Making India Hunger Free:
Role of Institutions and Innovations

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Four things to talk about

- Hunger within the overarching concept of Food Security
- Institutions and Innovations- Past and presently unfolding
- Political Economy of Food and Agri-Policies in India and its implications
- Global Hunger Index (GHI) and India's challenge

Hunger in its various forms

- Not getting two square meals a day…
- NSSO…hungry…those who slept without a meal (<2%)

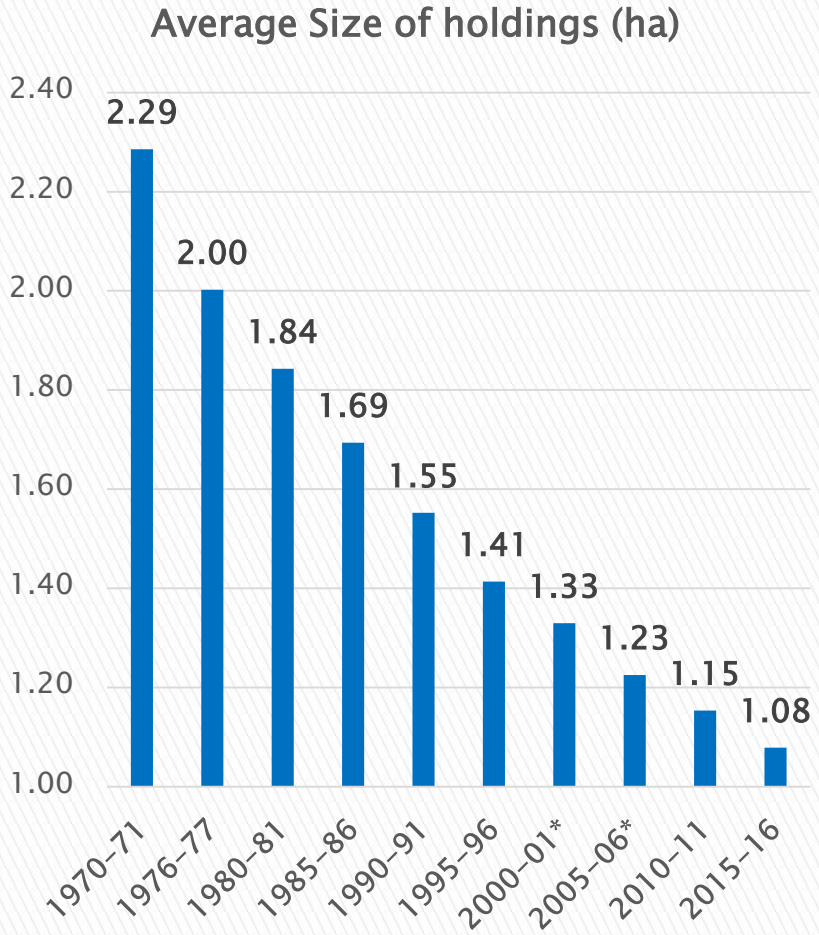
- But FAO's food security concept:
  - Sufficient Availability of Food
  - Economic and physical access
  - Absorption in terms of nutrition
  - Stability of food systems

First, Availability of food in relation to rising demand: Challenge of Feeding India

- **Large and Growing Population:**
  - 1.35 billion in mid 2017, likely to surpass China by 2024 (1.44 billion), and touch 1.5 billion in 2030; 1.66 billion by 2050; and 1.52 billion by 2100; 65 percent of population currently below 35 years of age
- **Fast growing GDP:**
  - Since economic reforms of 1991, GDP growth around 7 percent p.a, and likely to remain so by 2030;
- **Urbanization**:
  - from 380m in 2018 to 600m by 2030; need to build one Chicago each year till 2030…will put pressure on scarce land, water, energy and logistics
- **High expenditure on food**:
  - Avg HH exp on food 45% (NSSO, 2011); per capita income likely to grow at 5-6 percent p.a till 2030.

Challenge: Shrinking holding Size & swelling bottom

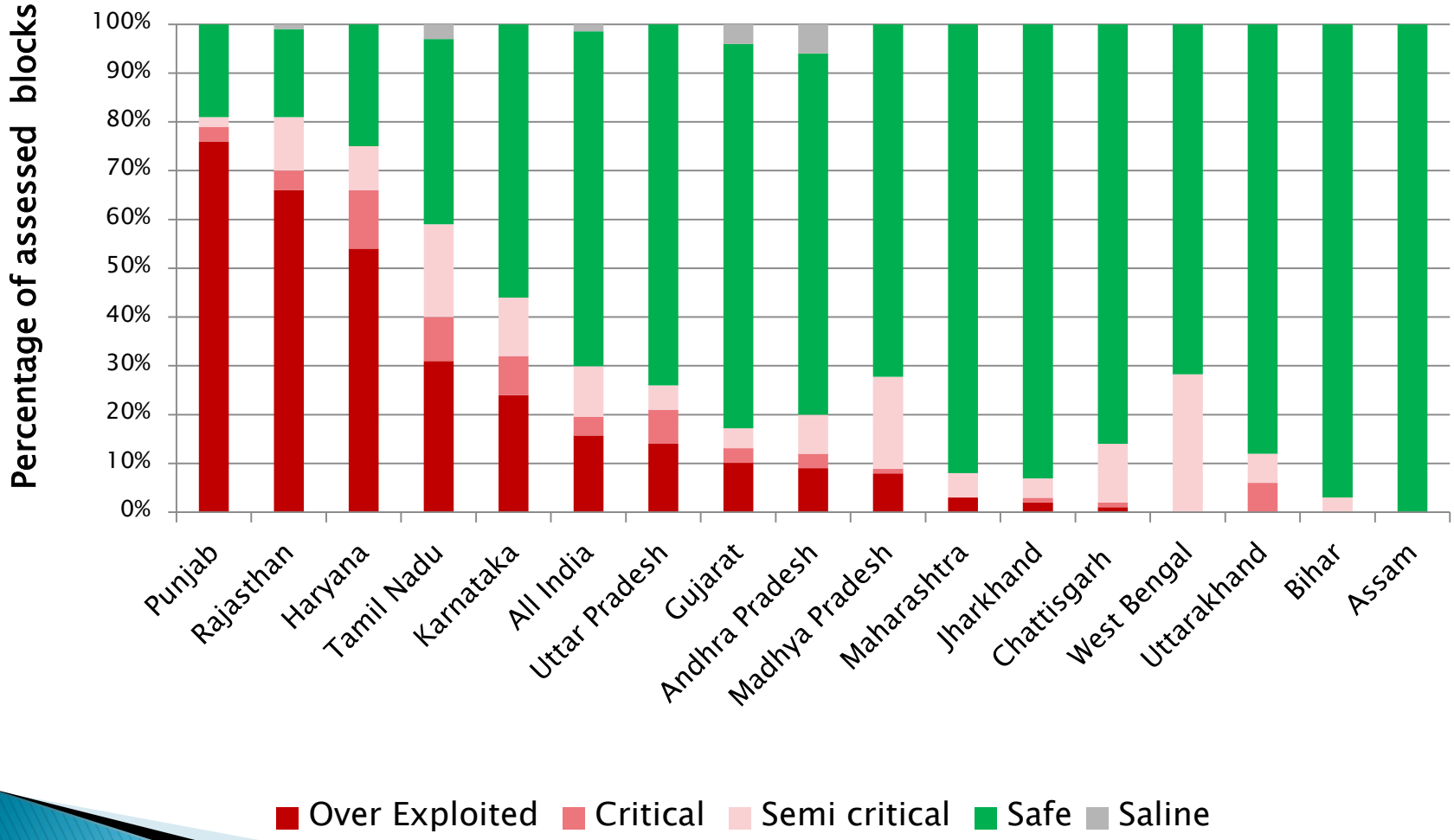
- Number of agri-holdings more than doubled, from around 71 million in 1970-71 to 145.7 million in 2015-16.
- Average holding size fallen from 2.3 hectares in 1970-71 to 1.1 in 2015-16.
- In 2015-16, 86% of holdings were small and marginal (<2 ha) operating 47 percent area.



Source- Agricultural Census of India

Challenge of Climate change & Fast depleting groundwater (2013)

Source: CGWB, 2017



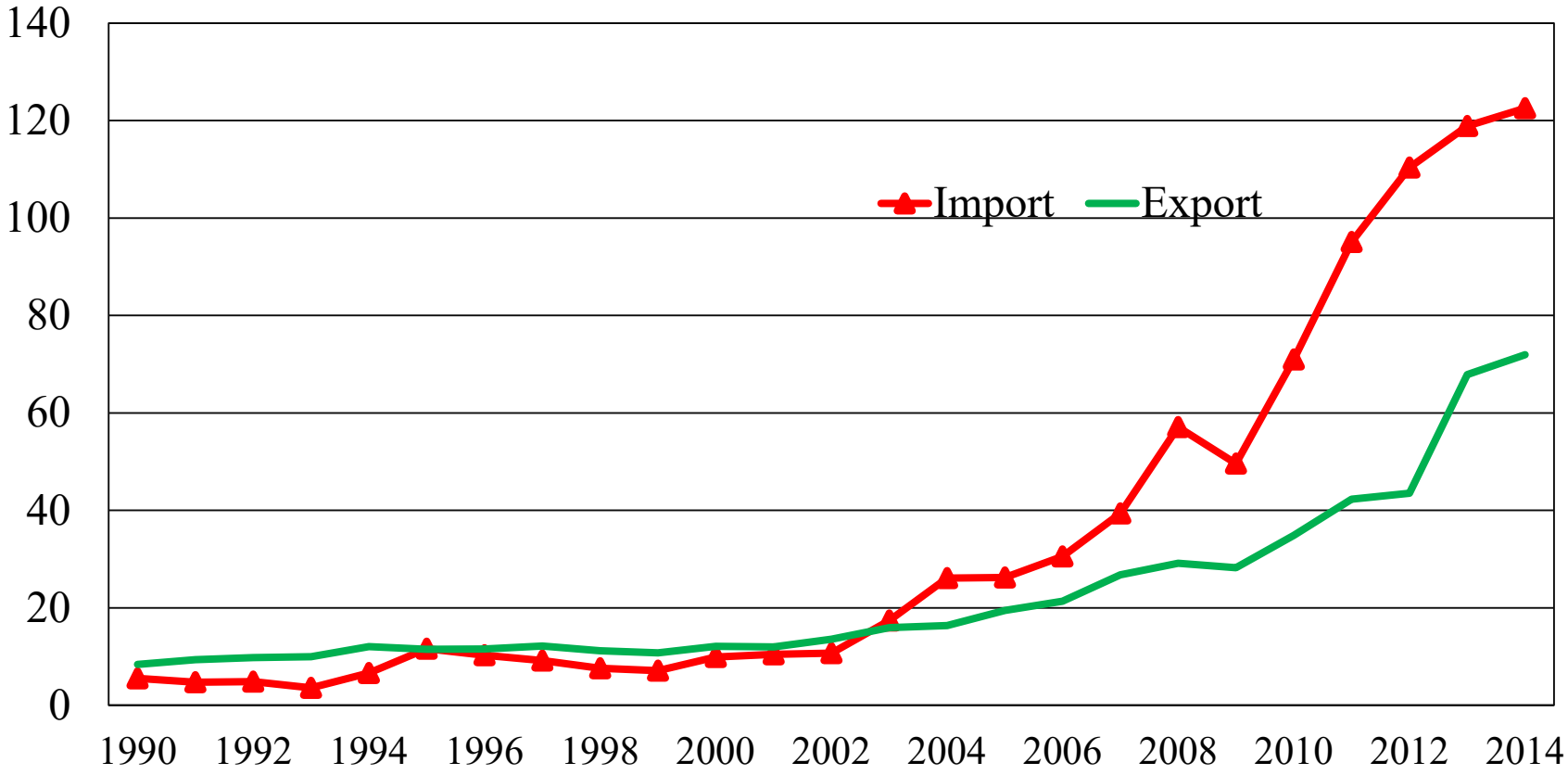
Earlier also, experts raised concerns…Who will Feed India?

- Paddock brothers (1966)…Famine 1975
- IFPRI (1998): India will be importing 63 mt of foodgrains by 2020
- Govt of India (2006) (Planning Commission) projecting deficit of 10 mt by 2011-12
- Hans Binswanger (2012): 73 mt imports of grains by 2039

Will India go the Chinese way?

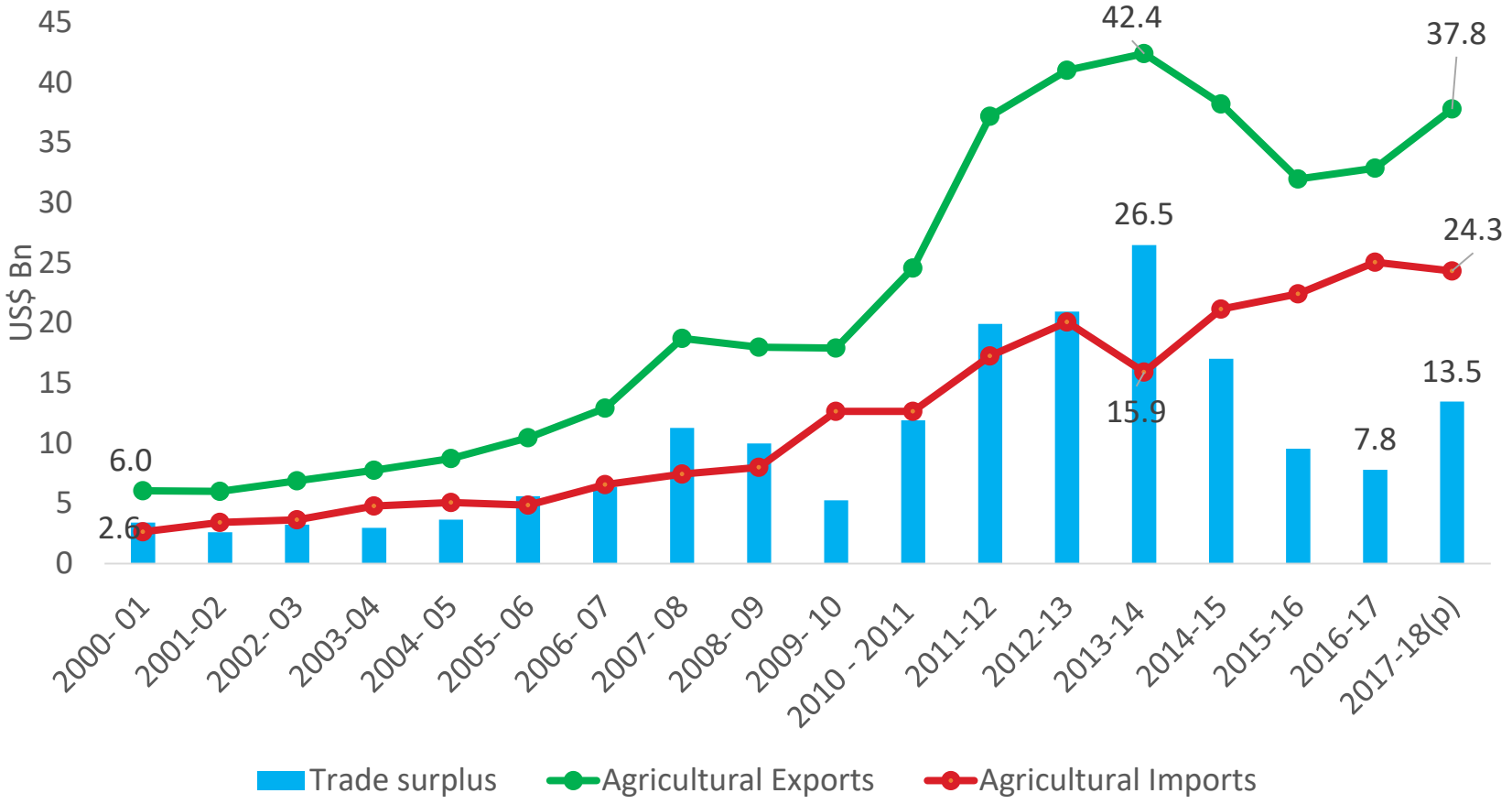
China's food imports and exports (USD billion)

Source FAOSTAT (from Jikun Huang 2019)



So far, India is surplus in agri-trade:

rice, marine and meat are most exported and edible oil, pulses, fruits and nuts(mainly almonds) are most imported



Source: FTPA, MoCI

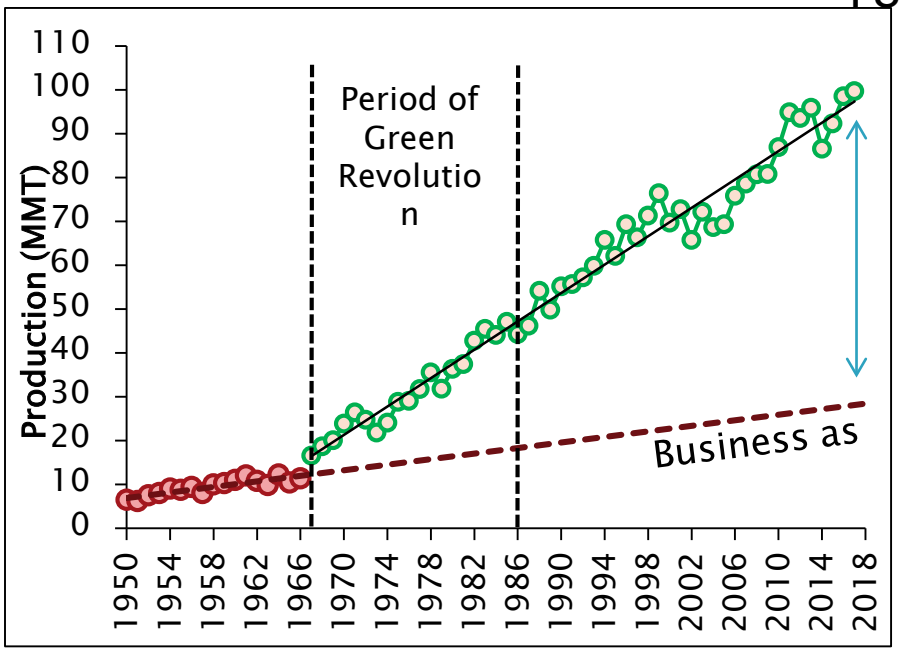
Peeping into past, present and likely future

- How did India overcome food shortages in the past?
- What is happening on food front in recent years?
- What is likely to happen in future, say by 2030?

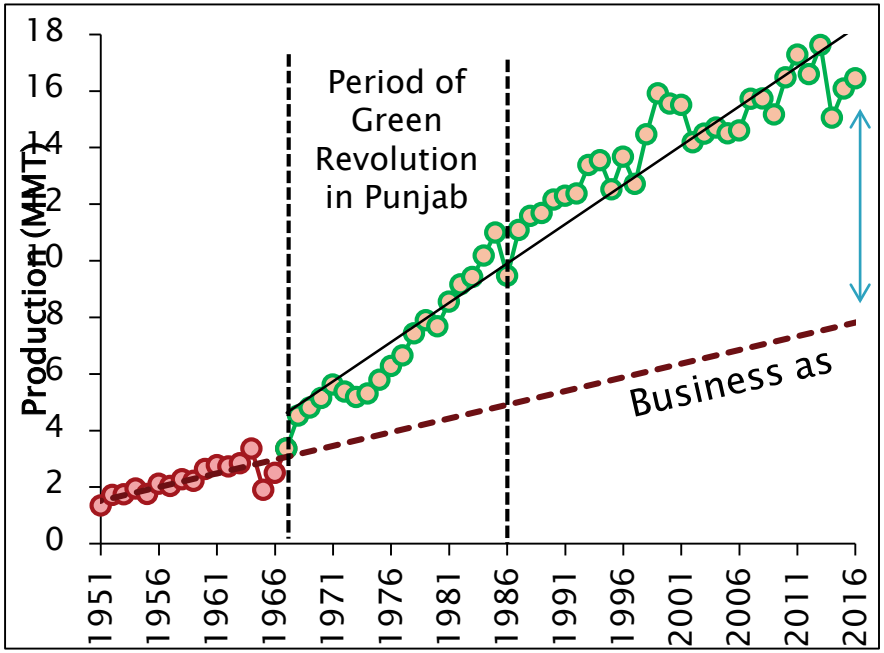
“From Ship to mouth” to Green Revolution: Wheat

(second largest producer, up from 6.5MMt in 1950-51 to 99.7 MMT in 2017-18)

All India wheat production



Wheat production in Punjab



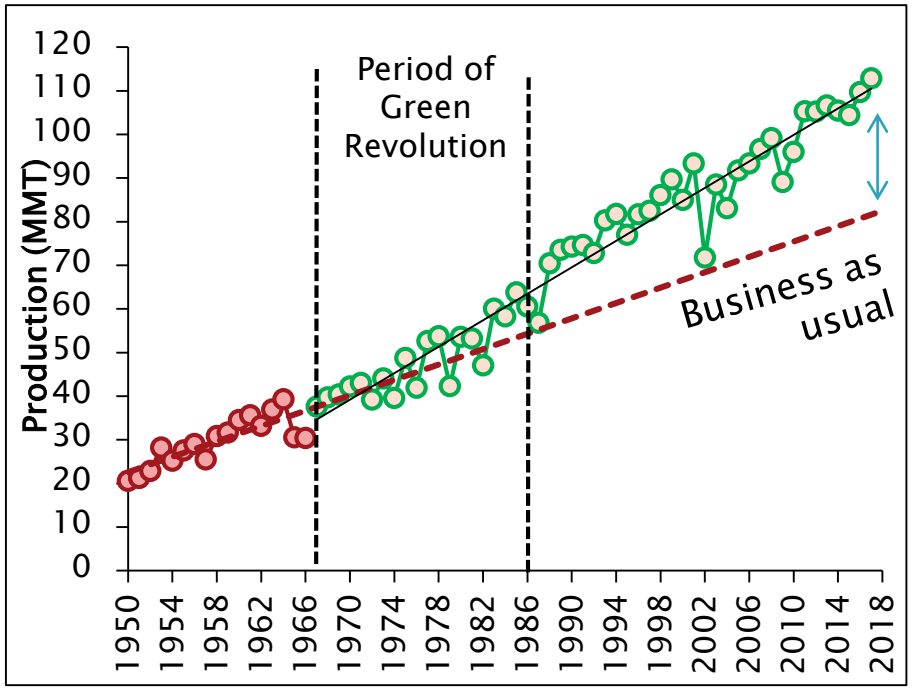
- Post introduction of HYV in 1966, very first wheat harvest in 1967-68 shot up by 45 percent from 10.4 MMT in 1966-67 to 16.5 MMT in 1967-68. In Punjab (Seat of Green Revolution), production increased 2.5 MMT to 5.6 MMT between 1966-67 and 1971-72.

Source: Agricultural Statistics at a Glance (2016), Directorate of Economics and Statistics, Department of Agriculture, Cooperation and Farmers

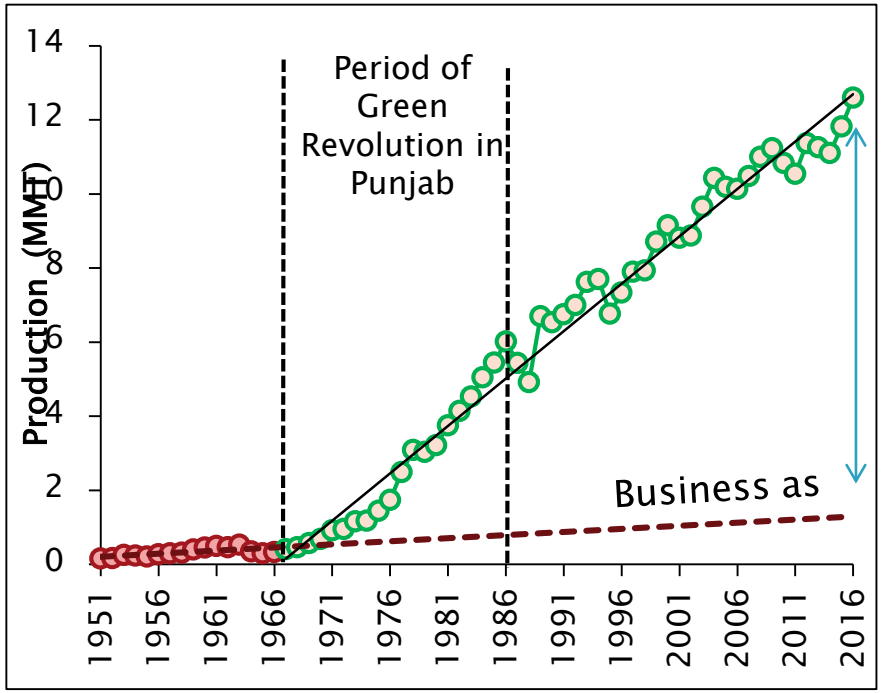
Rice: Largest exporter, second largest producer

Production: All India (113MMT) and Punjab (12.6MMT)

All India rice production



Rice production in Punjab



- IR8 from Philippines in 1966: Rice production increased by 24% from 30.4 MM
- In Punjab, it increased from 0.3 MMT to 0.9 MMT respectively between 1966-

Source: Agricultural Statistics at a Glance (2016), Directorate of Economics and Statistics, Department of Agriculture, Cooperation

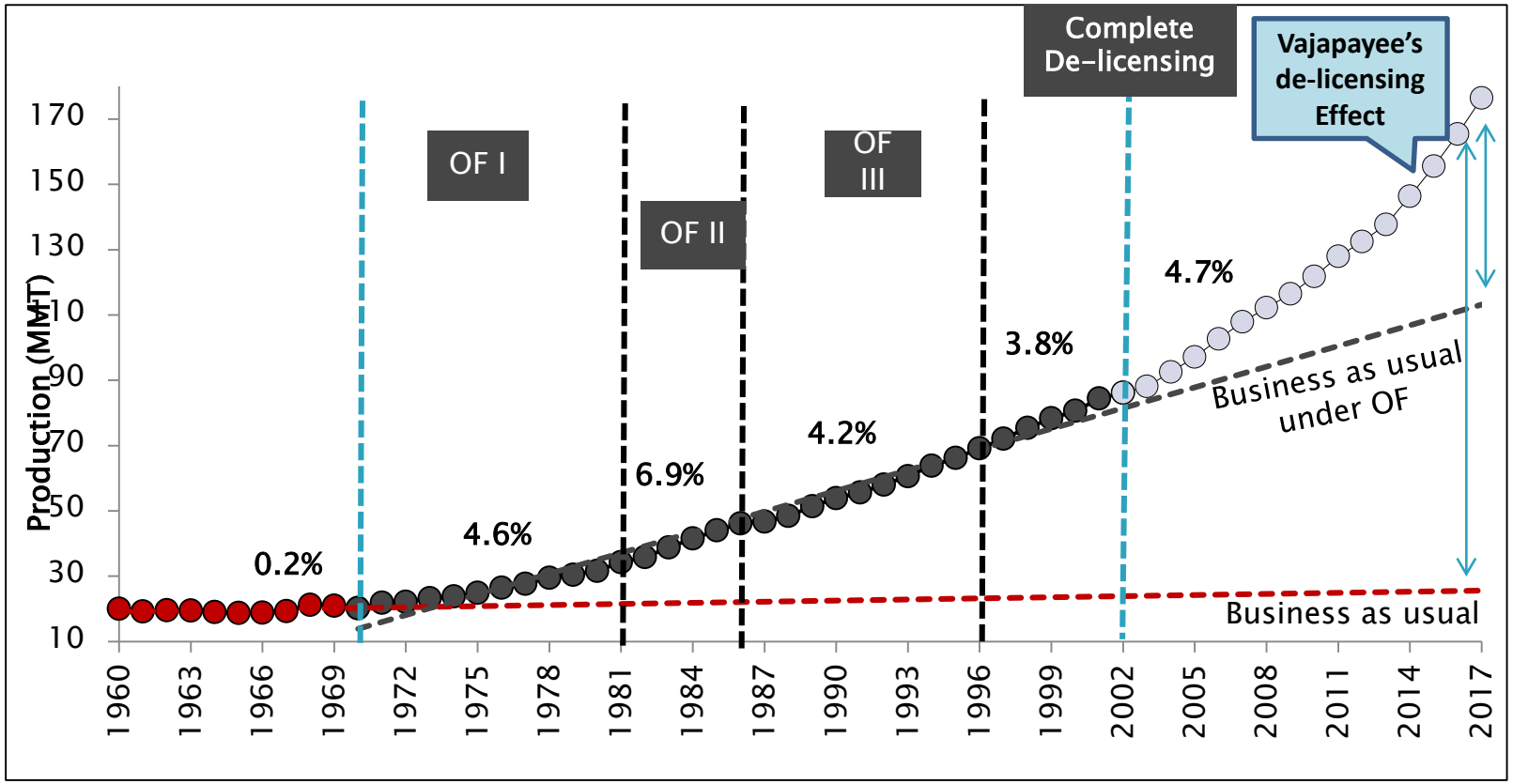
Policies, institutions, and innovations that ushered-in Green revolution

- Policy decision to import 18,000 tonnes of HYV wheat (Lerma Rojo and Sonara-64) from Mexico; and IR-8 from IRRI
- Role of ICAR and SAUs, plus agri-extension
- Critical Role of Pricing and procurement institutions: APC and FCI came in existence in Jan 1965

India's White Revolution

largest producer at 176.4 MMT in 2017-18

(Innovations in institutions and technologies for small holders)

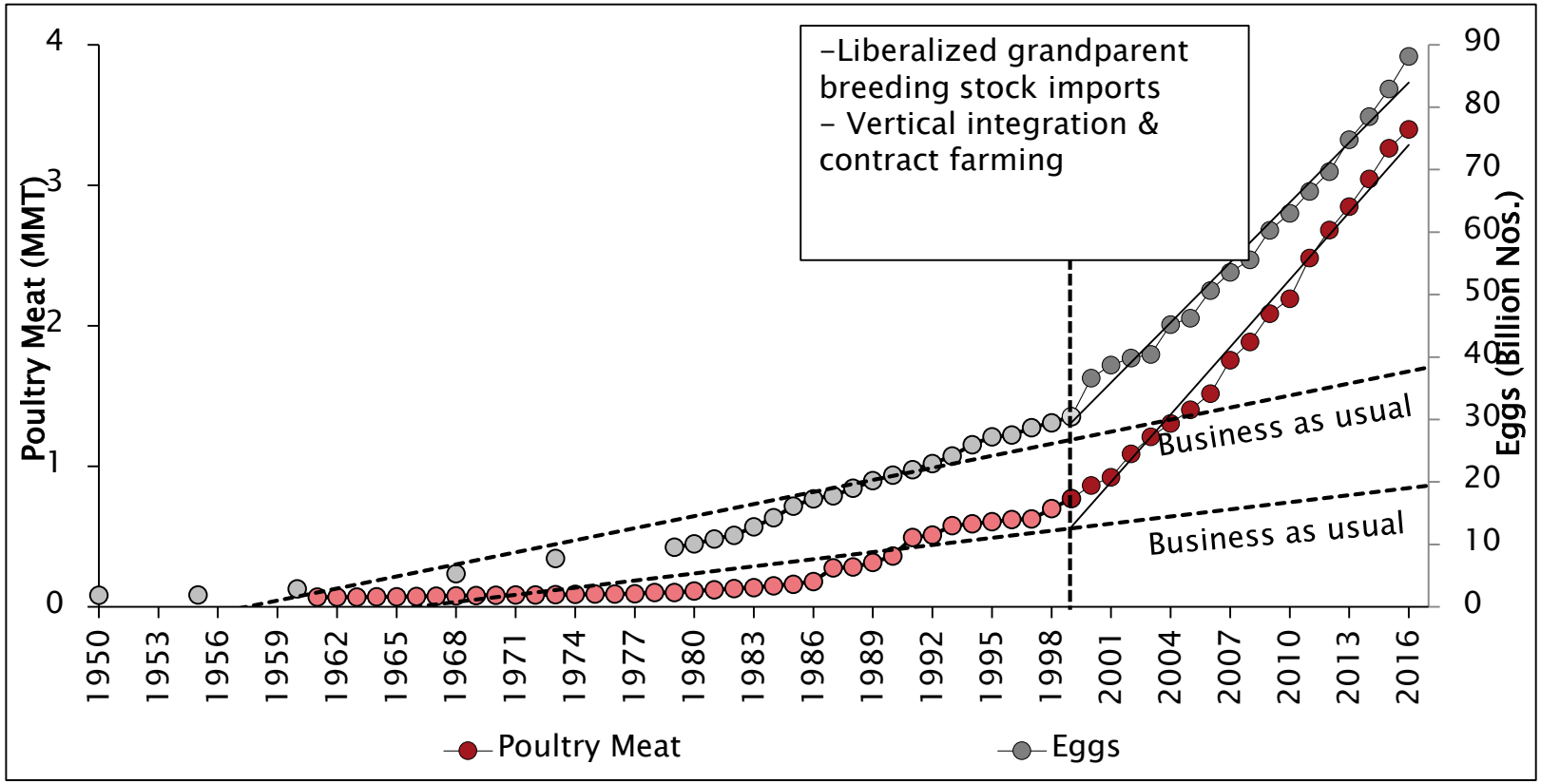


- **Operation Flood** → Production soared from 20 MMT in 1970-71 to 30.4 MMT in 1979-80 to 44 MMT in 1985-86 and 69.1 MMT in 1995-96, a jump of 50 MMT in 25 years!

Source: NDDB, FAO, USDA, Basic Animal Husbandry Statistics, Department of Animal Husbandry, Dairying & Fisheries (DoAHDF)

Red Revolution – Poultry meat and Egg

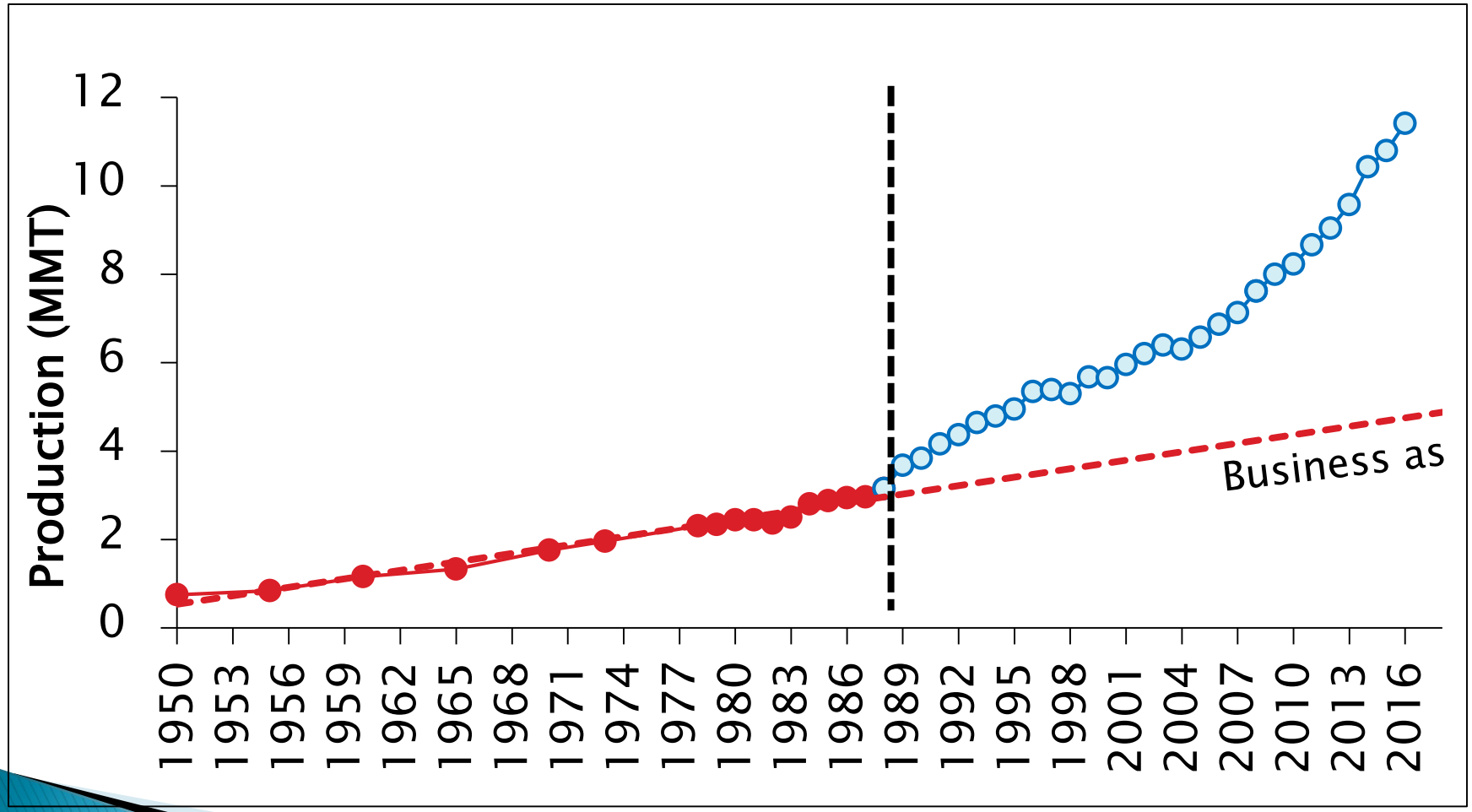
All India Egg and Poultry Meat production



- **Production -** Egg production from 1.83 billion in 1950-51 to 88.1 billion in 2016-17 (3rd largest) and poultry meat production from 0.06 MMT in 1961-62 to 3.46 MMT in 2016-17 (5th largest);
- **Consumption** – From 400 grams and 25 eggs per person/year respectively to 3.35 kg and 69 per person/year from 1990-91 to 2016-17;
- **Feed conversion ratio** – From 2.2 to 1.6 (Broilers);; **Egg laying capacity** – From 200 to 320+ eggs per year (layers).

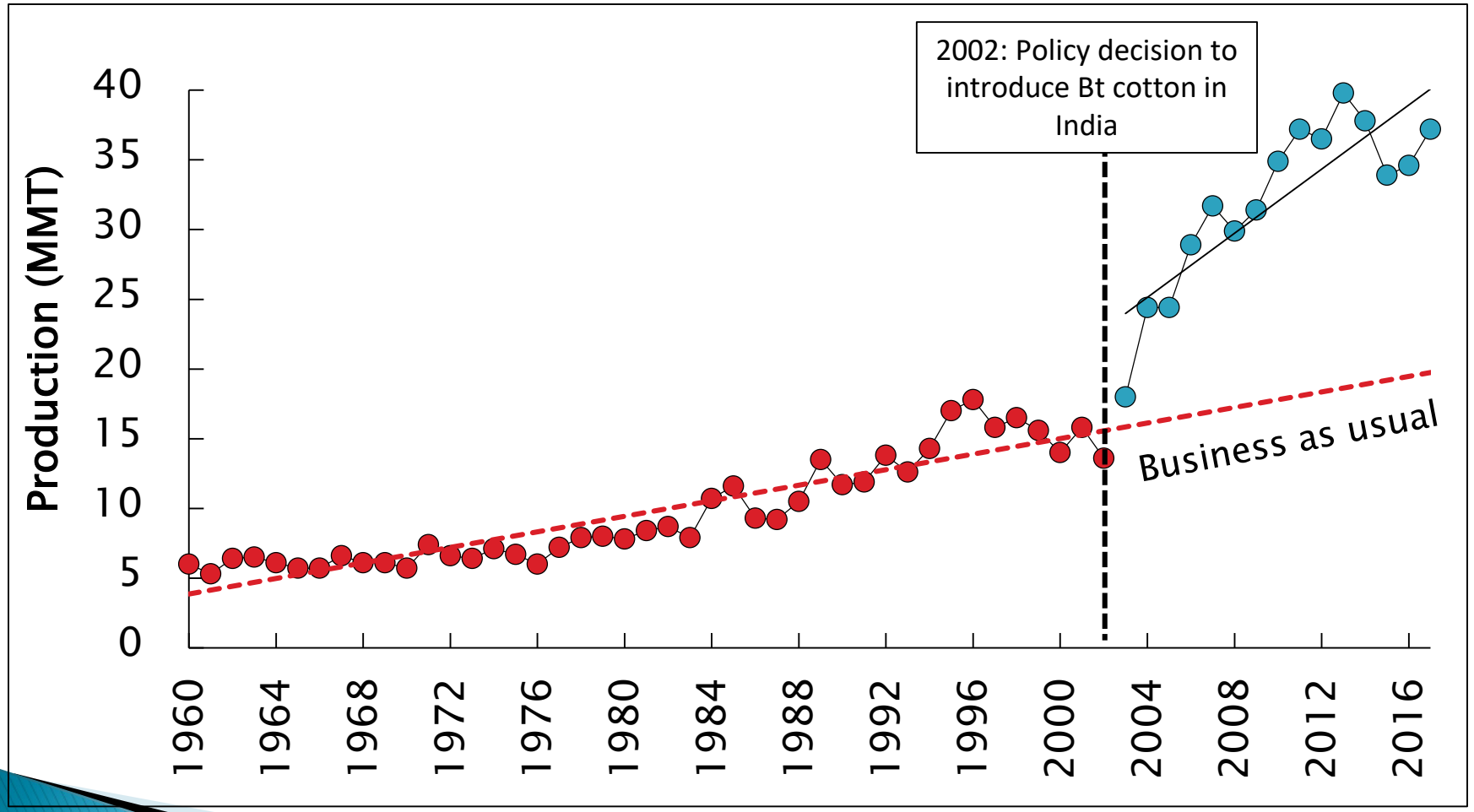
Source: Basic Animal Husbandry Statistics, Department of Animal Husbandry, Dairying & Fisheries (DoAHDF);

Blue Revolution: All India Fish production (Inland & Marine) (exported more than USD 7 billion in 2017-18, next only to rice)



Source: Basic Animal Husbandry Statistics, DoAHD&F, Government of India

Gene Revolution made India the largest producer and second largest exporter of cotton



Source: USDA, 2017

Political Economy of POLICY SETTING



ICRIER

OECD
BETTER POLICIES FOR BETTER LIVES

Indian agricultural policies have DUAL *(but conflicting)* aims

Farmers
ensure remunerative prices

Consumers
ensure access to food at affordable prices

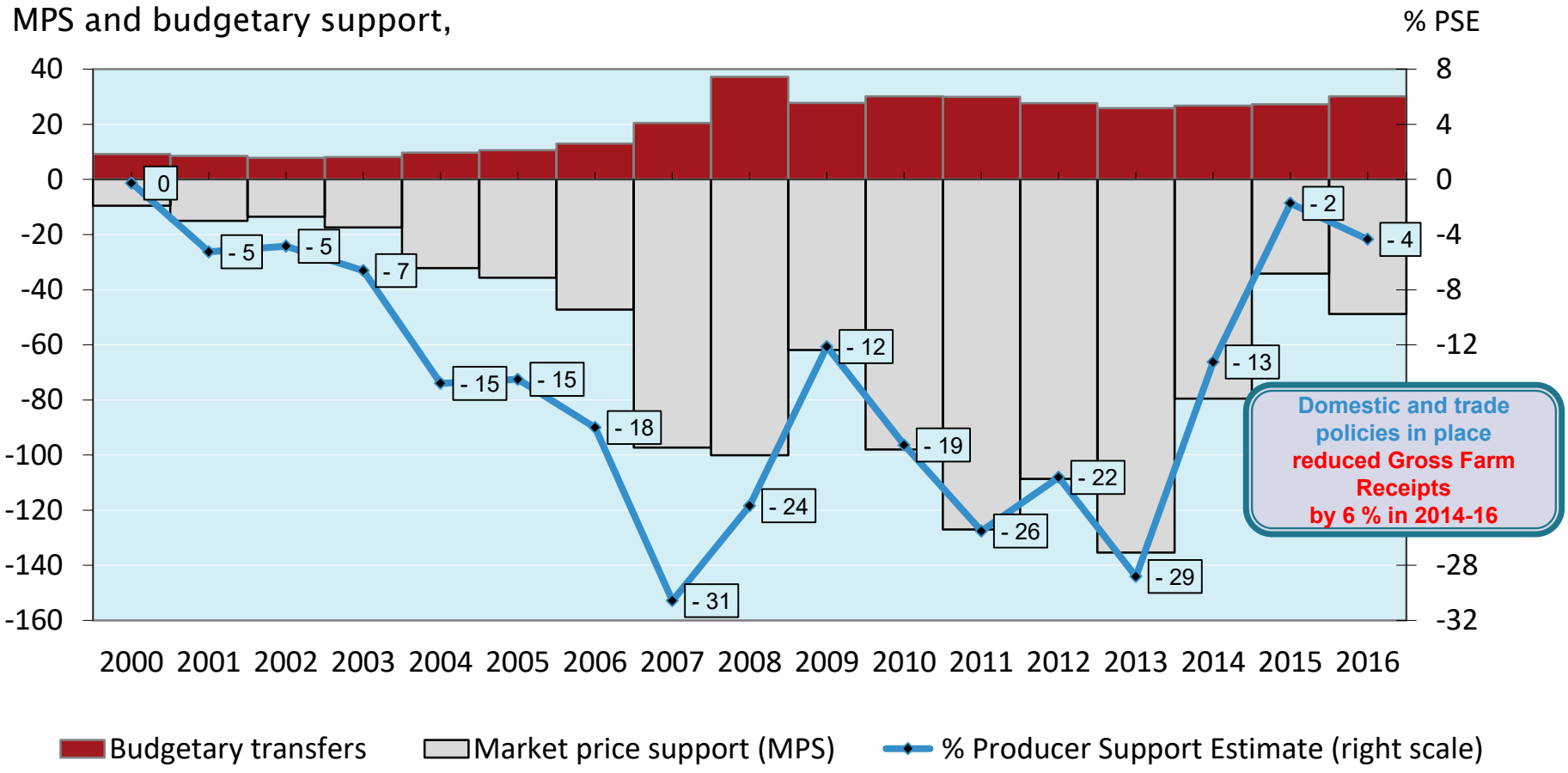
- Domestic market regulations
- Budgetary payments (Input subsidies)
- Trade policies
- Food subsidies

Translating the policy setting into numbers

OECD Producer and Consumer Support Estimates methodology

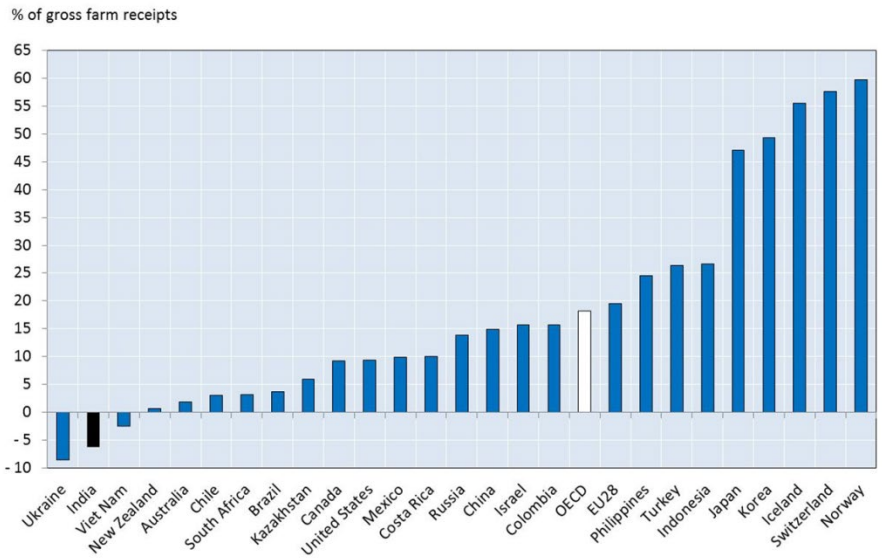
Result: India taxes its farmers and heavily subsidises its consumers

India "implicitly taxes" its agriculture…large input subsidies do not fully offset the effect of price-depressing policies (on average, taxation amounted to 14 percent of gross farm receipts, 2000-01 to 2016-17)



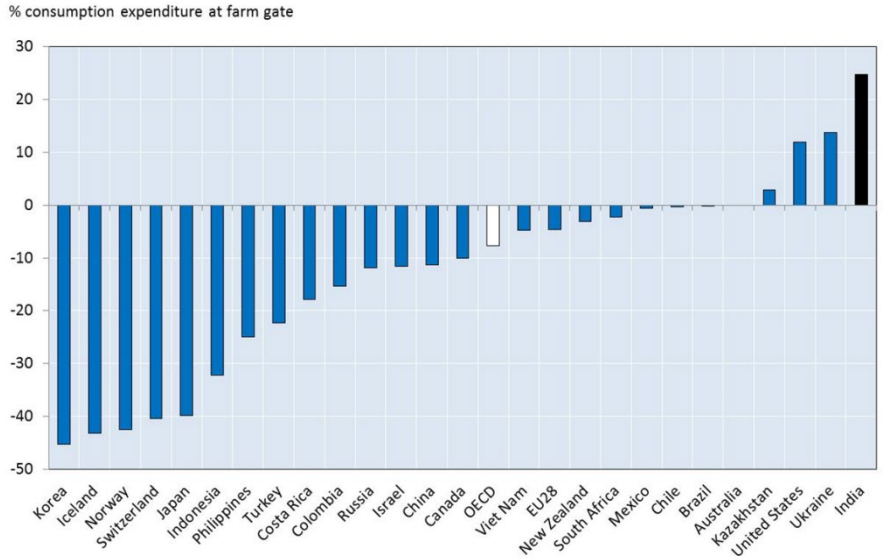
How does India compare with OECD and other emerging economies?

Producer Support Estimate (PSE): India taxes its farmers



Negative PSE in India as **producers receive prices below those on world markets**

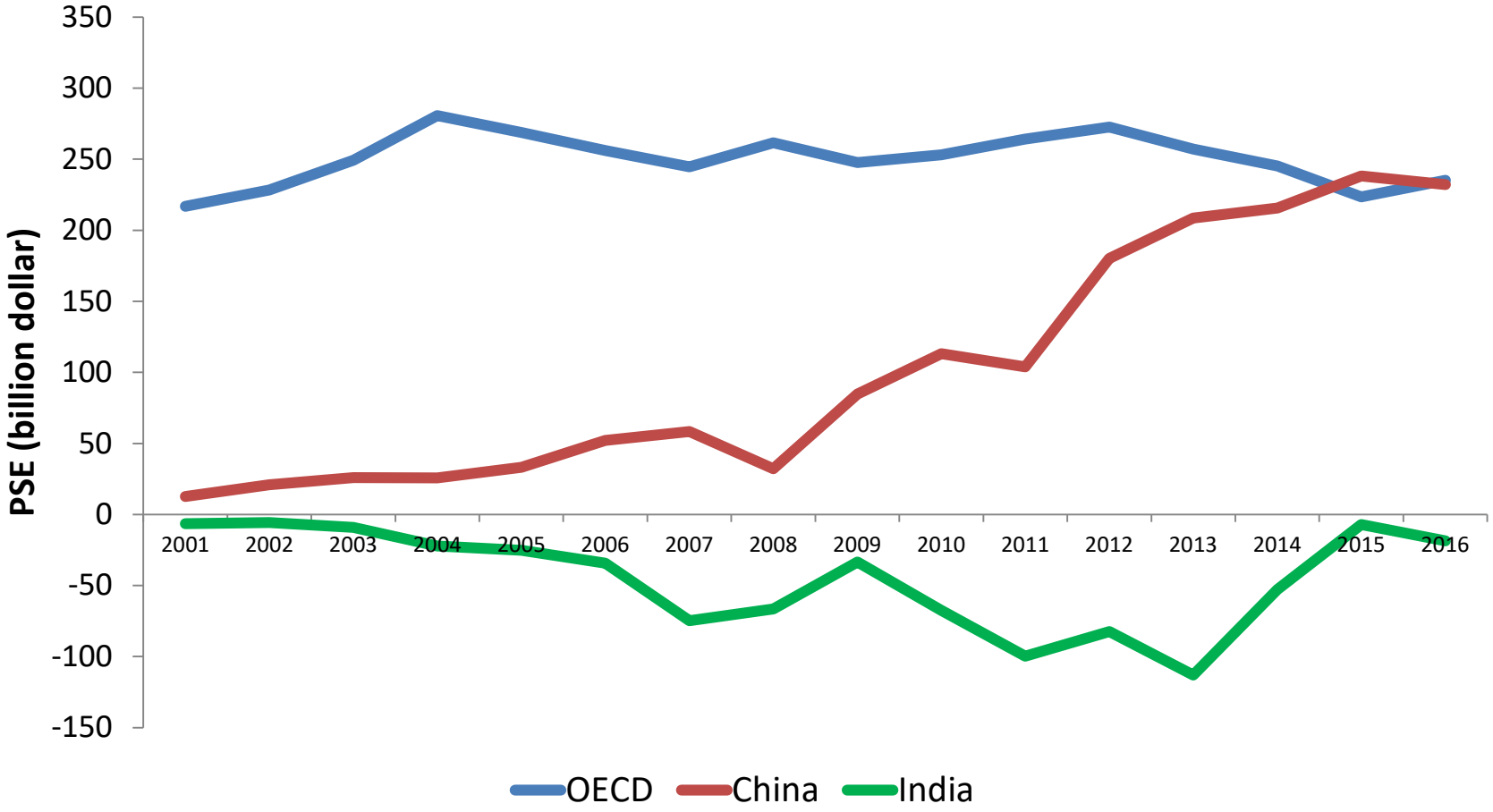
Consumer Support Estimate (CSE): India heavily subsidises its consumers



Policies that depressed farm prices together with food subsidies **reduced consumption expenditure** by 25% on average across all commodities

PSEs of India, China and OECD

(India implicitly taxes its agri thru restrictive trade and marketing policies)

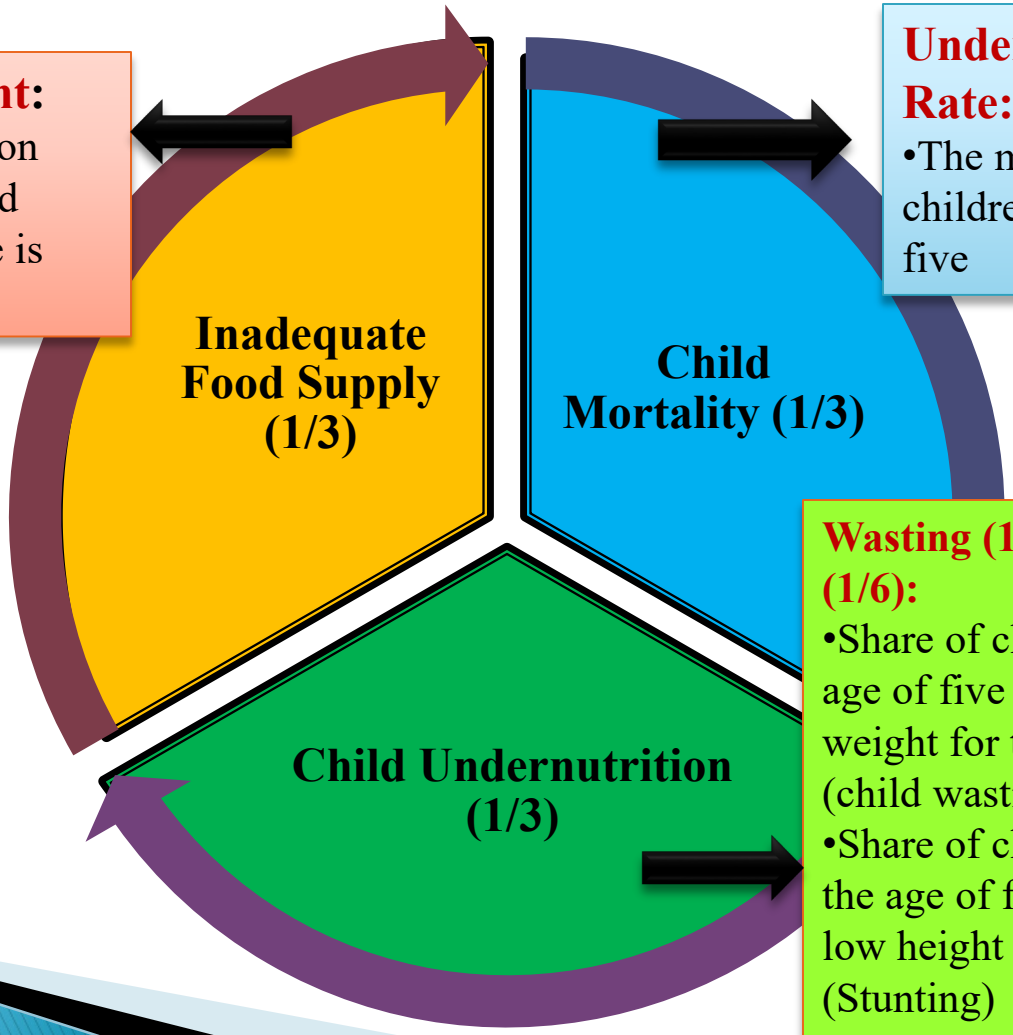


Needed: Appropriate Incentive Policies to promote investments, efficiency and sustainability…

- Innovations in policies, from higher MSPs or highly subsidized inputs, and loan waivers to income/investment policies…beginning in 2019 (PM-KISAN) (Rythu Bandhu, KALIA, etc)
- Invest in R&D- marginal returns are 5 to 10 times higher than on subsidies…yet to realise
- Invest in Sustainable Agriculture- especially taking care of Water resource, and saving on chemicals…yet to realise

GHI: concept, scores and ranking

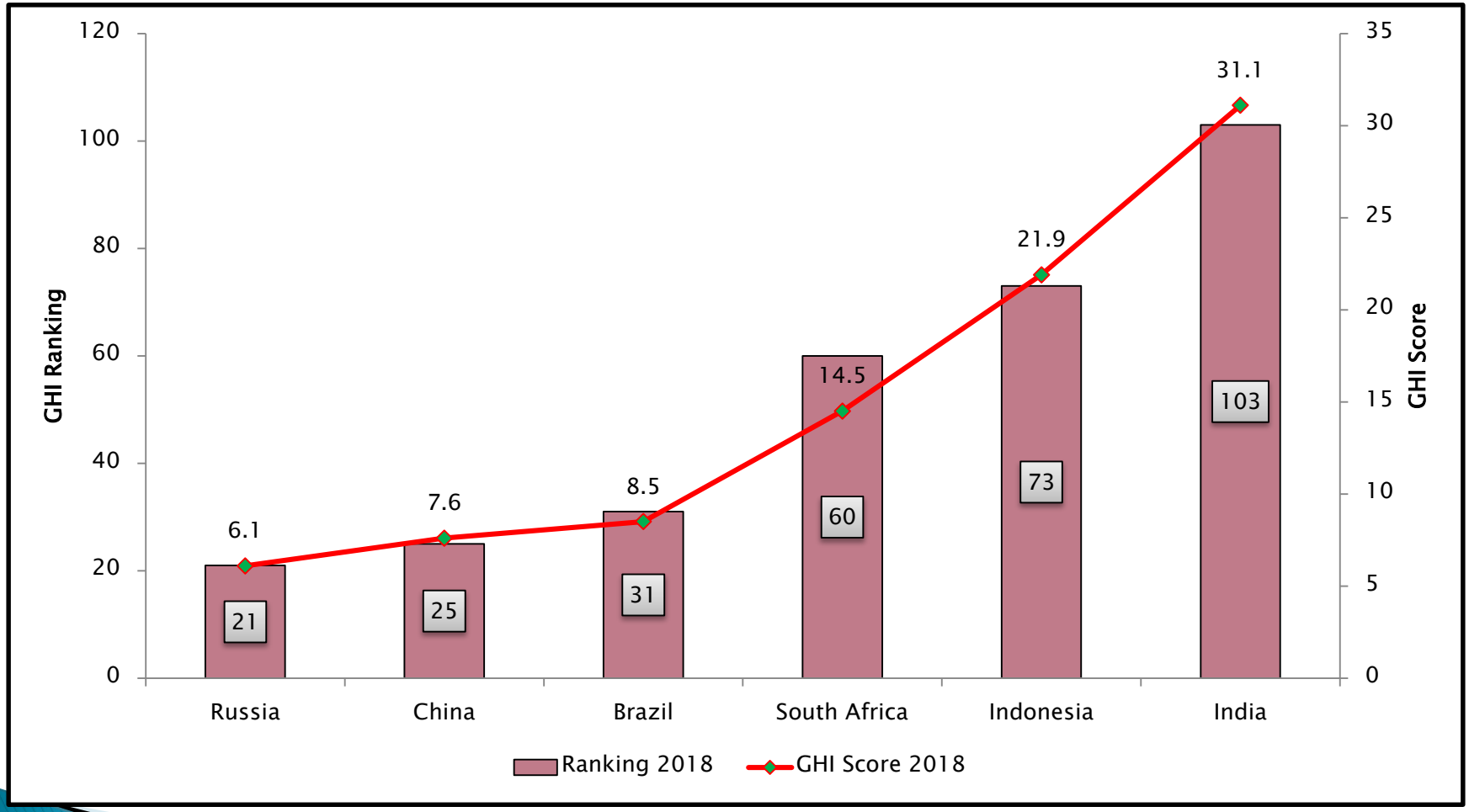
Undernourishment: Share of the population that is undernourished (whose calorie intake is insufficient)



Under five Mortality Rate:
- The mortality rate of children under the age of five

Wasting (1/6); Stunting (1/6):
- Share of children under age of five who have low weight for their height (child wasting)
- Share of children under the age of five who have low height for their age (Stunting)

India's real challenge on Hunger for next 10 years: can India graduate to least hungry 50 countries on GHI?



Concluding remarks

- India likely to remain self-reliant on food at least till 2030; after that a lot depends on incentive policies…
- But India real challenge now is not on food adequacy but of nutrition, GHI heavily tilted towards that
- Our research shows that it needs massive investments and fixing of sanitation (safe drinking water, toilets, etc) and women education

Can access much of this in these publications…Thanks!