# Governance for 21st Century Agriculture Challenges

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# Agriculture Governance – Ancient Times

- Agriculture was the main economic activity of the people in the Ancient Times. Agricultural supremacy made rich.
- In 1001 – India, China and rest of the World with 1/3 share were of World Trade were largest economies till 1700.
- Standard of living of textile workers and farmers
- India's Agricultural supremacy continued till 17th century
- Indian economy started collapsing with Entry of Europeans in 16th century and later East India Company.
- In 1750 (27%), 1947 (3%) and today less than 1 % with 1.3% World GDP, 2.2 % land, 4% water and 18% population – poverty!
- *Famine 1975! America's Decision: Who will Survive? By William & Paul Padcock*
- *However, Indian Agriculture has made rapid strides but???*

# Phases in Agricultural Policy and Growth

| | |
|---|---|
| 1950-1 to 1964-5: | 2.51 (area growth +yield growth) |
| 1967-8 to 1980-1: | 2.20 (yield gr. green revolution) |
| 1980-1 to 1990-1: | 3.07 (spread of green revlution) |
| 1992-3 to 2004-5: | 2.76 (reform period) |
| 1997-8 to 2004-5: | 1.60 (neglect of agriculture.) |
| 2004-5 to 2012-3: | 3.47 (revival of growth) |

- The policy, institutional and investment focus during green revolution time helped India achieve its food self sufficiency goals.
- However, now different policies are needed to focus on small holdings, rainfed areas, women, lagging regions, rural non-farm for sustainable agricultural transformation.

# Governance and Sectors of GDP (%)

| Year | Agriculture | Industry | Service | Total |
|---|---|---|---|---|
| 2005-06 | 18.40 | 27.90 | 53.70 | 100 |
| 2006-07 | 17.30 | 28.80 | 53.90 | 100 |
| 2007-08 | 16.80 | 28.70 | 54.50 | 100 |
| 2008-09 | 15.70 | 28.10 | 56.20 | 100 |
| 2009-10 | 14.60 | 28.20 | 57.20 | 100 |
| 2010-11 | 14.40 | 28.20 | 57.30 | 100 |
| 2011-12 | 14.10 | 27.50 | 58.40 | 100 |
| 2012-13 | 13.60 | 27.10 | 59.30 | 100 |

*Source: Central Statistics Office, New Delhi*

# Growth of Total GDP and Agriculture GDP

**Food grain Production in reform periods**

| Year | production (in m.t) |
|---|---|
| 1990-91 | 176.39 |
| 1991-92 | 168.38 |
| 1992-93 | 179.48 |
| 1993-94 | 184.26 |
| 1994-95 | 191.50 |
| 1995-96 | 180.42 |
| 1996-97 | 199.43 |
| 1997-98 | 193.12 |
| 1998-99 | 203.61 |
| 1999-00 | 209.80 |
| 2000-01 | 196.81 |
| 2001-02 | 212.85 |
| 2002-03 | 174.78 |
| 2003-04 | 213.19 |
| 2004-05 | 198.36 |
| 2005-06 | 208.59 |
| 2006-07 | 217.28 |
| 2007-08 | 230.78 |
| 2008-09 | 234.47 |
| 2009-10 | 218.20 |
| 2011-12 | 259.32 |
| 2012-13 | 254.36 |
| 2013-14 | 255.40 |

*Source: Reserve Bank of India*

**(including allied sector)**

| Plan | Annual Average Growth (% per annum) | |
|---|---|---|
| | GDP | Agriculture GDP |
| First Plan(1951-56) | 3.6 | 2.4 |
| Second Plan(1956-60) | 4.1 | 2.2 |
| Third Plan (1961-65) | 2.5 | 1.6 |
| Fourth Plan(1969-1973) | 3.3 | 3.6 |
| Fifth Plan(1974-79) | 5.0 | 5.7 |
| Sixth Plan(1980-85) | 5.4 | 3.1 |
| Seventh Plan(1985-90) | 5.8 | 1.3 |
| Eighth Plan(1992-1997) | 6.7 | 4.7 |
| Ninth Plan(1997-02) | 5.5 | 2.4 |
| Tenth Plan (2002-07) | 7.8 | 2.3 |
| Eleventh Plan (2007-12) target | 9.0 | 4.0 |

*Source: Ministry of Agriculture, Govt. of India.*

# Agrarian Distress : Evidences

**Structural Change in Landholdings in India**

| | Marginal | Small | Semi-Medium | Medium | Large | All Size | Smallholders |
|---|---|---|---|---|---|---|---|
| **Percentage share in number of holdings** | | | | | | | |
| 1970-71 | 51 | 19 | 15 | 11 | 4 | 100 | **70** |
| 2005-06 | 65 | 19 | 11 | 5 | 1 | 100 | 83 |
| 2010-11 | 67 | 18 | 10 | 4 | 1 | 100 | **85** |
| **Percentage share in operational area** | | | | | | | |
| 1970-71 | 9 | 12 | 18 | 30 | 31 | 100 | **21** |
| 2005-06 | 21 | 21 | 24 | 23 | 11 | 100 | 42 |
| 2010-11 | 22 | 22 | 24 | 21 | 11 | 100 | **44** |
| **Average farm size (Ha)** | | | | | | | |
| 1970-71 | 0.40 | 1.44 | 2.81 | 6.08 | 18.10 | 2.28 | 0.68 |
| 2005-06 | 0.38 | 1.38 | 2.68 | 5.74 | 16.22 | 1.21 | 0.61 |
| 2010-11 | 0.38 | 1.42 | 2.71 | 5.76 | 17.38 | **1.16** | 0.60 |

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# Governance and Employment share (%)

| Sector | 1999-2000 | 2009-2010 | Growth in employment share |
|---|---|---|---|
| **Agriculture** | 61.7 | 53.2 | **-8.5** |
| **Industry** | 15.9 | 21.5 | 5.6 |
| **Service** | 22.4 | 25.3 | 2.9 |

Source: NSSO 2009-10, New Delhi



# Two Dimensions of Crisis in Agriculture

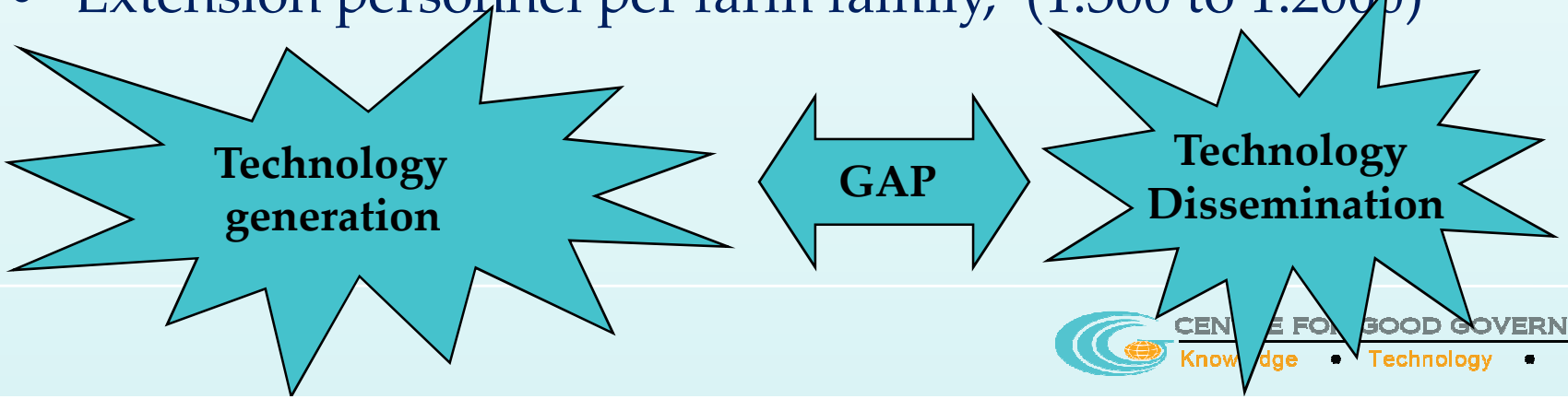
| Agrarian Crisis | Agricultural Governance Crisis |
|---|---|
| Threatening Livelihood of Farmers particularly, the small and marginal | Neglect of agriculture in designing of development programmes and allocation of resources |

## Features of the Current Crisis

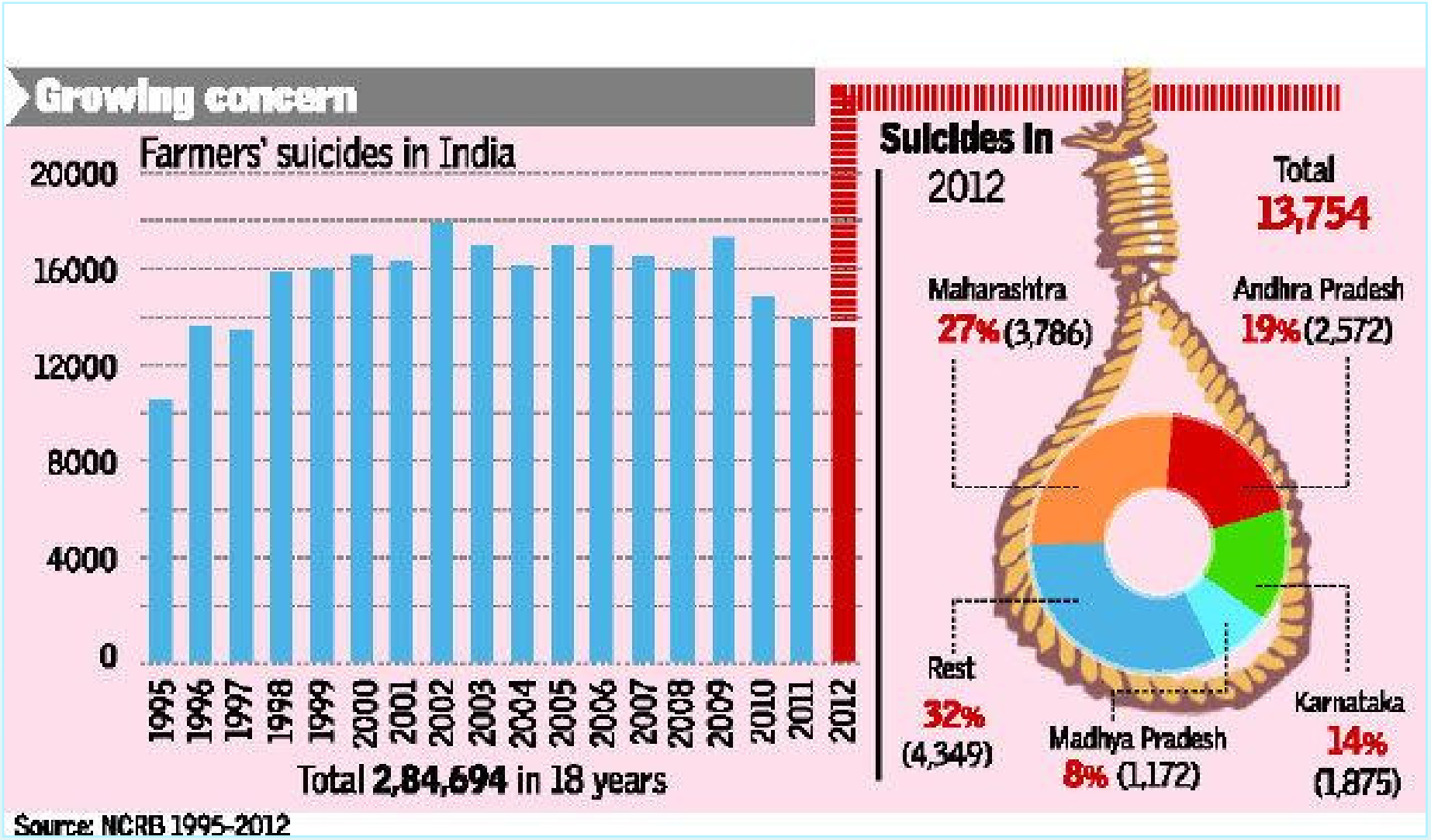
- Deceleration in production and productivity.
- Waning profitability and poor returns.
- High dependence on agriculture ( about 60% in 20010-11)
- Limited non-farm opportunities.
- Small farm holdings (about 85%, 20010-11)
- Decline of public investment in irrigation and other infrastructure.
- Inadequate supply of credit from formal sources.
- Failure of research and extension , particularly in rain fed and dry lands
- Changing technology and market conditions has increased uncertainties

# Governance Challenges in Indian Agriculture

- Slowdown in productivity growth
- Increases in production costs
- Volatility of market prices and not adhering to MSP
- Low and weak integration of smallholder farmers with markets
- Faster exhaustion of the productive capacity of natural resource bases
- Post- harvest losses
- Electricity supply
- Missing link between lab to land
- Absence of link between land to industry
- Extension personnel per farm family, (1:300 to 1:2000)



# Manifestation of Agrarian Crisis



# Agricultural Challenges of 21st Century

- Food Security – Population increase and urbanization
- Poverty Reduction – 70 % poor still live in rural areas and depend on agriculture
- Sustainable Natural Resource Management – Poor farmers, biodiversity
- Climate Change in India – increase in 2.33°C-4.78°C, Changing rainfall patterns
- Water Shortage – By 2025, 350 mt crop losse. More than US
- Soil Erosion and Land Degradation - Out of 328.2 mh, 120.40 mh affected 5.3 bn soil loss
- Agricultural Land: Diversion and Availability – Increase for non-agriculture
- Dry Land Farming - 328.2 mh, dry lands cover 228.3 mh (69.6%)

# Governance problems in Agriculture: Evidences

Apart from the challenges, we have specific challenges and problems in India. In fact many of these challenges could not be implemented because of governance problems. They include;

- Manures, Fertilizers and Biocides
- Shortage of good quality Seeds for poor peasants
- Problem of Irrigation
- Lack of mechanization
- Soil erosion
- Agricultural marketing
- Inadequate storage facilities
- Inadequate transport
- Scarcity of capital

*Most of these issues can be addressed through good governance in agriculture*

*Poor governance in agriculture has caused distress in farmers leading to suicides*

# Agricultural Governance

Governance in agriculture has become so important because of two reasons;

- *Increasing demand by farmers and rising pressures by rural people on government for equitable distribution services, subsidies, schemes etc*
- *Flaws in the current governing system.*

## The Analytical Framework of Good Governance

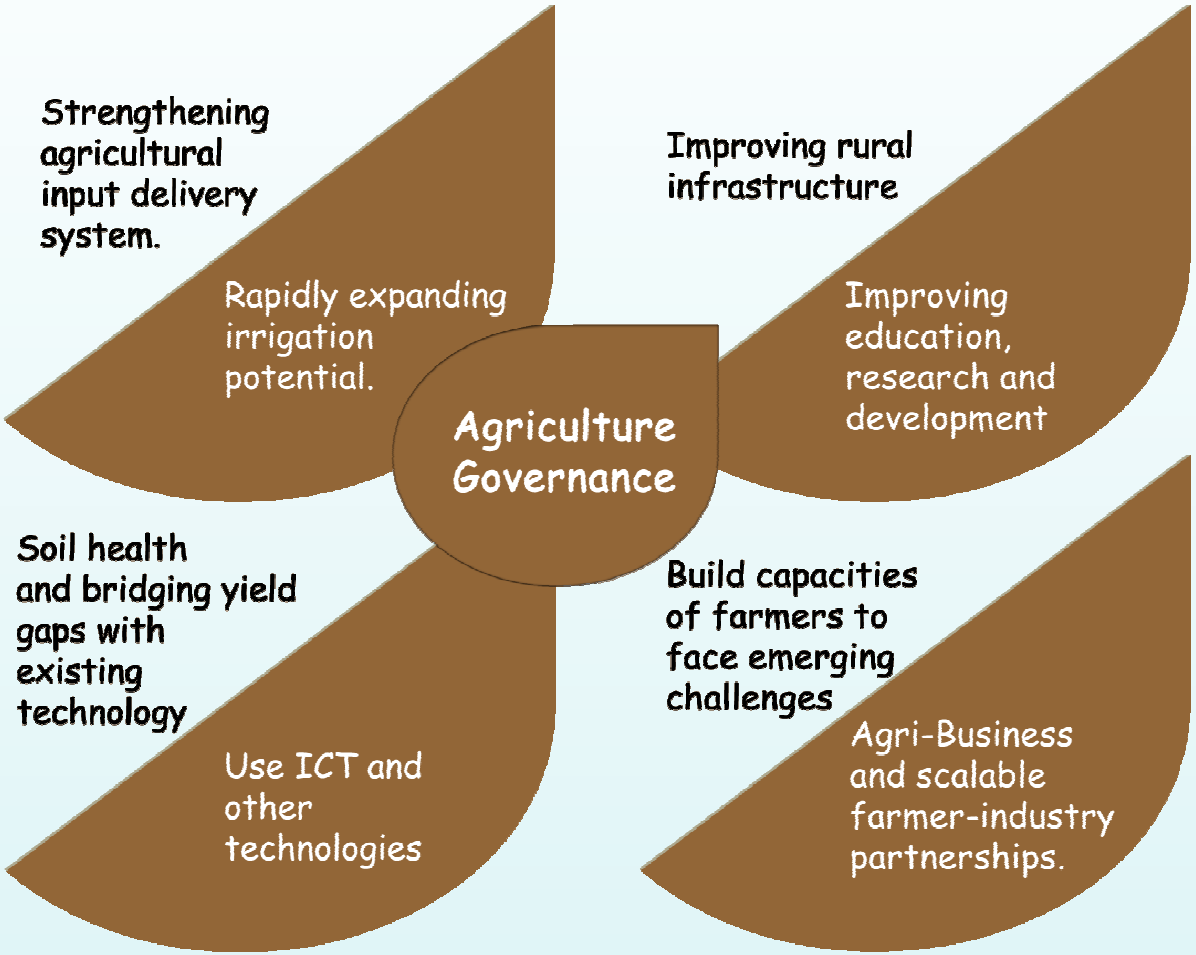
In order to remove flaws in present system, Good governance framework in agriculture must be built around three dimensions;

- Internal mechanisms
- Performance
- Accountability.

Agriculture Governance should focus on;

- Production and increased farm incomes
- Reduction in wastage of produce
- Support services to farmers
- A thrust to the food processing sector

# Governance of the Farm Sector



# Strengthening Agricultural Input Delivery System

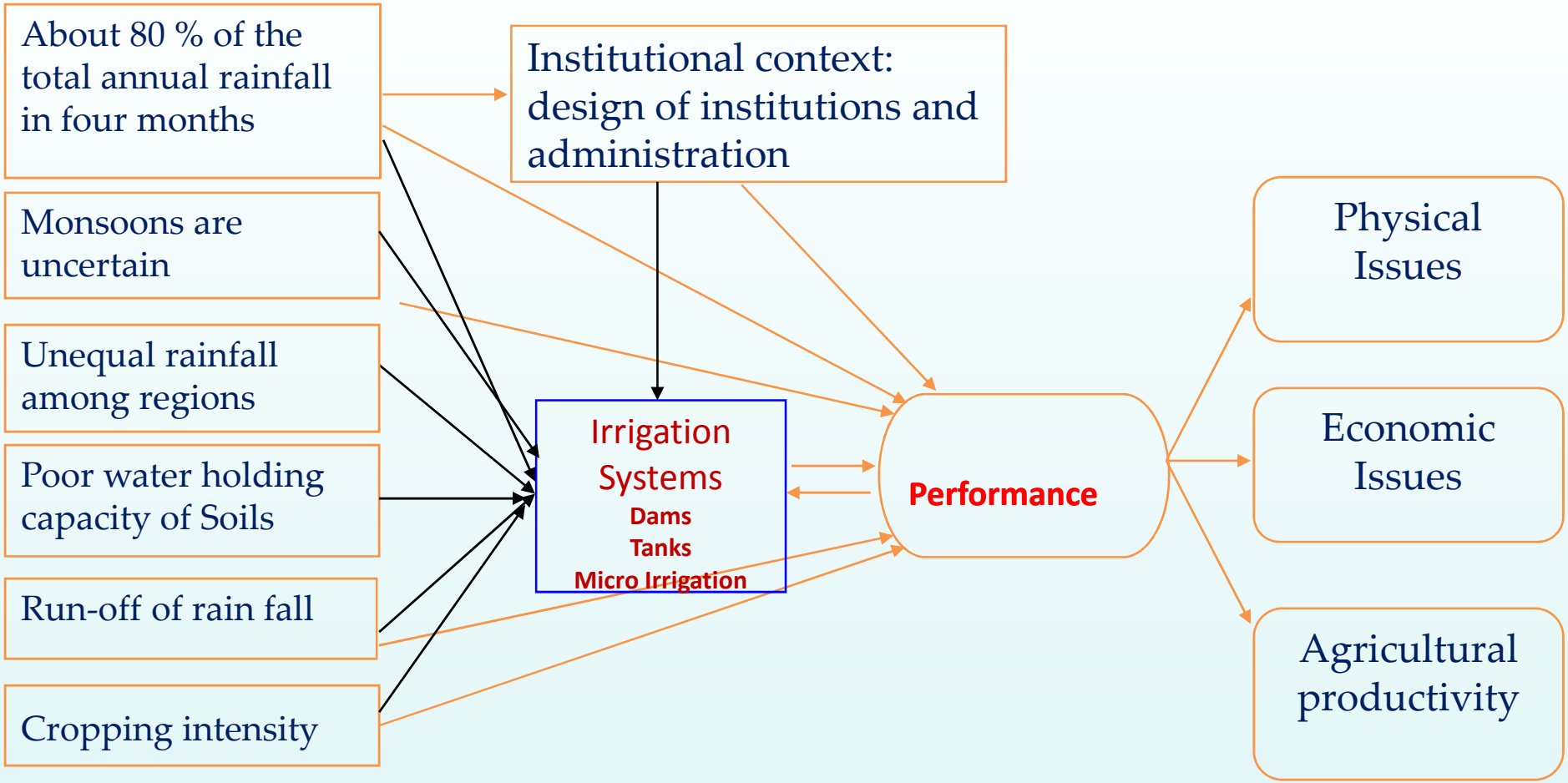
| | Major Issues | Governance Strategies |
|---|---|---|
| Agricultural Support Services (total system) | ★ Lack of commitment to solve problems of small farmers<br>★ Unsustainable resource management<br>★ Unorganized small farmers<br>★ Lack of coordination among multiple agencies | ★ Formulate and implement policies that are time bound and transparent with provision for accountability<br>★ Develop appropriate agricultural technologies and practices<br>★ Promote the development of farmers association / cooperatives based on database of individual farmers<br>★ Decentralize agricultural development programs and activities |
| Farm Inputs (e.g., land, water, fertilizer, labor, etc.) | ★ Inefficient water management<br>★ Inaccessibility to water<br>★ Untimely availability and inadequate quality/quantity of fertilizer and agrichemicals<br>★ Unskilled/exploited/shortage of labor | ★ Adopt watershed approach (rainfed areas) and organize/strengthen WUAs (irrigated areas)<br>★ Move towards a realistic cost recovery approach<br>★ Construct more irrigation facilities in the long term<br>★ Short term: make inputs available through cooperatives/groups<br>★ Long term: build infrastructure and deregulate input supplies<br>★ Adopt appropriate mechanization<br>★ Enforce minimum wage act<br>★ Undertake skills development |

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# Strengthening agricultural input delivery system

| | Major Issues | Governance Strategies |
|---|---|---|
| Research and Extension | ★ Irrelevant and top-down research<br>★ Improper allocation of funds<br>★ Limited coverage/gap between research and extension/ inefficient extension by government | ★ Conduct problem-oriented adaptive/applicable research<br>★ Adopt bottom-up approach/make farmers accountable<br>★ Promote public-private partner-ships<br>★ Encourage farmer-to-farmer type extension |
| Financing/ Credit | ★ Shortage/unavailability of credit/high interest<br>★ Complex procedures for obtaining credit from banks and other financial institutions<br>★ Improper utilization of loan proceeds by farmers<br>★ Absence/inadequacy/inefficiency of insurance schemes | ★ Earmark proportionate funds for small farmers by banks and other financial institutions<br>★ Subsidize/differentiate interest rates of loans for small farmers<br>★ Adopt group lending through credit and thrift groups<br>★ Monitor and supervise credit schemes by farmer's associations/groups<br>★ Streamline operations of credit institutions<br>★ Deregulate banking system<br>★ Provide subsidy in the form of insurance for small farmers' groups (premium to be made affordable) |

# Expand Irrigation Potential and Performance




Irrigation potential of 149.9 mha, by 2011-12, 99.1 m ha is already created

- Physical expansion to performance improvement
- From the current focus on irrigation with limited goal of agricultural production to focus irrigation as a critical tool for augmenting production and bring efficiency in its use
- From Government control to farmer oriented focus
- From full dependency on Government to collection of water charges
- From Government to participatory management.

# Irrigation Governance for Agriculture

- Examine organizational changes to ensure sustainable productivity of irrigation systems
- WUAs as appropriate organizations for small farmers to coexist with free market forces
- Participation as well as resource contribution from its users is most crucial for O&M of irrigation systems
- Focus on productivity of irrigation water with 'More crop per drop', mission statement of IWMI

a) Increasing irrigation intensity

b) Recycling surface irrigation water

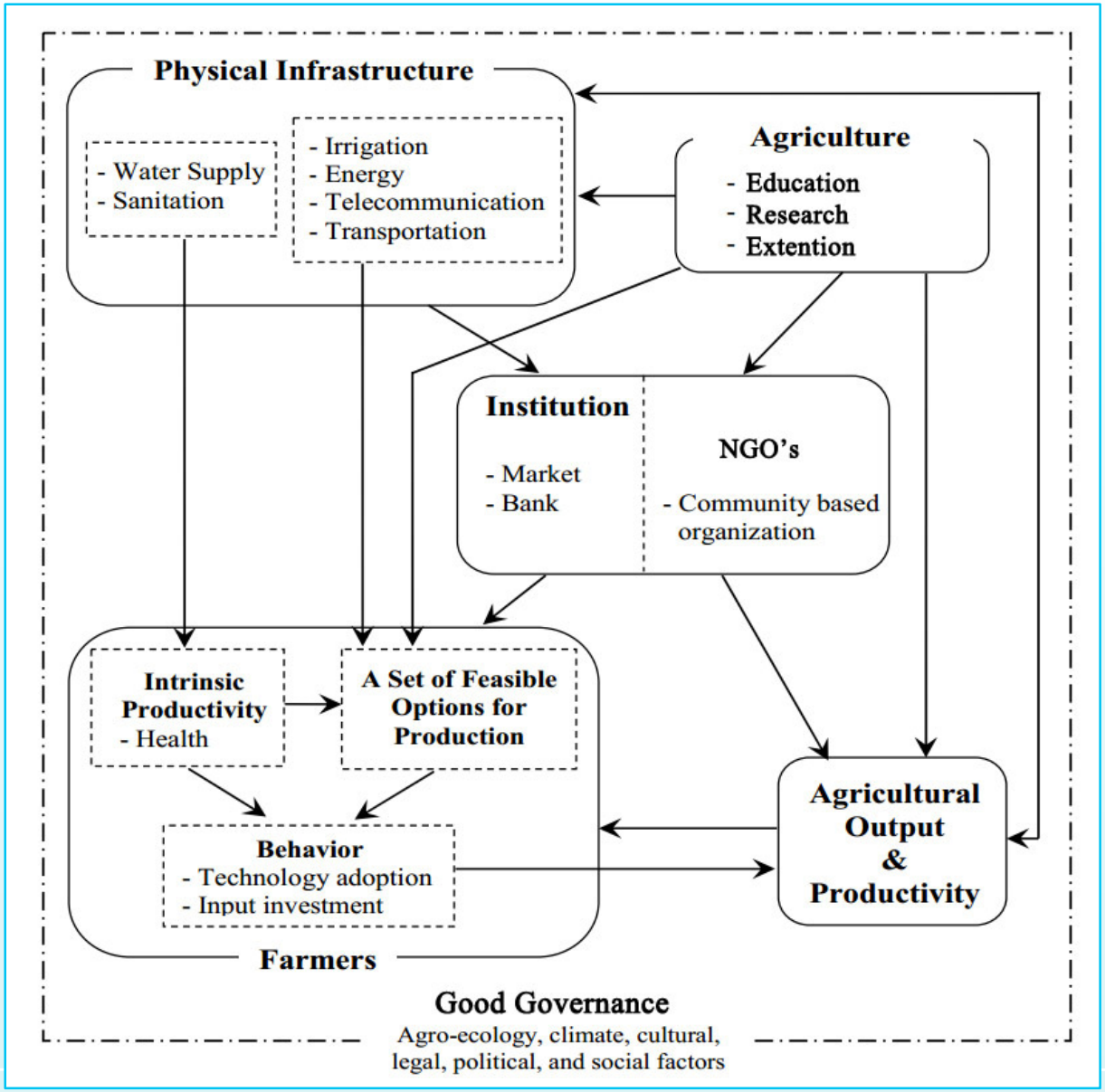
c) Developing conjunctive use

d) Improving canal efficiency

e) Introducing dynamic regulations

f) Transferring completed works to farmers

# Improving Rural Infrastructure



# Improving Education, Research and Development

- 66 agricultural universities and 99 ICAR institutes
- 623 Colleges including 103 general affiliated
- Annually admit 40,000 students and 24000 outturn
- The present day agricultural education does not address the issue like poverty, gender inequality, malnutrition, sustainability, regional imbalances
- Focus in economic equity, agri-business, agriculture marketing, value addition, international trade and other related disciplines are not addressed adequately.
- Need for greater infusion of frontier science subjects, legal aspects and good practices of trade, ethics of IPR and GMO,
- Technologies like ICT and GM, Nano, Satellite etc will become more important to promote efficiency, awareness, equity and competitiveness in agriculture.

# Improving Education, Research and Development

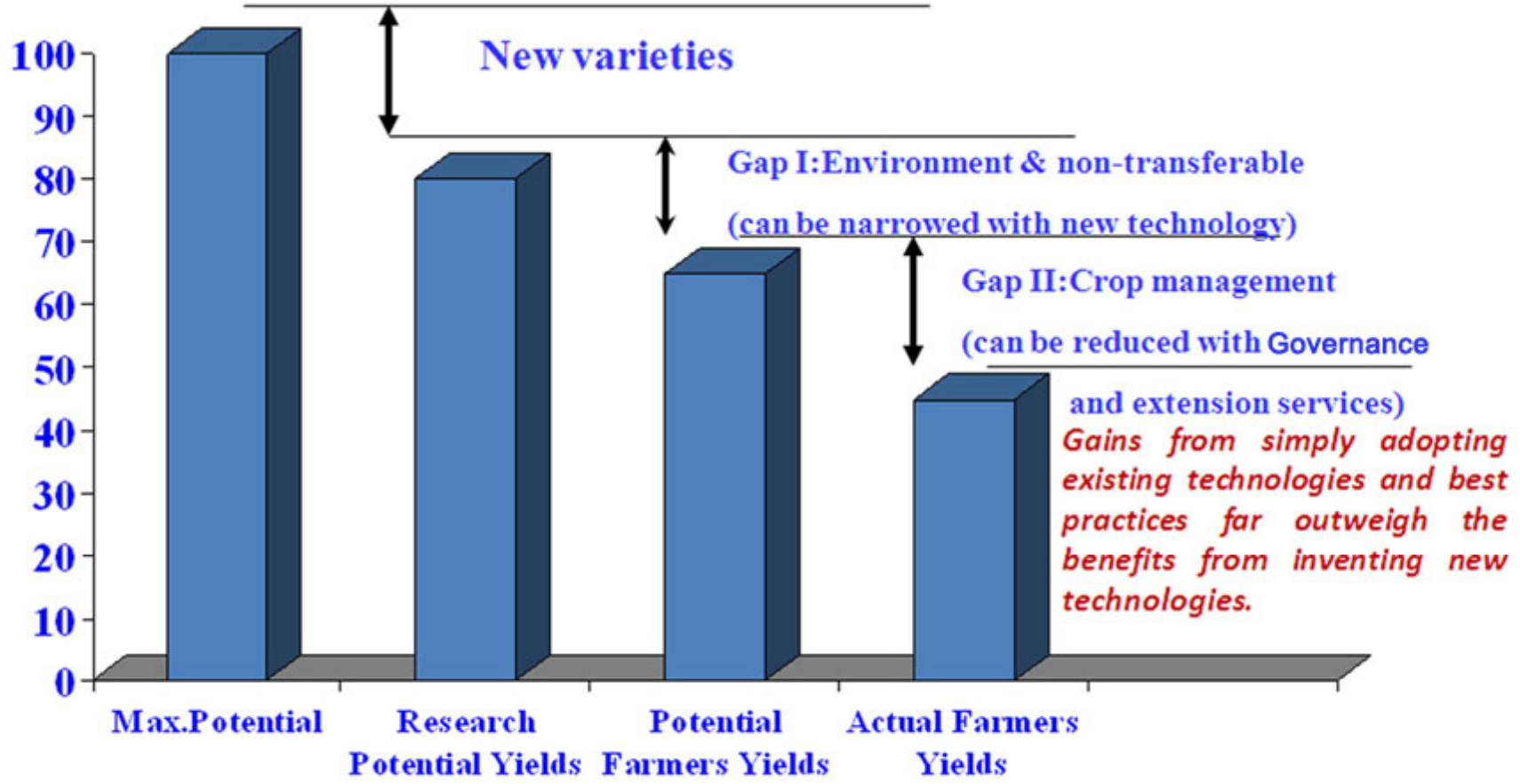
**Average public sector spend in agriculture research**

| Countries | Agriculture Spend* |
|---|---|
| Pakistan | 0.21 |
| Nepal | 0.23 |
| India | 0.70 |
| China | **1.10** |
| Sub-Saharan Africa | 0.61 |
| Latin America | 1.14 |
| Brazil | **1.80** |
| Australia | 3.56 |
| Japan | 4.75 |
| South Korea | 2.30 |

# Soil Health and Bridging Yield Gaps

- Widespread nutrient deficiencies and deteriorating soil health are cause of low nutrient use efficiency, productivity & profitability.
- Adoption of site-specific balanced and integrated nutrient management involving major, secondary and micro nutrients, organic manures, bio fertilizers and amendments.
- Conducive policy environment for more investments in the fertilizer sector for sustained supplies of fertilizers.
- Utilizing all indigenously available nutrient sources to reduce dependence on imports.
- Developing new efficient fertilizer products/ approaches through state of art R & D applications.
- Soil test based fertlizer sales
- Creating awareness amongst farmers on benefits of balanced fertilization.

# Bridging the Yield Gaps through Governance




| Region | Paddy(Rice) | Cotton(Lint) | Groundnut(pod) Kg/ha) |
|---|---|---|---|
| World | 2596 | 584 | 1449 |
| Best Country | 6057 (Egypt) | 1065 (Turkey) | 3329 (China) |
| India | 2005 | 321 | 859 |
| AP(Av). | 2846 | 287 | 742 |

# Gaps in Rice Yield (kg/ha)

| World | | India | | Andhra Pradesh/Telangana | |
|---|---|---|---|---|---|
| China | 4160 | Tamil Nadu | 3541 | West Godavari | 3504 |
| Indonesia | 2950 | Punjab | 3507 | Guntur | 3393 |
| Vietnam | 2835 | A. P. | 2846 | Adilabad | 2159 |
| Bangladesh | 2116 | West Bengal | 2287 | Vizianagaram | 1668 |
| India | 2002 | | | Visakhapatnam | 1608 |

## Gaps in Maize yield(Kg/ha)

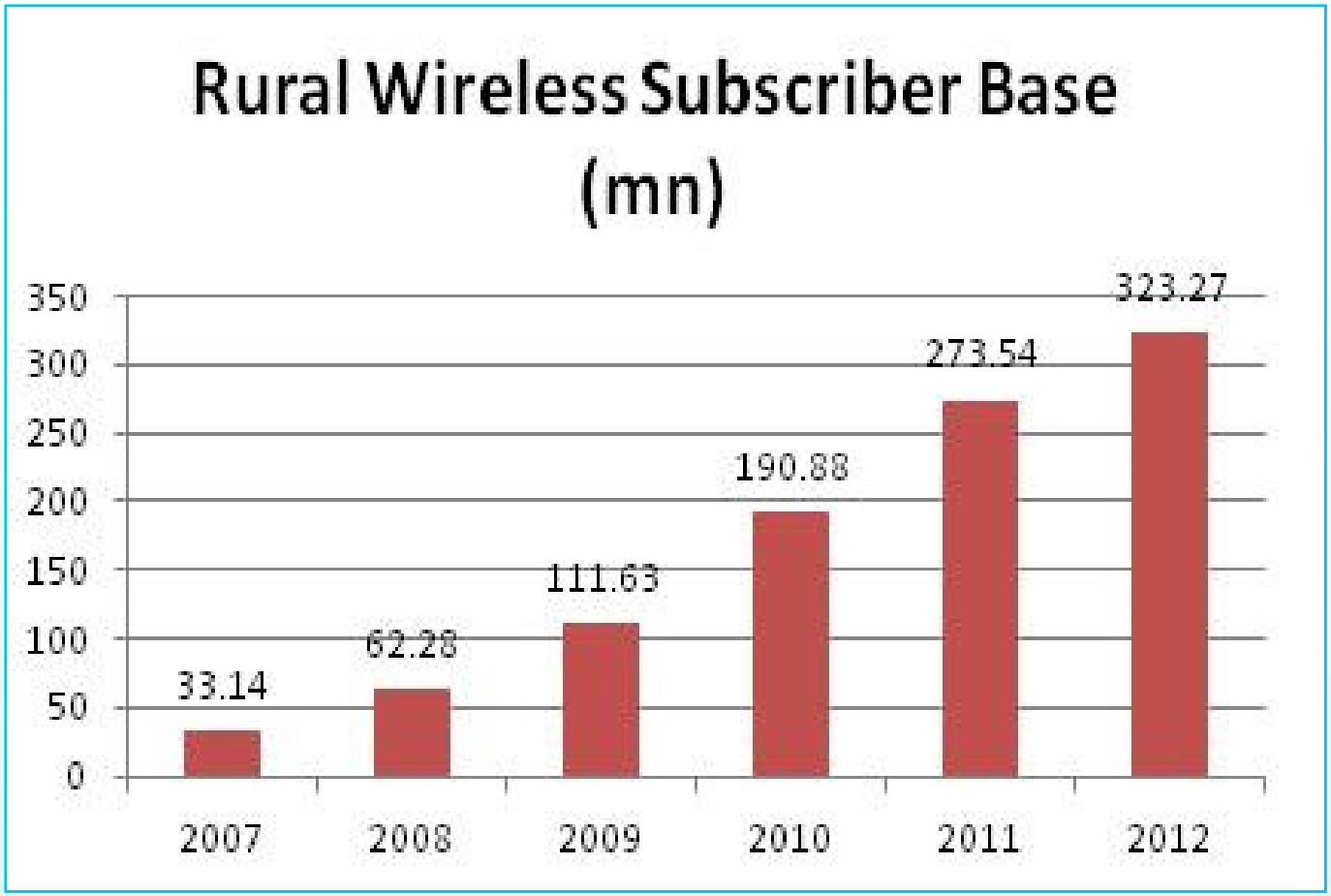
| World | | India | | Andhra Pradesh/Telangana | |
|---|---|---|---|---|---|
| Italy | 9386 | A.P | 3401 | West Godavari | 6226 |
| France | 9058 | Punjab | 2721 | Vizianagaram | 5392 |
| Egypt | 8760 | Bihar | 2618 | Karimnagar | 3956 |

- Raising productivity is raising profitability. Need to generate inherent yields and income per unit of land (soil), water and capital employed
- ICM proved to reduce seedling cost by up to 50%, main field crop management cost by10%, yield increase by 1.5 ton/ha. and overall profit by Rs 15,000/ha.

# Use ICT and other Technologies



# Use ICT and other Technologies



# Build Capacities of Farmers

- No demographic advantage to agriculture.
- Modern agriculture practices are increasingly turning out to be knowledge-based and hence gaining expertise in them is not an easy task for many of our rural farmers.
- Indian farmers require capacity building through training and education at all levels so that India farmers are better equipped to handle the threats of liberalization, privatization and globalization.

# Agri-Business and Scalable Farmer-Industry Partnerships

Agriculture to Agri-Business ???

Yes, for everybody like manufacturers and traders of inputs like seeds, fertilizers, pesticides, machinery etc. and even to farm labour who has options too.

But not for farmers!!!

Currently India produces 77 mnt of fruits and 150 mnt of vegetables and by 2021 300 mnt

Fruits and vegetable losses worth over,

Rs 2.13 lakh crore in 2011-12 and may cross

Rs.2.50 lakh crore in 2013-14

# Agriculture Governance

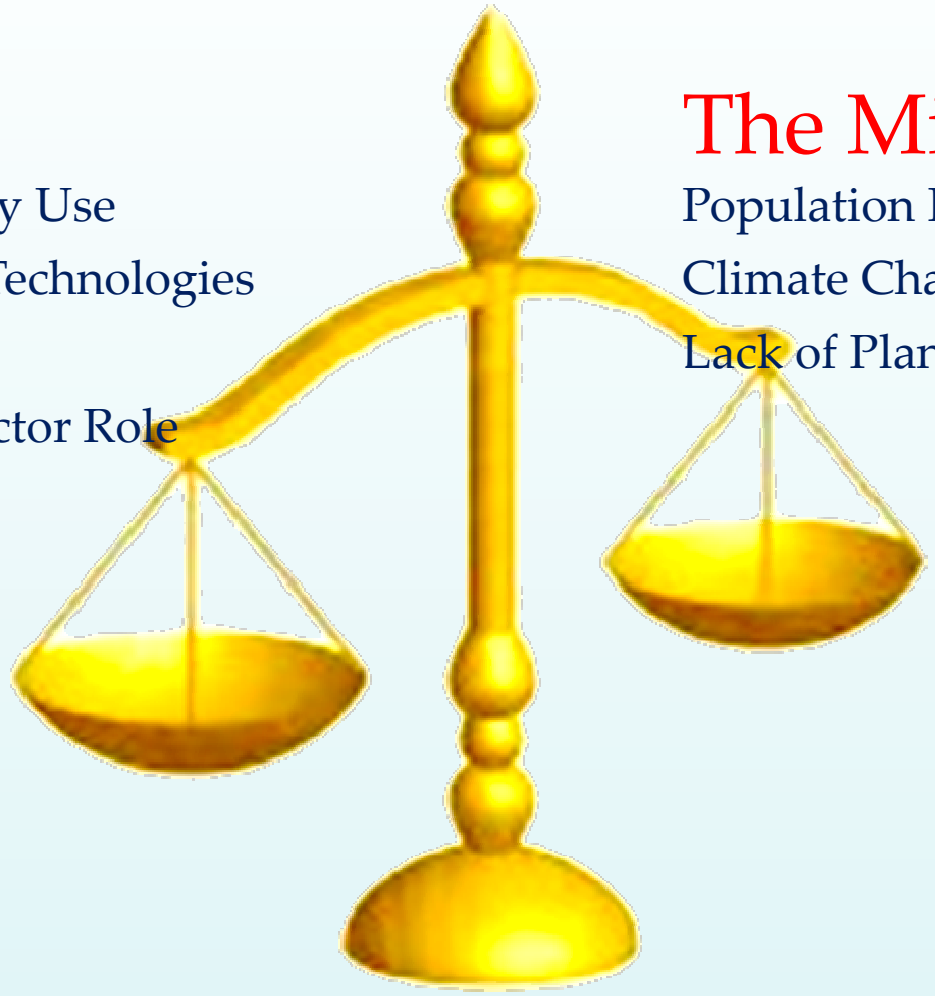
## The Pluses

Existing Technology Use

Use of Innovative Technologies

ICT revolution

PPP and Private sector Role



## The Minuses

Population Pressures

Climate Change

Lack of Planning

**'If agriculture goes wrong, nothing else will have a chance to go right in this country"**

# Thank you

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