Strengthen nutrition programmes, food distribution systems and access to affordable protein-rich foods for vulnerable households.

- **Invest in research** – Develop climate-resilient crops, improve agricultural input efficiency and support sustainable fisheries and aquaculture.

What lies ahead?

- India's protein challenge extends beyond domestic food production to the resilience of agricultural inputs, sustainable resource management and equitable access to nutrition.
- Strengthening protein sovereignty requires an integrated approach that combines import diversification, pulse self-sufficiency, and affordable nutritious diets.

Reference

[Down To Earth| India's protein supply exposed to import dependence](#)

