

Policy Framework for Increasing Private Sector Investments in Agriculture and Enhancing the Global Competitiveness of Indian Farmers

- A Road Map



Progress Through Science

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Trust for Advancement of Agricultural Sciences

The Trust for Advancement of Agricultural Sciences (TAAS) was established on 17 October 2002. Its mission is to promote growth and advancement of agriculture through scientific interactions and partnerships. The major objectives are: (i) to act as a Think Tank to deliberate on key issues relating to agricultural research and innovation for development (ARI4D) and influence science based policy decisions, (ii) to organize workshops, conferences, brainstorming sessions, policy dialogues, seminars and special lectures on emerging issues and new developments in agricultural science, (iii) to disseminate knowledge among stakeholders through publication of proceedings, strategy papers and policy briefs, (iv) to recognize and award scientists of Indian and foreign origin for their outstanding contributions towards Indian agriculture, (v) to motivate and attract youth (including women) in agriculture and (vi) to facilitate scientific interactions and partnership at the national, regional and global level to ensure science led growth in agriculture. The main activities include: organizing symposia/conferences/workshops/brainstorming sessions/ seminars on important themes, publishing of strategy papers on key policy matters, and conference/workshop proceedings, organising Foundation Day lectures/Special lectures and conferring Dr. M.S. Swaminathan Award for Leadership in Agriculture. For more details, please visit: www.taas.in

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Preamble

India has emerged to be a vibrant economy. The reasons had been: enabling policy and regulatory environment, increased capital investment for critical infrastructure, good institutions, competent human resource and the global partnership for access and scaling of innovations. As a result, India could achieve household food security and a significant decline in poverty. It also attained diversified agricultural growth through White, Blue, and Rainbow Revolutions, etc. Equally impressive had been the achievements for agricultural exports now touching almost US\$ 40 billion.

Despite these, second generation problems of Green Revolution such as factor productivity decline, depletion of natural resources (soil, water, biodiversity, etc.), decline in the income of farmers, etc. have emerged as major concerns. Also, meeting the sustainable development goals (SDGs), especially the concerns of poverty, hunger and environmental sustainability, and the adverse impact of climate change are the additional challenges to be addressed on priority not only by the Government alone but by all stakeholders.

In this context, the private sector holds key to accelerate further the present agricultural growth, which is around 2.9 per cent, by enhancing investments in R&D as well as in infrastructure and to ensure desired efficiencies in agricultural value chain through timely service delivery and linking smallholder farmers to market. The public-private partnership (PPP) is also critical to harness diverse talent (especially youth, including women) and modern technologies, backed by resources, corporate work culture and new business skills in pursuing sustainable development goals.

Currently, there are various challenges facing the Indian private sector engaged in agriculture. Some of these are: i) meeting nation's household food and nutritional security (food demand of about 350 million tons by 2025), ii) changes happening in the consumer preferences towards healthy foods (5-6% CAGR of fruits & vegetables and pulses), iii) increased stress on agri-production due to decline in resources (decreasing size of land holdings, decline in soil health and water availability, agri-labour migration to non-farm jobs), iv) expected adverse impact of climate change (54% of India faces high or extremely high water stress), v) food wastage across

the value chain (fruits & vegetables up to 37% and cereals up to 25%), (vi) lower profitability for the farmers, (vii) lack of rural infrastructure to support on-farm and off-farm activities, (viii) existing yield gaps in many important crops, (ix) lack of interest among youth in agriculture, and (x) adverse impact of agriculture on environment, especially on soil health, water, quality of air and on food safety.

Further, under the current scenario, an urgent reorientation of agricultural policies, research priorities and advisory services defining a comprehensive framework is urgently needed, which defines clear goals for the stakeholders (farmers, scientists, government, private sector: both agri-input and output industries, and NGOs) to be achieved. The needed key policy interventions in Indian agriculture include: i) making agriculture attractive, remunerative and globally competitive with better opportunities for employment in and around agriculture, ii) enhanced marketing options (both domestic and global), and iii) reduced pricing risks. Accordingly, the private agri-input industry has a major role and responsibility for: i) investing in developing and popularizing science based agronomic practices that are climate-smart and financially viable for the farmers, ii) creating and respecting intellectual property that is legally tenable and ethically sound, iii) providing effective technical advisory services to the farmers to adopt good agronomic practices (GAP) around sustainable intensification, and iv) producing and making available various products of high quality meeting the expectations of farmers.

India is the first country in the world to make corporate social responsibility (CSR) mandatory, following an amendment to the Companies Act, 2013 in April 2014. The inclusion of CSR is an attempt by the Government to engage private sector businesses with the national development agenda. As per the Act, every company (private limited or public limited) which either has a net worth of Rs 500 crore or a turnover of Rs 1,000 crore or net profit of Rs 5 crore, needs to spend at least 2 per cent of its average net profit on CSR activities relating to agricultural research, education, extension and development. The private industry working in agriculture, covering both inputs and outputs, has a significant expenditure on the CSR activity. In this regard, the private sector participation in the national agricultural extension system to provide good knowledge and for skill development, especially of youth, could be of great benefit.

For developing strong public-private partnership (PPP), there is strong need to build mutual trust between the Government and the industry. Private sector can provide support in areas like rural infrastructure, training and capacity building, establishment of agri-clinics, value chain development, linking farmers to markets and in technology development involving youth (including women) for increasing farmers' productivity and profitability through secondary and specialty agriculture. Therefore, for future growth acceleration, the private sector has to play a proactive role in creating much needed 'Agri-Youth Innovation Corpus Fund' and enhance rural employment

through special projects. Such an effort would enhance rural employment opportunities through small agri-business start-ups, public-private as well as private-private entrepreneurship. The private sector can also help in providing soft loans and in mentoring programs for the rural youths to become agri-entrepreneurs, input dealers/suppliers, technical service providers and paid extension agents.

The Roundtable Discussion

In order to discuss threadbare the above critical issues, a roundtable discussion on “Policy Framework for Increasing Private Sector Investments in Agriculture and Enhancing the Global Competitiveness of Indian Farmer” was organized by the Trust for Advancement of Agricultural Sciences (TAAS) at Taj Palace Hotel, New Delhi on 4th December, 2019. A total of 37 eminent experts, administrators, policy planners, farmers and the industry stakeholders participated. The main objectives of the roundtable discussion were: i) to define clear policy framework that can enhance private sector investments in agriculture, ii) to reorient priorities and the guidelines for use of CSR funds that can increase farmer’s income through agricultural diversification, entrepreneurship, capacity and skill development, and iii) to develop a Road Map for strengthening public-private partnership (PPP) to make Indian agriculture and the farmer globally competitive.

The Road Map

For increasing the private sector investments in agriculture and enhancing the global competitiveness of Indian farmers, there is an urgent need for policy reorientation. To ensure having a sound strategy and action plan for timely implementation, the following Road Map is proposed based on the Roundtable discussion:

I. Policy framework for increasing private sector investment

1. There is an urgent need for a paradigm shift from production oriented policies to market driven policies which will attract private investment in agriculture. These include:
 - The Essential Commodities Act in its present form is no longer relevant as India has moved from a shortage economy to a surplus economy concerning agricultural production and hence this Act needs to be revisited and modified suitably to avoid restrictions on movement of agricultural produce.
 - APMC Act needs to be amended to facilitate better price realization by the farmers. All the restrictions on the farmers/producers, especially for sale of perishable vegetables and fruits, as well as for price fixation need to be removed. Assessment of quality parameters by buyers should be made professional with accurate measurement systems. All the *mandis*

need to be modernized with improved infrastructure and use of new age digital technology. Also, the *mandis* need to be privatized on the pattern of airports, for better efficiency, transparency and greater private sector investment.

- An effective rural based primary value chain needs to be developed to reduce post-harvest losses and avoid the distress sale. Farmer self-help groups (SHGs), cooperatives and farmer producer companies (FPCs) be incentivized to aggregate agri-production and ensure effective linkage to markets. The markets need to be opened to private sector, including progressive farmers and the youth (including women).
2. Priority attention needs to be given to liberalize important factors of production like land, water and seeds through:
- Establishing open land lease markets to attract greater private sector investments for setting-up high value agriculture around secondary and specialty agriculture.
 - Reviewing Land Ceiling Act and liberalizing provisions for consolidation of land holdings, while ensuring minimum farm holdings not less than 1.0 ha. Also, private sector involvement is critical to make farming operations more efficient through adoption of modern technologies and farm machinery.
 - Promoting micro-irrigation in a mission mode and allowing private industry to compete through bidding and investing

in the irrigation projects. Also, there is need to open up water ways for development and use by the private sector in order to ensure efficiency.

- Creating a supportive and time bound regulatory/policy environment to apply modern science and technology for the production of quality seeds including the use of GM crops, new plant breeding innovations like gene editing and other modern technologies such as: geographic information system (GIS), artificial intelligence (AI), robots, drones, big data, etc.
 - Regulatory procedures and protection of intellectual property (IP) for innovations around various agri-inputs need to be improved in line with global standards. An integrated IP policy needs to be in place and has to be implemented ruthlessly by the Government. Enforcement of IP laws by the Centre and States is critical for attaining greater success.
3. Greater thrust needs to be given to increase non-farm income. This could be done through generation of energy (biofuel, solar or wind energy) or by enhancing input-use efficiency, post-harvest management and value chain that would generate additional income for the farmers.
4. There is need to create a few world class food and agricultural education institutions/universities with provision for equal shareholding by the Government, domestic /global private sector with their autonomous governance. Such institutions will bridge the gap between farms and

markets and will create high quality human resource through quality education in agriculture starting from secondary and higher education levels. Some of the premier institutions like Indian Institute of Management (IIM), Indian Institute of Technology (IIT), etc. could be good models in making agriculture both efficient and profitable to the farmers as well as consumers.

5. Increasing private sector investments in agricultural research, innovation and development through various ways is extremely important:

- There is need to promote research programs/projects of ICAR in collaborative mode and even devolve research initiatives like hybrid research in selected crops to the private sector for conducting research. Government should clearly identify and announce areas of priority for private sector investments with long-term enabling policy framework. Also, Government policies need to be reoriented to eliminate unsustainable practices by the farmers – like water consumption, power consumption, fertilizer use, etc.
- Government has to seriously think about bringing disruptive changes in the functioning of agricultural sector so as to ensure transformational change that will incentivize private sector to invest heavily in the agriculture sector. Government policy should promote R&D and innovation – by having clear policy on intellectual property (IP) protection, creating large public-private partnership based research projects,

and creating a national innovation fund of Rs.10, 000 cr to encourage innovation and entrepreneurship. The scope and guidelines for use of innovation fund needs to be developed. There is also a need to provide incentives for scaling innovations both by the national and international private sector R&D organizations, for which an enabling environment through quick release of national license to R&D companies, IPR for innovations, joint venture between public and private sector institutions, etc. shall have to be created at the soonest possible.

- Specific policy support needs to be provided for increasing the role of science and technology in agriculture, especially to counteract the negative perception created by the vested interests. The scientists working with Government institutions should be encouraged to support science and technology initiatives by the private sector in the larger interest of the county and the farmers. For this, there is need for creating confidence among general public through awareness programs (example: nano technology and artificial intelligence in fertilizers and pesticides, GM technology in seeds, etc.).
- Large scale promotion of nutri-crops rich in minerals and micronutrients is required to improve nutritional and health standards of our people. Also, the policy environment be created to support contract cultivation, corporate cultivation and price discovery mechanisms to facilitate their large scale cultivation. This will also help

in addressing the concern of existing micronutrient deficiency among Indian population.

- All subsidies being given by the Government need to be converted into incentives and the process is restructured to promote efficiency through sustainable practices by farmers and to ensure value chain creation through greater collaboration between public and private sectors. In this context, the recommendations of Paroda Committee submitted to the office of Principal Scientific Adviser (PSA), GoI be considered for implementation at the soonest possible.
- Government may set-up an appropriate institutional mechanism to facilitate regular policy consultations with the private sector and build much needed confidence among them in order to increase their investments in creating infrastructure, modernizing markets, primary processing and value addition, creating rural infrastructure, improvement of rural sanitation, education and health, peri-urban agriculture, etc.
- It is high time that Government starts thinking comprehensively as to how to facilitate taking farmers out of agriculture gradually to other livelihoods for better economic growth. For this to be a reality, needed capacity development initiatives shall have to be strengthened.
- There is vast opportunity to promote agri-exports from India, which requires large scale private investments in contract production, quality

management, processing and packaging technologies, value addition, storage and other links in the value chain. For this, the Government shall have to create a long-term and enabling policy environment for export.

6. Schedule 7 of Companies Act concerning use of Corporate Social Responsibility (CSR) funds needs to be revisited and amended to categorically include the investments by the corporate sector so as to accelerate the growth of Indian agriculture. This has to be ensured through:
 - Greater capital investments in agriculture by the corporate sector, as envisioned in the National Agricultural Policy (2000)
 - PPP projects for research on new innovations that help agricultural production and profitability of smallholder farmers
 - Developing and popularizing science based good agronomic practices (GAP) that are climate-smart and financially viable
 - Establishing infrastructure and conservation assets that will help the farmers in practicing sustainable agriculture
 - Creating venture capital fund such as: National Agricultural Innovation Fund for motivating and attracting youth (including women) in food and agri-enterprises and for establishment of Agri-Clinic Centres in all KVKs as recommended by Paroda Committee to the Government.

- Farm mechanization, storage and other infrastructure needs to be covered in the schedule for use of CSR funds
 - Any investment that has an end use in food and agri-sectoral growth need to be included under the CSR use category
 - Promoting large scale agri-waste management including *in situ* paddy straw management (e.g. Punjab and Haryana) and also converting agri-waste into biofuels for wealth creation by the farmers
 - Extending required financial and risk mitigation support such as: insurance of crops, animals, human life, assets and protection against natural calamities
 - Promoting the use of CSR funds for knowledge dissemination as a single window system and also for post-harvest management and value addition especially in peri-urban agriculture.
 - CSR funds could be effectively used in creating water-shed management assets in the villages which will help considerably in increasing the competitiveness of the farmer.
7. Urgent attention is needed to strengthen public-private partnership through:
- Greater trust needs to be built between public and private sector through an effective facilitation and dialogue mechanism and follow-up action on strengthening partnership for accelerating agricultural growth.
 - There should be special recognition and incentive mechanism for the efforts made by the private sector in research, production, extension and marketing of agricultural products. As an incentive, the national level research based agri-input companies could be considered for a special status in the licensing system.
 - Collaborative research projects between the public and private sector need to be developed in underutilized/orphan/minor crops and open pollinated (OP) crops. Also, there is need for undertaking contract research by both the sectors, with clear policies on sharing of IP rights, and through needed security of the products.
 - Government could declare specific areas where public-private partnership (PPP) will be promoted as a national priority and encourage private industry to come forward with higher investments for new innovations. For scaling out innovations, the involvement of smallholder farmers, self-help groups (SHG), and the FPOs, through trade oriented capacity building, could be a win-win scenario.
 - There is a strong need for creating an institutional mechanism for knowledge sharing with farmers involving existing KVKs. A commercial network of digital platforms for both production and post-harvest management and value addition needs to be established by bringing young men and women farmers and the private industry together.

II. Enhancing the global competitiveness of Indian farmers

1. There is an urgent need to study the relative cost of production per kg indifferent crops grown by the Indian farmers with those of other competing countries and identify options for reducing the costs and also improve yields to become globally competitive. This will help in making focused efforts to improve relative competitiveness.
2. The farmers who cultivate nutr—crops rich in minerals and micronutrients should get premium price so that they can be encouraged to grow these crops. This will also lead to enhanced income to smallholder farmers. .
3. A comprehensive and collaborative approach needs to be taken-up between the Central Government and the State Governments to take appropriate policy measures to improve global competitiveness of Indian farmers. For this, following aspects need attention:
 - An end to end approach needs to be adopted for each crop. Critical review of technologies to be used as inputs, agronomic practices that can increase yield and quality, post-harvest management to minimize losses in storage and transportation, etc. and the strategic policy support required to deploy the cutting edge technologies in each of the agro-ecologies would help smallholder farmers significantly. Private sector has to play an important role in scaling of innovations like expanding area under single cross maize hybrids, hybrid rice, conservation agriculture, micro-irrigation, protected cultivation, and vertical farming, etc.
 - There is also an urgent need to promote primary value addition at the village level involving youth including women, for which appropriate mechanism and enabling policies need to be in place. The value chain needs to be built for each crop in a comprehensive way in order to ensure full value for the farmers – reduce the role of unnecessary middlemen – create digital networks of farmers and value chain players to bring a seamless integration. This will need specific policy reforms in a much focused way. This has to be extended across sectors like crops, livestock, fisheries, etc.
 - As per current cost structure, almost 40-50 per cent of the cost is on account of labour. This has to change if we wish to make the farmer competitive and his farming remunerative. Farm mechanization strategies to reduce considerably the dependence on labour such as: field preparation, transplanting, weeding, pest management, harvesting, post-harvest operations etc are to be promoted through adequate policy support and incentives by the Government.
4. Improving the export competitiveness of the Indian farmers has to be given high priority. In order to enhance India's global trade of agricultural commodities to achieve at least 10 per cent of the share would require special attention on:

- A long-term import/export policy of agricultural commodities should be announced by the Government, which should be reviewed periodically (5 yearly intervals). This will assure farmers and associated organizations to plan required agricultural production for export purposes.
 - The policy framework has to reduce red tape, improve ease of doing business, provide integrated facilities from farm to fork, build warehouses near the ports, and establishes dry ports, etc. Further, helping private companies to meet export schedules without delay, financial support like credit, insurance, etc. will be critical components to be covered under the export framework.
 - Contract farming, collective farming and corporate farming are the key elements of the strategy to increase farmers' income for which required support is needed. Enforcement of contracts, eliminating Government/ bureaucratic interference will be crucial for their success.
 - Motivating and attracting youth (including women) in agriculture, especially towards secondary and specially agriculture and for export of value added products will be highly rewarding and thus be pursued vigorously.
5. The other important areas that need to be addressed on priority are:
- Risk management is a big challenge for farmers in India and we need to develop instruments that mitigate the risks in farming. In this context, for

strengthening the existing insurance system, we need to set-up robust future markets in India.

- Concerted efforts need to be made for human capital development. Agri-entrepreneurs, knowledge, input and service providers need to be trained and supported in rural areas to improve diversified farming practices and to link farmers with markets. A suitable policy framework for human resource development along with provision and easy access to funds needs to be created.
- Promoting Farmer Producer Organizations (FPOs) is extremely important for the required aggregation of agricultural produce, its processing, value addition and storage for collective bargaining and better income. Capacity building among FPOs through training, institutional backstopping and mentorship require urgent attention to make their business commercially viable.

III. General issues relating to policy, coordination and monitoring

For effective implementation of above recommendations, it is critical that some important issues related to policy, coordination and monitoring mechanisms, as recommended by Paroda Committee, and re-emphasised below are implemented urgently:

1. The National Agricultural Policy (2000) and the National Policy for Farmers

(2007) shall have to be revisited as these are more than a decade or two old. Moreover, as stated earlier, new challenges have emerged needing bold policy orientation and new directions. New challenges have emerged in Indian agriculture which need innovations to make a difference. Now it is not only production but post-production management and value addition that demand a paradigm shift from 'Farm to Fork', production to processing, including value chain and traditional to new efficient and sustainable farming. Therefore, business as usual will not do. Agricultural growth will have to be accelerated beyond 4 per cent per annum. Hence, a comprehensive "National Agricultural and Farmers' Welfare Policy (NAFWP)" must be reformulated in order to achieve SDGs through secure and sustainable agriculture. The new policy must reflect foresight and clear action plan to make India a developed nation through accelerated growth and development in agriculture. In the process, a thorough review needs to be done to see which of the goals set in the earlier two policies have not been implemented and what reorientation is critical now to make agriculture both a profitable and respectable business for the millions of smallholder farmers.

2. Since agriculture is a state subject, there is great need for coordination and convergence between the Centre and States especially for the policy alignment to enhance ease of doing business and debottlenecking several processes and constraints. Also, there is a need for a

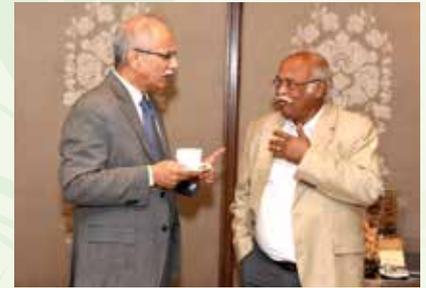
change in the mind-set of politicians and planners to enhance private sector participation. Policy should promote health and safety through establishment of uniform standards of food safety, farmer safety, crop quality, etc. The data on soils, rainfall patterns, crops, costs, yields, etc. needs to be collected and analyzed and the results are to be made accessible to both private and public sectors to construct products like credit, insurance, technical advice, market linkages, etc. An integrated approach across relevant ministries including the end user ministries like textiles, food processing, chemicals & fertilizers, marine products, etc. in addition to the agriculture ministry is to be drawn up and implemented. Establishment of a National Agricultural Development and Farmers' Welfare Council (NAD&FWC) under the chairmanship of Prime Minister, on the lines similar to GST Council, is urgently needed for an effective coordination and convergence mechanism.

3. Experience has shown that due to lack of effective implementation and assigned responsibilities for supervision, monitoring and evaluation, the Government programs are either delayed or they do not achieve their desired goals and objectives. Hence, invariably various initiatives/ investments are not able to yield desired results. It is, therefore, suggested to set-up an independent "Planning, Monitoring and Evaluation Unit" to review all missions, programs and important national schemes related to agriculture and allied fields. Such

a unit should be established under NITI Aayog to ensure independent functioning and timely implementation. This Unit should be headed by a senior agricultural executive and should have provisions to invite experts for

technical evaluation and monitoring. Also, the causes of poor implementation will have to be identified for taking corrective measures periodically, including the closure of non-performing schemes/programs.





Important TAAS Publications

- Brainstorming Workshop on Soybean for Household Food and Nutritional Security - Proceedings and Recommendations, March 21-22, 2014.
- The Eight Foundation Day Lecture on “Sustainable Agricultural Development - IFAD’s Experiences” by Dr. Kanayo F. Nwanze, President, IFAD, August 5, 2014.
- Need for Linking Research with Extension for Accelerated Agricultural Growth in Asia - Strategy Paper by Dr. R.S. Paroda, September 25, 2014.
- Global Conference on Women in Agriculture - Proceedings and Recommendations, March 13-15, 2015.
- Brainstorming Workshop on Upscaling Quality Protein Maize for Nutritional Security - Recommendations, May 21-22, 2015.
- The Ninth Foundation Day Lecture on “21st Century Challenges and Research Opportunity for Sustainable Maize and Wheat Production” by Dr. Thomas A. Lumpkin, Former DG, CIMMYT, September 28, 2015.
- National Dialogue on Efficient Management for Improving Soil Health - New Delhi Soil Health Declaration - 2015, September 28-29, 2015.
- Regional Consultation on Agroforestry: The Way Forward - New Delhi Action Plan on Agroforestry 2015, October 8-10, 2015.
- National Dialogue on Innovative Extension Systems for Farmers’ Empowerment and Welfare - Road Map for an Innovative Agricultural Extension System, December 17-19, 2015.
- Round Table Discussion on Promoting Biotech Innovations in Agriculture and Related Issues - Proceedings & Recommendations, August 4, 2016.
- Awareness cum Brainstorming Meeting on Access and Benefit Sharing – Striking the Right Balance – Proceedings, October 22, 2016.
- Delhi Declaration on Agrobiodiversity Management – Outcome of International Agrobiodiversity Congress 2016, November 6-9, 2016.
- National Conference on Sustainable Development Goals: India’s Preparedness and Role of Agriculture, May 11-12, 2017.
- Policy Brief on Efficient Potassium Management in Indian Agriculture, August 28-29, 2017.
- Regional Policy Dialogue on Scaling Conservation Agriculture for Sustainable Intensification, Dhaka, Bangladesh, September 8-9, 2017.
- Policy Brief on Scaling Conservation Agriculture in South Asia.
- Retrospect and Prospect of Doubling Maize Production and Farmers’ Income – Strategy Paper by Dr. N.N Singh, September 10, 2017.
- Indian Agriculture for Achieving Sustainable Development Goals - Strategy Paper by Dr. R.S. Paroda, October, 2017.
- Strategy for Doubling Farmers’ Income - Strategy Paper by Dr. R.S. Paroda, February, 2018.
- Livestock Development in India - Strategy Paper by Dr. A.K. Srivastava, Member, ASRB & Trustee, TAAS, February, 2018.
- Policy Brief on Agricultural Policies and Investment Priorities for Managing Natural Resources, Climate Change and Air Pollution - April, 2018.
- Women Empowerment for Agricultural Development - Strategy Paper by Dr. R.S. Paroda, May, 2018.
- Brainstorming Meeting on Harnessing Intellectual Property to Stimulate Agricultural Growth – Proceedings and Recommendations, July 27, 2018.
- Road MAP on Motivating and Attracting Youth in Agriculture (MAYA).
- Regional Conference on Motivating and Attracting Youth in Agriculture (MAYA) - Proceedings and Recommendations, August 30-31, 2018.
- Motivating and Attracting Youth in Agriculture - Strategy paper by Dr. R.S. Paroda, November, 2018.
- The Eleventh Foundation Day Lecture on “Can India Achieve SDG 2 – Eliminate Hunger and Malnutrition by 2030” by Dr. Prabhu Pingali, Professor in the Charles H. Dyson School of Applied Economics and Management at Cornell University, January 24, 2019.
- Urgency for Scaling Agricultural Innovations to Meet Sustainable Development Goals (SDGs) – Strategy Paper by Dr. R.S. Paroda, April, 2019.
- Horticulture for Food and Nutritional Security - Strategy Paper by Dr. K.L. Chadha and Dr. V.B. Patel, October, 2019.



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