

SEMINAR ON INDIA'S CHALLENGES OF AGRICULTURE

(13th march 2018)



From the left: Dr. Vibha Dhawan Senior Director, TERI; Ms. Veena Nayyar Director, Policy Foundation; Dr. Harsh Kumar Bhanwala, Chairman, NABARD; Dr. Rattan Lal, Head & Distinguished University Professor of Soil Sciences, President, IUSS; Dr. AnneSophie, Adviser, Sustainable Agricultural, FAO; Dr. Arabinda Kumar Padhee, Director, Country Relations and Business Affairs, ICRISA.

Glimpses of Seminar hosted by Policy Foundation on ***'India's Challenges on Agriculture'*** at India International Centre, New Delhi.

The seminar was a great success with the participation of eminent development practitioners and professionals from the field of Agriculture - National Bank For Agriculture & Rural Development, Food and Agriculture Organization of the United Nations (India), TERI - The Energy and Resources Institute, ICRISAT, International Union of Soil Sciences (IUSS).

The seminar was chaired by Dr Harsh Kumar Bhanwala, Chairman, NABARD. The Keynote Speaker was Dr Rattan Lal. To quote Dr M. S Swaminathan, "He is one of the World's greatest Scientists in Agriculture." We may add that he was, at the global level, the keynote speaker at both COP22 & COP23. Dr Arabinda Kumar Padhee, Director, Country Relations and Business Affairs, ICRISAT, gave his critical insights on Small and Marginal Farmers. Dr Vibha Dhawan, Senior Director, TERI, spoke on: 'Water Security for Agriculture'. Dr AnneSophie, Adviser, Sustainable Agricultural, FAO shared her accurate and deep understanding on Sustainable Agriculture.

A glimpse of problems pertaining to the Indian Agriculture



Dr Harsh Kumar Bhanwala, Chairman, National Bank for Agriculture & Rural Development (NABARD).

He highlighted the importance of institutional credit in supporting farmers, especially the marginalized and small landholders. He also focused on the importance of diversification of livelihoods and diets to ensure farmer's resilience. The main reason for agrarian distress is that, farmers invest more than what they receive when they sell their crops. This pushes them into debt, with local moneylenders.

In relation to the use of technology, he stressed on the importance of capturing and digitization of data. Lack of data is the first major hurdle to policy making. He emphasized on the absence of rural infrastructure as a major problem to growth and development in rural India. Lack of transport, storage and access to markets is a major hurdle that can be resolved with easy policy measures.

Climate Change and the risk due to the extreme events like droughts or dry spell lack accurate data at ground level which obstructs the framing of proper policies and providing adequate institutional support to farmers in helping them to cope with the risk. Climate risk can be averted with diversification and investment in agriculture allied activities like diary, fishing and farming.

Sustainability and quality of the soil is a pivotal element for Agriculture



Dr. Rattan Lal, Head & Distinguished University Professor of Soil Sciences, President, International Union of Soil Sciences (IUSS)

He is a world renowned Soil scientist at the Ohio University, focused on the sustainability and quality of the soil as a crucial element to ensure food security, higher prices for crops and sustainability of agriculture over a period of time. There is a strong need to reconcile increase in agronomic productivity with restoration of soil health and improvements of the environment. Degraded soils will compromise all the above leading to an agrarian unrest that we witness around manifested in failing crops, poor yields and dropping prices and increasing farmer debt, etc.

He shows how soil health factor is crucial in mitigation and adaptation to climate change. Soil can act as carbon sinks through sequestration and healthy soils adapt better to climate variability or extreme weather changes.

The policy intervention needed for this are-

1. Rewarding farmers for-
2. Sequestering SOC
3. Mulching fields (no burning of crop residues)
4. Using conservation agriculture,
5. Adopting micro-irrigation,
6. Applying balanced fertilizers based on soil test,
7. Reducing post-harvest losses of produce

8. Diverting fertilizer subsidies to retention/use of crop residues

Even though, India has the capacity to address these environmental issues like scientific knowledge and trained human resources. The existing gap between science and policy makers is what hinders translating what we know into effective action at ground level. Another important issue that was discussed in the conference was the misuse of technology that has aggravated the environmental problems rather than providing a solution. ‘Technology without wisdom’ has resulted in catastrophic impacts for the environment and climate.

The Small and Marginal Farmers



Dr Arabinda Kumar Padhee, The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

Dr. Padhee stated that there is a direct and positive correlation between India’s population and the number of small landholdings. According to the Agriculture Census of 2011, the average size of operational land holding of each farm is 1.15 hectares (taken together)

1. 0.39 ha (Marginal farmers)
2. 1.42 ha (Small farmers)
3. 17.38 ha (Large farm holdings)

Secondly, marginal and small farmers constitute 85% of 138 million farm holdings. They are classified as ‘Smallholders are small-scale farmers, pastoralists, forest keepers, fishers who

manage areas varying from less than one hectare to 10 hectares. Smallholders are characterized by family-focused motives such as favouring the stability of the farm household system, using mainly family labour for production and using part of the produce for family consumption.’(FAO 2012)

Importance of small farmers for sustainability

1. Smallholders hold the potential for transformation in World Agriculture
2. Smallholders are often neglected part of Global agricultural community
3. Smallholder productivity depends on well-functioning ecosystems
4. Sustainable agricultural intensification is the answer to enhanced food security, environmental protection and poverty reduction.

Policies and Strategies for Small Farmers

1. Develop National Plans to scale-up support to sustainable smallholder farmers, develop their entrepreneurial capacities and create viable livelihoods in the rural areas, with special focus on women and youth, including allocation of adequate resources.
2. Ensure smallholder farmers’ access and control over natural resources, mainly land, water, forests and seeds and promote culturally adapted short food chains.
3. Adopt and implement the Voluntary Guidelines on the Governance of Tenure of land, Fisheries and Forests.

Policy Challenges

1. Targeting subsidies: DBT
2. Balancing the moving-up and moving-out
3. Land leasing: insecure land tenure?
4. R&D: Climate resilience
5. Institutional support

Water Challenges of Agriculture in India



Dr Vibha Dhawan, Senior Director, TERI - The Energy and Resources Institute

Dr. Dhawan gave her thoughtful insights on Water Challenges of Agriculture. Water is a vital component of our ecosystem as food, energy & agriculture heavily depends on it. The emerging water crisis in the subcontinent due to scarcity (India has 17% of the world's population but only 4% of fresh water resources) and pollution (mining, dumping of waste, oil spillage, fertilizers and pesticides). It is estimated that the national water supply may fall 50% below the expected demand by 2030.

Government's Initiative -

- Water audits to be part of industrial activity
- Irrigation reforms
- Companies to include water footprint in the annual report
- Smart city mission aims to develop cities that optimize water usage; water harvesting; waste water treatment.
- Launch of National Mission of Clean Ganga with outlay of Rs.20,000 crore.

Specific Initiatives in Agriculture-

- Agriculture uses 80% of the total fresh water
- Watershed development

- Use of sprinkler / drip irrigation
- Sub-soil irrigation coupled with precision agriculture
- Develop varieties which are drought tolerant & have higher water use efficiency
- Technologies such as Direct Seeded Rice & conservation agriculture
- Soil sensors; recycling of waste water; solar pumping of water but selling electricity to grid etc.
- Choosing crops depending on water availability
- Prevent virtual flow of water

Tackling the Agrarian Crisis in India: Rethinking Innovation, Research and extension for Sustainable Food Systems.



Dr AnneSophie Poisot, Adviser, Sustainable Agricultural, Food and Agriculture Organization of the United Nations (FAO) - India

Dr AnneSophie started the session by defining innovation. She stated that most people assume a linear path (invention, design, and commercialization) which is mostly top –down in nature, where people (farmers) are seen as consumers, producers, employees and voters (but not innovators). Secondly, innovation is not simply a technology (or a technical object), it must be the reorganization of institutions, organizations, value chains, businesses - to

enable actors to innovate on their own terms (Felt et al., 2007). Innovation must be multi-actor networked path.

Institutional innovations are as important as technological innovations, in the transition to sustainable agriculture and they require policy support.

The context of innovation systems are

1. **Extension & Research Crisis-** Failure of Training & Visit; Reduced funding
Extension reform towards "demand driven"
2. **Changing situation for small-holders-** Farming environment, Climate change and markets.
3. **Broadened perception of Poverty including;** well-being, Power and Influence

Changes needed -New innovation systems to fit new purpose-

Agronomic skills: from fixed sets of practices, to discovery of agro-ecosystems processes (IPM, INM, soil health... require understanding of complex concepts)

1. From Agronomic to multidisciplinary knowledge
2. From input intensive to knowledge intensive agriculture
3. Soft skills: From extension workers to rural advisors to farmers on redesigning productive and ecologically-sound systems (rotations, associations, agro-forestry, green manure, soil health management.
4. Topics: From productivity to incomes ... means broader topics.
 - Market linkages, farming as a business, price discovery
 - Quality markets. No pesticide, safe, organic (25-30% growth)...
5. From linear vision of research to extension to farmers to co-constructing innovations with farmers
6. System rethink: from supply driven to demand driven solutions- how will the system address these issues.

Key notes –

- The transition to more remunerative, sustainable and climate resilient rural areas in India will be knowledge intensive.
- Technological innovations are necessary, but not sufficient. This is also about people and institutional innovations
- India cannot do this without investment in education of farmers and more nimble (advisory and) innovation systems.