# Vikshit Bharat, 2047

Krishi Vigyan Kendra, Kokrajhar Assam Agricultural University, Jorhat, Assam Year of Planning: 2024

# Vision of Vikshit Bharat

Prosperous India in harmony with modern agriculture and giving opportunities to all citizen residing in every regions to reach their potential.

# Objectives

- Access to modern technologies and most lucrative market along with diversification of high value agriculture in line with emerging consumption pattern.
- To help augment farmer substantially and sustainably for better livelihood.

# Four Pillar of *Viksit bharat* Developed India, 2047



Yuva (Youth) Mahila (Women) Garib (Poor) Kisan (Farmer)



# Key challenges must be addressed to achieve the goal of *Vikshit bharat* by 2024.

- Infrastructure Development: Upgrading physical infrastructure for better connectivity and storage facility of food commodity and consumables.
- Quality education: Assess to quality education for all especially to rural folk residing in village area is a must. Availability of power supply and digitalization of Govt school must be the foremost priority for quality education.
- Healthcare Facility: Accessibility to quality health care service, improved public health care facility and addressing malnutrition are the key challenges. Inclusion of nutri-rich food in indigenous *thali* is also the key challenge.
- Environmental sustainability: Balancing economic growth with environmental conservation is the key challenge and hence adoption of sustainable practices to mitigate climate change and natural resources.
- Innovation and research: Encouraging economic growth and research in all aspects with boost economic growth and drive technological advancement.
- **Skilled workforce:** Developing a skilled workforce is utmost important through vocational/skill trainings as it will directly influence the economic productivity.
- **Digital divide:** Bridging the gap between digital literacy and internet assess is essential for inclusive development and updated/upgraded knowledge.
- **Corruption and governance:** Step towards strengthening institutions and facilitate transparency as it will directly reflect good governance.

# Technology advancement contributes Vikshit bharat in 2047

#### Agriculture

- **Precision farming:** IoT Sensor, drone and AI help optimising crop yield, monitoring soil health and manage resource efficiency. Precise application of inputs in reducing cost of production with maximum output per unit area.
- Sufficient seed/planting material production: Scientific production of seeds/planting material within the village or block with the help of FPC so that the need of farmers can be fulfilled within the area.
- Market assess: e-Commerce platform connect farmers to buyer's directly and reducing inter-mediaries.

#### • <u>Renewable source of energy</u>

- Technology driven renewable energy solution reduces dependence on fossil fuels and mitigate climate change.
- Smart Grid: Efficient energy utilization and distribution.
- Wind energy, water and solar energy can be efficiently use in farmers field for irrigation of crop field, light trap for insect, drying of food commodities etc reducing cost of cultivation to an extent.

### • Manufacturing and industries

• Technology driven manufacturing boost local commodities production and export. For example export of handwoven raised design, tribal motifs in diversified fabric cater foreign market, Assam lemon is also an example ad more are in list.

#### • Environmental conservation

- **IoT Sensor:** Monitor air quality, water quality and wildlife habitat protect environment.
- Green Technology: Sustainable practices like use of electric vehicle, utilization of solar panels and waste management technology gives cleaner India. Improvised rain water harvest technologies will also contributes in water conservation.

Silent point to achieve the goal in terms of agriculture and allied sectors

- Facilitate and hand-holding MSME to compete with supply and demand in terms of food, shelter and clothing.
- Individual personality development especially the youth; most prominently the women folk must be facilitated through awareness, guidance and handholding through formal and informal education.
- Services for mobile facilities and services for all agriculture aspects/commodities/resources. Example mobile veterinary unit for treatment of livestock, mobile agriculture services for diagnosis and treatment of diseased field crops and management, *sabji kothi* per 5000 population for collecting local perishable/semi perishable vegetables from farmers and sell it to other vendor/locality.
- Establishment of *Jalkund* in area where soil is sandy-loam in texture.

## Silent point to achieve the goal in terms of agriculture and allied sectors

- e- market for farmers where farmer can sale there produce in MSP. Digital display board in every market area must be established where farmer get the idea of present market price and linkage must be established to collect the goods directly from the farmers.
- Value added and processed food industries must be established in every district where women may be engaged after skilled training. Proper packaging and standards must be ensured before export.
- Customisation of region specific drudgery reduction tools for farmers and farm women in accordance to general anthropometric data of the region for quality and efficient work.
- Skill training must be given to trans-gender section and women folk so as to empower the most neglected section of the society especially engaging them in handicraft, handloom, cottage industries etc. Moreover, initiative may be taken for Community based disease prevention of animals and control programme where hand-on training to youth may be taken for early clinical diagnosis and control of various diseases eg. Swine fever, Foot and Mouth Disease (FMD), PPR etc.

# Next five years in agriculture

- The next five years concept in agriculture includes
  - Integration of Advance technologies.
  - Data analytics
  - Precision farming practices

to enhance productivity, sustainability and efficiency in agriculture.

## Key area of focus include

- **1. Digital Farming:** Adoption of digital tools, sensors, and IoT devices for real-time monitoring of crops, soil health, and weather conditions.
- 2. Precision Agriculture: Targeted application of inputs (such as fertilizers and pesticides) based on data-driven insights.
- **3. Agri-Tech Startups:** A surge in startups developing innovative solutions for farmers.
- **4. Market Linkages:** Strengthening supply chains and connecting farmers directly to consumers.
- **5. Sustainable Practices:** Promoting organic farming, conservation agriculture, and water management.
- **6. High intensity cropping system:** Cultivation of crops with the aim of achieving 300 cropping intensity throughout the year.

# Challenges to be address:

- 1. Climate change
- 2. Water scarcity, and
- 3. Persistence of market volatility.

**Challenges** Ahead:

- **1.** Climate Resilience: Adapting to changing weather patterns and extreme events.
- **2.** Technology Adoption: Ensuring small farmers can access and benefit from technology.
- **3.** Market Access: Strengthening linkages between farmers and markets.
- **4.** Sustainable Practices: Balancing productivity with environmental conservation.

In summary, the next five years in Indian agriculture will witness a blend of technology adoption, policy reforms, and sustainable practices. Farmers, policymakers, and stakeholders must collaborate to create a resilient and prosperous agricultural sector

# How farmer can prepare for Climate change?

#### **1. Flood tolerant/Drought-Resistant Crops**:

Shifting rain patterns affect different regions of the world, leading to less rainfall in some areas whereas some areas are prone to flood. Farmers can switch to **Flood tolerant/drought-resistant crop varieties** that can better tolerate dry/wet conditions.

#### 2. Regenerative Farming Practices:

Transitioning from industrial agriculture to **regenerative practices** can help heal ecosystems and combat climate change. Key practices include:

- **Planting Cover Crops:** These improve soil health, sequester carbon, and prevent erosion.
- **No-Till Farming:** Reducing soil disturbance helps retain moisture and organic matter.
- **Crop Rotation:** Diverse crop rotations enhance soil fertility and resilience with year round production of varied crops.
- **Reducing chemical and fertilizers:** Minimizing synthetic input benefits both the environment and yields.

#### 3. Biodiversity Promotion:

Investing in food production that **promotes biodiversity** is crucial. Biodiverse ecosystems are more resilient to climate fluctuations. Conserving natural habitats and integrating native grasses into crop lands can contributes to this goal.

#### 4. Sound Management Plan:

Scientist/researcher should develop a **climate-smart management plan** and aware farmers in advance. It allow farmers to set goals, increase food output, run more efficiently, save cost and reduce climate impact.

# How farmer can prepare for Climate change?

#### **5. Adaptation Measures:**

Short-term actions can help farmers cope with weather changes and adapt to long-term climate shifts. Learning from progress and planning ahead are essential. Example include adjusting planting dates, diversifying crops, and practicing soil and water conservation.

#### 6. Community Collaboration:

Farmers can collaborate with local communities, extension services, and research institutions. Sharing knowledge, experiences, and best practices helps build resilience.

Climate adaptation is an ongoing process, and farmers worldwide must continue innovating and implementing sustainable practices to thrive in a changing environment.

### **1**. Precision Farming

- 1.Optimized Crop Management: AI predicts the best planting times, assesses soil health, and monitors pest and disease outbreaks. This precision helps farmers make informed decisions.
- **2.Water Efficiency**: Al-driven precision agriculture reduces water usage by optimizing irrigation schedules and minimizing waste.

### 2. Carbon Sequestration:

- **1.Agroforestry**: AI models can recommend optimal tree planting locations to enhance carbon sequestration.
- **2.Soil Carbon Monitoring**: Al analyzes soil data to identify areas suitable for carbon sequestration practices.

## **3.**Crop Yield Prediction:

**1.** All algorithms analyze historical data, weather patterns, and soil conditions to predict crop yields. This information guides resource allocation and risk management.

## How AI technologies use for climate resilient agriculture?

### 4. Climate-Resilient Crop Varieties:

**1**. All assists in breeding climate-resilient crop varieties by analyzing genetic data and identifying desirable traits.

2. These varieties withstand extreme weather conditions and contribute to food security.

### 5. Early Warning Systems:

1. AI models process satellite imagery and weather data to provide early warnings for extreme events like droughts, floods, or storms.

2. Farmers can take preventive measures to protect their crops and livelihoods.

## 6. Supply Chain Optimization:

**1**. Al streamlines supply chains, reducing food waste and emissions.

2. It ensures efficient transportation, storage, and distribution of agricultural products.

# How AI technologies use for climate resilient agriculture ?

## 7. Ecosystem Monitoring:

- 1. Al-powered drones and sensors monitor ecosystems, detecting changes in vegetation, water bodies, and biodiversity.
- 2. This information informs conservation efforts and sustainable land management.

## 8. Decision Support Systems:

- **1.** Al-based decision support tools assist farmers in making climate-smart choices.
- 2. They consider factors like weather, soil health, and market conditions.

### 9. Carbon Pricing and Trading:

- **1**. AI models help estimate carbon footprints and facilitate carbon trading.
- 2. Farmers can participate in carbon markets by sequestering carbon through sustainable practices.

#### **10.** Climate-Adaptive Pest Management:

- 1. Al identifies pest outbreaks early, allowing targeted interventions.
- 2. Integrated pest management strategies reduce chemical pesticide use.

# How to combat water Scarcity in agriculture?

#### 1. Efficient Farm Practices:

Agriculture utilizes 80% of the available water. Therefore, it is crucial to prioritize efficient farm practices such as:

- 1. Cropping Patterns: Choosing appropriate crop varieties and rotations to optimize water use.
- 2. On-Farm Water Management: Implementing efficient irrigation techniques and water-saving practices.

#### 2. Micro Irrigation:

Promoting micro-irrigation systems (such as drip irrigation) can significantly reduce water wastage by delivering water directly to the plant roots.

#### 3. Piped Distribution Network:

Developing a robust piped water distribution network can improve water access for agricultural purposes.

4. Mapping Water Resources Health:

Regularly assessing the health of water resources helps in identifying areas of concern and planning sustainable water management.

5. Inter-Basin Water Transfer:

Exploring inter-basin water transfer projects can balance water availability across regions.

6. Flood Plain Zoning:

Properly managing floodplains can prevent waterlogging and enhance water availability during dry periods.

7. Water Budgeting and Management at Gram Panchayat Level:

Local-level water management ensures efficient utilization and equitable distribution.

8. Water Use Efficiency in Different Sectors:

Encouraging water-efficient practices in agriculture, industry, and other sectors is essential.

## Role of Food Processing industries in Vikshit bharat

The **food processing sector** has grown substantially from 2015 to 2022, averaging an annual growth rate of around **7.3%**. This sector contributes significantly to GDP, employment and investment.

However, the food processing industry in India, particularly in Assam is still at a nascent stage, accounting for less than **10%** of total food production. Efforts to enhance food processing can contributes to *Vikshit Bharat* goals.

1. Development of strong supply chains that connect farmers/producers to processing and marketing.

2. Strengthening of primary processing at the farm level, including sorting/grading, packaging, drying, etc., while focusing on improved levels of value-addition.

## How can agricultural technologies contributes Vikshit Bharat in 2047?

#### 1. Digital Agriculture:

- **1. Precision Farming**: Leveraging technologies like **IoT**, **sensors**, and **drones**, farmers can monitor soil health, water levels, and crop conditions in real time. This enables precise irrigation, fertilization, and pest management.
- **2. Smart Irrigation**: Automated irrigation systems optimize water usage, reducing waste and ensuring sustainable agriculture.
- 3. Crop Prediction Models: Al-driven models predict crop yields, helping farmers make informed decisions.

#### 2. Market Access and E-Commerce:

- **1. Online Marketplaces**: Technology platforms connect farmers directly with consumers, eliminating intermediaries and ensuring fair prices.
- 2. Mobile Apps: Farmers can access market information, weather forecasts, and crop prices through mobile apps, empowering them to make better choices.

#### 3. Agri-Input Management

- **1.** Seed Technology: Genetically modified seeds enhance crop yield, resilience, and nutritional content.
- 2. Fertilizer Optimization: AI algorithms recommend optimal fertilizer usage based on soil conditions.
- **3.** Pesticide Management: Drones can identify pest-infested areas, allowing targeted pesticide application.

## How can agricultural technologies contributes Vikshit Bharat in 2047?

## 4. Supply Chain Efficiency:

- **1.Cold Chain Infrastructure**: Technology ensures safe storage and transportation of perishable goods.
- **2. Blockchain**: Transparent supply chains reduce wastage, fraud, and improve traceability.

### 5. Education and Awareness:

- **1. Digital Literacy**: Training farmers in digital tools enhances their productivity and income.
- **2. Telemedicine**: Rural areas benefit from telehealth services, improving overall well-being.

### 6. Renewable Energy:

- **1.Solar-Powered Irrigation**: Solar panels provide energy for irrigation pumps, reducing dependence on fossil fuels.
- **2. Biogas Plants**: Waste-to-energy solutions benefit rural households.

# Thank You