Can India Achieve SDG 2 – Eliminate Hunger and Malnutrition by 2030

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The Post-2015 Development Agenda links hunger, nutrition and agriculture under the SDG framework...
Goal 2: Zero Hunger  Specific Targets for 2030

1. End hunger & ensure access to safe, nutritious & sufficient food
2. End all forms of malnutrition, including child stunting & wasting by 2025
3. Double agricultural productivity & incomes of small scale producers
4. Ensure sustainable production systems & adaptation to climate change & extreme weather events
5. Maintain genetic diversity of cultivated plants & domesticated animals
### Undernourishment

<table>
<thead>
<tr>
<th>Period</th>
<th>Number of people undernourished (millions)</th>
<th>Prevalence of undernourishment (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-92</td>
<td>210.1</td>
<td>23.7</td>
</tr>
<tr>
<td>2014-16</td>
<td>199.8</td>
<td>15.3</td>
</tr>
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<td></td>
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<td>11.9</td>
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</tbody>
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- **WFS target**
- **MDG target**

*Source: FAO (1990-92 data: State of Food Insecurity 2015; 2014-15 data: FAOSTAT)*

### Poverty

<table>
<thead>
<tr>
<th>Period</th>
<th>Poverty headcount ratio at $1.90 a day (2011 PPP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>45.9</td>
</tr>
<tr>
<td>2011</td>
<td>21.2</td>
</tr>
<tr>
<td></td>
<td>23</td>
</tr>
</tbody>
</table>

*Source: World Development Indicators*
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Malnutrition by Global Region

Underweight

Stunting


Malnutrition Trends in India
1992 - 2016

Share of children who are stunted, underweight, and wasted. (Data source: NFHS, 2015-16).
District Variation in Child Malnutrition

Children under 5 Who Are Stunted (%)

Children under 5 Who Are Underweight (%)

Prevalence of overweight adults increasing

Share of men and women who are overweight and obese. (Data source: NFHS, 2015-16).
Spatial Distribution in Adult Malnutrition

Women Whose BMI is Below Normal (%)

Women Who Are Overweight or Obese (%)

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Smallholder farms are central to achieving SDG2

Average Share of Agricultural Holdings by Land Size Class

Data Source: FAO
Regional Distribution in Landholding size

Share of Gross Cropped Area in Land Holdings ≥ 10 ha

Share of Gross Cropped Area in Land Holdings < 1 ha

Double productivity & incomes – issues to consider

- Prospects for doubling crop yields – staple grains, pulses, etc
- Increase crop intensification
- Diversification of production systems – crops and livestock
- Increase efficiency of input use & TFP
- Rural non-farm employment
Significant Opportunities to Boost Productivity

Cropland distribution and average annual yield

Global Trends in Cereal Yields


National Yield Trends by Crop

Intensification is constrained by the widespread reliance on Rainfed Agriculture.

Rainfed areas are significant in scale, production, and livelihood impact. 61% of India's farmers rely on Rainfed Agriculture. 55% of gross cropped area is rainfed in India.

Rainfed area, though it has been neglected in terms of public investment, contributes: 40% rice, 89% millets, 73% cotton, 69% oilseed, 88% pulses.

Source: Revitalising Rainfed Agriculture (RRA) Network
Changing Diets Provide an Opportunity for Diversification of Production Systems

Share of calorie intake from non-cereals (rural numbers). (Data source: NSSO, 2014).

Share of food expenditure on non-cereals (rural numbers). (Data source: NSSO, 2014).
Supply of diversity is low despite rising prices for non-staples

Double productivity & incomes – issues to consider

- Prospects for doubling crop yields – staple grains, pulses, etc
- Increase crop intensification
- Diversification of production systems – crops and livestock
- Increase efficiency of input use & TFP
- Rural non-farm employment
Transformation of urban food markets creates new farm and non-farm jobs

Photo Sources
Left photos: Kiera Crowley
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Water is running out in some of the most productive areas of the country

Stage of Groundwater Development
(Total Draft/Total Available)

Data source: Central Groundwater Board, 2013.
Emerging Climate Change Risks to Agricultural Productivity

- Anticipated rise in temperatures could pose threats to the Kharif season crop in the north and the Rabi crop in the east & south

Source: Asha Sharma & Prabhu Pingali (2017)
Increased incidence of extreme climate events

**DROUGHT**

The order of the day?

One-third of India’s total districts faced more than four droughts in the past decade. According to government data, the drought-prone area of the country has increased by 57 per cent since 1997.

- **23** major droughts during 1871-2015
- **150** years India’s experience of organised drought management
- **68%** of sown area is subject to varying degrees of drought every year
- **50** million people affected by drought every year
- **750-1,125** mm annual rainfall most drought-prone areas get. The national average is **1,183 mm**

*Source: DownToEarth*
Agriculture is also a contributor to Climate Change

Green House Gas Emissions

Food Security Impacts of Climate Change

- **Increased cost of production** – disease ecology change in plants and animals

- **Income losses** due to yield reduction and post harvest losses

- Even crops suited for warmer climates will see a drop in yields

- **Food price fluctuations** especially higher value nutritious crops

- Diversification can have both +ve and –ve green house gas effects

- International trade can buffer domestic supplies and prices
Towards Sustainable Intensification

- Role of modern science and technology with “big data” tools, ICT and precision agriculture

- Advances in renewable energy sources could contribute to efficiency of energy use and sustainable resource use

- Adaptation to smaller scales is a major challenge for research and technology design
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Importance of Biodiversity in Achieving SDGs

- Loss of biodiversity and associated traditional knowledge is happening faster than ever before.

- Conserving agrobiodiversity and associated knowledge is essential in achieving the SDGs addressing poverty alleviation, zero hunger, and gender equity.

- To do this, all nations must work together.
SDG 2 success also depends on the other SDGs

SDG 2: Zero Hunger

**Poverty goals**
- Goal 1: No poverty
- Goal 8: Decent work and economic growth

**Health goal**
- Goal 3: Good health and wellbeing

**Social goals**
- Goal 5: Gender equality
- Goal 10: Reduce inequality within and among countries

**Environmental goals**
- Goal 12: Responsible production and consumption
- Goal 13: Climate action
- Goal 15: Life on land
What are the prospects for achieving SDG 2

**Ending Hunger**: possible for caloric adequacy but uncertain for access to food diversity, especially micro-nutrient rich food.

**Ending all forms of malnutrition**: declines in the incidence of child stunting & wasting, but sharp rise in obesity rates.

**Double small farm productivity**: unlikely for the least developed countries & lagging regions in emerging economies.

**Adaptation to Climate Change**: Unlikely for small farms in arid zones & flood risk areas.

**Sustainable Production Systems**: possible where policies are right & where technology adaptation to smaller scales is possible.