



## "India Needs to Empower Farmers for Sustainable Growth to Tackle Intense Challenges with Innovation and Collective Action"

**Shubhendu Dash,**  
Vice President & Head - Farm Sector, ACESS Development Services

### **Navigating India's Agricultural Transformation: From Water Crisis to Climate Resilience**

**Intro:** Did you know regenerative agriculture could be India's key to combating climate change? Did you know regenerative agriculture could increase rainwater-holding capacity by 93.6%? All this and more in an intense and exclusive interaction between **Shubhendu Dash and Mahima Sharma**, where he delves deep into India's agricultural landscape in an unprecedented manner. **Vice President & Head - Farm Sector, ACESS Development Services**, Mr Dash helps us discover innovative solutions for climate resilience, challenges in organic farming, and the imperative of sustainable relief measures for farmers. Read the exclusive at **Socio-economic Voices** at **Indiastat**

**MS: How can India balance domestic food security concerns with its commitments to job security, meet the international trade agreements and handle the global agri-export markets better...while its workforce is shifting from Agriculture to Manufacturing?**

**SD:** As India's economy is moving from agriculture to manufacturing/services sector, the challenges in food production are bound to increase. Our case is not like the skilled agriculture workforce with 100% farm mechanization in the western countries. The incidences of absentee landlords (people migrated to urban centres leaving no one behind to handle farming operations) has also increased.

However, this can also be seen as an opportunity for the smallholder farmers to strengthen community institutions (Farmer Producer Companies/ Cooperatives/ Producer Groups) to take charge and improve efficiencies in farming operations through farm mechanization, digitalization. **Currently the Government of India is facilitating the formation of 10,000 FPOs to aid this initiative.** There further lies a greater role of women who contribute 70% of the agricultural workforce, to rise from being unpaid implementers to decision makers in the farming operations.

Currently, the extension mechanism of Central and State Departments of Agriculture and Farmer Welfare treat mostly men as farmers and more than 90% of the training/ seed mini kits/ exposure visits etc. is being focused on male farmers. **While the national Rural Livelihoods Mission and its State Counterparts (State Rural Livelihood Missions) have taken steps to upgrade the skills of women farmers by organizing them into Producer Groups and Producer companies,** a policy level change by Department of Agriculture at Government of India and State level to include women as farmers may be more helpful to improve the efficiency and decision-making skills and resultant improvement in production and productivity.

Lastly, the booming Agritech startup ecosystem in the country is also offering some hope in improving farm production/ productivity/ digitalization/ farm mechanization/ satellite-based weather advisory etc. and this shall definitely bring a sea of changes in the agriculture economy of the country in terms of improved efficiencies.

**MS: How can we create a circular water value chain to address depleting water tables in cities, wastage from RO systems, and water shortages for urban and rural farming, ensuring sustainable water management for all?**

**SD:** With diminishing sources of water resources and increased demand for potable water, most of the urban farming systems depend upon untreated sewage water (which is easily available) posing serious health hazards. Currently most of the landscaping systems in urban areas use potable water (mostly groundwater), and farmers around urban areas use flooding mechanisms for the freely available sewage water. As a fast developing nation, we need to give serious thought to our sewage recycling systems and policies and make stringent norms for treatment and use of recycled water for non-food / landscaping activities. Investments in installation of numerous recharge structures, their regular cleaning and upkeep, making water harvesting mandatory will partly be able to solve the pressure on requirement of potable water.

**Green buildings, tray cultivation in multi-story apartment balconies will surely be able to reduce some burden on the existing food systems.** This had been successfully achieved by Cuba for achieving self sufficiency in achieving vegetable production during the initial sanction years by the US. For farming operations around urban centers, much stress and policy-enabling environment is required to augment more crop per drop through various water efficient technologies such as protected cultivation, use of compost/ hydro gel for improved soil water holding capacity and drip/ micro sprinkler systems etc. This will help an equitable distribution of water resources in urban centers and would help reduce conflict.

**MS: Given the challenges posed by soil degradation, what innovative approaches can India adopt to promote water-efficient and regenerative agricultural practices on a global scale?**

**SD:** A 2022 report by Delhi-based think tank Centre for Science and Environment (CSE), State of Bio Fertilizers and Organic Fertilizers in India, shows severe and widespread deficiency of organic carbon and micronutrients in Indian soils. This affects not only plant nutrient absorption potential but also soil water holding capacity. Research from ICAR-IARI, Delhi shows that Regenerative agricultural practices help improve soil structure and its organic carbon content, while planting water-guzzling and water-efficient crops together or in alternating cycles reduces the frequency and intensity of irrigation. They conserve energy used by irrigation aids such as pumps. Multiple studies to show that these and other practices often followed by organic farmers like systematic rice intensification — a method in which seeds are spaced at wider distances and organic manure is applied to improve yields — changing crop system patterns, leaving residue on the field and micro-irrigation lead to better water conservation.

**On the ground level, there have been some analyses which reaffirm the links among regenerative agriculture, soil health and water saving.** Kheti Virasat Mission, a civil society organisation that works in Punjab, conducted in 2021-22 a survey of more than 350 organic farmers in the state. Of the surveyed farmers, 93.6 per cent claim that the rainwater-holding capacity of their land increased compared to chemical-based farming. Organic farming reduced the irrigation requirements by 30-60 per cent in most cases.

Although, so far, there have been no structured studies on the water-saving potential of regenerative agriculture – but small evidence from the ground show promising and favourable results in favour of regenerative agriculture – which can be practiced on a global scale.

**MS: What cautionary advice do you have for farmers and consumers amidst the rapid expansion of organic food production in India, particularly regarding the shift from pesticide-based farming, especially in regions like Punjab? Also, what legislative measures or subsidy reforms are needed to regulate and incentivize genuine organic farming practices and penalize violators of organic standards?**

**SD:** Coming to the first part of your question, Punjab has amongst the highest use of fertilisers, pesticides and large machinery, including government support for chemical farming and procurement of wheat and rice, making it difficult to transition to organic and natural farming. The major issues farmers face when they shift to organic is drop in crop yield, and not proportionate increase in value received. **It is hence suggested that new farmers start with small plots. If they stop using chemical fertilisers at one go, there will be a big loss of yield which will dishearten them.**

**After a few years of using green manure and biofertilizers**, the soil regains its natural fertility and the production picks up while farmers get used to the new market.

**On the second part of the question:** After facing challenges in genuinely of organic produce, APEDA has licensed separate certification agencies for **NOP and NPOP systems**. While the organic producers have to follow NPOP as per Indian norms, the market lies mostly in the USA / Gulf /European countries which either follow or accept NOP.

**With two separate agencies verifying the farm, the changes of malpractice or error is surely going to change.**

Currently, many state governments also have a subsidy structure for organic production systems per acre, but it is either difficult or out of reach for most of the farmers. Integrating technology/digitalization/ traceability in the production systems would help. A gradual increase in soil organic carbon may also be a good indicator to begin with and can be measured easily with the newly available tools.

**MS: With the rise of agri-tech startups and innovations, how can India ensure that smallholder farmers and FPOs have access to these technologies and derive maximum benefit from them?**

**SD:** Smartphone usage has risen to 67.6 % in rural markets, with farmers embracing social technology with surprising speed. But what is important is to that solutions have to be customised with simplified UIs and localisation.

**Adding more modes of interaction**, like voice, can go a long way in reducing the effort required to onboard users and the time a farmer takes to find value. **Following it up with social proof using influential farmers**, and it can push usage in a given region to the next level. Another barrier to tech penetration is basic literacy and digital knowledge. Using any technology requires both. The younger generation of farmers may be tech-savvy, which is why some mobile apps have already reached 1 million installs. Nevertheless, there is still a minor percentage that is hesitant. **To increase the adoption rate among these older farmers, a better user experience is necessary.**

**Agricultural and social organisations** could help implement the solution in both pilot and scale-up phases, leveraging the participation of farmers and Farmer Producer Organisations (FPOs), to accelerate testing and deployment of projects.

**MS: How do you envision India's progress in climate-resilient agriculture over the next decade, especially after the significant losses suffered during the 2023 rainy season?**

**SD:** One of the critical challenges for a country's food security is climate change and its impact in form of extreme weather events. **The predicted 1-2.5 degrees Celsius temperature rise by 2030 is likely to show serious effects on crop yields.** An economic survey in 2017-18 cautioned that climate change might be reducing annual agriculture income in the range of 15 per cent to 18 per cent and up to 20 per cent to 25 per cent for unirrigated areas. This creates **food shortages, nutrient deficiencies in humans due to inadequate intake of healthy food makes humans vulnerable to health issues.**

The government has been pretty active in promoting schemes and policies to promote climate resilient agriculture, ideas of **Per Drop More Crop, Green India Mission, Soil Health Cards, Organic cultivation promotion in states of AP, Sikkim, Himachal etc.** In the next decade, institutions like ICAR, state agriculture universities, and other line departments will become more significant, and **the adoption of new techniques is expected to increase, gradually if not adversely in the next decade.**

**MS: Can international collaboration on carbon markets incentivize sustainable agricultural practices in India to mitigate climate change effectively? If so, what are the ideal steps? If not, why might it not be beneficial for a large nation like India?**

**SD:** Agriculture contributes to 18% of India's cumulative GHG emissions. Traditional farming practices, such as stubble burning and excessive use of inputs, further worsen these environmental challenges. By adopting sustainable farming practices, the agriculture sector has the potential not only to reduce emissions but also become a net carbon

sink. Hence, despite the challenges of India being an agricultural economy, **with majorly small and marginal farmers and despite other challenges there is a huge potential for India to collaborate with international organizations to mitigate carbon emissions.** Considering the projected 15-fold increase in demand for carbon credits by 2030, **agritech companies should equip farmers with the necessary tools and facilitate the acquisition and sale of carbon credits.** The benefits of participating in carbon offset projects extend beyond additional revenue for farmers.

Agritech through technological advancements such as remote sensing techniques, satellite imagery, and sensor-based monitoring systems can provide real-time data for more accurate estimation of carbon sequestration and monitoring of soil carbon levels. **Collaboration with Farmer Producer Organizations (FPOs) and cooperatives can facilitate awareness and enable individual farmers to participate in carbon markets collectively.** Adopting a 3F Framework by prioritizing Facilitation (of education and training to farmers), Fostering collective efforts and knowledge sharing, and Framing supportive policies and regulations will enable the agriculture sector to make substantial contributions to India's climate goals.

**MS: A lot is being said but not done. How can India foster greater synergy between government initiatives, private sector investments, and grassroots organizations to drive inclusive growth and development in rural areas?**

**SD:** India can increase public-private partnerships for agricultural infrastructure development, offering incentives for private investment in rural value chains, and empowering grassroots organizations with capacity-building programs and direct participation in policy formulation. By aligning interests, leveraging expertise, and ensuring local community engagement, India can drive inclusive growth and sustainable development in rural areas, catalyzing a resilient and prosperous agricultural sector for all stakeholders involved.

**Through a current program supported by Mastercard Centre for Inclusive Growth, ACCESS Development Services is working on such a model wherein 98 existing FPCs in ASSAM are being mentored with convergence support from NABARD for millets, NEDFI and NBFCs for credit linkage and NECTAR for promoting organic agriculture clusters.**

**MS: Innovative climate adaptation strategies that can ensure the resilience of India's food systems. Which all nations should we follow and why? What should be the timeline of this walk the talk?**

**SD:** Ensuring the resilience of India's food systems in the face of climate change requires a multi-faceted approach that combines traditional knowledge with innovative strategies. Here are some innovative climate adaptation strategies that India can adopt, along with examples from other nations:

- a. **Drought-Resistant Crop Varieties:** Following the lead of nations like Australia and Israel, India can invest in the development and promotion of drought-resistant crop varieties. These varieties are bred to withstand periods of low rainfall, helping farmers maintain yields even in drought conditions.
- b. **Water Management and Conservation:** Israel's expertise in water management, including drip irrigation and wastewater recycling, can be valuable for India. Implementing efficient irrigation techniques and rainwater harvesting systems can help Indian farmers optimize water use in agriculture.
- c. **Promotion of Agroforestry:** Indonesia has made significant strides in promoting agroforestry, which involves integrating trees into agricultural landscapes. Agroforestry practices improve soil health, provide additional income sources for farmers, and enhance resilience to climate impacts such as floods and droughts.
- d. **Climate-Resilient Livestock Farming:** The Netherlands is a leader in climate-smart livestock farming, focusing on reducing methane emissions and improving animal welfare. India can adopt similar practices to make its livestock sector more sustainable and resilient to climate change.
- e. **Technology for Early Warning Systems:** Germany's use of advanced technology for weather forecasting and early warning systems can be emulated by India. Timely information about weather patterns can help farmers

make informed decisions, such as adjusting planting times or choosing appropriate crop varieties.

f. **Insurance and Financial Support:** India can learn from the experiences of countries like the United States, where crop insurance programs help farmers recover from losses due to extreme weather events. Providing financial support and insurance options can buffer farmers against climate-related risks.

g. **Community-Based Adaptation:** Bangladesh has implemented community-based adaptation projects that empower local communities to manage climate risks collectively. India can promote similar initiatives, fostering community resilience through shared knowledge and resources.

By studying and adapting successful strategies from these nations and others, India can develop a comprehensive approach to climate adaptation in its food systems. These approaches not only enhance resilience but also contribute to sustainability, biodiversity conservation, and the well-being of farming communities.

**MS: A simple, yet intense question at the end: A bio-diversity park, created by chopping away a forest. What would such places mean for the Indian climate in their future impact?**

**SD:** Deforestation will obviously be a dangerous scenario for Indian climate and agriculture. As per research agriculture is still a more important contributor to deforestation than urbanization. 60% of India's cropland, which remains rain-fed, would be most affected by climate change. Climate change will lead to a decrease in rain rate of up to 2 mm per day over Northern India and an increase in rain rate of up to 5 mm per day over Southern India, which is predicted to decrease crop yield and crop duration. For every 0.5 °C rise in temperature, a fall in crop yield to the extent of 0.45 t ha<sup>-1</sup> and a fall in crop duration was predicted for Indian wheat.

**MS: Lastly, crores given as relief to lakhs of farmers means only a thousand rupees or little more perhaps. So the real relief is missing. How can the masses as well as policy makers get the farmer real relief, so that farmer suicides stop?**

**SD:** In my view, providing relief to farmers via cash disbursements is only a short term solution which does not attack the core problems in a sustainable manner. Increasing farmer income through ways (either primary or creation of secondary income sources like livestock, rural jobs etc.) are more sustainable in nature will only put a stop to farmer suicides. Farmers often suicide after being trapped into a debt trap or extreme poverty due to risks associated with Indian agriculture. Reducing cost of inputs by promoting technology, sustainable farming practices, climate resilient agriculture etc., having higher control over market prices across crops to safeguard the farmer interests, increasing access to low cost, timely and easy to access financial services, formulating policies to aggregate farmers into collectives allowing them greater control over the value chain of the crops – these measures will solely help put an end to farmer suicides than distribution of cash.

### **About Shubhendu Dash**

Shubhendu is currently the Vice President & Head – Farm Sector of ACCESS development Services, serving 150,000 farmers through 184 FPOs across seven States in India. He comes with 22 years of overall experience in agri value chain development, Organic agriculture development, FPO ecosystem development and promoting value addition in agri/ horticulture and allied commodities. He also has a good International exposure in providing consultancy services in Organic Agriculture Systems development for Malaysian Biotechnology Corporation and Ministry of Agriculture, Saudi Arabia.

### **About the Interviewer**

Mahima Sharma is an Independent Journalist based in Delhi NCR. She has been in the field of TV, Print & Online Journalism since 2005 and previously an additional three years in allied media. In her span of work she has been associated with CNN-News18, ANI - Asian News International (A collaboration with Reuters), Voice of India, Hindustan Times and various other top media brands of their times. In recent times, she has diversified her work as a

Digital Media Marketing Consultant & Content Strategist as well. Starting March 2021, she is also a pan-India Entrepreneurship Education Mentor at Women Will - An Entrepreneurship Program by Google in Collaboration with SHEROES. Mahima can be reached at [media@indiastat.com](mailto:media@indiastat.com)

**Disclaimer :** The opinions expressed within this interview are the personal opinions of the interviewee. The facts and opinions appearing in the answers do not reflect the views of Indiastat or the interviewer. Indiastat does not hold any responsibility or liability for the same.

## INDIASTAT INITIATIVES

### **indiastat**districts

A storehouse of socio-economic statistical of 620 districts. A cluster of 11 associate websites

### **indiastat**elections

Provides election data for all 543 parliamentary and 4120 state assembly constituencies

### **indiastat**publications

A collection of election and reference books in print, ebook & web based access formats

### **indiastat**media

Provides infographics and short-videos on socio-economic and electoral topics

### **indiastat**pro

An e-resource providing socio-economic statistical information about India, its states, sectors, regions, and districts.

### **indiastat**facts

A one-stop-app for all who are craving for the latest economic facts and figures of India.

### **indiastat**edu

One-of-a-kind online learning platform offering specialised courses and also providing interactive learning.

24 years of serving socio-economic and electoral research fraternity in india and abroad

© Datanet India Pvt. Ltd.