

# Strategic Analysis Paper

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## Hunger Amid Abundance: The Indian Food Security Enigma

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### Key Points

- Various food assistance policies, which have existed since the 1940s, guarantee that Indians have access to food. A lack of dietary diversity, however, means that many of the poorest members of Indian society continue to have nutritional deficits.
- Water mismanagement in states that provide 20 to 30 per cent of India's food supply, could undermine food security if the situation does not improve.
- Subsidies for agricultural inputs, such as fuel and fertilisers, disproportionately benefit large landowners and encourage wasteful usage of those inputs. They are also failing to lift the productivity of Indian farms.
- While the Indian population is broadly food secure at present, these challenges could undermine food security in the long term.

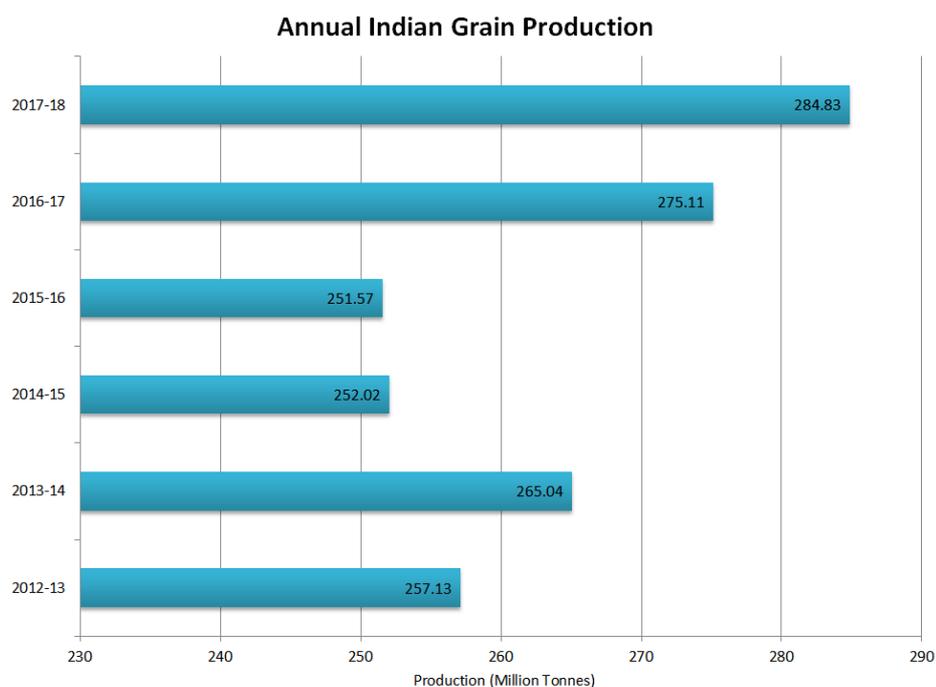
### Summary

India is self-sufficient in a number of food crops including rice and wheat, which are among the national staples, and there is enough food to meet demand. Despite this, hundreds of millions of Indians have poor nutritional health. India has been successful in ensuring that its population has access to food, but it has failed to ensure that it includes the necessary diversity in the types of food available. Micronutrient deficiencies are common in India, mainly as a result of a focus on calorie availability and not dietary diversity. Poor water management and subsidies that encourage wasteful practices in agricultural production could come to present a threat to Indian food security.

## Analysis

According to a [Food and Agriculture Organization](#) Policy Brief prepared in 2006, food security is achieved ‘when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life’. There are four aspects to food security: food availability, access to food, food utilisation and stability. For a community to be food secure, it must: have enough food available to it, be able to easily access enough of that food to remain healthy (including a sufficiently diverse diet that provides adequate levels of micronutrients) and it must be confident that those conditions will persist into the future.

India achieved self-sufficiency in food grains in the 1970s. Since the mid-1990s it has consistently been able to ensure that there is enough food (in terms of calories) available to feed its entire population. It is the [world’s largest producer](#) of milk, pulses and [millets](#), and the second-largest producer of rice, wheat, sugarcane, groundnuts, vegetables, fruit and cotton. Annual grain production has also remained relatively stable, with a decline in production between 2014 and 2016 caused by drought.



2014-15 and 2015-16 were drought years

Source: Indian Ministry of Agriculture and Farmers' Welfare

The government procures some of that grain for distribution to the poor. India’s attachment to that food security programme is one of the [impediments](#) to further progress in the World Trade Organization’s Doha Development Round. In 2018-19 it plans to purchase a record [35 million tonnes of wheat](#), which is more than can be stored in government-owned facilities. If the grain is improperly stored, in facilities that fail to provide protection from pests or water, a lot of it will be wasted. Some of the grain in government-operated storage facilities is already wasted due to poor practices. It is estimated that about [62,000 tonnes of stored](#)

[grain](#), mainly rice and wheat, were damaged between 2011 and 2017 due to pest infestations and exposure to rain.

After a number of famines in the first half of the twentieth century, India established the Public Distribution System (PDS) in the 1940s. It was originally designed as a universal subsidy for cereals, which were purchased by the Indian Government from farmers at guaranteed prices, for sale to citizens at standardised prices. In 1997, it was changed to a mechanism that specifically targeted those Indians living below a poverty line determined by the government. Households that fell below the poverty line were given the opportunity to purchase up to ten kilograms of subsidised cereals (mostly wheat and rice) per month.

In 2013, the Indian Government passed the National Food Security Act (NFSA), which specifies that all Indians have the right to food security. The legislation allows eligible households to purchase up to five kilograms of cereals per person, at even lower prices than before (three rupees per kilogram of rice, two rupees per kilogram of wheat and one rupee per kilogram of coarse grains – one Indian rupee is equal to \$0.20).

Under the scheme, the Indian Government purchases food grains at a Minimum Support Price, which is designed to financially support farmers. Up to one-third of India's wheat and 15 per cent of its rice output are [bought by the government each year](#). That grain is then distributed to Fair Price Shops, where ration card holders can buy subsidised food. The NFSA is one of the world's largest social security programmes and [810 million Indians are eligible](#) to purchase the food that it provides.

Various indicators of nutrition in India, however, suggest that it has failed to achieve adequate rates of food security. For example, [36 per cent](#) of children under the age of five are underweight (too light for their age) and [21 per cent](#) are wasted (too light for their height). Vitamin deficiencies are common in India, with [75 per cent](#) of the population not getting enough from their food intake. Rates of anaemia are also high, as [51 per cent](#) of women of reproductive age have low levels of iron.

While poverty and wealth inequality are often identified as major causes of food insecurity, they appear to play less of a role in South Asia. Economic growth and poverty reduction have not significantly improved South Asian nutrition, as they have in sub-Saharan Africa. That phenomenon is known as the "[South Asian enigma](#)". Poorer countries, such as Ethiopia, which are, on a per capita basis, much poorer than India, [have lower levels of malnutrition](#). Food security policies in India are very generous and ensure that the poorest members of society receive enough food to survive. Those policies are focussed on calorie availability, however, and fail to promote the level of dietary diversity necessary to avoid high rates of malnutrition.

In a bid to diversify the diets of those who rely on the PDS, the Indian Government announced, in April 2018, that [millets would be distributed through the system](#) in addition to wheat and rice. Improved education about the importance of a diverse diet, combined with the continuation of food subsidy programmes, should see Indian nutritional outcomes improve. Other factors, such as water mismanagement and wasteful agricultural practices, however, could still pose threats to food security in the long term.

Indian agriculture depends on the two monsoon seasons, as most farms are rain-fed. The main monsoon (known as the south-west monsoon) occurs between June and September. It accounts for almost [80 per cent](#) of the country's rain. The north-east monsoon, which occurs between October and December, is the main source of water for southern India. It provides water to Andhra Pradesh, Tamil Nadu, Kerala and Karnataka. Anticipated warmer temperatures in the Indian Ocean, however, could [weaken the hydrological cycle](#), resulting in weaker south-west monsoons and less rainfall.

While some Indian agricultural systems do draw water from the rivers that are fed by snowmelt from the Hindu Kush Himalayan region, this source is less important for most of India's agricultural regions.

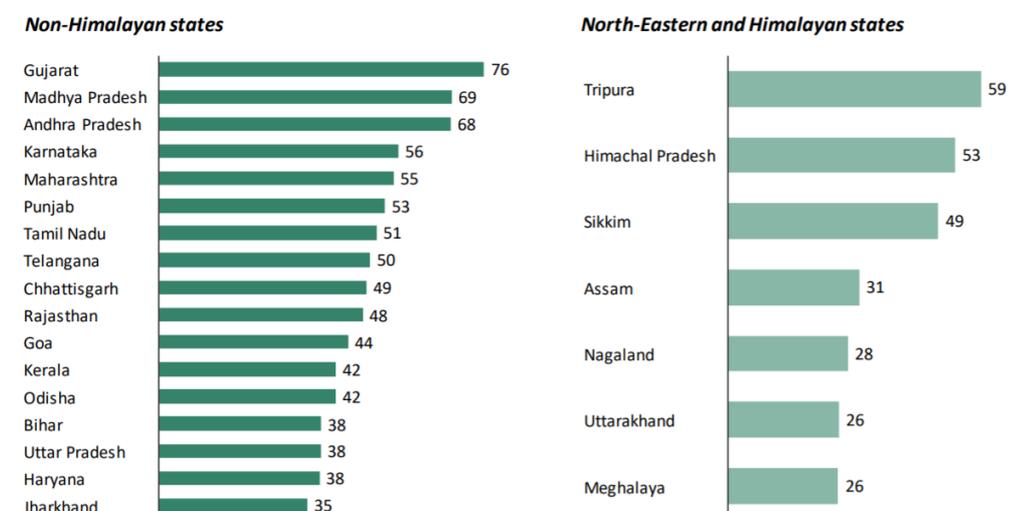
NITI Aayog, a research institute affiliated with the Indian Government, [claims](#) that 'India is suffering from the worst water crisis in its history'. It also states that 'the crisis is only going to get worse. By 2030, the country's water demand is projected to be twice the available supply, implying severe water scarcity for hundreds of millions of people and, an eventual ~6% loss in the country's GDP'.

Water shortages in urban areas, such as [Chennai](#), [Shimla](#) and [Delhi](#), receive considerable attention and make international news headlines, but rural areas also suffer from water insecurity. Between [85 and 90 per cent](#) of all the water consumed in India is used by the agricultural sector. As surface water sources become polluted or inaccessible, farmers begin to use groundwater instead. A [quarter](#) of all the groundwater consumed globally is used in India and, mainly due to the [inefficient use of that water](#), there is a strong chance that almost two-thirds of the aquifers in the country will be in a [critical state by 2032](#).

Indian states are ranked according to how well they manage their water resources; the following chart indicates that there is room for improvement in all cases.

### **All states can do better**

**State-level performance on water resource management**  
 Ranking of states according to Composite Water Index Scores (FY 16-17)



**Water Index scores vary widely across states, but most states have achieved a score below 50% and could significantly improve their water resource management practices.**

Source: Niti Aayog, 'Composite Water Management Index: A Tool for Water Management', June 2018

Together the lowest performing states on the index are home to about half of the Indian population (some 600 million people) and are the country's breadbaskets. The populous northern states of Uttar Pradesh, Rajasthan, Bihar and Haryana, account for between 20 and 30 per cent of Indian agricultural output. Persistent poor water management in those states poses a considerable risk to food and water security.

India has the [largest area of land under cultivation](#) (almost ten per cent of the global total), surpassing both the United States and China. The level of agricultural productivity (the yield from that land), however, falls far short when compared to outputs in those countries. The difference between India, the US and China suggests that there is ample room for India to improve in this respect, too.

### Yield of Selected Crops (Tonnes per Hectare)

	India	United States	China
Barley	2.67	3.91	4.06
Corn	3.12	11.08	6.11
Millets	1.27	2.02	2.44
Rice	3.85	8.41	6.92
Soybean	1.04	3.30	1.79
Sugarcane	69.74	82.41	76.15
Wheat	3.22	3.11	5.48

**Source: Food and Agriculture Organization, FAOSTAT, 2017**

Attention was drawn to this "yield gap" in the Indian Ministry of Finance's 2015-16 Economic Survey, which [suggested](#) that:

Agriculture requires a new paradigm with the following components: increasing productivity by getting "more from less" especially in relation to water via micro irrigation; prioritising the cultivation of less water-intensive crops, especially pulses and oil-seeds; ... and reinvigorating agricultural research and extension in these crops.

In the years since that survey was published, little effort has been expended to create that new paradigm.

Almost [20 per cent](#) of the Indian budget is spent on measures designed to suppress domestic food prices, support farmers and maintain import trade barriers. While some of that money is spent on the PDS, a considerable amount is also spent subsidising fuel and fertilisers for farmers. Those subsidies disproportionately benefit owners of large landholdings. Most Indian farmers possess [less than one hectare of land](#), which, according to the Indian National Sample Survey Office, is not enough to achieve food security through subsistence farming. Those subsidies can also [encourage farmers to continue growing crops](#) regardless of market demand. For example, at a time when both domestic and international markets are

oversupplied with sugar, government assistance encourages farmers to continue producing more.

When India established its food assistance scheme in the 1940s, a lack of food was the primary cause of food insecurity. In recent decades India has achieved food self-sufficiency, it now has enough food to meet domestic demand (at least in terms of calories). The PDS ensures that Indians have enough calories to survive, but it does not ensure the dietary diversity that is necessary for the maintenance of a healthy life. While efforts are being made to improve the PDS, water mismanagement, changing climatic conditions, limited agricultural productivity and wasteful farming practices, are likely to continue to pose challenges to Indian food security.

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*Any opinions or views expressed in this paper are those of the individual author, unless stated to be those of Future Directions International.*

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