

TRANSFORMING AGRICULTURE TO ACHIEVE SDGs

Transforming food systems would mean strengthening our household food and nutrition security, along with employment, rural development and economic growth, conserving natural resources and responding suitably to climate change. It also implies diversification in our farming systems including structure of landholdings, scaling of technologies and active involvement and capacity building of youth (including women). Such changes do require strong will and policy support to reap the multiple benefits of transforming rural livelihoods through agricultural advancements. Overcoming the complex challenges would require transformative action, embracing the principles of sustainability and tackling the root causes of poverty and hunger. By nurturing our mother land and adopting sustainable agriculture, the present and future generations will be able to sustain ever growing population. Agriculture is the world's biggest employer as well as an important economic sector for many countries, including India.

The SDGs were adopted by the United Nations in 2015, with universal call to end poverty, hunger, AIDS, discrimination against women and girls, protect the planet, and ensure that by 2030 people globally enjoy peace and prosperity. The 17 SDGs are integrated, they recognize that action

in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability. Therefore, national commitment, human creativity, technical knowhow, and financial resources are necessary to achieve SDGs.

Concerted efforts are thus urgently needed to improve social development index (SDI), especially in the Eastern and Northeastern states which somehow got bypassed by the Green Revolution. Also we shall have to sustainably increase agricultural production and productivity, while conserving our natural resources, improve current supply-chain, decrease food losses and waste, and ensure that hungry and malnourished have easy access to food and nutrition.

Challenges and Constraints

The world population is expected to reach 9.8 billion by 2050, which will be about 34 per cent higher than the present. Globally we will require 70 per cent more food (FAO 2009) considering the present dietary pattern, income, and consumption scenario. India's current population of 1.41 billion (around 17.7% of the global population) is likely to reach 1.51 billion by 2030. We will soon be the most populous country in the world. The challenge to produce more from decreasing per capita arable land and water, besides increasing abiotic and biotic stresses, is quite daunting. The significant adverse impact of climate change on agriculture is being experienced already—reducing

production of crops like rice, wheat and maize ranging between 10–15 per cent. Hence, reorientation and reforms in agriculture are urgently needed to address the most important SDGs like no poverty, zero hunger and environmental sustainability.

Currently, the country is facing the second-generation problems, especially related to sustainability, nutrition, water scarcity, soil degradation, biodiversity loss, decreasing forest cover, and higher emission of greenhouse gases (GHGs) – mainly due to land and forest degradation, improper management of bovine animals, inefficient fertiliser use and cultivation of crops like rice.

In view of the above, agriculture sector seems to stand at crossroads. At one end, we need to continue producing more

food to meet the demand of evergrowing population, whereas on the other, we must adopt those technologies and practices that help in sustainability of our natural resources. To face these unprecedented challenges, we need to reorient our agriculture through long-term farm policies that are aimed at scaling disruptive innovations and diversified farming systems around secondary and speciality agriculture. In fact, despite Green, White and Blue revolutions, the problems of poverty, hunger and malnutrition still persists, and the real income of the farmers is a major concern, which requires urgent attention if we have to achieve SDGs by 2030. In this regard, currently we have around 18.7 per cent people below poverty, 189.2 million people undernourished, whereas 34.7 per cent of our children aged under five are stunted. Also, 51.4 per cent of women in reproductive age between 15 to 49 years are anaemic and need nutritious food. Moreover, the challenge is not about lack of food but the economic access to available food, higher farm income and that of retaining youth (including women) in agriculture.

Achieving SDGs

Fortunately, the science-led Green Revolution in late Sixties transformed India from a food-deficit to a food-surplus country. The current science, technology, and innovation (STI)-led 'Rainbow Revolution' has transformed our country from 'ship-to-mouth' status to that of 'Right-to-Food Bill'. Today, we are the second largest agrarian economy in the world. Our country's science and technology initiatives are now geared to produce 'More from Less for More' without overexploitation of our agro-ecosystems. We also need to rely more on diversified local food systems that are more nutritious and healthier.

To meet SDGs by 2030, we would demand enhanced capital investment in agriculture, both by public and private sector, especially in the states of Bihar, Odisha, West Bengal, Assam and the north east where social development index is presently low. Also, doubling of funds for agricultural



research and innovation for development (ARI4D) at the national level is fully justified to scale technologies that help in sustainable intensification. In fact, investments in research give very high returns (more than 10-15 times) compared to any other growth sectors. Doubling farmers' income demands major focus on increased production while reducing cost on inputs, and efficient post-production management, including value-chain leading to better options for linking farmers to market. We shall need a paradigm shift from current 'farming first' to 'farmer first' to attain higher agricultural growth and overall farmer's prosperity. Also, there is urgency for introspection of existing scientific, development and policy related programs, being funded by the government for long, to make them efficient and incentive based instead of subsidy oriented as at present. Time has come to evolve a new strategy with defined 'Road Map', for faster implementation in order to accelerate agricultural growth critical for achieving SDGs in time. This obviously calls for some bold policy decisions to scale existing innovations, invent or import new technologies with policy support for intellectual property and incentives for public-private partnerships. Scaling of proven innovations, some of which are: hybrid technology (maize, pearl millet, sorghum, rice); biotechnology-GM crops (soybean, mustard, maize, papaya, brinjal etc.), conservation agriculture from current 3.0 mha to >20 mha to make grey areas green; expansion of protected cultivation from current 0.5 to 2.0 mha; micro-irrigation area to be doubled from current 10 mha; use of laser levelling, use of biofuel such as ethanol, permitted by government for admixing up to 20 per cent in petrol, from potential crops such as sugarcane and maize; greater use of biofortified crops

(quality protein maize, iron and zinc rich rice, iron rich pearl millet, zinc rich wheat, etc.) through right policy on their pricing; and greater use of information communication technology (ICT), internet of things (IoT), artificial intelligence (AI), drones, big data etc., will certainly help in achieving SDGs much faster. Also, for scaling, involvement of skilled youth for better knowledge empowerment, private 'paid' extension services, entrepreneurship, farmer producer organisations (FPOs), custom hire services, agri-clinics, etc., will be quite rewarding and thus help in faster knowledge sharing without dissemination loss.

In view of the Paris Climate Agreement and the commitments made by our Hon'ble Prime Minister in COP 26 in Glasgow last year, concerted efforts need to be made to enhance the use of renewable energy by 50 per cent, and to reduce 1 billion tons of projected carbon emission by 2030. In fact, we need to rely now more on agriculture to reduce GHG emission by arresting land degradation, improving fertiliser use efficiency, diversification of rice, good management of bovine animals and scaling conservation agriculture (CA) or no-till agriculture, especially in the rainfed areas and by laying greater thrust on agroforestry for enhanced carbon sequestration. Accordingly, we must accelerate our efforts to diversify our farming systems eco-region wise, have resilience for improved efficiency, and scale both CA and agroforestry in a Mission Mode to make dryland agriculture both productive and sustainable.

Finally, accelerated investment in agricultural research for innovation and development and enabling policy support with effective coordination and monitoring mechanism will be the key requirements for achieving SDGs. In fact, agriculture sector be seen as solution of the problem rather than to be viewed as cause only. Moreover, attaining SDGs at the global level will depend mainly on the progress India makes on food, nutrition and environmental security front. Fortunately, we seem to be making great progress in this regard, but certainly there is no room for complacency as 2030 is not all that far.



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