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7 IMPERATIVES TO BUILD A VIKSIT AGRI ECONOMY BY 2047

Modernizing Indian Agriculture: Imperatives for a Sustainable Future

Balancing Food Security and Sustainability

Indian agriculture plays a critical role in ensuring food security, improving rural livelihoods, and addressing environmental challenges. While productivity has improved, adoption of advanced technologies remains limited. To achieve a sustainable and inclusive agricultural transformation by 2047, India must adopt key strategies.

Key Imperatives for Agricultural Transformation

1. Leveraging AI for Smarter Farming

- AI applications like weather forecasting, pest detection, and yield optimization are underutilized, despite their potential.
- In contrast, countries like the US and Europe use generative AI for precision farming.
- Steps needed:
 - Develop vernacular AI platforms for smallholder farmers.
 - Collaborate with AgTech startups for affordable AI solutions.
 - Integrate AI advisory services into government programs.

2. Advancing Regenerative Farming Practices

- Soil degradation and biodiversity loss result from monoculture and chemical overuse.
- India lags behind countries like France and the US, which have structured policies for regenerative agriculture.
- Actions required:
 - Formulate a national regenerative farming policy.
 - Encourage private-sector-led R&D in sustainable agro-ecological practices.

3. Promoting Robotics and Automation



- Advanced robotics like automated harvesters remain inaccessible due to high costs.
- Basic tools like seeders and sprayers dominate small farms.
- To enhance automation:
 - Develop low-cost robotic solutions for small farms.
 - Establish AgTech hubs to test and deploy technologies.
 - Foster public-private partnerships to fund robotics innovations.

4. Scaling the Alternative Protein Market

- India's alternative protein sector faces challenges in affordability and scalability.
- The EU leads with advanced R&D and government support.
- India should:
 - Collaborate globally to advance production techniques.
 - Improve affordability through innovative formulations.
 - Conduct awareness campaigns to promote alternative proteins.

5. Harnessing Digital Twin Technology

- Manual field trials delay deployment of new crop technologies.
- Digital twin technology can create virtual models to reduce costs and accelerate R&D.
- Required measures:
 - Partner with AgTech companies to pilot digital twin projects.
 - Train agricultural researchers in digital modeling.
 - Offer tax incentives for investments in this technology.

6. Scaling Blockchain for Supply Chain Transparency

- Blockchain adoption in India is limited, despite potential for improving market access and traceability.
- China demonstrates success with blockchain integration in agriculture.
- Key actions for India:
 - Focus on export crops for blockchain scalability.



- Invest in infrastructure to support adoption.
- Provide training and raise awareness among farmers.

7. Expanding Climate-Smart Farming

- Climate-smart initiatives like PM-KUSUM are limited in scale.
- To combat climate risks effectively:
 - Scale up micro-irrigation technologies.
 - Distribute climate-resilient seed varieties.
 - Promote bio-based crop protection solutions.
 - Leverage AI for localized climate advisories.

Conclusion

India's agricultural transformation hinges on innovation, investment, and inclusivity. By prioritizing smallholder farmers, fostering collaborations, and tailoring global solutions for local needs, India can emerge as a global agricultural leader by 2047. Bold policy reforms, strategic investments, and grassroots engagement are essential to achieve a sustainable and technologically advanced agriculture sector, contributing to the vision of "Viksit Bharat."

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