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STANDING COMMITTEE ON AGRICULTURE, ANIMAL HUSBANDRY AND FOOD PROCESSING (2025-26)

EIGHTEENTH LOK SABHA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE
(DEPARTMENT OF AGRICULTURE AND FARMERS WELFARE)

`PROMOTION OF CLIMATE RESILIENT FARMING'

[Action-taken by the Government on the Observations/ Recommendations contained in the Sixty-Eighth Report (Seventeenth Lok Sabha) of the Standing Committee on Agriculture, Animal Husbandry and Food Processing (2023-24)]

TWENTY-SECOND REPORT

LOK SABHA SECRETARIAT
NEW DELHI
December, 2025 / Agrahayana, 1947 (Saka)

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Presented to Lok Sabha on **18.12.2025**

Laid on the Table of Rajya Sabha on **18.12.2025**

LOK SABHA SECRETARIAT
NEW DELHI
December, 2025 / Agrahayana, 1947 (Saka)

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LOK SABHA

2. Shri Patel Umeshbhai Babubhai
3. Smt. Harsimrat Kaur Badal
4. Shri Rajkumar Chahar
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27. Shri Nitin Laxmanrao Jadhav Patil
28. Shri Madan Rathore
29. Shri Ramji Lal Suman
30. Shri P. P. Suneer
31. Shri Randeep Singh Surjewala

Shri Krishan Lal Panwar, Member resigned from Rajya Sabha on 14.10.2024.

**Shri Masthan Rao Yadav Beedha, Member, Rajya Sabha has been nominated to the Standing Committee on Agriculture, Animal Husbandry and Food Processing w.e.f on 8th August 2025, vide Lok Sabha Bulletin Part-II, Para No. 3117 dated 13.08.2025.*

COMPOSITION OF THE STANDING COMMITTEE ON AGRICULTURE, ANIMAL HUSBANDRY AND FOOD PROCESSING
18th Lok Sabha (2025-26)

SHRI CHARANJIT SINGH CHANNI – CHAIRPERSON

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29. Shri Ramji Lal Suman
30. Shri P. P. Suneer
31. Shri Randeep Singh Surjewala

SECRETARIAT

1.	Shri Dhiraj Kumar	-	Joint Secretary
2.	Shri Maheshwar	-	Director
3.	Shri Sanjeev Kumar	-	Under Secretary
4.	Shri Narender Kumar	-	Assistant Committee Officer

INTRODUCTION

I, the Chairperson, Standing Committee on Agriculture, Animal Husbandry and Food Processing, (2025-26) having been authorized by the Committee to submit the Report on their behalf, present this Twenty Second Report on Action Taken by the Government on the Observations/Recommendations contained in the Sixty-Eighth Report (Seventeenth Lok Sabha) of the Standing Committee on Agriculture, Animal Husbandry and Food Processing **(2023-2024)** on the Subject `Promotion of Climate Resilient Farming' pertaining to the Ministry of Agriculture and Farmers Welfare (Department of Agriculture and Farmers Welfare).

2. The Sixth-Eighth Report (Seventeenth Lok Sabha) of the Committee Standing Committee on Agriculture, Animal Husbandry and Food Processing **(2023-24)** on the Subject `Promotion of Climate Resilient Farming' pertaining to the Ministry of Agriculture and Farmers Welfare (Department of Agriculture and Farmers Welfare) was presented to Lok Sabha and laid on the Table of Rajya Sabha on 07th February,2024. The Action Taken Notes on the Report were received on 27.06.2024.

3. The Report was considered and adopted by the Committee at their Sitting held on 19.09.2025.

4. An Analysis of the action taken by the Government on the Observations/Recommendations contained in the Sixty-Eighth Report (Seventeenth Lok Sabha) of the Committee is given in **Appendix.**

NEW DELHI;
15th December, 2025
24 Agrahayana, 1947 (Saka)

CHARANJIT SINGH CHANNI
Chairperson,
Standing Committee on Agriculture
Animal Husbandry and Food Processing

CHAPTER - I

REPORT

This Report of the Standing Committee on Agriculture, Animal Husbandry and Food Processing deals with the Action Taken by the Government on the Observations/Recommendations contained in the Sixty-Eighth Report (Seventeenth Lok Sabha) of the Standing Committee on Agriculture Animal Husbandry and Food Processing (2023-24) on the subject `Promotion of Climate Resilient Farming' (2023-24) pertaining to the Ministry of Agriculture & Farmer Welfare (Department of Agriculture & Farmers Welfare) which was presented to Lok Sabha on 07.02.2024 and Laid on the Table of Rajya Sabha on 07.02.2024, respectively.

1.2 The Sixty-Eighth Report (17th Lok Sabha) the Standing Committee on Agriculture, Animal Husbandry and Food Processing (2023-24) on the subject `Promotion of Climate Resilient Farming' pertaining to Ministry of Agriculture & Farmers Welfare (Department of Agriculture & Farmers Welfare) contained 17 Observations/ Recommendations on the following aspects.

`Promotion of Climate Resilient Farming'	
Ministry of Agriculture & Farmers Welfare (Department of Agriculture and Farmers Welfare)	
Recommendation No.	Recommendation
1.	Creation of Single Nodal Agency at National Level to Deal with Issues of Climate Change
2.	Nationwide implementation of Comprehensive and Integrated Approach to mitigate adverse impact of Climate Change on Agriculture- Implementation of NICRA Scheme in all Risk Prone Villages due to Climate Change
3.	Giving prominence to Village Panchayats to raise awareness about impact of Climate Change and its effects on Agriculture
4.	Role of Krishi Vigyan Kendras (KVKs) and the need for transformation
5.	Ensuring Food and Nutritional Security for all
6.	Need for giving priority to Crop Diversification and Water conservation.
7.	Impetus to Research in Climate Smart Practices and Big Data Analytics
8.	Availability of Farm inputs and finance
9.	Promotion of Organic/Natural Farming

10.	Upgradation/Digitization of Agriculture Markets
11.	Need for promotion of Forest conservation and Natural wetlands
12.	Promotion of Millets and Coarse grains
13.	Carbon market in Agriculture
14.	Availability of information regarding Latest Technological advances and conduct of training workshops for Farmers
15.	Reduction in emission of Green House Gases (GHG) from Agriculture in a time bound manner
16.	Increasing budgetary allocation for Ministry of Agriculture & Farmers Welfare
17.	Issue of Manpower in Research Institutes and bodies attached to Ministry of Agriculture & Farmers Welfare

1.3 The Ministry of Agriculture and Farmers Welfare (Department of Agriculture and Farmers Welfare) has furnished Action Taken Replies in respect of all the 17 Observations/Recommendations contained in the Report. These Replies have been categorized as under:

(i) Observations/Recommendations that have been accepted by the Government:

Recommendations Nos. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15

Total- 14
Chapter-II

(ii) Observations/Recommendations which the Committee do not desire to pursue in view of the Government's replies:

Recommendation Nos. 1

Total- 01
Chapter-III

(iii) Observations/Recommendations in respect of which Replies of the Government have not been accepted by the Committee:

Recommendation Nos. 16 and 17

Total-02
Chapter-IV

(iv) Observations/Recommendations in respect of which final replies of the Government are still awaited:

Recommendation - NIL

Total-0
Chapter-V

1.4 The Committee trust that utmost importance would be given to implementation of the Observations/ Recommendations accepted by the Government. In cases where it is not possible for the Department to implement the Recommendations in letter and spirit for any reason, the matter should be reported to the Committee with reasons for non-implementation. The Committee desire that further Action-taken Notes on the Observation/ Recommendations contained in Chapter - I and Final Action-taken Replies to the Recommendations contained in Chapter-V of this Report be furnished to them at an early date.

1.5 The Committee will now deal with the Action -Taken by the Government of some of Recommendations in the succeeding paragraphs.

A. <u>Nationwide implementation of Comprehensive and Integrated Approach to mitigate adverse impact of Climate Change on Agriculture- Implementation of NICRA Scheme in all Risk Prone Villages due to Climate Change.</u>

Recommendation No.2

1.6 The Committee had observed/recommended: -

"Climate change impacts are not evenly distributed among different populations and countries. Developing countries, which heavily rely on the Agriculture and lack the necessary technologies and finances for risk management, face greater vulnerability to climate risks. Research has found that elevated temperatures have a more detrimental effect on the Agricultural growth in developing countries as compared to developed ones. Recent studies have demonstrated that Climate Change has resulted in a substantial decrease in the productivity growth of global Agriculture in the last five- six decades. With a more pronounced impact on developing countries, similar evidence has been reported for India, where climatic hazards have led to a substantive reduction in productivity growth, especially in low-income and agrarian States. The socio economic consequences of Climate Change's negative impact on agriculture are also more significant for developing countries. Studies have indicated that climatic shocks have disproportionately increased undernutrition and poverty rates in the South Asia and Sub-Saharan Africa compared to other regions of the world. Numerous other studies have also documented a significant decline in household income and consumption expenditure due to adverse rainfall shocks.

The long-term consequences of repeated exposure to multiple risks can be devastating. They can deplete household savings, force the sale of assets, increase

indebtedness, discourage the adoption of new technologies and innovations, and degrade natural resources and ecosystem services. There are concerns that, without mitigation and adaptation measures, poor farmers may find it difficult to fully recover from the impacts of climatic shocks and remain trapped in a cycle of low-income, debt, and poverty. The adverse impacts of Climate Change on Agriculture and Agriculture-based livelihoods can be reduced by implementing comprehensive and integrated approaches. These approaches include technological advancements in agriculture, meteorology, information and communication, data sciences, and the incorporation of traditional farming practices. Depending on risk aversion, resource availability, and access to information and finances, farm households adopt various measures to manage climate risks. Extensive analysis of adaptation literature has shown that integrating scientific innovations with traditional practices is a strong strategy for enhancing productivity, sustainability, and resilience in smallholder-dominated agrarian economies.

Against this backdrop, the Committee desire that NICRA (National Innovations in Climate Resilient Agriculture) Scheme should be implemented in all identified risk prone/vulnerable villages to empower the farmers and shield them from the vagaries of natural events & meteorological incidents and thus enabling them to usher in a new era of financial security."

1.7 In its Action Taken Reply, the Department has stated:-

"The National Innovations on Climate Resilient Agriculture (NICRA) project is being implemented in 151 risk prone districts covering 448 villages. However, the objectives of NICRA are to conduct strategic research on adaptation and mitigation, technology demonstration and capacity building. Considering the fact that agriculture sector is highly vulnerable to climate change and to achieve food security, focus is given to the adaptation practices which in turn provides climate resilience to the small and marginal farmers and vulnerable sections of the society. The ICAR under NICRA identified 310 districts are risk prone to climate change. The ICAR has developed several technologies to build climate resilience in all the agriculturally predominant districts of the country. The salient achievements under ICAR are as follows:

(i) ICAR has developed resilient varieties in different crops tolerant to climatic stresses to improve the food grain production in the face of changing climate. Since 2014, a total of 2279 varieties have been released out of which 1888 are climate resilient varieties which includes 429 abiotic stress tolerant varieties.

(ii) Sixty-eight location-specific climate resilient technologies have been developed and popularized for wider adoption among the farming communities.

(iii) Agricultural contingency plans for 650 districts have been prepared and State officials have been sensitized for preparedness through 57 State-level interface meetings during the past eight years. Agricultural contingency plans have been made available online for policy makers to take decisions in the event of delayed monsoons and other extreme weather events.

(iv) District level risk and vulnerability assessment of Indian agriculture to climate change has been prepared which is useful for several Ministries/ Departments for prioritizing resources towards developmental programs.

(v) Based on vulnerability assessment, climate resilient technologies are being demonstrated on farmer's fields in 151 clusters covering 454 villages.

(vi) A total of 74 IFS models including 8 integrated organic farming system models suitable for 26 States/UTs have been developed under AICRP IFS/AINP-OF and are being scaled through various schemes such as NMSA, IFC and State plan schemes. These IFS models are designed such a way that nutritional requirements such as carbohydrate, protein, fat and minerals are available within the farming system for the family. Bio-fortified varieties are also integrated wherever suitable.

All the districts are being covered for promotion of sustainable agriculture practices under National Mission on Sustainable Agriculture (NMSA) through various schemes. The Mission aims to evolve and implement strategies to make Indian agriculture more resilient to the changing climate. NMSA was approved for three major components i.e. Rainfed Area Development (RAD); On Farm Water Management (OFWM); and Soil Health Management (SHM). Subsequently, new programmes such as namely Soil Health Card (SHC), Paramparagat Krishi Vikas Yojana (PKVY), Mission Organic Value Chain Development in North Eastern Region (MOVCDNER), Per Drop More Crop, National Bamboo Mission (NBM) etc. were also included.

To protect the farmers from climate hazards, Government has introduced flagship yield based Pradhan Mantri Fasal Bima Yojana (PMFBY) along with weather index based Restructured Weather Based Crop Insurance Scheme (RWBCIS) from Kharif 2016. The scheme aims at supporting sustainable production in agriculture sector by way of providing financial support to farmers suffering crop loss/damage arising out of unforeseen natural

calamities, adverse weather incidence and to help in stabilize the income of farmers to ensure their continuance in farming. Comprehensive risk insurance to farmers is provided against unpreventable natural calamities such as drought, dry-spells, flood, hailstorm, inundation etc. under the scheme for entire crop cycle including pre-sowing to post harvest losses.

IMD runs an operational Agrometeorological Advisory Services (AAS) viz., Gramin Krishi Mausam Sewa (GKMS) scheme specifically for the benefits of farming community in the country. Under the scheme, medium range weather forecast for next 5 days at district and block level and also subsequent week Met Sub-division wise rainfall and temperature forecast are generated by IMD. Based on the forecast, 130 Agromet Field Units (AMFUs), located at State Agricultural Universities (SAUs), institutes of Indian Council of Agricultural Research (ICAR) and Indian Institute of Technology (IIT) etc., prepare Agromet Advisories on every Tuesday and Friday for the districts under their jurisdiction and communicate to the farmers to take decision on day-to-day agricultural operations. IMD will be providing weather & climate information as well as Agromet advisories to support NICRA Scheme of MoA&FW."

1.8 The Committee in their Report had recommended that NICRA (National Innovations in Climate Resilient Agriculture) Scheme should be implemented in all identified risk prone/vulnerable villages to empower the farmers and shield them from the vagaries of natural events & meteorological incidents and thus enabling them to usher in a new era of financial security. The Department in its Action Taken Reply has submitted that all the districts are being covered for promotion of sustainable agriculture practices under National Mission on Sustainable Agriculture (NMSA) through various schemes and the Mission aims to evolve and implement strategies to make Indian agriculture more resilient to the changing climate. The Department has also submitted that to protect the farmers from climate hazards, Government has introduced flagship yield based Pradhan Mantri Fasal Bima Yojana (PMFBY) along with weather index based Restructured Weather Based Crop Insurance Scheme (RWBCIS) from Kharif 2016. The Department has further submitted that IMD runs an operational Agrometeorological Advisory Services (AAS) viz., Gramin Krishi Mausam Sewa (GKMS) scheme specifically for the benefits of farming community in the country. Under the scheme, medium range weather forecast, Sub-division wise rainfall and temperature forecast for next 5 days at district and block level and subsequent week are generated by IMD. The Committee are of the considered opinion that Climate

Change is a reality which needs to be accepted and tackled in such a manner that its effects become minimal. The Committee opine that technological advance in agriculture, meteorology, information & communication, data sciences need to be incorporated/integrated alongside modern & traditional farming practices to transform the agriculture sector.

B. Ensuring Food and Nutritional Security for all

Recommendation No. 5.

1.9 The Committee had observed/recommended: -

"At the core of the Sustainable Development Goals (SDGs) lie objectives to terminate the state of hunger, accomplish food security, and enhance nutrition. The issue of food security remains of utmost importance for India, within its roster of developmental concerns as a result of the nation's comparably elevated levels of economic advancement. Achieving and sustaining Food and Nutritional security remains a challenge for India, the world's most populous Nation. In the last three decades or so, India has transitioned itself from a food deficit nation to a self sufficient food producing nation. In this context, merely achieving satisfactory levels of food production is not sufficient to guarantee a nation's food security. The National Food Security Act (NFSA) 2013 aims to provide for food and nutritional security by ensuring access to adequate quantities of quality food at affordable prices to the most vulnerable segments of the Society through various Schemes and Programmes.

The primary issue encountered in Indian agriculture pertains to the insufficiency of productivity. The Nation necessitates an escalated level of public investment in the advancement and dissemination of crop varieties that exhibit heightened tolerance towards fluctuations in temperature and precipitation, while also being more proficient in water and nutrient utilization. The Committee are of the considerate view that Agricultural Policy ought to prioritize the enhancement of crop productivity, while concurrently formulating safety nets to effectively cope with the associated risks posed by Climate Change.

The introduction of the POSHAN Abhiyan (Nutrition Mission) in March 2018 by the Government of India has reoriented the national focus on nutrition. This initiative aims to enhance productivity and ensure food security for individuals as well as their families and communities. Poor nutrition is a major risk factor in non communicable diseases (NCD). The Committee strongly recommend that latest technologies such as Artificial Intelligence, Big

Data Analytics etc. may be utilized to ensure food and nutritional security for the masses especially vulnerable sections of the society, rural population in fulfilment of Sustainable Development Goals and for overall growth of the Agriculture sector."

1.10 In its Action Taken Reply, the Department has stated: -

"The National Food Security Act, 2013 (NFSA) provides for coverage of up to 75% of the rural and up to 50% of the urban population for receiving highly subsidized foodgrains under Targeted Public Distribution System (TPDS), which at Census 2011 comes to about 81.35 crore. The Coverage under the Act is substantially high to ensure that all the vulnerable and needy sections of the society get its benefit. The Central Government issues advisories to all the States/Union Territories from time to time to identify all eligible and poor persons/ households including vulnerable Sections of the Society for inclusion under the NFSA. States are undertaking updation of their beneficiary database so that bogus ration cards get deleted and better targeting of rightful beneficiaries is ensured. Thus, deletion of ineligible beneficiaries and addition of eligible beneficiaries under the Act is a continuous process.

To meet the challenges of sustaining domestic food production in the face of changing climate, the Government is implementing National Mission for Sustainable Agriculture (NMSA). NMSA is one of the Missions within the National Action Plan on Climate Change (NAPCC) which aims to evolve and implement strategies to make Indian agriculture more resilient to the changing climate and to sustain increase in production. The Indian Council of Agricultural Research (ICAR) under Ministry of Agriculture and Farmers Welfare, Government of India has launched a flagship network project namely National Innovations in Climate Resilient Agriculture (NICRA). The project aims to study the impact of climate change on agriculture including crops, livestock, horticulture and fisheries and to develop and promote climate resilient technologies in agriculture which will address vulnerable areas of the country and the outputs of the project will help the districts and regions prone to extreme weather conditions like droughts, floods, frost, heat waves, etc. to cope with such extremes. The salient achievements under ICAR are as follows:

(i) ICAR has developed resilient varieties in different crops tolerant to climatic stresses to improve the food grain production in the face of changing climate. Since 2014, a total of 2279 varieties have been released out of which 1888 are climate resilient varieties which includes 429 abiotic stress tolerant varieties.

(ii) Sixty-eight location-specific climate resilient technologies have been developed and popularized for wider adoption among the farming communities.

(iii) Agricultural contingency plans for 650 districts have been prepared and State officials have been sensitized for preparedness through 57 State-level interface meetings during the past eight years. Agricultural contingency plans have been made available online for policy makers to take decisions in the event of delayed monsoons and other extreme weather events.

(iv) District level risk and vulnerability assessment of Indian agriculture to climate change has been prepared which is useful for several Ministries/ Departments for prioritizing resources towards developmental programs.

(v) Based on vulnerability assessment, climate resilient technologies are being demonstrated on farmer's fields in 151 clusters covering 454 villages.

(vi) A total of 74 IFS models including 8 integrated organic farming system models suitable for 26 States/UTs have been developed under AICRP IFS/AINP-OF and are being scaled through various schemes such as NMSA, IFC and State plan schemes. These IFS models are designed such a way that nutritional requirements such as carbohydrate, protein, fat and minerals are available within the farming system for the family. Bio-fortified varieties are also integrated wherever suitable.

Recognizing the centrality of food security within the Sustainable Development Goals (SDGs), the government has prioritized comprehensive strategies aimed at eradicating hunger, ensuring food security, and enhancing nutrition across the nation.

Mission Saksham Angamvadi and Poshan 2.0 (Mission Poshan 2.0): The Government of India has placed malnutrition at the forefront of its agenda, implementing the ambitious Saksham Anganwadi and Poshan2.0 (MissionPoshan2.0) with unwavering determination. In the 15th Finance Commission, components of nutritional support for children below the age of 6years, pregnant women and lactating mother, Adolescent Girls (14 - 18years); Early Childhood Care and Education (3-6years); Anganwadi infrastructure including modern, upgraded Saksham Anganwadi, POSHAN Abhiyaan and Scheme for Adolescent Girls have been reorganized under Mission Saksham Anganwadi and Poshan 2.0 (Mission Poshan2.0). MissionPoshan2.0 focuses on Maternal Nutrition, Infant and Young Child Feeding Norms, Treatment of MAM/SAM and Wellness through AYUSH practices to reduce wasting and under-weight prevalence besides stunting and anemia. It shifts the focus from

addressing caloric sufficiency alone to prioritizing improved health, wellness, and immunity through micronutrient sufficiency, all underpinned by well-defined strategies.

The objectives of Poshan 2.0 are as follows:

- To contribute to human capital development of the country
- Address challenges of malnutrition
- Promote nutrition awareness and good eating habits for sustainable health and well- being; and
- Address nutrition related deficiencies through key strategies.

Poshan Abhiyaan plays a vital role in achieving SDGs 2 i.e., Zero Hunger aims to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture. Poshan Abhiyaan focuses on addressing malnutrition, a key aspect of achieving zero hunger. Through initiatives like the Supplementary Nutrition Programme, the government is striving to provide comprehensive nutrition support to vulnerable groups, including children, pregnant women, lactating mothers, and adolescent girls.

Supplementary Nutrition Programme: Under Supplementary Nutrition Programme, nutrition support is provided to the children (including severely malnourished children) up to the age of 6years, pregnant women, lactating mothers, and adolescent girls (14-18 years) in the aspirational districts including those in Assam and North-Eastern States for 300 days in a year. Under this programme, Take Home Ration (THR) and Hot Cooked Meal (HCM) is provided to the beneficiaries by the States/UTs in accordance with the nutritional norms contained in Schedule-II of the National Food Security Act (NFSA), 2013.

Recently, in order to address the challenge of malnutrition more effectively, nutrition norms contained in Schedule-II of the NFSA have been revised and notified on 25.01.23 to make them more comprehensive in terms of both quantity and quality. The emphasis is on including micronutrients and promoting dietary diversity. The revised norms advocate for the provision of quality protein, healthy fats, and 7(seven) essential micronutrients such as calcium, zine, iron, dietary folate, Vitamin A, Vitamin B6, and Vitamin B12. Further, this Ministry has also suggested that to the extent possible, provision of animal source foods (such as fresh milk) and seasonal whole fresh fruits be included in the food rations to further improve diet diversity, protein quality and available micro nutrients such as calcium, vitamin B12, vitamin B6 etc. WCD has also recommended that eggs may be included in the "Recommended Food Baskets" in order to improve protein quality and provide adequate

amounts of Vitamin B12. However, for beneficiaries not consuming eggs, equivalent amount of milk/nuts & seeds may be given. Further, WCD has recommended that jaggery may be used instead of sugar as it is rich in micro nutrients and prevents anaemia.

Under Wheat Based Nutrition Programme (WBNP), more emphasis is being given on the supply of millet for preparation of THR and HCM at Anganwadis for Pregnant Women, Lactating mothers and children below 6 years of age, as millet are highly nutritious and are known to have high nutrient content which includes protein, essential fatty acid, dietary fiber and micro nutrients such as B-Vitamins, calcium, iron, zinc, folic acid and others thus helping to tackle anaemia and other micro nutrient deficiencies common among women and children. As per the Scheme Guidelines issued for Mission Saksham Anganwadi & Poshan 2.0, millet needs to be mandatory supplied at least once a week and suitably integrated in THR and HCM in a palatable form.

The Ministry of Women & Child Development (MWCD) remains dedicated to leveraging the potential of technology-driven solutions to advance the goals of food and nutritional security, particularly among vulnerable sections of society and rural populations. IT systems have been leveraged to strengthen and bring about transparency in nutrition delivery support systems at the Anganwadi centers. The 'Poshan Tracker' application was rolled out on 1 March, 2021 as an important governance tool and under POSHAN Abhiyaan, for the first time, a digital revolution was ushered in when the Anganwadi Centres were equipped with mobile devices to key in data in the Poshan Tracker app. The Poshan Tracker facilitates monitoring and tracking of all AWCS, AWWs and beneficiaries on defined indicators. Technology under Poshan Tracker is being leveraged for dynamic identification of stunting, wasting, under-weight prevalence among children. The mobile application has also facilitated digitization and automation of physical registers used by AWWs that helps in improving their quality of work. Poshan Tracker is available in 24 languages including Hindi and English. It has facilitated near real time data collection for Anganwadi Services such as, daily attendance, Provision of Hot Cooked Meal (HCM)/Take Home Ration (THR), Growth Measurement, Early Childhood Care and Education (ECCE), etc. The App also offers counseling videos on key behaviours and services which help disseminate messages on birth preparedness, delivery, post-natal care, breastfeeding and complementary feeding."

1.11 The Committee in their Report had recommended that latest technologies such as Artificial Intelligence (AI), Big Data Analytics etc. may be utilized to ensure food and nutritional security for the masses especially vulnerable sections of the society, rural

population in fulfilment of Sustainable Development Goals and for overall growth of the Agriculture sector. The Department in its Action Taken Reply has submitted that the National Food Security Act, 2013 (NFSA) provides for coverage of up to 75% of the rural and up to 50% of the urban population for receiving highly subsidized foodgrains under Targeted Public Distribution System (TPDS), which at Census 2011 comes to about 81.35 crore. The Coverage under the Act is substantially high to ensure that all the vulnerable and needy sections of the society get its benefit. The Department has also submitted that the Central Government issues advisories to all the States/Union Territories from time to time to identify all eligible and poor persons/ households including vulnerable Sections of the Society for inclusion under the NFSA. The Department in its Action Taken Reply has further submitted that the Government of India has placed malnutrition at the forefront of its agenda, implementing the ambitious Saksham Anganwadi and Poshan 2.0 (Mission Poshan 2.0) with unwavering determination and in the 15th Finance Commission, components of nutritional support for children below the age of 6 years, pregnant women and lactating mother, Adolescent Girls (14 -18years); Early Childhood Care and Education (3-6years); Anganwadi infrastructure including modern, upgraded Saksham Anganwadi, POSHAN Abhiyaan and Scheme for Adolescent Girls have been reorganized under Mission Saksham Anganwadi and Poshan 2.0 (Mission Poshan2.0). Mission Poshan 2.0 focuses on Maternal Nutrition, Infant and Young Child Feeding Norms, Treatment and Wellness of Mothers and Infants through AYUSH practices to reduce wasting and under-weight prevalence besides stunting and anaemia. It shifts the focus from addressing caloric sufficiency alone to prioritizing improved health, wellness, and immunity through micronutrient sufficiency, all underpinned by well-defined strategies. The Committee are of the considered opinion that use of latest technologies such as AI, Big Data Analytics would not only enhance the reach of the Schemes to vulnerable sections of the Society but also go a long way in fulfilment of Sustainable Development Goals (SDGs) thereby ensuring overall growth of the Agriculture sector which in turn will positively impact the country's GDP growth.

Increasing budgetary allocation for Ministry of Agriculture & Farmers Welfare

Recommendation No. 16.

1.12 The Committee had observed/ recommended:-

"Agriculture sector in India is now at the cusp of a transformation backed by Union Government initiatives such as Digital Public Infrastructure, Agriculture Infrastructure Fund schemes and so on. The scalability of these Schemes needs to be enhanced so that their impact is more tangible and areas across the country start getting benefits simultaneously. The Committee feel that without adequate financial support and backing by the government, most of the Schemes will not be able to create the desired impact.

The Committee, therefore, recommend that budgetary allocation of the Ministry of Agriculture & Farmers Welfare needs to be enhanced to boost public spending in Agriculture & Allied Sectors, to tackle issues related to Climate Change as India is among the top ten countries to be affected by extreme meteorological events, to train farmers and FPOs in the latest technological advances to combat adverse impact of phenological events, to ensure farm inputs across the length and breadth of the country, invest more in research in farm methods and technologies & related demands of Allied Sectors and so on."

1.13 In its Action Taken Reply, the Department has stated:-

"Government of India is committed to the welfare of farmers and Department of Agriculture and Farmers Welfare is accordingly implementing comprehensive range of central sector as well as centrally sponsored schemes and programmes for the welfare of farmers in the country. These schemes encompass entire spectrum of agriculture including credit, insurance, income support, infrastructure, crops including horticulture, seeds, mechanization, marketing, organic and natural farming, farmer collectives, irrigation, extension, procurement of crops from farmers at minimum support prices, digital agriculture etc. The total budget allocation for DA&FW for the FY 2024-25 has witnessed an increase of 1.73% in comparison to FY 2023-24. The budget allocation at BE level for FY 2024-25 is Rs. 117528.80 crore, whereas BE 2023-24 was Rs. 115531.79 crore.

The budgetary allocation for Department of Agriculture & Farmers Welfare (DA&FW) depends upon the various factors including amount of scheme approved, their previous years" expenditures under the schemes, absorption capacity of the Department and the actual requirement of funds depending upon progress of scheme and overall fiscal situation

of Govt. during the respective financial years. The allocation of budget for various schemes, including RKVY, is worked out by Budget Division of MoA&FW."

1.14 The Committee in their Report had recommended that budgetary allocation of the Department of Agriculture & Farmers Welfare needs to be enhanced to boost public spending in Agriculture & Allied Sectors, to tackle issues related to Climate Change as India is among the top ten countries to be affected by extreme meteorological events, to train farmers and FPOs in the latest technological advances to combat adverse impact of phenological events, to ensure farm inputs across the length and breadth of the country, invest more in research in farm methods and technologies & related demands of Allied Sectors and so on. The Department in its Action Taken Reply has submitted that the budgetary allocation for Department of Agriculture & Farmers Welfare (DA&FW) depends upon the various factors including amount of scheme approved, their previous years expenditures under the schemes, absorption capacity of the Department and the actual requirement of funds depending upon progress of scheme and overall fiscal situation of Govt. during the respective financial years. The Department has further submitted that the allocation of budget for various schemes, including RKVY, is worked out by Budget Division of MoA&FW. The Committee is of the considered view that public spending in Agriculture needs to be enhanced not only to boost farm productivity, increase credit, insurance and infrastructure facilities but also for overall growth of the country's economy and GDP. The Committee after considering the reply of the Department emphasise that, given Agriculture's role as the largest livelihood provider in the country and its significant contribution to the economy and other sectors through backward and forward linkages, enhanced budgetary allocation to the Department of Agriculture & Farmers Welfare would be highly beneficial. Such support could help ensure that agriculture receives due importance, while also strengthening the scalability of ongoing schemes and making their impact more tangible. Hence, the Committee reiterate their earlier recommendation in the matter.

<u>Issue of Manpower in Research Institutes and bodies attached to Ministry of Agriculture & Farmers Welfare</u>

Recommendation No. 17

1.15 The Committee had observed/ recommended: -

"A robust and strategic knowledge system is imperative for the identification, formulation, planning, and execution of policy-driven measures, while upholding the requisite rate of economic growth. This strategic knowledge system, aimed at informing and supporting actions sensitive to climate change, must encompass several objectives. These objectives entail addressing climate science through modelling specific to regions; evaluating various technological scenarios and alternatives to meet national objectives; harnessing international cooperation and enhancing our endeavours to select and develop new technologies for adaptation and mitigation; and ensuring the bridging of knowledge gaps. It is of utmost importance to sustain the vitality of the knowledge enterprise that addresses Climate Change issues through the promotion of human and institutional capacity-building. Such measures are indispensable in the crafting of policy responses and implementation approaches at the national level and in providing inputs for negotiations at the international for a by designated Departments. The role of Research Institutes in sustaining the vitality of knowledge systems, ICAR in the present context, is of immense importance in combating the effects of Climate Change. Manpower is the most important asset of any organization and more so, in the case of research institutes such as ICAR, Coconut Development Board (CDB) and so on.

The Committee note that the Posts are lying vacant in certain crucial Research Institutes like Coconut Development Board (CDB), Central Institute of Fisheries Training (CIFT) and Central Marine Fisheries Research Institute (CMFRI), etc. The Committee feel that the Recruitment Processes need to be expedited and Officials appointed to increase the efficiency of the functioning of all the Research Institutes."

1.16 In its Action Taken Reply, the Department has stated: -

"Government makes all the efforts for timely filling up of the vacant posts through recruitment as well as promotion. It is a continuous process and regular monitoring of the retirements and completion of tenures is done and accordingly, requisitions for filling up the vacancies are sent in advance to recruiting agencies."

1.17 The Committee had desired to sustain the vitality of the knowledge enterprise that addresses Climate Change issues through the promotion of human and institutional capacity-building as such measures are indispensable in the crafting of policy responses and implementation approaches at the national level and in providing inputs for negotiations at the international fora by designated Departments. The

Committee had recommended that the Recruitment processes for posts lying vacant in certain crucial Research Institutes like Coconut Development Board (CDB), Central Institute of Fisheries Training (CIFT) and Central Marine Fisheries Research Institute (CMFRI), etc. need to be expedited and Officials be appointed to increase the efficiency of the functioning of all the Research Institutes. In its Action Taken Reply, the Department has submitted that the Government makes all the efforts for timely filling up of the vacant posts through recruitment as well as promotion which is a continuous process and regular monitoring of the retirements and completion of tenures is done and accordingly, requisitions for filling up the vacancies are sent in advance to recruiting agencies. The Committee after taken note of the reply of the Department emphasise that filling vacancies in significant numbers within the concerned Departments is imperative for strengthening the efficiency of Research Institutes under its mandate. The Committee are of the view that expediting the recruitment process would enable these Research Institutes to contribute more effectively to the process of nation building. In this context, the Committee reiterate their earlier recommendation on the matter.

CHAPTER – II

OBSERVATIONS/RECOMMENDATIONS THAT HAVE BEEN ACCEPTED BY THE GOVERNMENT

Nationwide implementation of Comprehensive and Integrated Approach to mitigate adverse impact of Climate Change on Agriculture- Implementation of NICRA Scheme in all Risk Prone Villages due to Climate Change

Recommendation No. 2

Climate change impacts are not evenly distributed among different populations and countries. Developing countries, which heavily rely on the Agriculture and lack the necessary technologies and finances for risk management, face greater vulnerability to climate risks. Research has found that elevated temperatures have a more detrimental effect on the Agricultural growth in developing countries as compared to developed ones. Recent studies have demonstrated that Climate Change has resulted in a substantial decrease in the productivity growth of global Agriculture in the last five- six decades. With a more pronounced impact on developing countries, similar evidence has been reported for India, where climatic hazards have led to a substantive reduction in productivity growth, especially in low-income and agrarian States. The socio economic consequences of Climate Change's negative impact on agriculture are also more significant for developing countries. Studies have indicated that climatic shocks have disproportionately increased undernutrition and poverty rates in the South Asia and Sub-Saharan Africa compared to other regions of the world. Numerous other studies have also documented a significant decline in household income and consumption expenditure due to adverse rainfall shocks.

The long-term consequences of repeated exposure to multiple risks can be devastating. They can deplete household savings, force the sale of assets, increase indebtedness, discourage the adoption of new technologies and innovations, and degrade natural resources and ecosystem services. There are concerns that, without mitigation and adaptation measures, poor farmers may find it difficult to fully recover from the impacts of climatic shocks and remain trapped in a cycle of low-income, debt, and poverty. The adverse impacts of Climate Change on Agriculture and Agriculture-based livelihoods can be reduced by implementing comprehensive and integrated approaches. These approaches include technological advancements in agriculture, meteorology, information and communication,

data sciences, and the incorporation of traditional farming practices. Depending on risk aversion, resource availability, and access to information and finances, farm households adopt various measures to manage climate risks. Extensive analysis of adaptation literature has shown that integrating scientific innovations with traditional practices is a strong strategy for enhancing productivity, sustainability, and resilience in smallholder-dominated agrarian economies.

Against this backdrop, the Committee desire that NICRA (National Innovations in Climate Resilient Agriculture) Scheme should be implemented in all identified risk prone/vulnerable villages to empower the farmers and shield them from the vagaries of natural events & meteorological incidents and thus enabling them to usher in a new era of financial security.

REPLY OF THE GOVERNMENT

The National Innovations on Climate Resilient Agriculture (NICRA) project is being implemented in 151 risk prone districts covering 448 villages. However, the objectives of NICRA are to conduct strategic research on adaptation and mitigation, technology demonstration and capacity building. Considering the fact that agriculture sector is highly vulnerable to climate change and to achieve food security, focus is given to the adaptation practices which in turn provides climate resilience to the small and marginal farmers and vulnerable sections of the society. The ICAR under NICRA identified 310 districts are risk prone to climate change. The ICAR has developed several technologies to build climate resilience in all the agriculturally predominant districts of the country. The salient achievements under ICAR are as follows:

(i) ICAR has developed resilient varieties in different crops tolerant to climatic stresses to improve the food grain production in the face of changing climate. Since 2014, a total of 2279 varieties have been released out of which 1888 are climate resilient varieties which includes 429 abiotic stress tolerant varieties.

(ii) Sixty-eight location-specific climate resilient technologies have been developed and popularized for wider adoption among the farming communities.

(iii) Agricultural contingency plans for 650 districts have been prepared and State officials have been sensitized for preparedness through 57 State-level interface meetings during the past eight years. Agricultural contingency plans have been made available

online for policy makers to take decisions in the event of delayed monsoons and other extreme weather events.

(iv) District level risk and vulnerability assessment of Indian agriculture to climate change has been prepared which is useful for several Ministries/ Departments for prioritizing resources towards developmental programs.

(v) Based on vulnerability assessment, climate resilient technologies are being demonstrated on farmer's fields in 151 clusters covering 454 villages.

(vi) A total of 74 IFS models including 8 integrated organic farming system models suitable for 26 States/UTs have been developed under AICRP IFS/AINP-OF and are being scaled through various schemes such as NMSA, IFC and State plan schemes. These IFS models are designed such a way that nutritional requirements such as carbohydrate, protein, fat and minerals are available within the farming system for the family. Bio-fortified varieties are also integrated wherever suitable.

All the districts are being covered for promotion of sustainable agriculture practices under National Mission on Sustainable Agriculture (NMSA) through various schemes. The Mission aims to evolve and implement strategies to make Indian agriculture more resilient to the changing climate. NMSA was approved for three major components i.e. Rainfed Area Development (RAD); On Farm Water Management (OFWM); and Soil Health Management (SHM). Subsequently, new programmes such as namely Soil Health Card (SHC), Paramparagat Krishi Vikas Yojana (PKVY), Mission Organic Value Chain Development in North Eastern Region (MOVCDNER), Per Drop More Crop, National Bamboo Mission (NBM) etc. were also included.

To protect the farmers from climate hazards, Government has introduced flagship yield based Pradhan Mantri Fasal Bima Yojana (PMFBY) along with weather index based Restructured Weather Based Crop Insurance Scheme (RWBCIS) from Kharif 2016. The scheme aims at supporting sustainable production in agriculture sector by way of providing financial support to farmers suffering crop loss/damage arising out of unforeseen natural calamities, adverse weather incidence and to help in stabilize the income of farmers to ensure their continuance in farming. Comprehensive risk insurance to farmers is provided against unpreventable natural calamities such as drought, dry-spells, flood, hailstorm, inundation etc. under the scheme for entire crop cycle including pre-sowing to post harvest losses.

IMD runs an operational Agrometeorological Advisory Services (AAS) viz., Gramin Krishi Mausam Sewa (GKMS) scheme specifically for the benefits of farming community in the country. Under the scheme, medium range weather forecast for next 5 days at district and block level and also subsequent week Met Sub-division wise rainfall and temperature forecast are generated by IMD. Based on the forecast, 130 Agromet Field Units (AMFUs), located at State Agricultural Universities (SAUs), institutes of Indian Council of Agricultural Research (ICAR) and Indian Institute of Technology (IIT) etc., prepare Agromet Advisories on every Tuesday and Friday for the districts under their jurisdiction and communicate to the farmers to take decision on day-to-day agricultural operations. IMD will be providing weather & climate information as well as Agromet advisories to support NICRA Scheme of MoA&FW.

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COMMENTS OF THE COMMITTEE

For comments of the Committee, please refer to Para No. 1.8 of Chapter-I of this Report.

Giving prominence to Village Panchayats to raise awareness about impact of Climate Change and its effects on Agriculture

Recommendation No. 3

The most challenging political issue in the Climate Change policy arises from the inadequate acknowledgement and recognition of the changing climate by Village Panchayats or Local Self-governing Bodies. An enlightened or aware Sarpanch will act as a force multiplier and in turn educate the farmers who are the front line warriors about the effects of Climate Change on Agriculture and the need for adoption of Climate Resilient practices. The farmers need to be enlightened clearly that the impact of climate risks could transmit along the Supply or Value chains from genetics to end-consumption, affecting the efficiency and sustainability of the entire chain and the livelihoods of chain actors.

Until a village Sarpanch is made aware of the need to align the development strategies of a Gram Panchayat with the goal of adapting agriculture to climate variability, any efforts made at higher levels of governance may not yield the desired outcomes. The institution of a Panchayat possesses the ability to leverage funds from a multitude of Govt. schemes. Funds

provided under Govt. Schemes can be utilized in adaptation and mitigation strategies for enhancing Climate Resilience by working on agro forestry and plantation, soil & water management, creation of water ponds/reservoirs and so on. Workshops containing information for Beginners, Medium and Advance Level Training and Refresher courses for Village Sarpanchs and Panchayats on Climate Change issues need to be conducted on a regular basis at District, Regional and National Level to keep them attuned to the developments happening worldwide. National/regional Level ranking of villages adopting best Climate Resilient practices may be started and those topping the charts may be felicitated to motivate others to follow the suit.

The Committee are of the considered opinion that to enhance awareness regarding impact of Climate Change on Agriculture, in villages especially among the farming community and Village Sarpanchs, messages may be broadcast on social media platforms extensively in Hindi, English as well as in vernacular languages across the country. Focus on dissemination of these informative messages regarding impact of Climate Change on Agriculture in remote areas with sub optimal connectivity and border areas may be given prominence so that farmers residing there do not remain oblivious about the adverse impact of Climate Change and adopt essential adaptative and mitigative practices.

REPLY OF THE GOVERNMENT

The Ministry of Panchayat Raj (MoPR) disseminates, weather forecasts of IMD for preparedness to deal with floods during monsoon season. The ministry intends to outreach Sarpanch of Gram Panchayat to give weather warnings. All the apps and portal links of IMD like Mausam, Umang, Meghdoot, etc. are used for dissemination. IMD"s Panchayat Mausam Sewa application on daily weather forecast data at the block level is integrated with eGram Sawaraj portal of MoPR. The eGram Sawaraj portal is being used by all the Districts/ blocks and Gram panchayats. Unified mobile app MAUSAM was launched on 15th Jan 2024 on the occasion of commencement of 150 years of services of IMD. In addition to English, it supports 12 Indian languages and aims to provide accurate, reliable, real time weather information and forecast for every hour to 7 days to users. With convenient GIS based weather maps, it provides all weather services to users including weather forecasts and warnings, Rain alerts, Cyclone alerts, Lightning alerts, Radar and Satellite products, forecast along National Highway, railways, aviation and agro meteorological advisory services among others. User can be proactively warned of impending severe weather events based on location of the user.

The mobile app caters to the need of all categories of services including urban, power, health, hydrology, environment, agriculture, surface, transport, aviation, navigation and tourism sectors. The mobile app provides specialized services on current weather including temperature, humidity, wind, rainfall, sunrise/sunset, moonrise/moonset and AQI. MAUSAM app is freely available on mSevaAppStore, Google Play store, Apple App store.

The ICAR has collaborated with Ministry of Electronics and Information Technology, Government of India to link KVKs with Common Service Centres (CSCs) for extending the reach of KVKs up to Panchayat level. Accordingly, 3.5 lakh CSCs have been linked with the KVKs for providing technological solutions to the farmers visiting CSCs with agriculture related technological problems. Besides, KVKs are using ICT social media platforms like WhatsApp and Facebook to disseminate technological information including those mitigating adverse impact of Climate Change. Moreover, 151 KVKs, implementing Technology Demonstration Component of National Innovations on Climate Resilient Agriculture, have formed Village Climate Risk Management Committees in 151 clusters of villages involving panchayat representatives and farmers for planning and monitoring implementation of climate resilient technologies.

The National Institute of Rural Development and Panchayat Raj (NIRD&PR), Hyderabad is a premier institute under MoRD is in intended to have capacity building programmes in climate resilient agriculture to the farmers in collaboration with ICAR. The main objective of the institute is systematic observation and analysis of disasters to improve measures relating to prevention, mitigation, preparedness, emergency response and recovery. Besides, mainstreaming Disaster Risk Reduction (DRR) as a policy objective in all developmental efforts encompassing the measures needed to achieve objective and developing a culture of disaster resilience and climate change adaptation strategies.

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Role of Krishi Vigyan Kendras (KVKs) and the need for transformation

Recommendation No. 4.

The Committee note that significant contribution has been made by the KVKs (Krishi Vigyan Kendras) towards the overall enhancement of farmers' quality of life. These

contributions include in the areas of income generation, agricultural productivity, the introduction of state-of-the-art technologies, approaches to resource conservation, the promotion of organic farming, diversification of agricultural activities, Training Programmes for rural youth and farm women to foster entrepreneurial endeavours, the development of integrated farming systems, models for climate-resilient agriculture, and the utilization of information and communication technology (ICT) for effective dissemination of information. It is an established fact, as revealed by field-based stakeholder analysis, that the presence of a KVK in each district has led to tangible progress in the Agrarian sector. This progress is attributed to the provision of a Single Window Platform that offers technology and services - within easy reach of all stakeholders.

The Committee think that time has arrived wherein infrastructural and technological facilities in KVKs need a boost to enable them to cater training to farmers in the latest technological Agrarian practices. The record keeping of KVKs especially in regard to records of training being imparted to the Farmers, also needs to be spruced up. KVKs should resort to data analytics to ensure that all farmers are imparted training in the relevant fields. The KVKs need to utilize Artificial Intelligence and other latest innovations to act as Knowledge Centres where information/Knowledge can be imparted in Vernacular languages too, through online mode 24 x7 as and when queries are raised by the farmers. These changes will revamp the existing system and KVKs will usher in a new version KVK 2.0 fully equipped and geared to meet not only the challenges of Climate Change but other exigencies too, as and when the need arises. These changes will also enable KVKs to provide courses in Capacity Building Programmes for Farmers and Farmer Producer Organisations (FPOs).

REPLY OF THE GOVERNMENT

KVKs are mandated for frontline extension which act as a bridge between research organizations and the main extension system operated by different development departments of the State Governments. Considering the role and resources of a KVK, it caters to the requirement of the selected farmers of the district and provide capacity development support to State Development Departments. The coverage of entire district is the responsibility of development departments of State Governments. They bridge the gap between the National Agricultural Research System (NARS) and the farming community, disseminating knowledge and promoting cutting-edge agricultural practices.

The Government is supporting for need based infrastructure creation in KVKs. The KVKs imparted training to about 21.56 lakh farmers during 2023-24 on latest agricultural practices by organizing 69 thousand training programmes. These training programs included skill development under “Attracting and Retaining Youth in Agriculture” and National Skill Qualification Framework aligned training courses. KVKs have also been entrusted with providing technological backstopping to the FPOs. During 2023-24, the KVKs provided technological backstopping to 1866 FPOs by organizing 2340 training programmes with participation of 85291 members. The farmers are informed about the schedules of such training programmes through Newsletter of KVKs, advertisement in newspaper, Notice/Bulletin Board of KVKs, website, messages on mobile of farmers, social media, announcement about training programmes during village level programmes, etc. The interested farmers approach to attend the training programmes. Besides, training programmes are also conducted on the demand of farmers‟ groups, Farmers Producer Organizations, etc. Different organizations also nominate farmers/ farmers‟ groups for training. Records of the training programmes are maintained by the KVKs.

The KVKs use ICT and social media to reach large number of farmers. The ICAR has created an online Platform KisanSarathi for two-way communication with farmers for solving their field problems through latest technologies including climate resilient ones. Farmers registered on this platform are able to ask questions and get answers in their own language. A total of 1.91 crore farmers of 2.82 lakh villages are registered on KisanSarathi.

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Ensuring Food and Nutritional Security for all

Recommendation No. 5.

At the core of the Sustainable Development Goals (SDGs) lie objectives to terminate the state of hunger, accomplish food security, and enhance nutrition. The issue of food security remains of utmost importance for India, within its roster of developmental concerns as a result of the nation's comparably elevated levels of economic advancement. Achieving and sustaining Food and Nutritional security remains a challenge for India, the world's most populous Nation. In the last three decades or so, India has transitioned itself from a food

deficit nation to a self sufficient food producing nation. In this context, merely achieving satisfactory levels of food production is not sufficient to guarantee a nation's food security. The National Food Security Act (NFSA) 2013 aims to provide for food and nutritional security by ensuring access to adequate quantities of quality food at affordable prices to the most vulnerable segments of the Society through various Schemes and Programmes.

The primary issue encountered in Indian agriculture pertains to the insufficiency of productivity. The Nation necessitates an escalated level of public investment in the advancement and dissemination of crop varieties that exhibit heightened tolerance towards fluctuations in temperature and precipitation, while also being more proficient in water and nutrient utilization. The Committee are of the considerate view that Agricultural Policy ought to prioritize the enhancement of crop productivity, while concurrently formulating safety nets to effectively cope with the associated risks posed by Climate Change.

The introduction of the POSHAN Abhiyan (Nutrition Mission) in March 2018 by the Government of India has reoriented the national focus on nutrition. This initiative aims to enhance productivity and ensure food security for individuals as well as their families and communities. Poor nutrition is a major risk factor in non communicable diseases (NCD).

The Committee strongly recommend that latest technologies such as Artificial Intelligence, Big Data Analytics etc. may be utilized to ensure food and nutritional security for the masses especially vulnerable sections of the society, rural population in fulfilment of Sustainable Development Goals and for overall growth of the Agriculture sector.

REPLY OF THE GOVERNMENT

The National Food Security Act, 2013 (NFSA) provides for coverage of up to 75% of the rural and up to 50% of the urban population for receiving highly subsidized foodgrains under Targeted Public Distribution System (TPDS), which at Census 2011 comes to about 81.35 crore. The Coverage under the Act is substantially high to ensure that all the vulnerable and needy sections of the society get its benefit. The Central Government issues advisories to all the States/Union Territories from time to time to identify all eligible and poor persons/ households including vulnerable Sections of the Society for inclusion under the NFSA. States are undertaking updation of their beneficiary database so that bogus ration cards get deleted and better targeting of rightful beneficiaries is ensured. Thus, deletion of ineligible beneficiaries and addition of eligible beneficiaries under the Act is a continuous process.

To meet the challenges of sustaining domestic food production in the face of changing climate, the Government is implementing National Mission for Sustainable Agriculture (NMSA). NMSA is one of the Missions within the National Action Plan on Climate Change (NAPCC) which aims to evolve and implement strategies to make Indian agriculture more resilient to the changing climate and to sustain increase in production. The Indian Council of Agricultural Research (ICAR) under Ministry of Agriculture and Farmers Welfare, Government of India has launched a flagship network project namely National Innovations in Climate Resilient Agriculture (NICRA). The project aims to study the impact of climate change on agriculture including crops, livestock, horticulture and fisheries and to develop and promote climate resilient technologies in agriculture which will address vulnerable areas of the country and the outputs of the project will help the districts and regions prone to extreme weather conditions like droughts, floods, frost, heat waves, etc. to cope with such extremes. The salient achievements under ICAR are as follows:

1. ICAR has developed resilient varieties in different crops tolerant to climatic stresses to improve the food grain production in the face of changing climate. Since 2014, a total of 2279 varieties have been released out of which 1888 are climate resilient varieties which includes 429 abiotic stress tolerant varieties.

2. Sixty-eight location-specific climate resilient technologies have been developed and popularized for wider adoption among the farming communities.

3. Agricultural contingency plans for 650 districts have been prepared and State officials have been sensitized for preparedness through 57 State-level interface meetings during the past eight years. Agricultural contingency plans have been made available online for policy makers to take decisions in the event of delayed monsoons and other extreme weather events.

4. District level risk and vulnerability assessment of Indian agriculture to climate change has been prepared which is useful for several Ministries/ Departments for prioritizing resources towards developmental programs.

5. Based on vulnerability assessment, climate resilient technologies are being demonstrated on farmer‟s fields in 151 clusters covering 454 villages.

6. A total of 74 IFS models including 8 integrated organic farming system models suitable for 26 States/UTs have been developed under AICRP IFS/AINP-OF and are being scaled through various schemes such as NMSA, IFC and State plan schemes.

These IFS models are designed such a way that nutritional requirements such as carbohydrate, protein, fat and minerals are available within the farming system for the family. Bio-fortified varieties are also integrated wherever suitable.

Recognizing the centrality of food security within the Sustainable Development Goals (SDGs), the government has prioritized comprehensive strategies aimed at eradicating hunger, ensuring food security, and enhancing nutrition across the nation.

Mission Saksham Angamvadi and Poshan 2.0 (Mission Poshan 2.0): The Government of India has placed malnutrition at the forefront of its agenda, implementing the ambitious Saksham Anganwadi and Poshan2.0 (MissionPoshan2.0) with unwavering determination. In the 15thFinance Commission, components of nutritional support for children below the age of 6years, pregnant women and lactating mother, Adolescent Girls (14 - 18years); Early Childhood Care and Education (3-6years); Anganwadi infrastructure including modern, upgraded Saksham Anganwadi, POSHAN Abhiyaan and Scheme for Adolescent Girls have been reorganized under Mission Saksham Anganwadi and Poshan 2.0 (Mission Poshan2.0). MissionPoshan2.0 focuses on Maternal Nutrition, Infant and Young Child Feeding Norms, Treatment of MAM/SAMand Wellness through AYUSH practices to reduce wasting and under-weight prevalence besides stunting and anemia. It shifts the focus from addressing caloric sufficiency alone to prioritizing improved health, wellness, and immunity through micronutrient sufficiency, all underpinned by well-defined strategies.

The objectives of Poshan2.0 are as follows:

- To contribute to human capital development of the country
- Address challenges of malnutrition
- Promote nutrition awareness and good eating habits for sustainable health and well- being; and
- Address nutrition related deficiencies through key strategies.

Poshan Abhiyaan plays a vital role in achieving SDGs 2 i.e., Zero Hunger aims to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture. Poshan Abhiyaan focuses on addressing malnutrition, a key aspect of achieving zero hunger. Through initiatives like the Supplementary Nutrition Programme, the government is striving to provide comprehensive nutrition support to vulnerable groups, including children, pregnant women, lactating mothers, and adolescent girls.

Supplementary Nutrition Programme: Under Supplementary Nutrition Programme, nutrition support is provided to the children (including severely malnourished children) up to the age of 6years, pregnant women, lactating mothers, and adolescent girls (14-18 years) in the aspirational districts including those in Assam and North-Eastern States for 300 days in a year. Under this programme, Take Home Ration (THR) and Hot Cooked Meal (HCM) is provided to the beneficiaries by the States/UTs in accordance with the nutritional norms contained in Schedule-II of the National Food Security Act (NFSA), 2013.

Recently, in order to address the challenge of malnutrition more effectively, nutrition norms contained in Schedule-II of the NFSA have been revised and notified on 25.01.23 to make them more comprehensive in terms of both quantity and quality. The emphasis is on including micronutrients and promoting dietary diversity. The revised norms advocate for the provision of quality protein, healthy fats, and 7 essential micronutrients such as calcium, zine, iron, dietary folate, Vitamin A, Vitamin B6, and Vitamin B12. Further, this Ministry has also suggested that to the extent possible, provision of animal source foods (such as fresh milk) and seasonal whole fresh fruits be included in the food rations to further improve diet diversity, protein quality and available micro nutrients such as calcium, vitamin B12, vitamin B6 etc. WCD has also recommended that eggs may be included in the "Recommended Food Baskets" in order to improve protein quality and provide adequate amounts of Vitamin B12. However, for beneficiaries not consuming eggs, equivalent amount of milk/nuts & seeds may be given. Further, WCD has recommended that jaggery may be used instead of sugar as it is rich in micro nutrients and prevents anemia.

Under Wheat Based Nutrition Programme (WBNP), more emphasis is being given on the supply of millet for preparation of THR and HCM at Anganwadis for Pregnant Women, Lactating mothers and children below 6 years of age, as millet are highly nutritious and are known to have high nutrient content which includes protein, essential fatty acid, dietary fiber and micro nutrients such as B-Vitamins, calcium, iron, zinc, folic acid and others thus helping to tackle anaemia and other micro nutrient deficiencies common among women and children. As per the Scheme Guidelines issued for Mission Saksham Anganwadi & Poshan 2.0, millet needs to be mandatory supplied at least once a week and suitably integrated in THR and HCM in a palatable form.

The Ministry of Women & Child Development (MWCD) remains dedicated to leveraging the potential of technology-driven solutions to advance the goals of food and nutritional security, particularly among vulnerable sections of society and rural populations.

IT systems have been leveraged to strengthen and bring about transparency in nutrition delivery support systems at the Anganwadi centers. The 'Poshan Tracker' application was rolled out on 1 March, 2021 as an important governance tool and under POSHAN Abhiyaan, for the first time, a digital revolution was ushered in when the Anganwadi Centres were equipped with mobile devices to key in data in the Poshan Tracker app. The Poshan Tracker facilitates monitoring and tracking of all AWCS, AWWs and beneficiaries on defined indicators. Technology under Poshan Tracker is being leveraged for dynamic identification of stunting, wasting, under-weight prevalence among children. The mobile application has also facilitated digitization and automation of physical registers used by AWWs that helps in improving their quality of work. Poshan Tracker is available in 24 languages including Hindi and English. It has facilitated near real time data collection for Anganwadi Services such as, daily attendance, Provision of Hot Cooked Meal (HCM)/Take Home Ration (THR), Growth Measurement, Early Childhood Care and Education (ECCE), etc. The App also offers counselling videos on key behaviours and services which help disseminate messages on birth preparedness, delivery, post-natal care, breastfeeding and complementary feeding.

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COMMENTS OF THE COMMITTEE

For comments of the Committee, please refer to Para No. 1.11 of Chapter-I of this Report.

Need for giving priority to Crop Diversification and Water conservation

Recommendation No. 6

Diversification and modification of crop species and variety portfolios are commonly employed strategies by farmers to address environmental and socio economic variability and to effectively respond to transformative shifts, such as climate change. Despite the undeniable importance of crop diversity in enabling agro ecosystems for successful adaptation to climate change as current public policies and development interventions offer inadequate assistance in promoting crop diversification. The Committee feel that understanding the dynamics of alterations in the crop portfolios of farmers, the intricate interaction between climate and other factors that drive these changes, and the

consequences for the food security, nutrition, and income of farmers assumes paramount importance in providing valuable insights for agricultural decision-making, which is primarily crucial in designing feasible approaches for enduring adaptation in a swiftly evolving global context. The Committee recommend that as Crop Diversification is an efficient tool in ensuring food security, enhancing soil fertility, controlling pests & diseases, brings about yield stability and more importantly, mitigate effects of Climate Change and hence it should be actively promoted by the Ministry and all possible assistance rendered to farmers in pursuance of the same across the country.

Better management of water resources must be a key feature of sustainable Agriculture. Water Supply Management Options such as new storages and water harvesting are important, especially in the water-stressed regions of North-western India. Water use efficiency in Agriculture needs to be enhanced. India's irrigation infrastructure needs to be upgraded; particular attention needs to be given to north-western India, the country's food basket that is prone to climate-induced droughts. Despite the benefits of drip irrigation, it is still largely adopted for high-value horticultural crops. To enhance the area under micro and drip irrigation, the government needs to take a nuanced stance on the subsidy on electricity for drawing water for irrigation purposes, which has been a major contributor to declining groundwater levels, towards the adoption of Drip Irrigation techniques.

In view of the foregoing, the Committee strongly recommend the use of latest technologies such as Artificial algorithms, which will optimize irrigation schedules, conserve water and minimize environmental impact, particularly in the light of growing water scarcity issues.

REPLY OF THE GOVERNMENT

Crop Diversification Programme is being implemented in Original Green Revolution States viz: Punjab, Haryana and Western Uttar Pradesh under RKVY since 2013-14 to divert the area of water guzzling paddy crop to alternate crops like pulses, oilseeds, coarse cereals, nutri cereals, cotton and agro forestry.

Crop Diversification Programme (CDP) is operation under Rashtriya Krishi Vikas Yojana (RKVY) in the Original Green Revolution States of Punjab, Haryana and Western Uttar Pradesh since 2013-14 to diversify paddy area towards less water requiring crops like

oilseeds, pulses, coarse cereals/nutri-cereals, cotton and agro forestry. CDP has been extended to tobacco growing states of Andhra Pradesh, Bihar, Gujarat, Karnataka, Maharashtra, Odisha, Tamil Nadu, Telangana, Uttar Pradesh and West Bengal to encourage tobacco growing farmers to shift to alternate crops/cropping system w.e.f. 2015-16. Presently, the programme is being implemented in the districts having more than 50,000 hectares" paddy area to give more emphasis to divert paddy area in the states of Punjab, Haryana and Uttar Pradesh. The following objectives are expected to achieve through implementation of CDP in the Original Green Revolution States:

- To demonstrate and promote improved production technologies of alternate crops for diversion of paddy cultivation.
- To restore soil fertility through cultivation of leguminous crops that generate heavy biomass and consume lesser nutrients.

Under this scheme, assistance is provided to the farmers on cluster demonstrations of alternate crops, farm mechanization & value addition, site- specific activities and contingency, awareness training, implementation and monitoring etc. as per approved cost norms under any of the centrally sponsored scheme/state scheme by the implementing states. The scheme is implemented through State Governments with the approval of the State Level Standing Committee (SLSC).

Crop diversification is given importance by ICAR under AICRP on Integrated Farming Systems by identifying the suitable alternative cropping systems for various farming systems. Cropping system Atlas having first and second pre-dominant cropping systems have been developed. Pilot Project for crop diversification is initiated in 75 districts to train the extension agents and farmers on crop diversification by including pulses, oilseeds, millets and vegetables.

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) has been implemented since 1st July, 2015 jointly by Department of Agriculture & Farmers Welfare, Ministry of Water Resources, Department of Land Resources, and Department of Rural Development. The scheme aims at end-to-end solutions in irrigation requirement, viz. water sources, and distribution network and farm level in order to double the farmers" income. It comprises of four components, namely (i) Accelerated Irrigation Benefit Programme (AIBP), (ii) Har Khet Ko Paani, (iii) Watershed Development and (iv) Per Drop More Crop. Micro Irrigation (MI) is an integral component of PMKSY to maximize water use efficiency at field level and ensuring

„Per Drop-More Crop" (PMKSY-PDMC). This Scheme is being implemented by Ministry of Agriculture under PMKSY (PDMC). Micro-irrigation technologies viz. drip and sprinkler systems are experimented at different locations. Drip systems resulted in saving of about 40% water and 30% increase in yield compared to the surface irrigation methods. Whereas, the sprinkler system resulted in 20% water saving and 15% increase in yield compared to surface irrigation. PDMC also promotes aautomation in the Micro Irrigation Systems for ease of operation with minimal or no manual intervention thereby achieving greater efficient use of Micro Irrigation Systems by the beneficiaries. Water use efficiency means bringing more area under irrigation per unit water and more crop per drop. Till date, the country has achieved bringing 16 million ha. of agriculture land under micro irrigation.

Central Government has formulated National Water Policy 2012 which inter alia contains provisions for rainwater harvesting like incentivizing revival of traditional water harvesting structures by States, encouraging rainwater harvesting to increase availability of utilizable water in urban and industrial areas, preference to urban and rural domestic water supply from surface water in conjunction with groundwater and rainwater, etc. The National Water Policy has been sent to all States/UTs for appropriate action.

Water being a State subject, steps for augmentation, conservation and efficient management of water resources are primarily undertaken by the respective State Governments. In order to supplement the efforts of the State Governments, Central Government provides technical and financial assistance to them through various schemes and programmes.

In order to effectively implement the rainwater harvesting across the country, the Government undertakes various activities in the form of special drives, schemes and programmes. Some of the major steps taken by Government of India in this regard are as follows:

(i) Jal Shakti Abhiyan-I (JSA-I) was conducted in 2019 in 1,592 blocks out of 2,836 blocks in 256 water stressed districts of the country and was expanded as “Jal Shakti Abhiyan: Catch the Rain” (JSA:CTR) in 2021 with the theme “Catch the Rain Where it Falls When it Falls” to cover all the blocks of all districts (rural as well as urban areas) across the country. “Jal Shakti Abhiyan: Catch the Rain” (JSA:CTR) -2022 campaign, the third in the series of JSAs, was launched on 29.03.2022 to cover all the blocks of all districts (rural as well as urban areas) across the country. Jal Shakti Abhiyan: Catch the Rain 2023, 4th in the series of JSA, has been launched on

04.03.2023. Rainwater harvesting is one of the major components of the campaign. States/UTs have been advised to actively participate in JSA:CTR 2023 and have also been suggested to undertake rain harvesting activities under JSA:CTR.

(ii) Watershed Development Component of Pradhan Mantri Krishi Sinchayee Yojana (WDC-PMKSY) has got rainwater harvesting as one of the activities under its Natural Resource Management (NRM) component.

(iii) The scheme of Surface Minor Irrigation (SMI) and Repair, Renovation & Restoration (RRR) of Water Bodies have multiple objectives like expanding cultivable area under assured irrigation by improvement and restoration of water bodies inter alia increasing ground water recharge and revival of lost irrigation potential.

(iv) Master Plan for Artificial Recharge to Groundwater- 2020 has been prepared by Central Ground Water Board in consultation with States/UTs which is a macro level plan indicating various structures for the different terrain conditions of the country.

(v) Central Ground Water Authority (CGWA) while granting No Objection Certificates (NOCs) for ground water abstraction envisages that the proponents shall install roof top rain water harvesting & recharge systems in the project area.

(vi) Government of India has launched Atal Mission for Rejuvenation and Urban Transformation (AMRUT) in 2015 which focuses on development of basic urban infrastructure especially water supply & access to tap connection to every household in 500 cities. In water supply sector, ULBs/State may take up projects related to new/augmentation/rehabilitation of water supply system; rejuvenation of water bodies for water supply, rainwater harvesting and recharge of ground water etc. Further, AMRUT 2.0 has been launched in 2021 which covers all the statutory towns of the country to ensure universal coverage of water supply. It envisages rejuvenation of water bodies, urban aquifer management, promote recycle & reuse and rainwater harvesting to augment freshwater resources.

(vii) Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) includes water conservation and water harvesting structures as one of the activities under its natural resource management (NRM) component.

(viii) The Mission Amrit Sarovar was launched on National Panchayati Raj Day on 24th April, 2022 as a part of celebration of Azadi ka Amrit Mahotsav with an objective to

conserve water for future. The Mission is aimed at developing and rejuvenating 75 water bodies in each district of the country.

Geospatial technology for targeting water harvesting structures in watershed systems were standardized and the existing WHS were rejuvenated to enhance storage capacity. Research on fertigation technologies in fruit and vegetable crops resulted in 25% saving in fertilizers compared to conventional method of fertilizer application. IoT enabled integrated sensing systems are developed and tested for judicious irrigation scheduling in different crops. Groundwater modeling system was used for simulation of groundwater depth under future scenarios for judicious groundwater management. Artificial groundwater recharge technologies using recharge shafts and for abandoned wells were being developed and tested to augment groundwater recharge.

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Impetus to Research in Climate Smart Practices and Big Data Analytics

Recommendation No. 7

Climate Change is anticipated to modify pest behavior, specifically in terms of infestation levels, resistance and resurgence, and the emergence of novel pests in response to altered climatic conditions. Numerous research studies have examined the influence of climate change on Indian Agriculture using diverse datasets and estimation methods. In the realm of biological science, controlled experiments are often employed to quantitatively assess the effects of weather parameter fluctuations, particularly temperature, on crop yields. With all other factors held constant, these controlled conditions expose crops to varying temperature levels, enabling the determination of the extent of yield reduction.

The Committee having noticed the importance of modern technologies in agriculture, do recommend that Ministry of Agriculture and Farmers Welfare should give top priority to the advancement of research in emerging areas of Climate Science in order to develop technologies that encompass pest surveillance and forecasting systems, simulation modelling, and big data analytics, among others. The implementation of digital agriculture, utilizing ICT (Information and Communication Technology) and emerging technologies, has the potential to play a crucial role in facilitating the adoption of various climate smart interventions. Emphasizing agricultural research and innovation is necessary to ensure the

efficient utilization of resources such as water and nutrients, carbon sequestration, and the assessment of Greenhouse Gas emissions from the Agricultural sector. This requires an augmented allocation of budgetary support and the establishment of collaborations and partnerships. Therefore, the Committee further recommend that the Ministry/Department should ensure sufficient allocation for this purpose from the resources available with them.

REPLY OF THE GOVERNMENT

Indian Agricultural Statistics Research Institute under ICAR (ICAR-IASRI) has developed AI based mobile app for disease and pest identification in crops entitled AI-DISC (Artificial Intelligence-based Disease Identification System for Crops) (available at stores:https://play.google.com/store/apps/details?id=com.ai.ai_disc) play using deep learning techniques. This work was carried out under the world bank funded National Agricultural Higher Education Project (NAHEP) component 2 'Investment in ICAR Leadership for Agriculture Higher Education' and ICAR-NASF (ICAR-National Agriculture Science Fund) funded project `Artificial intelligence based mobile app for identification and advisory of maize diseases and insect pests'. In this work, ICAR IASRI has collected numerous images of crops related to disease and insect-pests and created a national-level image database, National Image Base for Plant Protection (NIBPP) approx. 3.5 lakhs digital images of crops from across the country. The dataset contains images of 53 crops for 145 diseases and 146 insect-pests. For easy image data collection, ICAR-IASRI has developed a mobile application aka National Image Base for Plant Protection (NIBPP) through which the images were collected and validated under the supervision of domain experts. Using the image dataset of NIBPP, ICAR-IASRI developed several deep learning-based disease identification models for 20 crops comprising 54 diseases (such as: major diseases of Rice, wheat, Maize, Tomato, Mustard etc.) with an average accuracy of classification accuracy of more than 95-98%. For developing the disease detection deep learning models, ICAR-IASRI applied several state-of-the-art architectures such as Inception, MobileNet, DenseNet, EfficientNet, etc. in a fine tuned manner. Best performing models were selected for deployment in the server. AI-DISC in which the developed deep learning models were integrated. The AI-DISC mobile app has been duly certified as a technology by ICAR in 2023 (certificate ID: ICAR-AED IASRI-Technology-2023-004). Using the mobile application, the user can just upload an image of the crop and get the results on the mobile screen within seconds along with the recommended management practices. The AI based Pest and Disease Identification of multiple diseases on the same plant or physiological disorders is envisaged which aims to systematically identify,

classify, quantify, and predict crop protection related problems through deep learning techniques and integration of models in the National Pest Surveillance System (NPSS) mobile app developed by Ministry of Agriculture and Farmers Welfare.

Pilot studies on use of wireless sensor networks, sensor-based irrigation scheduling and use of Artificial Intelligence (AI) for detecting pests and diseases is under progress. Depending on the budget availability, these pilot scales will be further extended for large scale demonstrations. Under NICRA, integrated simulation modelling using IPCC, AR6 climate change projections (CMIP6) were used to predict the future climate change impact on various crop yields and livestock. Global climate models (GCM) and regional climate models (RCM) were used under various climate change scenarios. Artificial intelligence and IoT based solar powered surface and sub-surface drip irrigation for irrigation scheduling in chilliin which soil moisture sensor unit, ET sensors and crop water sensors were installed for scheduling the irrigation.

Drones were being used on large scale for spraying pesticides and liquid fertilizers. The drones were supplied to KVKs and capacity building on use of drones was imparted to the farmers and KVK staff. Hyper spectral airborne remote sensing using AVIRIS-NG is used for precise estimation of rice growth parameters such as LAI and high resolution multispectral remote sensing using Sentinel 2A for detection and spread of invasive pest species in maize, sorghum and chilies. The pest and disease forecast models have been developed for spot blotch of wheat and leaf blast of rice.

Remote sensing approaches are also used for estimating above and below ground carbon which is useful for carbon credit in agriculture. Further, software SQI CAL was developed for rapid calculation of soil quality index. A proposal for developing deep learning-based AI models for plant recognition and stress detection from plant digital imageries and also an app-based interface tool for real time diagnostics, decision management and management is under consideration.

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Availability of Farm inputs and finance

Recommendation No. 8

Climate Change is the most defining challenge for Agriculture, human development and ecological well being in the 21st century. Climate Change has forced farmers to use adaptative and mitigation methods to lessen the impact. The Committee do recommend that seeds of Climate Resilient Varieties may be provided to the farmers and accordingly, Seed Hubs need to be promoted on a large scale and indigenous breeds in Animal Husbandry may be made available alongwith necessary food supplements at affordable prices. Climate Resilient varieties may be popularized be it Horticulture or Fisheries. These Climate Resilient varieties would ultimately help in reduction of GHG emissions and pave for enhanced agricultural yields too in uncertain times.

REPLY OF THE GOVERNMENT

In order to make quality seeds affordable to farmers, Government ensures fixation of uniform breeder seed price in consultation with ICAR for minimization of the seed production cost in case of foundation and certified seed. Furthermore, Government provides financial assistance to different States and Government Seed Producing Agencies for production and distribution of seeds and for other interventions related to seed sector viz. National Food Security Mission (NFSM), Mission for Integrated Development of Horticulture (MIDH), Rashtriya Krishi VikasYojana (RKVY), Sub-Mission on Seeds and Planting Materials (SMSP) etc. so as to make quality seed affordable and available to the farmers in timely manner. The following steps are being taken up by DA&FW to ensure availability of quality seed to the farmers:

1. State Governments has been preparing Seed Rolling Plan for three years in advance to estimate the requirement of seed in their State and distribute seed production targets accordingly to different Seed Production Agencies. This system ensures timely availability of required quantity of seed to the farmers in different States.
2. State Governments are placing their Breeder Seed indent in different crops one year in advance for systematic breeder seed production. After production the Breeder Seed is allotted to State Governments and Seed Producing Agencies for further multiplication into foundation and certified seed and its distribution to the farmers.

3. For any unforeseen climatic condition, a National Seed Reserve is established in different States for creating Seed Reserve every year which is having short, medium duration and stress tolerant varieties seeds.

The Department of Animal Husbandry & Dairying is implementing Rashtriya Gokul Mission (RGM) with the aim of development and conservation of indigenous bovine breeds, genetics upgradation of bovine population and enhancement of milk production and productivity of bovines. Under the scheme the following major steps have been taken for development and conservation of indigenous bovine breeds:

(i) Implementation of Nationwide Artificial Insemination Programme for enhancing artificial insemination coverage using semen of high merit bulls including semen of high genetic merit bulls of indigenous breeds. Under the programme, quality AI services are delivered free of cost at farmers doorstep.

(ii) Implementation of In-vitro Fertilization (IVF) for faster genetic upgradation of bovine population including indigenous breeds of cattle and buffaloes.

(iii) Progeny testing and Pedigree selection: Organized Progeny Testing and Pedigree selection is implemented in the country to produce high genetic merit bulls.

(iv) Sex sorted semen production for indigenous breeds of cattle along with other bovine breeds has been initiated in the country. Sex sorted semen is important for production of female calves with 90% accuracy.

Sub-Mission on Feed and Fodder development aims towards strengthening of fodder seed chain to improve availability of certified fodder seed required for fodder production and encouraging entrepreneurs for establishment of fodder Block/Hey Bailing/Silage Making Units through incentives.

Under Mission for Integrated Development of Horticulture (MIDH), Centers of Excellence (CoEs) are being established in various States through Bilateral Cooperation or Research Institutes. These CoEs serve as demonstration and training centres for latest technologies in the field of horticulture. These CoEs also serve as source of planting material for fruits and vegetable seedlings for protected cultivation and used for transfer of technology and knowhow in diverse areas, viz., Post-Harvest management, Irrigation and Fertigation, Plant protection, Introduction of New Varieties, Pollination etc.

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Promotion of Organic/Natural Farming

Recommendation No. 9.

Organic Farming have the potential to contribute to the mitigation of climate change through two main mechanisms. Firstly, by minimizing the release of Green House Gases (GHGs), and secondly, by sequestering Carbon dioxide (CO2) from the atmosphere within the soil. The impact of Traditional Agricultural Practices on Global Warming is significantly impacted by the application of synthetic Nitrogen Fertilizers and the presence of high levels of Nitrogen in soil. In contrast, Organic Agriculture is capable of sustaining itself with Nitrogen. Mixed organic farms engage in highly efficient recycling of manures from livestock and crop residues through the process of composting. Additionally, Leguminous Crops contribute an ample amount of nitrogen, particularly on stockless organic farms where it serves as the primary source.

The emission levels of Nitrous Oxide are directly correlated to the concentration of easily accessible mineral Nitrogen in soil. Following the application of fertilizers, high rates of emission are observed, displaying significant variability. However, in Organic Agriculture, the prohibition of mineral Nitrogen and the decreased number of livestock units per hectare substantially decrease the concentration of easily available mineral nitrogen in soil, consequently resulting in reduced N2O emissions. The implementation of diversified crop rotations with the use of green manure enhances soil structure and diminishes the release of Nitrous Oxide and organically managed soils possess improved aeration and significantly lower levels of mobile Nitrogen concentrations, both of which lead to decreased emissions of Nitrous Oxides.

The Committee strongly feel that as Organic Farming/ Natural Farming has the potential to reduce GHG emissions, enhance soil fertility and strengthen Climate resilience, hence Ministry should help farmers adapt to Climate Change by promoting Organic Farming through research and extension services. Government Schemes such as Rashtriya Krishi Vikas Yojana(RKVY), National Mission on Natural Farming, MOVCD-NER(Mission Organic Value Chain Development for North East Region),One District One Product(ODOP) are steps taken in the right direction. The Committee recommend that inputs at affordable prices may be made available to the farmers, latest technologies such as AI and IoT (Internet) of Things used extensively in the certification process and awareness may be created among various stakeholders, be it farmers or consumers, by using social media platforms too, regarding the

benefits of Organic/natural Farming which would go a long way in not only increasing the prosperity of farmers, but also, improve health of common man and more importantly, mitigate effect of Climate Change.

REPLY OF THE GOVERNMENT

Government has been promoting organic farming on priority in the country since 2015-16 through the schemes of Paramparagat Krishi Vikas Yojana (PKVY) and Mission Organic Value Chain Development for North Eastern Region (MOVCDNER). Both the schemes stress on end-to-end support to farmers engaged in organic farming i.e. from production to processing, certification and marketing and post-harvest management. Training and Capacity Building are integral part of the scheme. Incentives to farmers for producing and using organic fertilizers/manure are inbuilt in these schemes as on-farm and off-farm organic inputs. Direct Benefit Transfer (DBT) is provided to the farmers for using organic inputs including organic fertilizers. PKVY is being implemented in all the States other-than North Eastern (NE) States across the country whereas MOVCDNER scheme is being implemented exclusively in the NE States.

Under PKVY, an assistance of Rs.50,000 per ha for a period of three years is provided to States including States of Tamil Nadu & Rajasthan for promotion of organic farming to cover different components like Training & Capacity Building, Data Management, PGS Certification, Value Addition, Marketing and Publicity. Out of this, assistance of Rs. 31,000 per ha for a period of three years is provided to farmers through DBT for on- farm /off –farm organic inputs. Whereas under MOVCDNER, an assistance of Rs. 46,575/ha for 3 years is provided for creation of FPO, support to farmers for organic inputs, quality seeds/ planting material and training, hand holding and certification. Out of this, assistance @ Rs. 32500/ ha for 3 years is provided to farmers for off -farm /on –farm organic inputs under the scheme including Rs. 15,000 as DBT to the farmers and Rs. 17,500 for the planting material to be given to the farmers by State Lead Agency (SLA) in kind.

In view of the increasing demand of organic farming products of India in the global market, Government is facilitating value addition, certification and marketing. As per requirement of International market, Government has initiated third party certification under National Programme for Organic Production (NPOP). Organic farming research undertaken through All India Network Programme on Organic Farming resulted in development of package of practices for organic farming in 76 cropping systems suitable to 16 states. These

packages are being scaled through the developmental schemes of Union and State Governments. Eight integrated organic farming system models suitable for 7 states have also been developed and are being popularized in the States of Meghalaya, Kerala, Tamil Nadu and Sikkim. Quantification of ecosystems services from organic farming in 5 districts of Uttar Pradesh namely Meerut, Bulandshahr, Aligarh, Mirzapur and Hamirpur have been made using capital approach such as Natural, produced, human and social aspects. Natural capital approach included estimation of carbon sequestration, GHG emission assessment using the IPCC co-efficient, agro-diversity etc. Organic farming promotion resulted in better ecosystem services including the increased carbon sequestration, reduced greenhouse gas emissions and soil health contributing positively for the environmental protection. Natural farming study initiated from 2020 at 20 locations in 16 states covering 8 major cropping systems.

Capacity building including awareness on organic and natural farming are being undertaken regularly to update the knowledge of various stakeholders on organic and natural farming. Tools such as Internet of things (IoT), machine learning and Artificial Intelligence (AI) based analysis of data/information and translation of scientific information in to local languages are also explored for wider reach of stakeholders in dissemination of organic farming technologies developed and natural farming knowledge.

Dedicated Portal on Natural Farming with training material, instructional videos and facility for peer-to-peer learning by MANAGE and NITI Aayog has been developed. Sensitization and training of 2.5 lakh SHG members under Livelihood Mission on Natural Farming was imparted. Besides, 50 Radio Programs, 123 “ChaupalCharcha” and 213 “Hello Kisan” Programs conducted for awareness generation which benefitted about 65 lakh farmers. A 10-minute Video film in 14 regional languages developed and telecasted on national network through multiple platforms, KVKs and Gram Panchayats with more than 10 crore viewership.

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Upgradation/Digitization of Agriculture Markets

Recommendation No. 10.

Since independence, India has traversed a long journey in agriculture marketing but still numerous problem such as fragmented and non-compressed value chains that involve numerous intermediaries, the lack of transparency in price discovery mechanisms and the absence of scientifically advanced storage and logistics systems etc remain a big challenge to overcome. Agricultural market reforms were introduced through Agricultural Produce Market Committee (APMC) Act, 2003, which were enacted by State Governments. The reforms encompasses several key aspects, including the facilitation of direct trading between farmers and buyers, promotion of contract farming, the encouragement of private sector involvement in constructing market infrastructure, such as warehousing, cold chains, and other logistical systems, and the move towards establishing a unified national market. The virtual market platform, e NAM (National Agriculture Market), since its inception in April 2016, has been consistently enhanced in terms of new technology, innovation, the enhancement of transparency in transactions, digital payments, and user-friendly attributes. In July 2022, the e-NAM platform, through the introduction of the Platform of Platforms (PoPs) as a comprehensive unified structure, has served as a Single platform for all stakeholders in the value chain, including farmers, Farmer Producer Organizations (FPOs), e-platform service providers, transport service providers, quality assaying service providers, value addition, processors, exporters, Fintech, storage, etc. Various service platforms have been enlisted under the following 10 service categories on the Platform of Platforms(PoP) module, namely Quality Assaying, Transportation, Warehousing, Fin-tech, Trading platforms, Agri advisory, Market information, Institutional buyers, Sorting and grading, and Agri input aggregators.

Having analyzed the spectrum of this phenomenon in holistic spectrum, the Committee are of the considerate view that disruptive technological solutions in the agricultural marketing sphere is the need of the hour. Measures need to be taken to ensure that participants in these markets can assess each other's credibility by way of providing ratings to each other which in turn is visible to other users which will significantly enhance transparency and enhance the reputation of the system. Similarly, digitization of entire FPOs may be done which would enable the traceability of produce back to individual farmers. In addition, Intelligent Vision Capabilities may also be devised to pave the way for the sorting of fruits, vegetables, and staples based on buyer specifications. The Committee desire that Fintech products that integrate warehousing with Credit and Insurance need to be developed, technological

advancements need to be deployed to offer modular and energy-efficient storage systems at the farm level at affordable prices and a combination of machine learning data systems, blockchain, IoT and sensors utilized to create end-to-end traceability within the Food Supply Chains. The Committee do feel that all Agricultural markets across the country may be linked to e-NAM portal at the earliest to ensure seamless transactions and to create a win-win situation for both the farmers who can sell their produce to fetch good prices and the buyers who purchase produce of their choice at competitive rates.

REPLY OF THE GOVERNMENT

Department of Agriculture & Farmers Welfare (DA&FW) recognizes the urgent need for innovative technical solutions within the agricultural marketing sector. The e-NAM platform is keeping pace with required marketing ecosystem, which will progress towards developing like an Open Network for Digital Commerce (ONDC) integrating there with service providers. e-NAM (National Agriculture Market) mobile app is now integrated with ONDC platform. The idea and vision is to provide farmers choice for multiple buyers and multiple marketing platforms so as to realize best discovered price in competitive and transparent manner. Expansion and consolidation of e-NAM platform across country and across the service providers will further benefit the farmers and ease the doing of business.

It is important to note that there are ongoing plans to implement a rating system for service providers based on feedback from the service takers. The FPO Module, which is an integral part of the e-NAM initiative, aims to facilitate the digitalization process for FPOs, ultimately enhancing their efficiency and reach. By May 31, 2024, a total of 3803 FPOs had been registered, engaging in trade transactions amounting to 94,856 MT and 2.5 crores in numbers (betel leaf and coconut), with a cumulative value of Rs 168.57 crores.

Financial assistance is being extended through the e-NAM scheme to equip stakeholders with advanced technological capabilities for tasks such as sorting, grading, and quality assessment of agricultural products. Efforts are underway to establish a mutually beneficial environment for all parties involved by bridging the gap between service takers (farmers, FPOs, traders) and service providers (fintech, warehousing, traceability, ancillary services) through the utilization of the e-NAM PoP module. Out of the total 1389 mandis integrated into the e-NAM platform, 129 mandis were successfully integrated in October 2023, showcasing significant progress in the initiative.

In order to decentralize the fund sanctioning power to meet local requirements and give liberty to States/ UTs to decide upon and to expand the e NAM operation beyond APMC markets yards, the operational guidelines of e NAM have been modified, to achieve the ultimate goals as envisaged under the scheme to enhance the income of farmers.

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Need for promotion of Forest conservation and Natural Wetlands

Recommendation No. 11.

Forests are the best shield against Climate Change and act as carbon sinks. Their role in segregating and absorbing carbon from the atmosphere is non pareil. They form the first line of defence against Climate Change and hence need to be given utmost prominence. Forests have long been part of Indian society & culture and have been eulogized for their importance in human lives.

Wetlands, such as swamps and marshes, are renowned for being ecosystems abundant in wildlife, making them some of the most bio diverse habitats on Earth. These wetlands possess shallow waters and thrive plant life, providing sustenance for a wide array of organisms ranging from insects to water fowls and so on. These wetlands, along with lakes, rivers, and other aqueous environments worldwide, face imminent threats. Many of these areas have fallen victim to pollution and degradation, a consequence of both climate change and human development. Safeguarding and rehabilitation of Natural habitats is not only imperative for the preservation of biodiversity but also as a means to combat the climate crisis. In November 2022, the Ramsar Convention on Wetlands elevated the prominence of wetlands and underscored their pivotal role in attaining the Sustainable Development Goals, which serve as humanity's blueprint for a more promising future. The subsequent month, at the United Nations Biodiversity Conference, countries achieved a groundbreaking agreement to protect nature. This accord encompassed a provision to restore a minimum of 30 percent of deteriorated inland water bodies and to preserve healthy freshwater ecosystems in an equitable manner.

It is noteworthy that coastal and freshwater wetland ecosystems harbour a significant percentage of the world's biodiversity. In particular, peatlands, a distinct type of vegetated

wetland, possess the capacity to store twice as much carbon as the entirety of the world's forests. Despite these remarkable attributes, wetlands have been subjected to drainage for agricultural purposes or to facilitate infrastructure development over the past two centuries.

Therefore, the Committee strongly recommend that as Forests and wetlands are of profound ecological significance, concerted efforts are imperative to safeguard these invaluable habitats which would overtly and covertly assist Agriculture to stand up against extreme phenological events. The rights of forests communities also need to be taken care of while formulating policies. Also, the goals and vision of Sub-Mission on Agroforestry and Green India Mission need to be popularized and advertised more prominently to create awareness among different stakeholders, seeds & saplings provided at affordable rates to Farmers especially in High Risk Prone Areas/Districts affected or likely to be affected from Climate Change and even financial incentives be provided to them to make these Programmes a success and as such will ensure farmers with additional source of income which is an avowed objective of the present Government policies. The Committee desire that sustainable forest management needs to be done in an integrated and inclusive manner, while combating climate change and using biodiversity in a sustainable way.

REPLY OF THE GOVERNMENT

India is a signatory to the Ramsar Convention on wetlands, which defines wetlands as, "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres". Ministry of Environment, Forest and Climate Change (MoEF&CC) has notified the Wetlands (Conservation and Management) Rules, 2017 under the provisions of the Environment (Protection) Act, 1986 as a regulatory framework for conservation and management of wetlands in India. This is a significant step to conserve, manage and maintain the ecological character of the wetlands without restricting the wise use that includes sustainable agriculture. These rules fortify the legal framework for environmental concerns and strengthen the institutional framework through State/UT Wetlands Authorities and a National Wetlands Committee.

MoEF&CC implements a centrally sponsored scheme namely, the National Plan for Conservation of Aquatic Ecosystems (NPCA) for conservation and management of wetlands, including Ramsar Sites, in the country on cost sharing basis between Central Government

and respective State/UT Governments. The scheme aims at holistic conservation and restoration of wetlands, besides improvement in biodiversity and ecosystems. It promotes mainstreaming of wetlands in developmental programming with States by supporting formulation and implementation of integrated management plans, capacity building and research. Currently, India has 80 Ramsar Sites covering approx. 1.33 million ha. It is the second largest in Asia and fourth in the world in terms of total number of Ramsar Sites in a country.

Acknowledging the importance of Ramsar Sites in India, MoEF&CC launched the Amrit Dharohar initiative during June 2023. The goal of Amrit Dharohar is 'to promote unique conservation values of Ramsar Sites'. The purpose is to maintain a healthy and effectively managed network of Ramsar Sites which provide water and food security; buffer the landscape from floods, droughts, cyclones, and other extreme events; generate local employment and support livelihoods; provide habitats for species of local, national and international conservation significance; maintain and enhance carbon sinks; and conserve and celebrate rich cultural heritage. Amrit Dharohar is being implemented focusing on four main components such i.e. Species and Habitat Conservation, Wetlands Livelihood, Nature Tourism and Wetlands Carbon. Wetlands, including peatlands are critical for preventing and mitigating the effects of climate change, preserving biodiversity, minimizing flood risk, and ensuring safe drinking water. They can act as long-term carbon sinks, preserving atmospheric CO2 in their sediments at high-rate intensities for centuries. All together the wetlands store almost one third of the world's total carbon. In this regard, MoEF&CC in collaboration with the knowledge partners is developing a Standard Operating Procedure for assessing carbon stock in wetlands. Further, MoEF&CC organized a workshop during 14th-15thFebruary 2024 on 'Developing a Programme for Peatlands in India' for establishing a peatland assessment framework in India including definition and classification of peatlands across the country. Based on the outcomes of the workshop, MoEF&CC is currently developing a peatland map of India to facilitate conservation measures in the identified sites.

National Agroforestry Policy in 2014, aims to enhance productivity, profitability, and sustainability through this agroecological land use system. Agroforestry integrates trees, crops, and livestock, addressing food, nutrition, energy, employment, and environmental challenges. This aligns with global commitments like the Paris Agreement, Bonn Challenge, UN Sustainable Development Goals, United Nations Convention on Combating Desertification (UNCCD), Doubling Farmers Income, Green India Mission and more. Sub-

Mission on Agroforestry (SMAF) was launched in the year 2016-17 to encourage tree plantation on farm land with the aim of “Har Medh Par Ped”, along with crops/ cropping system to help the farmers get additional income. Sub-Mission on Agroforestry (SMAF) was implemented from 2016-17 to 2021-22. Presently, the restructured Agroforestry Component is being implemented under the Rashtriya Krishi Vikas Yojana (RKVY) and focuses on Quality Planting Material. Agroforestry is known to have the potential to mitigate the climate change effects through microclimate moderation, conservation of natural resources and creation of an additional source of livelihood and income opportunities. The scheme is implemented with objectives to encourage and expand tree plantation in a complementary and integrated manner with crops to improve productivity, additional/ income generation and improved livelihoods of rural households, especially the small farmers.

National Mission for a Green India (GIM) is one of the eight missions outlined under the National Action Plan on Climate Change. It aims at protecting, restoring, and qualitatively and quantitatively enhancing India's forest and tree cover. The Mission's interventions focus on the forest and non-forest areas equally, through a landscape approach and are undertaken in the selected landscapes under different categories. These categories include plantation on moderately dense forest showing degradation. eco restoration of degraded open forests, restoration of grasslands, rehabilitation of shifting cultivation areas, restoring scrub lands, ravine reclamation, restoration of abandoned mining areas, farmers land including current fallows, shelterbelt plantation, Highways/rural roads/canals/tank bunds. The Mission is implemented through Joint Forest Management Committees (JFMCs) through a proactive participation of the communities and different stakeholders. So far, Rs. 909.82 Crores have been released to the 18 Stale/UTs for taking up the GIM activities in the selected landscapes and so far 1.55 lakh Ha has been taken up for creation of plantation in these States/UTs.

[Ministry of Agriculture & Farmers Welfare
(Department of Agriculture & Farmers Welfare)

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Promotion of Millets and Coarse grains

Recommendation No. 12.

The proposition of Indian Government to designate 2023 as the International Year of Millets(IYM) has been well acknowledged by the United Nations. The International Year of

Millets (IYM 2023) presents an occasion to enhance awareness regarding the nutritional and health advantages of millets, while also directing policy focus towards their cultivation in adverse and evolving climatic conditions. Millets possess the capacity to thrive in arid lands with minimal resources and exhibit resilience towards climate variations. Consequently, they offer an ideal solution for nations seeking to augment self-sufficiency and diminish reliance on imported cereal grains.

The Committee note that unlike rice and wheat, which thrive in irrigated environments, millets flourish in marginal ecologies, which expand the range of options available for swift and adaptable adaptation in the face of uncertain future conditions. These coarse grains need to be part of Public Distribution System which would encourage farmers to do their cultivation.

The Committee express happiness over the fact that the due importance given to coarse grains within policy frameworks by the Government, would yield benefits for both human health and the Climate since they require lesser amount of pesticides and fertilizers, enhance crop diversity and also provide protection against soil erosion. The Committee strongly feel that farmers who switch from growing traditional crops like rice and wheat to millets or coarse grains, need to be given financial protection as incentives for initial two years minimum to boost their confidence.

REPLY OF THE GOVERNMENT

The year 2023 was celebrated as International Year of Millets (IYM), the Government of India is implementing a multi stakeholder approach with focus on strategies to enhance production and productivity, consumption, export, strengthening value chain, branding, creating awareness for health benefits etc. The first Global Event for IYM was organised by the Department of Agriculture & Farmers Welfare on 18th March 2023. The occasion was graced by the Prime Minister of India wherein IYM engraved stamp and currency coin were also launched. As part of the event, participants from 100 countries including six Agriculture Ministers from leading millet producing/ exporting countries, international organizations, scientists, Padma Awardees, farmers, FPOs, international companies etc. participated. Moreover, a global level Exhibition-cum-Buyer-Seller Meet (BSM) in collaboration with APEDA was organized with focus on millets with participation of domestic and international exporters for promotion of millets. Several other stakeholders such as farmer producer companies/ farmers, self-help groups, schools, agri-universities, Krishi Vigyan Kendras (KVKs), gram panchayats, cooperative institutions, hotel management schools, Yuva

kendras, Anganwadi, Indian embassies, Ministry of Railways and diaspora, etc. also participated in the event online.

Government is providing R&D support to Research Institutions for popularizing nutritious millets. ICAR-Indian Institute of Millets Research (IIMR), Hyderabad is undertaking various research projects related to shelf-life, food standards, database development etc. funded under NFSM. Central Food Technological Research Institute (CSIR-CFTRI) is undertaking R&D projects to tackle the bottlenecks in millet processing, value addition and product development. Under the Pradhan Mantri Formalization of Micro Food Processing Enterprises (PMFME) Scheme of Government of India, CSIR-CFTRI, Mysuru has conducted several training and skill development programmes to enhance competitiveness of existing individual micro-enterprises, including millet based industries in the unorganized segment. Under Rashtriya Krishi Vikas Yojana - Remunerative Approaches for Agriculture and Allied Sectors Rejuvenation (RKVY-RAFTAAR) program a Centre of Excellence for Processing Millets and incubation centre is being set up consisting of around 8 processing lines dedicated to millets. These lines will help in obtaining quality primary and secondary products with enhanced shelf-life. ICMR-National Institute of Nutrition is conducting R&D activities on millets such as on nutritional values of various processed and cooked millets, efficacy of cooked millet diet, effect of finger millet based dietary supplementation.

Shree Anna are also included under the Poshan Abhiyan of the Ministry of Women and Child Development. Further, the Ministry of Food and Public Distribution has revised its guidelines to increase the procurement of Shree Anna under the Targeted Public Distribution System (TPDS), Integrated Child Development Services (ICDS) and Mid-Day Meal. The Ministry has also advised the State Governments and Union Territories to increase the procurement of Shree Anna. An Export Promotion Forum dedicated to promotion of Shree Anna in the international market has been set up to facilitate promotion, marketing and development of Shree Anna exports from India. Under the Eat Right campaign, the Food Safety and Standards Authority of India (FSSAI) is creating awareness to promote the use of Shree Anna as part of a healthy and varied diet.

Department of Agriculture and Farmers Welfare (DA&FW) is implementing a Sub-Mission on Nutri-Cereals (Millets) under National Food Security Mission (NFSM) in all districts of 28 States & 2 Union Territories viz. Jammu & Kashmir and Ladakh. The Nutri-Cereals (millets) such as Sorghum (Jowar), Pearl Millet (Bajra), Finger Millet (Ragi/Mandua), Minor Millets i.e., Foxtail Millet (Kangani/Kakun), Proso Millet (Cheena), Kodo Millet (Kodo),

Barnyard Millet (Sawa/Sanwa/ Jhangora), Little Millet (Kutki) and two Pseudo Millets Buck-wheat (Kuttu) and Amaranthus (Chaulai) are covered under NFSM programme.

Under NFSM–Nutri Cereals, the incentives are provided to the farmers, through the States/UTs, on crop production and protection technologies, cropping system based demonstrations, production & distribution of certified seeds of newly released varieties/hybrids, Integrated Nutrient and Pest Management techniques, improved farm implements/tools/resource conservation machineries, water saving devices, capacity building of farmers through trainings during cropping season, organizing events/workshops, distribution of seed minikits, publicity through print and electronic media etc.

In addition, the Ministry of Food Processing Industries (MoFPI) has approved the Production Linked Incentive Scheme for Food Processing Industry for Millet based products (PLISMBP) for implementation during 2022-23 to 2026-27 with an outlay of Rs. 800 crores. The Pradhan Mantri Formalization of Micro Food Processing Enterprises (PMFMFE) Scheme, launched under the Atmanirbhar Bharat Abhiyan is currently being implemented in 35 States and Union Territories (UTs). Government is also popularizing Agri-Infrastructure Fund Scheme to invite farmers/ FPOs /Entrepreneurs to avail the benefit of interest subvention on loans up to 2 crores for setting up primary processing units in millets (Shree Anna). To encourage farmers to take up millet cultivation, higher Minimum Support Prices (MSP) to Jowar, Bajra and Ragi has been announced.

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Carbon market in Agriculture

Recommendation No. 13.

The escalating global population has led to an increased demand for food, consequently resulting in the emission of Carbon dioxide from agricultural activities, which continues to have a detrimental impact on the environment. Over the previous decade, there has been a notable increase in interest and discourse encompassing carbon markets, indicating the potential for a robust global market for carbon and emissions. In India, both the Public and Private sectors have continued to establish standards for emissions reduction and advance efforts in Voluntary Carbon Markets (VCM), scrutiny of carbon market practices and

the associated climate impact has intensified. Specialized carbon markets that cater to farming and agricultural activities are emerging, garnering growing interest from farmers, the Private sector, and Governments worldwide.

Although agriculture is a contributing factor to this issue, it also possesses the potential to be part of the solution. In the developed nations, as custodians of the land and agricultural resources, farmers and ranchers are actively engaging in carbon sequestration through the implementation of sustainable practices in soil management, crop cultivation, livestock rearing, and agroforestry.

Conversely, Private Sector investments in carbon markets are gaining traction and are primarily driven by three factors namely –(i) Legal obligations (ii) Voluntary goals, such as corporations, industrial entities, or municipal operations aiming to fulfill publicly stated environmental targets (iii) Shareholder or consumer expectations.

The government plays a crucial role in establishing protocols and certifying mechanisms to accurately verify efforts in carbon offsetting.

The growth of the Carbon Market will necessitate the involvement of various stakeholders viz. farmers, industry and so on. Alternatively, in certain cases, the Committee feel that offerings that fail to promote collaboration or support a transparent, consistent, efficient, and high-quality Carbon Market in Agriculture will become obsolete in the next phase of Carbon Market expansion, while those who successfully mitigate current uncertainties could derive significant benefits and generate substantial impact.

REPLY OF THE GOVERNMENT

Ministry of Agriculture and Farmers Welfare has recently released a Framework for the voluntary carbon markets in the agriculture sector in India which would support in development of a market-based mechanism to incentivize and finance sustainable agricultural practices that can contribute to climate change mitigation and build climate resilience. By participating in voluntary carbon markets, farmers and landowners can earn revenue from the sale of carbon credits to companies and individuals who are looking to offset their carbon emissions. This revenue thus generated can be used for scaling up of sustainable agricultural practices, leading to a virtuous cycle of increasing carbon sequestration, reducing emissions, and promoting climate resilient agriculture. Voluntary

carbon markets also provide an opportunity for private sector and individuals to take responsibility for their carbon emissions and invest in projects that have positive impact on the environment and local communities. In the long run, this would contribute to sustainable development goals, support rural livelihoods, and promote climate resilience. Various sustainable agricultural practices being adopted by the farming community in India have potential to generate carbon credits through improving soil carbon content and its sequestration thus leading to the reduction of GHG emissions and generation of carbon credits to farmers. The ministry and various development partners/ organizations are actively involved in promoting sustainable agricultural practices across the country through their programs / projects / schemes. In order to ensure additional income to the farmers through adoption of sustainable practices, the partners both governmental and non-governmental have a definite role to play.

The major objective of VCM framework is to create awareness and capacity building among the farming community, motivating farmers to continue sustainable agricultural practices. Accordingly, Ministry of Agriculture and Farmers Welfare (MoA&FW) has invited proposals for pilot projects on carbon credits through the adoption of sustainable practices from ICAR institutes, State Agricultural Universities and CG Institutes. Accordingly, a detailed work plans for capacity building in the institutes identified for implementing pilot projects have been prepared. The work plan involves activities such as finalization of the Pilot Project Concept Note, Validation of the Pilot project under Carbon Standards and Methodology development for Voluntary Carbon Markets.

These projects will help in reducing the emissions and sequestration of carbons through different sustainable agricultural practices and thereby mitigating the effect of climate change in agriculture sector. The standards and methodologies developed by ICAR institutions will help in establishing transparency, credibility, and consistency in the carbon offset market. The pilot carbon project development process will consist of several stages, including project design, registration, implementation, monitoring, verification, and issuance. Each stage plays a crucial role in ensuring the generation of high-quality carbon credits.

At the simplest level, the agricultural sector consists of two major stakeholders– producers, i.e., farmers, and consumers. However, a granular look at the Indian agricultural sector reveals multiple categories on the producer end, each with varied interests and challenges. All these stakeholders must actively participate to ensure the success of a voluntary carbon market in the agriculture sector. Aggregating bodies such as Farmer

Producer Organisations (FPOs), Community-Based Organisations (CBOs), SHGs (Self Help Groups), Water User Associations (WUAs) and Non-Governmental Organisations (NGOs) play an important role in creating awareness on VCM development in the country.

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Availability of information regarding Latest Technological advances and conduct of training workshops for Farmers

Recommendation No. 14

The implementation of AI (Artificial intelligence) in agriculture holds immense potential to revolutionize the industry by increasing productivity, reducing costs, promoting sustainability, and addressing the challenges posed by climate change and resource scarcity. AI is reshaping every aspect of agriculture be it increased productivity, enhanced efficiency, promotion of sustainability, and reduction of waste. AI will assist the industry in adapting to climate change by analyzing historical climate data to predict weather patterns, thereby optimizing water usage and reducing emissions.

AI-powered farm management software will streamline farming operations by integrating data from various sources, optimizing resource allocation, and enhancing productivity and profitability. The integration of AI and computer vision into self-driving machines will revolutionize agriculture by automating essential tasks such as ploughing, planting, and harvesting. This transformation promises heightened productivity, reduced labour costs, and optimized resource utilization. AI-driven analytics and decision support systems will aid farmers in making informed choices by processing extensive amounts of data, including weather patterns and soil conditions. Through the incorporation of AI, plant health sensors will enable real-time monitoring of crops, detecting diseases, nutrient deficiencies, and pest infestations for timely intervention. Drones and robots equipped with AI capabilities will provide precise insights into crop conditions and perform labour-intensive tasks, thereby reducing the requirements for manual labour. AI will assist the industry in adapting to climate change by analyzing historical climate data to predict weather patterns, thereby optimizing water usage and reducing emissions.

The Committee strongly feel that the integration of AI with the Internet of Things (IoT) will automate and optimize farming operations, leading to higher yields, resource conservation, enhanced sustainability and AI will enhance the resiliency of agricultural supply chains by providing predictive insights, optimizing logistics, and reducing wastage & also expedite agricultural biotechnology by accelerating breeding processes and facilitating gene editing techniques to develop more resilient and high-performing crops. Therefore, the Committee do recommend that Farmers and FPOs may be trained in KVKs and other relevant training institutes in all latest adaptative and mitigative technologies providing them the essential know how thereby enabling to use these for their own betterment and in larger societal & national interests.

REPLY OF THE GOVERNMENT

Government has taken various initiatives to spread awareness among farmers about latest and modern agriculture technology in farming. In this regard, support is being provided to State Extension Programmes for Extension Reforms under Agricultural Technology Management Agency (ATMA) for dissemination of latest and modern agricultural technologies in different thematic areas to increase agricultural production through extension activities viz. Farmers Training, Demonstrations, Exposure Visits, Kisan Mela, Mobilization of Farmers Groups and Setting up of Farm Schools. Agri-Clinics and Agri-Business Centres (AC&ABC) Scheme aims to supplement the efforts of public extension through creating gainful self-employment opportunities for unemployed candidates possessing qualification in agriculture and allied subjects for dissemination of information in latest and modern agricultural technologies.

Four Extension Education Institutes(EEIs) established on regional basis at Nilokheri (Haryana); Hyderabad (Telangana); Anand (Gujarat) and Jorhat (Assam) to cater to the training needs of middle-level field extension functionaries working under agriculture and allied departments of States/UTs of respective regions to equip them with information on latest and modern technology for dissemination to the farmers. Short duration Skill Training (7 days) of Rural Youth (STRY) scheme imparts short term skill training to rural youths and farmers on latest & modern technology on agriculture and allied areas. The National Institute of Agricultural Extension Management (MANAGE) is implementing STRY across the country through State Agricultural Management & Extension Training Institutes (SAMETIs), ATMA and Krishi Vigyan Kendras.

Diploma in Agricultural Extension Services for Input Dealers (DAESI) is of one year (expanded to 48 weeks) regular course with an objective to impart education in agriculture and other allied areas to the Input Dealers so that they can establish linkage to their business with extension services including information on latest & modern technology, besides discharging regulatory responsibilities enjoined on them. Skill Training Courses in agriculture and allied areas of minimum of 200 hrs for rural youth and farmers are conducted through the wide network of training institutes to create a pool of skilled manpower and promote wage/self-employment among rural youth and farmers.

Government has finalized the core concept of India Digital Ecosystem of Agriculture (IDEA) framework which would lay down the architecture for the federated farmers" database. Further, the databases related to the schemes governed by the Department have been integrated. The IDEA would serve as a foundation to build innovative agri-focused solutions leveraging emerging technologies to contribute effectively in creating a better Ecosystem for Agriculture in India. This Ecosystem would help the Government in effective planning towards increasing the income of farmers in particular and improving the efficiency of the Agriculture sector as a whole. Under National e-Governance Plan in Agriculture (NeGP-A), ministry supports State(s)/ UT(s) for implementing projects on use of modern technologies like Artificial Intelligence (AI), Machine Learning (ML), Robotics, Drones, Data Analytics, Block Chain etc.

Sub Mission on Agricultural Mechanization (SMAM) is being implemented w.e.f April,2014.The scheme aims at 'reaching the unreached' by bringing to the small and marginal farmers in the core and giving the benefits of farm mechanization, by Promoting 'Custom Hiring Centers', creating hubs for hi-tech & high value farm equipments, distribution of various agricultural equipments, creating awareness among stakeholders through demonstration and capacity building activities, and ensuring performance - testing and certification at designated testing centers located all over the country.

The Indian Council of Agriculture Research (ICAR) has also compiled more than 100 mobile apps developed by ICAR, State Agricultural Universities and Krishi Vigyan Kendras and uploaded on its website. These mobile apps developed in the areas of crops, horticulture, veterinary, dairy, poultry, fisheries, natural resources management and integrated subjects, offer valuable information to the farmers, including package of practices, market prices of various commodities, weather related information, advisory services, etc.

Agriculture Infrastructure Fund (AIF) is implemented for creating post-harvest management infrastructure and community farming assets to help enhanced productivity and minimize post-harvest losses. The primary processing centers and sorting and grading units established under the scheme is helping farmers to realize 20-25% better price for their produce. Custom Hiring Centers and projects of smart and precision farming infrastructure established under the scheme is contributing towards pacing up the farm mechanization and technology adoption in agriculture sector and also helping in boosting productivity.

A Centre for Climate Change has been set up at Bankers Institute of Rural Development, Lucknow by NABARD in July 2018. As a part of the Centre, a number of training programmes are organised every year, which cater to the requirements of various stakeholder institutions. Since 2020-21, BIRD regularly conducts training programmes on "Climate Resilient Agriculture & Livelihoods" exclusively for NGOs and FPOs. The programme has also been converted into a free e-learning module, which is available on BIRD's website. As National Nodal Training Institute, BIRD also regularly organizes capacity building programmes for FPOs under MoAFW scheme for promotion and formation of 10,000 FPOs, wherein inputs on latest technological developments are shared with the participants (FPO members & CBBO representatives) through lectures and exposure visits.

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Reduction in emission of Green House Gases (GHG) from Agriculture in a time bound manner

Recommendation No. 15

India is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC), as well as its Kyoto Protocol (KP) and the Paris Agreement (PA). As a participant in the UNFCCC, India regularly submits its National Communications (NCs) and Biennial Update Reports (BURs) to the UNFCCC, which include a National Greenhouse Gas (GHG) inventory, containing information on Methane emissions. Under the Paris Agreement, India has submitted its Nationally Determined Contribution (NDC), which does not impose any Sector-specific mitigation obligation or action. However, India remains steadfast in its commitment to formulating and implementing measures to address climate change.

The Committee are optimistic that nationwide implementation of National Mission on Sustainable Agriculture (NMSA), which incorporates Climate-Resilient practices that contribute to significant Methane reduction in rice cultivation be accorded priority. The technologies such as System for Rice Intensification(SRI) and Direct Seeded Rice(DSR) developed by Indian Council of Agricultural Research (ICAR) under the National Innovations in Climate Resilient Agriculture (NICRA) Project, aimed at mitigating methane emissions from rice cultivation be made available provided across the country. System for Rice Intensification(SRI), has the potential to increase rice yield by 36-49% while using 22-35% less water than conventional methods while Direct Seeded Rice(DSR) reduces methane emissions by eliminating the need for raising nurseries, puddling, and transplanting.

National Livestock Mission, being implemented by Department of Animal Husbandry and Dairying (DAHD), which includes initiatives for breed improvement and balanced rationing, by feeding livestock with high-quality balanced rations, which helps reduce methane emissions from the livestock sector needs to implemented expeditiously.

The production of green fodder, silage making, chaff cutting, and total mixed ration under the National Livestock Mission being promoted by the Union Government, with the aim of reducing methane emissions from livestock, needs to be implemented at a faster pace nationwide, at the earliest.

Initiatives such as the 'Gobar Dhan' (Galvanizing Organic Bio-Agro Resources) - Scheme and the New National Biogas and Organic Manure Programme incentivize the utilization of cattle waste, while also promoting the production of clean energy in villages. The Gobar Dhan Scheme which specifically supports the recovery and conversion of biodegradable waste into resources, leading to a reduction in Methane emissions needs to be more popularized across the country for the benefit of farmers as well as the society at large. The Committee strongly recommend that while formulating and implementation Schemes to reduce GHG(Green House Gases) emissions, legitimate interests of vulnerable sections and those communities/segments residing in remote areas, also need to be given priority and safeguarded.

REPLY OF THE GOVERNMENT

Agriculture has not been considered as a sector under mitigation by India and adaptation is priority in agriculture for India. Agriculture sector in the country is highly

vulnerable to climate change, and the need to enhance climate actions to bring resilience, without compromising on food security and livelihoods is recognized.

India has submitted its Nationally Determined Contribution (NDC) for the period of 2021-2030 under the Paris Agreement. In INDC, it was clarified that India is not bound to any sector specific mitigation obligation or action, including in agriculture sector. India's goal is to reduce overall emission intensity and improve energy efficiency of its economy over time and at the same time protecting the vulnerable sectors of economy and segments of our society.

In India, livestock and paddy are prime sources of GHG emissions from the agriculture sector, followed by emissions from soil. However, overall contribution to net total emissions is not significant.

India is primarily agrarian and dependence on agriculture is high for livelihood of more than half of the population. Agriculture sector has high level of vulnerability to changing climate. Erratic monsoon and increased frequency of mid-season droughts have emerged as an important productivity constraint besides high intensity rains being received in traditionally low rainfall regions of the country. Livestock as part of the Integrated Farming System (IFS) brings income stability, improved livelihoods and household nutrition.

In view of the above national circumstances, India avoids inclusion of sectoral target particularly for mitigation / reducing emission targets in agricultural sector.

India's NDC commitments and other climate change related commitments are being met through the implementation of the NAPCC. The primary principle that guides the NAPCC is Protecting the poor and vulnerable sections of society through an inclusive and sustainable development strategy, sensitive to climate change. Other principles are as follows –

- Achieving national growth objectives through a qualitative change in direction that enhances eco-logical sustainability, leading to further mitigation of greenhouse gas emissions.
- Devising efficient and cost-effective strategies for end use Demand Side Management.
- Deploying appropriate technologies for both adaptation and mitigation of greenhouse gases emissions extensively as well as at an accelerated pace.
- Engineering new and innovative forms of market, regulatory and voluntary mechanisms to promote sustainable development.
- Effecting implementation of programmes through unique linkages, including with civil society and local government institutions and through public- private-partnership.

- Welcoming international cooperation for research, development, sharing and transfer of technologies enabled by additional funding and a global IPR regime that facilitates technology transfer to developing countries under the UNFCCC.

Keeping in view the challenges from changing climate, Government of Government has launched and implemented many schemes and programs to scale up India's climate actions. The schemes under NMSA aim to build resilience to agriculture against climate change with a focus on welfare of farmers. The schemes include Pradhan Mantri Kisan Samman Nidhi (PM KISAN); Rainfed Area Development (RAD); Per Drop More Crop (PDMC); Paramparagat Krishi Vikas Yojana (PKVY); Crop Residue Management; Agro forestry; Soil Health Card and National Bamboo Mission (NBM). Besides NMSA, other schemes such as Pradhan Mantri Kisan Maan Dhan Yojana (PMKMY); Pradhan Mantri Fasal Bima Yojana (PMFBY); Agriculture Infrastructure Fund (AIF); Namo Drone Didi; Rashtriya Krishi Vikas Yojana; National Food Security Mission (NFSM) and Sub- Mission on Seed and Planting Material (SMSP) are being implemented in the ministry to address risk mitigation due to adversities of climate change. The schemes under NMSA are mainly meant for climate adaptation. These schemes also have co-benefits of mitigation. Therefore, the schemes formulated and implemented are focused towards climate change adaptation rather than addressing the GHG reductions in agriculture.

The Indian Council of Agricultural Research (ICAR), Ministry of Agriculture and Farmers Welfare, Government of India launched a flagship network project 'National Innovations in Climate Resilient Agriculture' (NICRA). The project aims to develop and promote climate resilient technologies in agriculture which will address vulnerable areas of the country and the outputs of the project will help the districts and regions prone to extreme weather conditions like droughts, floods, frost, heat waves, etc. to cope with such extremes.

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CHAPTER - III

OBSERVATIONS/RECOMMENDATIONS WHICH THE COMMITTEE DO NOT DESIRE TO PURSUE IN VIEW OF THE GOVERNMENT'S REPLIES

Creation of Single Nodal Agency at National Level to deal with issues of Climate Change

Recommendation No. 1

Several studies have now unequivocally established that the phenomenon of climate change has a detrimental effect on crop yields and agricultural productivity. The impact can be negated by implementing both modern and traditional adaptation measures, with the necessary Institutional and Policy support. Every Ministry/Department is mandated to prepare a Disaster Management Plan under Sections 36/37 of Disaster Management (DM) Act, 2005. Accordingly, Department of Agriculture and Farmers Welfare also prepare a National Agriculture Disaster Management Plan (NADMP) to include key aspects of Disaster Risk Reduction (DRR) that addresses Climate Change adaptation and sustainable development goals related to the Agriculture Sector. However, a unified command at the National Level is required for having seamless coordination among various Ministries, acting dynamically as and when the situation so requires, take swift decisions on urgent issues effecting Agriculture coming under the ambit of several ministries viz. Ministry of Science & Technology, Ministry of Earth Sciences, Ministry of Water Resources, Ministry of Environment, Forests & Climate Change.

Making any single Ministry as the Nodal Agency to deal with Climate Change in Agriculture would not be able to create the desired impact as it cannot use its powers effectively over other Ministries/Departments or do seamless liaisoning with different State Governments or take swift decisions nor it can be held responsible for the Subjects lying under the jurisdiction of other Ministries/Departments which a National Level Authority with unified command can do or achieve.

The Committee, therefore, are of the firm view that the issues pertaining to ground water, Meteorological events and advisories, Agro advisories and other overlapping areas related to Agriculture or covertly connected with it, require the need for a National Authority, especially in times of calamitous events & extreme phenological events to work in close cooperation with various stakeholders including State Governments and their Agencies and take swift decisions and to deal with all Climate Change issues holistically.

The Committee are further of the considered view in this regard that issues related to Climate Change and its effects impacting Agriculture needs to be handled by a single Authority at the National level on the pattern of National Disaster Management Authority(NDMA)which can be named as National Agriculture Disaster Management Authority(NADMA). The Committee further desire that the proposed NADMA may consist of experts having rich experience in the relevant fields for the purpose. This will not only enhance dynamism in decision making but also fix accountability which is presently missing in the system. The Committee again express their suggestion that formation of NADMA will act as a catalyst and game changer and enhance the responsive mechanism of the government.

REPLY OF THE GOVERNMENT

On Parliamentary Standing Committee's observations at page-79 of the report, it may be stated that National Disaster Management Authority (NDMA) is a statutory body mandated under Disaster Management Act 2005. NDMA works on various climate-related hazards (heat wave, cold wave, lightning etc.) and non climate-related hazards (earthquakes, tsunamis) especially on drought management in agriculture. The NDMA has given due focus on Agriculture and Agriculture related disasters in the National Disaster Management Plan (NDMP) 2019. The nodal Ministry for climate change is Ministry of Environment Forest and Climate Change (MoEFCC) while for drought is Ministry of Agriculture & Farmers Welfare (MoAFW). Following the ratification of Paris Agreement, the Inter- Ministerial Apex Committee for Implementation of the Paris Agreement (AIPA) was established by MoEFCC to prepare the coordinated response on Climate Change. AIPA ensures that India meets its commitments under Paris Agreement including Nationally Determined Contributions (NDC). Hence, creating another nodal authority may lead to be duplication of efforts.

National Institute of Disaster Management (NIDM) under National Disaster Management Authority (NDMA), Ministry of Home Affairs is dealing with agriculture related disasters. National Agriculture Disaster Management Plan (NADMP) has been prepared by NIDM to address the key aspects of disaster risk reduction in agriculture sector. Besides this, under the National Innovations in Climate Resilient Agriculture (NICRA), a flagship network project of ICAR aimed at developing climate resilient varieties for different biotic and abiotic stresses in major crops, developing and popularizing climate resilient technologies for wider adoption among farming communities and prepare District Agricultural Contingency Plans

(DACP) to sensitize the state officials for preparedness to face aberrant weather conditions. India Meteorological Department (IMD) is providing all kinds of weather information and Agromet advisories as per the requirement.

The NDMA in collaboration with National Rainfed Area Authority (NRAA) and the Ministry of Agriculture and Farmers' Welfare is implementing Drought Mitigation Plans (DMPs) for 12 drought-prone states, which are to be supported through the resources of the National Disaster Mitigation Fund (NDMF), as recommended by the XV Finance Commission. The NDMA is hand holding the States to develop long term drought mitigation plans to address the challenges posed by successive droughts through a standard template, duly approved by Ministry of Home Affairs. These plans include area-specific farming systems, improvements in surface and ground water management, promoting efficiency of water use, agro-forestry schemes and solar energy installations. The DMPs received from the States have been evaluated by a Technical Advisory Committee led by NDMA and are under consideration of SC-NEC for approval.

The Government has already put in place institutional mechanisms for coordination and overseeing the implementation of climate action. The Prime Minister's Council on Climate Change (PMCCC) has been constituted, as an institutional arrangement for managing issues pertaining to and arising from climate change. The Hon'ble Prime Minister of India is the Chairman of the PMCCC. The keys tasks carried out by the PMCCC are:

i. Evolve a coordinated response to issues relating to climate change at the national level;

ii. Provide oversight for formulation of action plans in the area of assessment, adaptation and mitigation of climate change;

iii. Periodically monitor key policy decisions;

iv. And additionally provide guidance on international negotiations. The composition of the PMCCC is inter-ministerial and also has representation of experts.

The Executive Committee on Climate Change (ECCC) has been constituted for assisting the PMCCC in evolving a coordinated response to issues relating to climate change. Chaired by the Principal Secretary to the Prime Minister, the ECCC monitors all climate change missions and other initiatives on climate change by the Government of India.

The Apex Committee for Implementation of Paris Agreement (AIPA), was set up in November 2020, just before the implementation of the Paris Agreement commenced on 1st January 2021. The AIPA has been set up to specifically work for ensuring a coordinated response on climate change matters that protects the country's interests and ensures that India is on track towards meeting its climate change obligations under the Paris Agreement including its nationally determined contribution. The composition of the AIPA is inter-ministerial, chaired by Secretary, MoEFCC and with representation from all line ministries of Government of India, pertaining to climate change. The AIPA also coordinates activities and carries out detailed examination of climate change related issues through experts or by consulting organizations, and reports to the ECCC.

As an institutional arrangement for managing domestic climate action; Under the Government of India (Allocation of Business) Rules, 1961, the MoEFCC has been appointed as the nodal Ministry to deal with matters related to Climate Change. The MoEF&CC assists the PMCCC and ECCC as the Secretariat in their work by coordinating with relevant central Ministries, Departments, States, Union Territories and other relevant stakeholders.

The Government is implementing National Action Plan on Climate Change (NAPCC) which provides an overarching policy framework for all climate actions. The NAPCC encompasses nine missions in the specific areas of Solar Energy, Enhanced Energy Efficiency, Sustainable Habitat, Water, Sustaining the Himalayan Eco-system, Strategic Knowledge for Climate Change, Green India, Sustainable Agriculture and Human Health. These specific areas tackle core issues pertaining to climate change, outlining steps to simultaneously advance India's development and climate change related objectives of adaptation and mitigation.

The Ministry anchoring the respective national mission is responsible for the implementation and laying down the budget provisions and actionable priorities for it. The Missions are under various stages of implementation, including planning, formulation of policies and strategies, and preparing the budgetary allocation for implementation. A thorough update and revision of the national missions have been undertaken to align them with India's NDC and emerging scientific knowledge.

[Ministry of Agriculture & Farmers Welfare
(Department of Agriculture & Farmers Welfare)
F.No. 5-5/2022-NRM-CC FTS-107597 dt. 27th June, 2024]

CHAPTER - IV

OBSERVATIONS/RECOMMENDATIONS IN RESPECT OF WHICH REPLIES OF THE GOVERNMENT HAVE NOT BEEN ACCEPTED BY THE COMMITTEE

Increasing budgetary allocation for Ministry of Agriculture & Farmers Welfare

Recommendation No. 16

Agriculture sector in India is now at the cusp of a transformation backed by Union Government initiatives such as Digital Public Infrastructure, Agriculture Infrastructure Fund schemes and so on. The scalability of these Schemes needs to be enhanced so that their impact is more tangible and areas across the country start getting benefits simultaneously. The Committee feel that without adequate financial support and backing by the government, most of the Schemes will not be able to create the desired impact.

The Committee, therefore, recommend that budgetary allocation of the Ministry of Agriculture & Farmers Welfare needs to be enhanced to boost public spending in Agriculture & Allied Sectors, to tackle issues related to Climate Change as India is among the top ten countries to be affected by extreme meteorological events, to train farmers and FPOs in the latest technological advances to combat adverse impact of phenological events, to ensure farm inputs across the length and breadth of the country, invest more in research in farm methods and technologies & related demands of Allied Sectors and so on.

REPLY OF THE GOVERNMENT

Government of India is committed to the welfare of farmers and Department of Agriculture and Farmers Welfare is accordingly implementing comprehensive range of central sector as well as centrally sponsored schemes and programmes for the welfare of farmers in the country. These schemes encompass entire spectrum of agriculture including credit, insurance, income support, infrastructure, crops including horticulture, seeds, mechanization, marketing, organic and natural farming, farmer collectives, irrigation, extension, procurement of crops from farmers at minimum support prices, digital agriculture etc. The total budget allocation for DA&FW for the FY 2024-25 has witnessed an increase of 1.73% in comparison to FY 2023-24. The budget allocation at BE level for FY 2024-25 is Rs. 117528.80 crore, whereas BE 2023-24 was Rs. 115531.79 crore.

The budgetary allocation for Department of Agriculture & Farmers Welfare (DA&FW) depends upon the various factors including amount of scheme approved, their previous years" expenditures under the schemes, absorption capacity of the Department and the actual requirement of funds depending upon progress of scheme and overall fiscal situation of Govt. during the respective financial years. The allocation of budget for various schemes, including RKVY, is worked out by Budget Division of MoA&FW.

[Ministry of Agriculture & Farmers Welfare
(Department of Agriculture & Farmers Welfare)

F.No. 5-5/2022-NRM-CC FTS-107597 dt. 27th June, 2024]

COMMENTS OF THE COMMITTEE

For comments of the Committee, please refer to Para No. 1.14 of Chapter-I of this Report.

Issue of Manpower in Research Institutes and bodies attached to Ministry of Agriculture & Farmers Welfare

Recommendation No. 17

A robust and strategic knowledge system is imperative for the identification, formulation, planning, and execution of policy-driven measures, while upholding the requisite rate of economic growth. This strategic knowledge system, aimed at informing and supporting actions sensitive to climate change, must encompass several objectives. These objectives entail addressing climate science through modelling specific to regions; evaluating various technological scenarios and alternatives to meet national objectives; harnessing international cooperation and enhancing our endeavors to select and develop new technologies for adaptation and mitigation; and ensuring the bridging of knowledge gaps. It is of utmost importance to sustain the vitality of the knowledge enterprise that addresses Climate Change issues through the promotion of human and institutional capacity-building. Such measures are indispensable in the crafting of policy responses and implementation approaches at the national level and in providing inputs for negotiations at the international for a by designated Departments. The role of Research Institutes in sustaining the vitality of knowledge systems, ICAR in the present context, is of immense importance in combating the effects of Climate Change. Manpower is the most important asset of any organization and more so, in the case of research institutes such as ICAR, Coconut Development Board (CDB) and so on.

The Committee note that the Posts are lying vacant in certain crucial Research Institutes like Coconut Development Board (CDB), Central Institute of Fisheries Training (CIFT) and Central Marine Fisheries Research Institute (CMFRI), etc. The Committee feel that the Recruitment Processes need to be expedited and Officials appointed to increase the efficiency of the functioning of all the Research Institutes.

REPLY OF THE GOVERNMENT

Government makes all the efforts for timely filling up of the vacant posts through recruitment as well as promotion. It is a continuous process and regular monitoring of the retirements and completion of tenures is done and accordingly, requisitions for filling up the vacancies are sent in advance to recruiting agencies.

[Ministry of Agriculture & Farmers Welfare
(Department of Agriculture & Farmers Welfare)
F.No. 5-5/2022-NRM-CC FTS-107597 dt. 27th June, 2024]

COMMENTS OF THE COMMITTEE

For comments of the Committee, please refer to Para No. 1.17 of Chapter-I of this Report.

CHAPTER - V

OBSERVATIONS/RECOMMENDATIONS IN RESPECT OF WHICH FINAL REPLIES OF THE GOVERNMENT ARE STILL AWAITED

- NIL -

New Delhi
15th December, 2025
24 Agrahayana, 1947(Saka)

Charanjit Singh Channi
Chairperson
Standing Committee on Agriculture, Animal Husbandry and Food Processing

ANNEXURE

MINUTES OF THE THIRTY SEVENTH SITTING OF THE COMMITTEE ON AGRICULTURE, ANIMAL HUSBANDRY AND FOOD PROCESSING (2024-25)

The Committee sat on Friday, the 19th September, 2025 from 1103 hrs. to 1335 hrs. in Committee Room No. 1, First Floor, Block-A, Extension to Parliament House Annexe (EPHA), New Delhi.

Present

Shri Charanjit Singh Channi – Chairperson

Members

Lok Sabha

2. Shri Patel Umeshbhai Babubhai
3. Smt. Anita Nagarsingh Chouhan
4. Shri Kuldeep Indora
5. Shri Sukanta Kumar Panigrahi
6. Smt. Krishna Devi Shivshankar Patel
7. Shri Naresh Chandra Uttam Patel
8. Shri Dharambir Singh
9. Shri Dushyant Singh

RAJYA SABHA

10. Smt. Ramilaben Becharbhai Bara
11. Dr. Anil Sukhdeorao Bonde
12. Shri Banshilal Gurjar
13. Shri S. Kalyanasundaram
14. Shri Madan Rathore
15. Shri Ramji Lal Suman
16. Shri P. P. Suneer

Secretariat

1.	Shri Dhiraj Kumar	–	Joint Secretary
2.	Shri Maheshwar	–	Director
3.	Shri Prem Ranjan	-	Deputy Secretary

2. At the outset, the Chairperson welcomed the Members to the Sitting of the Committee. Thereafter, the Committee took up for consideration and adoption of the following Draft Subject Reports and Draft Action Taken Reports:

(i) xxxxx xxxxx xxxxx xxxxx xxxxx*;

(ii) xxxxx xxxxx xxxxx xxxxx xxxxx*

(iii) Action-taken Report on the Action taken by the Government on the Observations/ Recommendations contained in the 68th Report of the Committee on the Subject 'Promotion of Climate Resilient Farming' pertaining to Ministry Agriculture & Farmers Welfare (Department of Agriculture & Farmers Welfare) presented during 17th Lok Sabha;

(iv) xxxxx xxxxx xxxxx xxxxx xxxxx*;

(v) xxxxx xxxxx xxxxx xxxxx xxxxx*;

(vi) xxxxx xxxxx xxxxx xxxxx xxxxx*;

(vii) xxxxx xxxxx xxxxx xxxxx xxxxx*, and

(viii) xxxxx xxxxx xxxxx xxxxx xxxxx*.

3. xxxxx xxxxx xxxxx xxxxx xxxxx*

4. The Committee also adopted the draft Action Taken Reports on 68th Report on the subject 'Promotion of Climate Resilient Farming', xxxxxx with modifications as suggested in Annexure I, xxxxxx. The Committee authorized the Chairperson to finalize and present the Reports to Parliament.

5. xxxxx xxxxx xxxxx xxxxx xxxxx

The Committee then adjourned.

* Matter not related to this report.

Annexure-I

During the Sitting held on 19.09.2025, the Members made the following suggestions to be incorporated into the Sixty-Eighth Report (Seventeenth Lok Sabha) of the Standing Committee on Agriculture Animal Husbandry and Food Processing (2023-24) on the subject `Promotion of Climate Resilient Farming' (2023-24) pertaining to the Ministry of Agriculture & Farmer Welfare (Department of Agriculture & Farmers Welfare):-

Page no. of the Draft Report	Comments on Para No.	Original Comments	Modification incorporated
14	1.14	The reply of the Department does not seem to be convincing. Given the fact that Agriculture is the largest livelihood provider in the country and its impact on the economy & growth in other Sectors through its backward and forward linkages is gigantic, the Committee reiterate their earlier recommendation to enhance budgetary allocation to Department of Agriculture & Farmers Welfare to ensure that Agriculture gets its due importance and legitimate share thereby improving the scalability of the ongoing schemes and making their impact more tangible.	The Committee after considering the reply of the Department emphasise that, given Agriculture's role as the largest livelihood provider in the country and its significant contribution to the economy and other sectors through backward and forward linkages, enhanced budgetary allocation to the Department of Agriculture & Farmers Welfare would be highly beneficial. Such support could help ensure that agriculture receives due importance, while also strengthening the scalability of ongoing schemes and making their impact more tangible. Hence, the Committee reiterate their earlier recommendation in the matter.

15	1.17	The Committee note that the reply given by the Department is not convincing and is not factually correct. Had so been the case as cited in the Action Taken Reply of the Government, vacancies in such huge numbers would not have existed in the aforesaid Departments. The Committee opine that the Department should expedite the process of Recruitment in the Research Institutes under its Mandate to enhance the efficiency of these Institutes so that they are able to contribute effectively in the process of Nation building. Hence, the Committee reiterate their earlier stance in the matter.	The Committee after taken note of the reply of the Department emphasise that filling vacancies in significant numbers within the concerned Departments is imperative for strengthening the efficiency of Research Institutes under its mandate. The Committee are of the view that expediting the recruitment process would enable these Research Institutes to contribute more effectively to the process of nation building. In this context, the Committee reiterate their earlier recommendation on the matter.

APPENDIX

ANALYSIS OF ACTION TAKEN BY GOVERNMENT ON THE OBSERVATIONS/ RECOMMENDATIONS CONTAINED IN THE SIXTY-EIGHT REPORT (17th LOK SABHA) OF THE STANDING COMMITTEE ON AGRICULTURE, ANIMAL HUSBANDRY AND FOOD PROCESSING (2023-24)

(i) Total number of Recommendations 17

(ii) Observations/Recommendations that have been accepted by the Government

Para Nos. 2,3, 4, 5, 6,7, 8, 9, 10, 11, 12, 13, 14 and 15

Total 14

Percentage 82.35%

(iii) Observations/Recommendations which the Committee do not desire to pursue in view of the Government's replies

Para Nos. 1

Total 01

Percentage 5.89%

(iv) Observations/Recommendations in respect of which replies of the Government have not been accepted by the Committee

Para No. 16 and 17 Total 02

Percentage 11.76%

(v) Observations/Recommendations in respect of which final replies of the Government are still awaited:

Recommendation NIL

Total 00

Percentage: 00.00%