



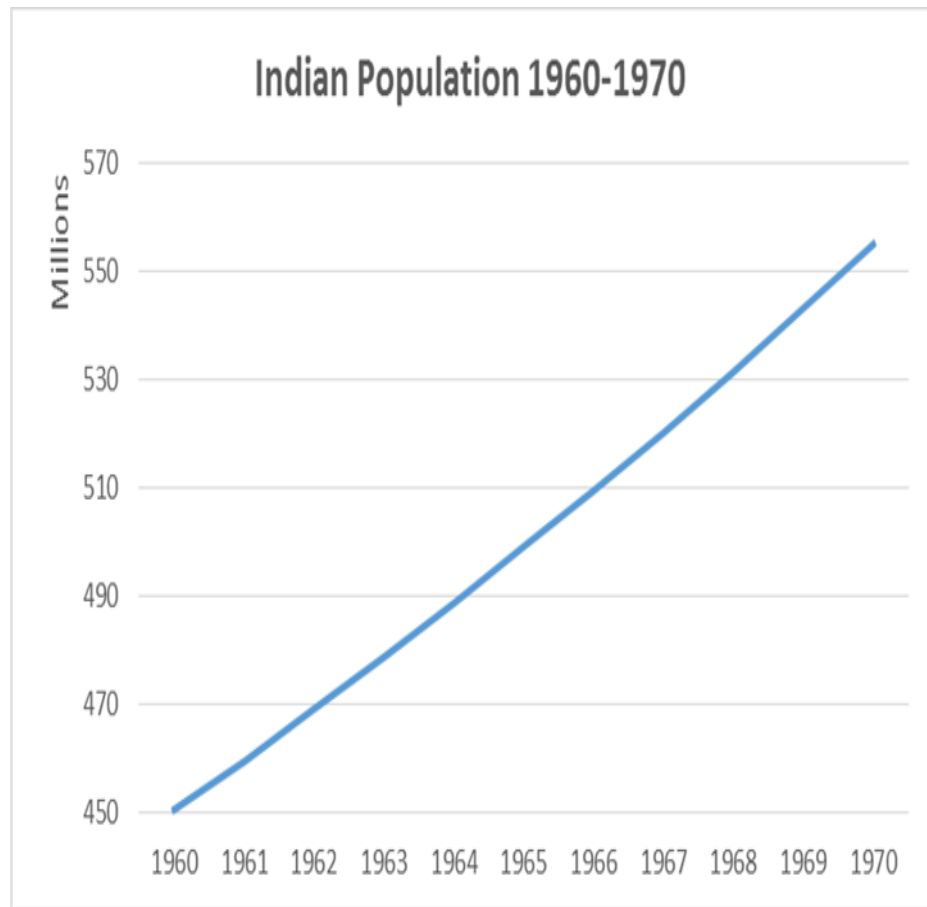
# The Cost of Green Revolution

Case Study - 2

- Reading material for these slides:
- Case study 10, page number 70, in the environmental reader textbook
- <https://www.thehindubusinessline.com/opinion/the-paradox-of-indias-green-revolution/article27472671.ece>
- <https://www.kalw.org/post/pattern-farmer-suicides-punjab-unearthing-green-revolution#stream/0>
- <https://www.npr.org/templates/story/story.php?storyId=102893816>
- <https://www.npr.org/2009/04/14/102944731/green-revolution-trapping-indias-farmers-in-debt>
- <http://livingheritage.org/green-revolution.htm>

- India, historically, has always been known to be a country of famines. Towards the end of the colonial rule in the country, agriculture had seen stagnant or negative growth rates which partly contributed to The Bengal Famine of 1943, leaving parts of the country devastated.

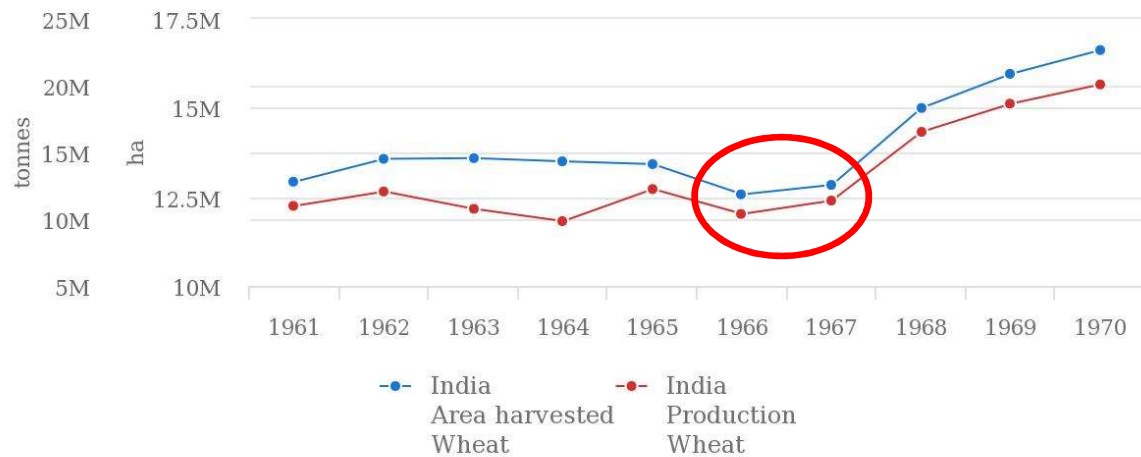
### India's Food Security Scenario 1960-1970



Post independence, India did try to boost agricultural productivity but it frequently fell below the requirements of the steadily growing nation (Refer to graph) which forced it to import grains.

## Production/Yield quantities of Wheat in India

1961 - 1970

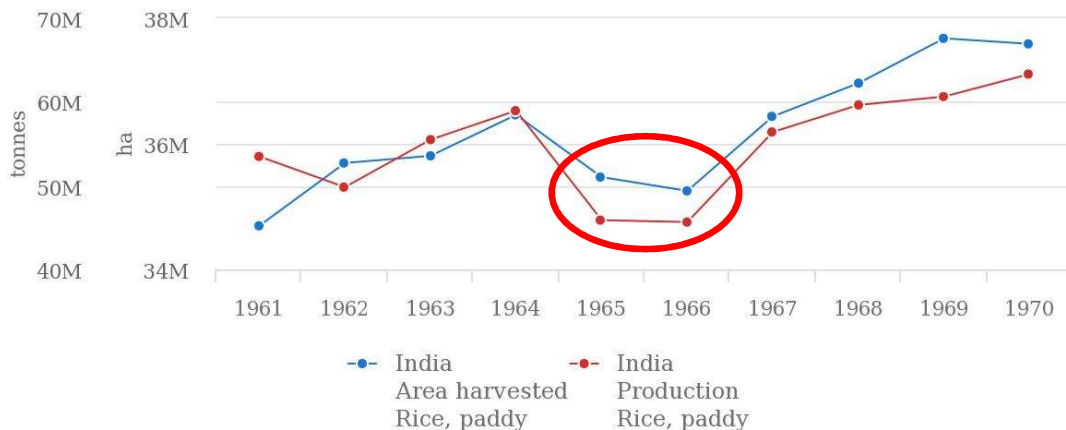


Source: FAOSTAT (Jul 19, 2019)

- This was a huge burden on the coffers of an already impoverished country. Furthermore, successive droughts such as those in the years 1966-67 (highlighted in the graphs on the left) severely compromised the country's food security causing a famine in some areas, whose effects were only reduced due to international intervention.

## Production/Yield quantities of Rice, paddy in India

1961 - 1970



Source: FAOSTAT (Jul 19, 2019)

- As a result, it was quickly becoming imperative for India to strengthen its agriculture to improve its self-sufficiency/sovereignty, economy, food security and the general well-being of its citizens.



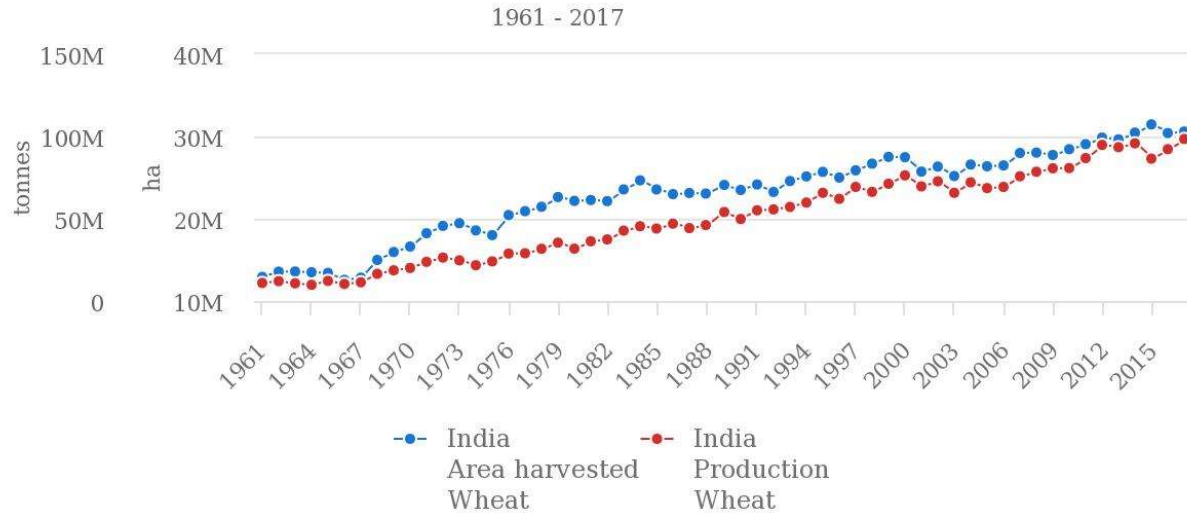
## The Indian Green Revolution

That is why in the 1960s and 1970s, Government of India introduced a string of policies which included introduction of high-yield variety (HYV) seeds, irrigation facilities, pesticides, fertilizers and land consolidation for agriculture. Together, these policies culminated as what we now call as the “green revolution” in India. Punjab was the first state to be subjected to these policies by receiving HYV dwarf wheat seeds imported from Mexico because it was more water secure than the rest of the country and had a successful agricultural history.

As a result of those policies, India’s agricultural production shot up to the point that it became food self-sufficient and was even able to start exporting its agricultural produce. The graphs in the slide show the scale of boost. Rice production rose almost 3 times and Wheat production rose almost 10 times in the period 1960-2015.

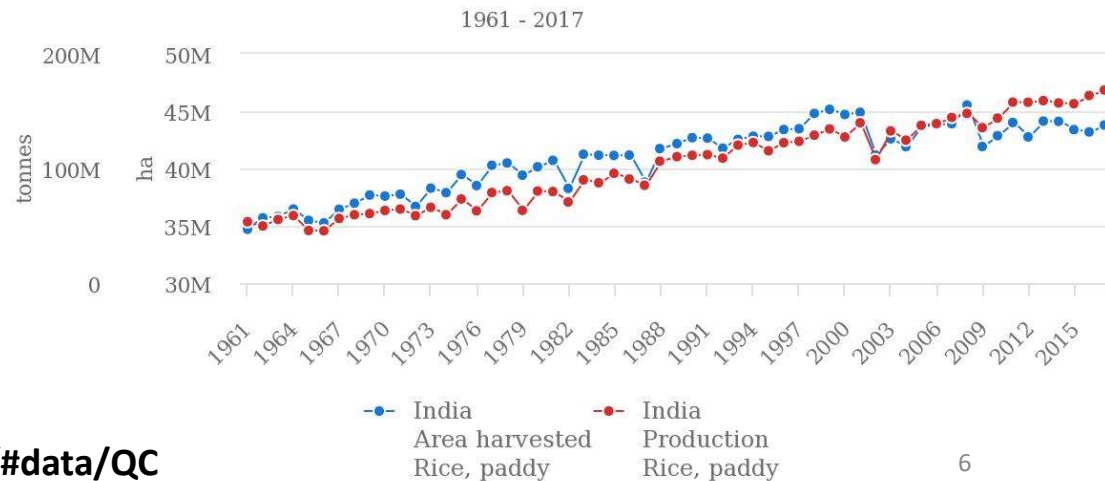
**Source for the graphs:** <http://www.fao.org/faostat/en/#data/QC>

### Production/Yield quantities of Wheat in India



Source: FAOSTAT (Jul 20, 2019)

### Production/Yield quantities of Rice, paddy in India



Source: FAOSTAT (Jul 20, 2019)

# The Flipside

Opinion

Source: Hindu Businessline

INDIA IN TRANSITION

## The paradox of India's Green Revolution

Marshall M Bouton | Updated on June 04, 2019 | Published on June 04, 2019



Despite the rapid strides made in foodgrain output, malnutrition

remains stubbornly high

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## Green Revolution's hidden toll

Diabetes, obesity, malaria, Japanese Encephalitis and more



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By Biplab Das  
Last Updated: Saturday 04 July 2015



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## India's Farming 'Revolution' Heading For Collapse

April 13, 2009 - 4:01 PM ET  
Heard on All Things Considered

DANIEL ZWERDLING

The first of a two-part series



Farmers in the village of Chotia Khurd in northern India don't realize it, but they symbolize a growing problem that could become a global crisis.

They gathered on a recent morning in a stone-paved courtyard — a circle of Sikhs with brightly colored turbans and big, bushy beards — to explain why the famed "bread basket" of India is heading toward collapse.

Photo Gallery »



Revisiting India's 'Green Revolution'

Crosscurrents

## A pattern of farmer suicides in Punjab: Unearthing the Green Revolution

By KANWALROOP KAUR SINGH • DEC 4, 2018

Share Tweet Email



Source: kalw.org

- Though the green revolution yielded great short term benefits for India, it is now posing some serious long term consequences. Heavy pesticide and fertilize use coupled with resource intense crops have deteriorated the micronutrient content of soil in Punjab.
- Heavy dependence on irrigation from bore wells coupled with weak monsoons has severely depleted the underground aquifers, forcing the farmers to dig deeper bore wells than ever before. Unfortunately, deeper bore well waters are also more saline and cause damage to crop roots and the soil, further decreasing their productivity.
- Beyond this, the heavy pesticide and fertilizer use have had some serious health consequences for the farmers and intensification of irrigation and machine farming has increased their debt causing a sharp rise in drug use and their suicide rates.



# Solutions?

- Refocus on ecologically sensitive agriculture
- Reintroduction of native seeds to maintain genetic diversity of seeds
- Shifting from mono-cropping to multi-cropping system to better regulate the nutritional content of soil
- More effective water management programs to ensure better water and moisture conservation
- Introduction of crop insurance schemes to better protect the farmers