GOAL 2: ZERO HUNGER

TAMIL NADU

1. **SOLAR POST-HARVEST SOLUTIONS** - (CLOSELY LINKED TO **SDGs 1,3,** AND **12**) -

Improving earning capabilities of small & marginal farmers through solar post-harvest solutions by reducing wastage of agriculture commodities and creating opportunities for value-addition. Introducing Covestro innovations helps Thottiyam Banana Producer Group improve the earnings of 5000+ small farmers & nutrition levels of young mothers & diabetics.

It empowers small farmers with -

- Evaluation and assessment study with support from the concerned state governments to identify a baseline
- Post-harvest technology to reduce wastage of farm produce by increasing shelf-life. This is achieved through solar conduction dryers, solar greenhouse dryers & solar cold storage
- Market linkage for several commodities by connecting farmers directly to the markets
- Skill development and training in best practices for various activities in the agri-value chain.
- Post-Harvest Food Security Platform is a digitally smart initiative to connect important stakeholders to co-create action plans

Use of solar greenhouse dryers, solar conduction dryers, and solar cold storage in the agriculture value chain is demanded by all major stakeholders namely, farmers, the food processing industry, the hotel industry, and market linkage partners. Covestro innovations launched a Public Private Partnership project called SUSTAIN, co-funded by KFW-DEG (the German Development Bank) using sustainable solar technologies, thus reducing the wastage of agricultural commodities, reducing the

agricultural carbon footprint, reducing hunger, and promoting nutrition for all while creating sustainable businesses based on international consortiums.

The Banana fruit is dried in the state- of- the- art greenhouse solar dryers to remove80 percent of water in it without loss of any of its nutrients. This process is cleanand cost-effective. The dry fruit has a good quality, taste, and shelf life, and serves as mid-day meals, snacks, and more, providing the required nutritionwhich was all easily achieved due to the entrepreneurial attitude of the farmers.

HIMACHAL PRADESH

2. **CROP DIVERSIFICATION PROMOTION PROJECT** -

Implemented by the state Department of Agriculture, this project aims to develop minor irrigation facilities, farm roads, and promotion of vegetable cultivationacross 5 districts of Himachal Pradesh. Around 1,000 hectares has been turned into vegetable cultivation areas and some of the farmers reportedly saw a rise intheir income levels.

ANDHRA PRADESH

3. AADHAR-ENABLED FERTILIZER DISTRIBUTION SYSTEM (AeFDS) -

Krishna District is the first region to have started an AeFDS in 1100 Fertilizer retail shops with an objective to effectively monitor the distribution of fertilizers across the value chain from manufacturers to farmers and ensure timely and correct distribution of fertilizers based on farmers' aadhaar numbers (including tenant farmers). AeFDS involves the exact distribution of fertilizer quantities to farmers based on factors including the size of their land holdings, soil fertility status, andtype of crop grown using Aadhaar-enabled Point of Sale (PoS) devices.

The pilot project was accepted through Biometrically Authenticated Physical Uptake (BAPU) mode in all retail shops of Krishna District. The workflow was developed, and training was imparted to Retailers/PACS on the use of e-PoS devices. Realtime update of data in the Mobile Fertilizer Monitoring System (mFMS) portalof the Department of Fertilizers has been ensured. Soil test data is made online, and messages are sent to farmers' mobile numbers as soon as the analysis workis completed for immediate application of fertilizers. This has allowed the

implementation of the Government of India scheme "Soil Health Card Scheme under National Mission for Sustainable Agriculture" with special emphasis on micronutrient deficiency correction.

This has streamlined the distribution of fertilizers across the value chain and reduced malpractices, because of which 67 retailers have surrendered their licenses. This system also ensures that all farmers get their quantity well in time so that they can avail direct subsidies in the long run. Currently, 90% of the farmers have started taking fertilizers based on the recommendations.

4. **AADHAR-ENABLED PDS THROUGH ePOS DEVICES** -

Krishna District has taken up automating the supply chain from the Food Corporation of India up to the ration card holder to comply with the end-to-end computerization strategy of PDS through digitization of the Ration Card Database and seeding the Aadhaar number into the database. AePDS with PoS devices has been taken up for the automation of 2161 Fair Price Shops (FPS) in the district to increase transparency, accountability, and efficiency of PDS. A Unique Identification (UID) is added to the database of beneficiaries through which they are identified under a beneficiary number.

Step-by-step transactions between the FCI and the Mandal level stock point and transactions between the Mandal level stock point and FP Shops can be heard from ePoS devices either in the regional language (Telugu) or in English. On receipt of an SMS, the beneficiary goes to the Fair Price Shop, authenticates their biometrics on ePoS, and collects the ration. The cardholder gets the printed receiptof the transaction, which is also recorded on the NIC Server. The closing balancegets calculated automatically.

5. **COMMUNITY-BASED GROUNDWATER MANAGEMENT** -

(CLOSELY TIES IN WITH **SDG 13**) -

The Andhra Pradesh Farmer Managed Groundwater System (APFAMGS) Project is an enabling intervention to manage groundwater overdrafts through voluntary self-regulation where farmers implement Demand Side Groundwater Management. In seven drought- prone districts of Andhra Pradesh - Anantapur, Chittoor, Cuddapah, Kurnool, Mahbubnagar, Nalgonda, and Prakasam - thousands of farmers in habitations have taken the lead to reduce the exploitation ofgroundwater.

APFAMGS is a Nationally Executed (NEX) project through a network of NGOs, under the close support and supervision of FAO India, New Delhi, and technical backstopping of FAO Headquarters at Rome. The project undertook extensive training of farmers (Farmer Water Schools) and established a hydrological monitoring system (rainfall data, observation wells, groundwater level data) to facilitate an annual, participatory exercise of community decision- making (crop water budgeting). Efficient water use practices such as mulching, bunding, improved irrigation practices, and large-scale promotion of water- saving deviceshave been implemented by farmers.

As a result of the project, groundwater users have been enabled to make better- informed decisions on their cropping patterns, while also ensuring its judicious use. Their incomes have improved through a reduction in the costs of input, some increase in yields, and incipient improved marketing strategies.

Apart from best practices, Andhra Pradesh's SDG Vision Document "ACHIEVING SUSTAINABLE DEVELOPMENT GOALS 2030", details further major policies and strategies to achieve benchmarks for SDG 2 - ZERO HUNGER, as follows-

- Strengthening of AP state's **special initiative of "Primary Mission"** for enhancing the productivity and production of agricultural commodities.
- **Chandranna Rythu Kshetralu** and **Polam-Pilustondi** (Farm is calling) campaign - officials visit the farm twice a week to promote advanced technology among farmers. 56 new Rythu Bazars were sanctioned by the government for operation in 2018-19.
- Micro irrigation, drip irrigation, Panta Sanjeevani, rain gun, farm ponds, anddrought- proofing measures.
- **Meekosam Meals Scheme** in Vizianagaram District, provides meals at subsidized rates to labourers, petitioners, and daily wage workers comingto file their grievances and attend proceedings of the grievance cell every Monday.
- The **Andhra Pradesh Irrigation and Livelihood Improvement Project** - aims at increasing agricultural productivity, strengthening institutional and marketing capacities of farmers by rehabilitating existing irrigation systems, supporting integrated farming systems, and strengthening value chain development, thus contributing toward the improvement of livelihoods of farmers and other rural communities.
- **Anna Amrutha Scheme** (supports pregnant and lactating mothers s through spot feeding of one full meal and administration of iron and folic

acid tablets to reduce the incidence of anaemia), ICDS Programs, NTR Canteen, Gorumudda Schemes, National Food Security Mission, National Nutrition Mission, Mid-day meals scheme, National Horticulture Mission, National Livestock Mission, food processing units, etc. for ensuring food andnutritional security.

- Strategic extension services, Agri-finance, and insurance (PM Fasal Bima Yojana), RKVY, marketing, e-Agri services, HARITA project, organic farming, farm mechanization, etc. for making agriculture sustainable.

KARNATAKA

6. **JAL SAMVARDHAN PROGRAM** -

In a unique initiative of the Government of Karnataka, the private sector, and farmers conceptualized a district-wide water conservation model aimed at rejuvenating all water bodies in Yadgir and Raichur districts, to achieve the dream of making these districts water-sufficient in 5 years. The program involves all stakeholders through a transparent process with no monetary exchange taking place amongst them.

The Jal Samvardhan Program is implemented with the help of Bharatiya Jain Sanghatana, a Pune-based disaster response NGO. A decision was taken to map all water structures in the Yadgir district. The Yadgir administration, with the help of all the line departments, identified water bodies and their feeder channels that required desilting, widening, and deepening, consequently, defining the scope ofthe work required for each of the water bodies that existed in every taluka of Yadgir. In February 2019, 350 water structures were identified in six talukas for water restoration and after a technical feasibility assessment, the final scope of work was prioritized. These structures included village ponds, storage tanks, dams, and minor irrigation tanks where water conservation was needed to increase the water storage capacity.

Due to a lack of water-harvesting structures, the run-off could not be efficiently utilized, and water was available only during monsoons. After the construction ofthese tanks, water is now available in both Kharif and Rabi seasons. There is scope for harvesting rainwater and improving irrigation methods.

Relevant Case Stories:

1) Rejuvenation of MI Tank in Ibrahimpur Village, Shahapur Taluka, Yadgir

2) Rejuvenation of Village Pond in Katletkur Village, Raichur Rural

7. **INNOVATIONS IN AGRICULTURAL MARKETS** -

To revolutionize the Agricultural Produce Market Committee (APMC) markets through a pioneer program in Agriculture marketing systems to bring in increased transparency, and increased participation of outside traders and bulk buyers by creating an ideal market for both farmers and traders, and by harnessing advances made in IT and web- based, e-marketing interfaces for the benefit of farmers.

- Agricultural Marketing Reforms Committee (AMRC) was set up to suggest reforms to bring in necessary interventions and their recommendations were adopted as 'The Karnataka Agricultural Marketing Policy'.

- To give impetus to the policy, the Government made necessary amendments to KAPM (R&D) Act and Rules for Single trader licenses, warehouse-based sales, encouraging private markets and direct purchase centers, waiver of market fees for perishables, exemptions for FPOs and simplifying contract farming arrangements, notifying online trading and online payment in markets, and online dispute resolution mechanism.

- The Government incorporated Rashtriya e-Market Services Limited (ReMS), a PPP initiative, with NCDEX Spot Exchange Limited as the private partner to implement market reforms.

- ReMS set up and managed a specialized electronic trading platform called Unified Market Platform (UMP) for auctioning farmers' produce to implement reforms. The UMP enables automated price discovery mechanisms and post- auction processes to the agricultural markets facilitates assaying, and warehouse-based sales of produce, and supports commodity funding to benefit all stakeholders. UMP Technology platform covers all operations of APMC, from the goods entering the market to those exiting and beyond.

The UMP has made real- time information on the products available to market participants and has provided an equal chance for every lot for being bid by wider participation of buyers. The Karnataka model of agricultural reforms has encouraged healthy competition in agricultural marketing, enhanced

transparency in market operations and true-price discovery improved access to markets, created infrastructure, and empowered farmers by simplifying marketing processes, ensuring timely online payment and enhancing their bargaining power to improve price realization.

8. **GIS - THE SPATIAL SUPPORT FOR LOCAL LEVEL PLANNING**-
The developments in spatial analysis and Geographic Information System (GIS) methods/techniques have provided value- added information for development work in communities. The program combines aspects of check-dams, groundwater, and surface water interaction to cater to the community's socioeconomic developmental needs and utilises data management systems to evaluate and monitor multi-task developments.

Detailed surveys are conducted for the Construction of check dams for:

- Irrigation and increase in cultivation efficiency, growth of yield, andproduction rates
- Supporting drinking water and animal husbandry
- Micro level water harvesting techniques and recharging the groundwater table
- Sustainable agricultural Developments and prohibiting soil erosion
- Utilization of flowing waste water

MAHARASHTRA

9. **CENTRALISED KITCHENS FOR BETTER NUTRITION** -
In the Aspirational District of Nandurbar, Maharashtra, a central kitchen has been set up by the Tribal Development Department of the State Government to provide hot and nutritious meals to children in residential schools, known as Ashram Shalas. This kitchen caters to 28 ashram schools with a capacity of up to 11,000 students to tackle deep-rooted problems of malnourishment and anaemia. The transportation mechanism, with set routes, ensures the provision of hot and healthy food to the children. The kitchens are equipped with advanced semi-automatic machinery to create employment opportunities and to maintain the quality, hygiene, and cleanliness of the meals.

10. **CROP PEST SURVEILLANCE SYSTEM AND ADVISORY PROJECT (CROPSAP)** -

CROPSAP was a collaborative initiative undertaken by ICAR-National Center for Integrated Pest Management, New Delhi, and Commissionerate of Maharashtra, Department of Agriculture in the backdrop of severe pest outbreak on soybean crops during 2008-09.The major objectives of the project were to develop an online real-time pest monitoring and advisory system, identify hotspots to avoid pest build-up and recurrence, issue real-time advisories based on pest status and create mass awareness among farmers about integrated pest management. The major crops covered included cotton, soybean, arhar, rice, gram, mango, pomegranate, and banana. Pest scouts collected data on pest incidence from fixed and random plots in representative villages on fixed days and fed the data online for software analysis. Location- specific advisories are issued by experts from Agriculture Universities after analyzing the data. The messages are transmitted to around 50 lakh registered farmers in the form of SMSs twice a week. Mass awareness programs are also conducted system-wise. Since the inception of the project, there has been no outbreak of any major pests on the crops.

GUJARAT

11. MICRO-IRRIGATION SYSTEMS FOR WATER AND COST ECONOMY, AND HIGH YIELD -

Micro-Irrigation (MI) methods such as drip and sprinkler systems have been found to have significant water- saving and crop productivity benefits. Overdraft of groundwater results in decreased water table levels and an increase in salinity ingression. This led to the establishment of Gujarat Green Revolution Company (GGRC) implementing Micro Irrigation Schemes (MIS) in Gujarat in a uniform mode with an objective of benefiting farmers by increasing agricultural production through the adoption of scientific water management techniques, thereby ushering in the Second Green Revolution in Gujarat. The State Government has embarked upon Jal Sanchay Abhiyan (Drive for Storage of Water) of which the MIS is an integral part. The Scheme is being implemented with a uniform subsidy pattern. SC/ST farmers are entitled to an additional subsidy of 25% of the MIS Cost. MIS has gained popularity by the provision of electricity connections on a priority basis to farmers who adopt MIS on their agricultural lands.

TELANGANA

As per Telangana's SDG Implementation Document 2018, the state's strategy to achieve benchmarks for SDG 2 - ZERO HUNGER, the state has focused on the following major policies and strategies-

- ICDS
- Kalyan Lakshmi / Shaadi Mubarak
- Aarogya Lakshmi
- SERP – TRIGP
- SHG bank linkage
- Supply of 6 kg rice/person/month to 2.86 crore persons (1 Re/ kg)

PUNJAB

12. **CARE COMPANION PROGRAM** (**CCP**) -

The CCP is a state government initiative implemented by the Department of Health and Family Welfare in partnership with the YosAid Innovation Foundation thataims to engage family members by providing them with basic medical skills via interactive video-based training. Families are taught basic physical therapy, proper dietary and lifestyle changes, and how to detect early warning signs of medical emergencies - leveraging medically informed support to ensure a safe recovery. The Maternal and Child Health (MCH) Program focuses on maternal and newbornhealth.

The program is operational in in-door wards across 22 district hospitals and has conducted over 4000 sessions, having trained over 2 lakh patients/caregivers.

HARYANA

As per Haryana's 2030 Vision Document, the following programs promoting opportunities under SDG 2 - ZERO HUNGER have met with success-

- Supplementary nutrition under **Integrated Child Development Services Scheme** (ICDS)
- **Kishori Shakti Yojana Scheme** - provides training and supplementary nutrition to adolescent girls in 15 districts
- **Rajiv Gandhi Scheme for Empowerment of Adolescent Girls** (SABLA) **Scheme** - provides adolescent girls nutritional provisions; iron and folic acid (IFA) supplements; medical check-ups and referral services;

nutrition, life skills and health education; counseling and guidance, and other benefits

- **Indira Gandhi Matritva Sahyog Yojana** (Pilot project in the Panchkula district) - provides financial support to pregnant mothers from their third trimester; extends support after the baby is of six months to ensure complementary feeding
- **Micronutrient Supplementation Program**, including vitamin-A, deworming, iodine, and IFA syrup
- **Facility- based management of Severe Acute Malnutrition** (SAM) in selected districts
- Adolescent reproductive and sexual health (ARSH) and menstrual hygiene programs
- **Rashtriya Bal Swasthya Karyakram** (RBSK)
- **Mukhaya Mantri Anusuchit Jati Nirmal Basti Yojana**
- Advocacy for food fortification
- Food and supplies public distribution system (end-to-end computerized PDS)
- Health and nutrition facilities at brickkiln and construction sites
- **Dal Roti Scheme** - provides pulses at the rate of 2.5 kg per family per month to AAY and BPL families at Rupees 20 per kg
- **Soil Health Card Scheme** - creates awareness among the farming community for the balanced use of fertilizers and sustains soil health
- National Mission for Oilseed and Oil Palm
- National Mission on Agriculture Extension and Technology
- National Livestock Mission - initiative for the sustainable growth and development of the livestock sector
- Mission for Integrated Development of Horticulture - meant for the holistic development of horticulture and specifically covers different components of production, including protected cultivation, creation of water sources and post- harvest management, area expansion, mechanization, bee-keeping, etc.
- National Urban Livelihoods Mission - assists the urban poor in setting up small businesses and providing skills training to semi-skilled/unskilled urban poor to help secure jobs with better compensations, deals with street vending issues, and provides shelter for the urban homeless

TRIPURA

13.GOAT FARMING WITH HIGH- YIELD VARIETY (SIROHI GOAT)-

The state has made significant progress in the field of animal resources, particularly in meat production- where the maximum portion of total meat comes from pigs and chickens. Only a small portion comes from goat meat. The gap in demand and supply accounts for very high rates of goat meat. The project on high- yield variety Goat farming is meant to increase the farmer's income substantially, improve rural livelihood, and encourage employment generation and self-sufficiency with low investment and good returns. High- yielding varieties of goats ensure greater milk and meat production, thus having better returns in comparison with investment in other small animals.

The state government has taken up different beneficiary-oriented schemes with the introduction of high yield goat farming using funds available under SC and ST welfare Department, RKVY etc. along with the provision of technical support.

14. DUCK-REARING PROJECTS -

The project was undertaken to double farmers' income by 2022. All beneficiaries are mainly fishermen dwelling in and around Rudrasagar, Melaghar. To improve their livelihood, a pilot project on duck rearing was taken up by the state government. Ducklings were distributed to each beneficiary, in a phased manner, to acquaint them with proper rearing/management. The Department provided all technical support like training, rearing practices, treatment, vaccination, etc. at the doorsteps of farmers.

15.SYSTEM OF RICE INTENSIFICATION (SRI) -

SRI is an example of options available to farmers to promote community- led agricultural growth in response to the growing population.
Tripura has successfully adopted and popularized the SRI technique, also known as the Madagascar Method. The system is based on principles different from conventional rice cultivation methods; including developing nutrient-rich and un-flooded nurseries; ensuring wider spacing between rice seedlings; preferring composts or manure to synthetic fertilizers; and managing water carefully to avoid plant roots from saturation.

Capacity building of interested farmers was done by organizing extensive training on SRI techniques for farmers from the village level up to district levels. SRI Implementation allowed Tripura to increase the productivity of rice with reduced

requirement of water, seed, chemical fertilizers, pesticides, herbicides, and labour inputs.

16. INCREASE IN FISHERIES PRODUCTION -

- Fish farmers are supported technically and financially by the Department of Fisheries by means of essential fishery inputs and imparting scientific management. Various annual technology dissemination programs for skill development help farmers grasp the knowledge of the latest technology. They are also supported by the scheme of pisciculture as a governance programin the tank created/reclaimed under MG-NREGA.
- Low- cost input technology (composite fish culture) with multiple stockings and harvesting has increased fish production and profit.
- Feed- based intensive fish culture has increased fish production and incomecovering several RD Blocks.

MADHYA PRADESH

17. HORTICULTURE PRICE AGREEMENT INITIATIVE -

To make farming a profitable venture, the Horticulture Price Agreement Initiative was launched by the Aspirational District of Chhatarpur. The initiative has forward and backward linkages and guarantees procurement at maximum price and partnership in local micro- processing units for farmers, while generating employment for the local youth. The target groups include small and marginal farmers, families with female heads, families with specially challenged people as heads of the family, and farmers of deprived castes.

18. YANTRADOOT VILLAGES -

Farm Mechanization enhances crop productivity through the efficiency of agriculture operations and inputs. Over 85% of farm holdings in India are small and individualspossessing farm machinery is neither feasible nor affordable. The Madhya Pradesh Government started a unique model of empowering villages with innovative and highly mechanized farm equipment. A variety of farm implementswere introduced including rotavators, seed graders, double box seed cumfertilizer drills, ridge furrows & ridge bed planters, and broad weeders and insect controllers. Harvesting and threshing also deployed the use of machines. Focusedeld demonstrations are conducted for various agricultural methods and implemented periodically during both the rainy and winter seasons. Post-eld

demonstrations, Custom Hiring Centers (CHCs) are set up in model villages. CHCs house all the equipment demonstrated to the farmers and are available for hire at a nominal price cheaper than rates offered by private companies. The CHC is managed by a field coordinator, who hires people from among the village youth to manage the equipment, thus reducing farmers' costs, providing local employment, and increasing their income.

ODISHA

19. **POTABLE WATER TO HOUSEHOLDS IN HILLY AND TRIBAL REGIONS THROUGH A GRAVITY FLOW SYSTEM** -

Under this project, water from springs is collected and distributed for drinking and irrigation purposes through a gravity flow system that takes advantage of the undulating terrain of the aspirational district of Kalahandi. Perennial stream water is harnessed in an elevated zone and utilizing gravity power, water is brought to the lower-level through PVC pipe along with contours, intermittent outlets, and controlling devices. Locals are involved in the whole process from survey to implementation. The Integrated Tribal Development Agency with the support of the District Planning and Monitoring Unit has applied this technology to the hilly regions of the district to make it durable and cost-effective. The project can provide water to almost 5 acres of land and villagers receive potable drinking water through standposts.

20. **AUTOMATED PADDY PROCUREMENT SYSTEM** -

The Food Supplies and Consumer Welfare (FS&CW) Department planned to automate all paddy procurement transactions at the Society/Market Yard level to reduce the workload of societies or agencies, keep track of the progress of procurement, optimization of fund flow, and for increased farmer participation.

The software is integrated with a farmer registration software of the FS&CW Department and can be used by all commission agents for Odisha State Civil Supplies Corporation (OSCSC) and other state procuring agencies. The software generates all the required paperwork. Two separate software components have been developed – a desktop component for rural areas where Internet connectivity is often not available, and a web portal component for concurrent access to information by all stakeholders through MIS reports.

Automation has streamlined operations, brought in transparency, and reduced the time taken to do manual paperwork and the consequent harassment of farmers in getting paid for their paddy. Monitoring of farmer registration is being done at civil supplies offices of all 30 districts.

21. DECENTRALIZATION OF ICDS SUPPLEMENTARY NUTRITION PROGRAM -

The implementation of the ICDS program suffers due to pilferage, corruption, and excessive delays in food supply to Anganwadi centers. Under this usually centralized system, Anganwadi Workers (AWWs) do not have any control over the quantity and quality of food supply. As a result of the scheme, funds for the procurement of food are transferred directly into the joint accounts of AWWs. For all the remaining expenses (such as expenses of hygiene kits), the funds flow from the state to the CDPO at the district level and then to AWWs. This system helps in the local procurement of food materials by AWWs. There is a state-level Management Information System (MIS), which can be accessed by users at each administrative level. E-transactions for the transfer of funds are carried out by banks via e-FMS (Electronic Fund Management System). The state department also has a Treasury Management System for fund management. Benefits include the improved functioning of the ICDS, and the empowerment of women and their SHGs.

RAJASTHAN

22. **NARMADA CANAL PROJECT** - (ALONG WITH GUJARAT)

The Narmada Canal project is an inter-state project designed to utilize 0.05 million Acre Feet (MAF) of Narmada's water in Rajasthan. Initially, the project was conceived to provide irrigation facilities over 1.35 lakh hectares by conventional (flood) irrigation method. It was observed that conventional irrigation methodswith higher water allowance caused an increase in the water table in a short spanand problems related to drainage and salinity. It was then decided to adoptpressure irrigation (sprinkler irrigation) to avoid problems arising due toconventional methods and optimize the use of water.

To provide pressure irrigation, the command area was divided into 2,236 chaks; each chak having its own shallow tank which receives water from the canal. The

water is lifted through monoblock pumps installed in pump rooms constructed with each tank. Lifted water is carried through buried HDPE pipes and cultivators draw their share of water by installing their sprinkler sets at the outlets provided. Command Area Development and Water Management (CAD&WM) activities are being implemented pari-passu with the construction of the canal network and other civil works. The use of micro-irrigation systems has improved on-farm water use efficiency, leading to coverage of more areas under irrigation.

UTTAR PRADESH

22. DIRECT BENEFIT TRANSFER IN SEED SUBSIDY -

The methods of distributing such subsidies are non-transparent and hence give rise to chances of misappropriation. In the wake of rising dissatisfaction among stakeholders, the Uttar Pradesh government decided to move towards direct benefit transfers in seed subsidy. The program was tried out to provide subsidies on hybrid seeds in the 2015 Kharif season, followed by direct benefit transfer (DBT) on all seeds — both certified varieties and hybrids. Central to it was the creation of a farmers' database containing their identity proofs, land particulars, and bankaccount numbers under the scheme called Pardarshi Kisan Seva Yojana. Each farmer is assigned a unique 'Kisan ID' number. Farmers can buy seed varieties from stores belonging to agriculture and cooperative departments, UP State Agro- Industrial Corporation, UP Seed Development Corporation, or Kribhco and IFFCO at the notified market price of ₹3,000 per quintal. The subsidy amount is then transferred directly into their bank accounts within 15 days of purchase.

22. LEMON GRASS CULTIVATION -

Baghpat district's heavy dependence on sugarcane cultivation led the Bio Energy Board and the Department of Agriculture to organize a publicity and awareness seminar regarding the cultivation of lemon grass. Technical training was imparted to farmers, full grants were given by the BioEnergy Board to farmers invested in the lemon grass project while imitating the basic spirit of social organization power and spreading awareness about alternatives to sugarcane farming. The project has impacted an increase in the income of sugarcane farmers and mutual involvement in union efforts.

23. SUNEHRA KAL MISSION - UNNAT KRISHI-SAMMRIDH KISAN

Balrampur's use of traditional farming systems to grow cereal crops, paddy, and wheat on approximately 60-70% of the land has increased the cost of production. Also, the use of chemical fertilizers is having an adverse effect on the soil. By using this method, the cost of cultivation for the farmers was increasing day by day. Along with this, the burning of crop residue after paddy harvesting is a major concern for the district. District Agriculture Officers, together with ITC's 'Sunehra Kal' intervention training program, aimed to orient farmers to adopt better agricultural practices to improve this situation and harvest more crops from theirland. This training was started with the orientation of block extension officers and reached all the farmers of the district in a cascade mode.

24. **BLACK RICE FARMING** -

The District Administration and Agriculture Department Chandauli tried to innovate the sustainable agriculture sector to increase the income of the farmers of the district. Black rice was selected as a natural for Chandauli for innovation in cultivation as it does not require any chemical fertilizers. Black rice produced with the help of Agriculture Department Chandauli, was publicized among farmers Kisan Pathshala, Farmers Seminar and district level farmers fair exhibition organized at the block level, and through print and mass media.

25. **PERMACULTURE** -

Despite the conducive geographical conditions & resources, the lack of advanced technical resources negatively impacts the development of farmers' income and livelihood in the Kannauj district. The Jalalabad block began mixed cultivation by incorporating advanced technology of capsicum as an intercrop with banana species G-9. A Drip Irrigation System was used, which saved about 60 percent of water and increased the quality and production of the crop. Fertilizers were also used through drip irrigation. Mulching sheets were used for moisture conservation and weed control. During the preparation of land, the use of biofertilizers reduced dependence on chemical fertilizers. The use of new technological improvements to increase the cultivation and production of fruits and vegetables has led to enhancedincome for farmers.

JHARKHAND

26. **MATSYA MITRA - MOBILISING FARMER GROUPS** -

Jharkhand's Fisheries Department launched a series of initiatives to attract individuals and communities with water bodies to promote aquaculture. The decision was taken because the state, which has a huge fish-eating population, imported a bulk of its fish from Andhra Pradesh and other states. The initiative members, called Matsya Mitras, collect vital information regarding the pH scale and content of organic carbon in the pond water and the soil in surrounding areas, and in case of anomalies, instruct farmers on how to solve the problem. The state has over 3,600 Matsya Mitras who help district fisheries officers in resource assessment, documentation of farming practices, and in the sourcing of support services. They also help in the identification of coal pits, small ponds, and wells that are not being used for fish farming. It has helped farmers create ponds through existing fishery schemes of the state department. The efficiency of Matsya Mitras is evaluated annually and selected Mitras are rewarded. Matsya Mitras is also the guiding force for the Tribal Fisheries Co-operative Societies in the adoption of scientific technologies for better production from fish cages installed in reservoirs. They are also actively involved in fishery enhancements with the participation of fish production groups (SHGs) including women beneficiaries. The state has consequently increased its capacity of fish seed production, which is in shortagein the country as well as its fish production.

Apart from thebest practices, Jharkhand's policies and strategies to achieve benchmarks for SDG 2 - ZERO HUNGER, are mentioned as follows-

- **Krishak Mitra** for service outreach to farmers.
- **Udyan Mitra** for promotion of horticulture.
- Promoting improved varieties, and strengthening the seed distribution system by establishing agriculture business centres and Krishi clinics along with PACS & LAMPS.
- Eligible households to have **access to food security through National Food Security Act (NFSA)** and the enhanced PDS system
- Leveraging technology to create an Integrated Nutritional Food Security network to guarantee nutritional security
- **Jharkhand Opportunity for Harnessing Rural Growth (JOHAR)** - a project supported by the World Bank to bring initiatives under agriculture, horticulture, animal husbandry, poultry and fishery, forestry, handicrafts,and rural tourism to enhance farm and non-farm livelihoods.
- Distribution of **soil health cards** to 100% farmers
- Development of policy for warehouses and cold storage to attract private sector
- Linking farmers to market by enrolling all APMC market on eNAM

- Bringing farmers under crop insurance to mitigate the risk of abiotic stresses
- **Pradhan Mantri Krishi Sinchai Yojana** - restoring and renovating existing water reservoirs, distribution systems and water management measures to increase the area under micro irrigation to enhance the water useefficiency.

NORTH-EAST

26. **Strawberry Cultivation: Horticultural Revolution** — Meghalaya

The State Government aims at transforming Meghalaya by setting up "Horti-hubs" in different districts to harness horticultural crops on a large scale. In 2004-05, Sohliya village in theRibhoi district was selected as a hub for strawberry cultivation. The initiative was implemented in collaboration with the Horticulture department farm in Dewlieh, and the active participation of the Ri-Bhoi Strawberry Growers Association (RBSGA) under the Technology Mission for the Integrated Development of Horticulture in the North East and the Government of Meghalaya. Raw materials were brought from Maharashtra, and later seedlings and other technologies came from California. The practice has seen a jump in farmers' incomes while opening employment opportunities at higher wage rates and international exports.

27. **Sub-Mission on Agriculture Mechanisation (SMAM)** — Arunachal Pradesh

The scheme was initiated with the objective to promote agricultural mechanisation among small and marginal farmers and in the areas where the level of mechanisation is very low.

Objectives include :

- Increasing the reach of farm mechanization to small and marginal farmers and to the regions where the availability of farm power is low
- Promoting 'Custom Hiring Centers' to offset the adverse economies of scale arising due to small landholding and high cost of individual ownership
- Creating hubs for hi-tech & high value farm equipment's
- Creating awareness among stakeholders through demonstration and capacity building activities
- Ensuring performance testing and certification at designated testing centers.

FEATURES :

- Promotion and Strengthening of Agricultural Mechanization through Training, Testing and Demonstration to ensure performance testing of agricultural machinery and equipment, capacity building of farmers and end users and promoting farm mechanization through demonstrations
- Demonstration, Training, and Distribution of Post-Harvest Technology and Management (PHTM) to popularize technology for primary processing, value addition, low cost scientific storage/transport and crop by- product management through demonstrations, capacity building of farmersand end users. Provides financial assistance for PHT units
- Financial Assistance for Procurement of Agriculture Machinery and Equipment to promote ownership of various agricultural machinery & equipment's as per norms of assistance
- Establish Farm Machinery Banks for Custom Hiring to provide suitable financial assistance to establish Farm Machinery Banks for Custom Hiring for appropriate locations and crops
- Establish Hi-Tech, High Productive Equipment Hub for Custom Hiring for financial assistance to set up hi-tech machinery hubs for high-value crops like sugarcane, cotton etc.
- Promotion of Farm Mechanization in Selected Villages for financial assistance to promote appropriate technologies and to set up Farm Machinery Banks in identified villages in the states.
- Financial Assistance for Promotion of Mechanized Operations/hectare Carried out Through Custom Hiring Centres for financial assistance on a per hectare basis to the beneficiaries hiring machinery/equipment from custom hiring centres in low mechanized areas
- Promotion of Farm Machinery and Equipment in North-Eastern Region to extend financial assistance to beneficiaries in high-potential but low mechanised states of north-east.

BENEFITS :

- Norms/pattern of financial assistance will be available to the selected beneficiaries as per pattern approved in AAP of the state
- Cash component under this Sub Mission is to be transferred electronically to each beneficiary (Individual or Institutions) by Department of Agriculture, Cooperation & Farmers Welfare (DAC&FW)
- Promotion of Farm Machinery and Equipment in North-Eastern Region

28. **Rashtriya Gokul Mission** — Arunachal Pradesh

Rashtriya Gokul Mission (RGM) was for development and conservation of indigenous breeds through selective breeding and genetic upgradation of nondescript bovine population. The scheme comprises two components - National program for Bovine Breeding (NPBB) and National Mission on Bovine Productivity (NMBP), to enhance milk production and productivity of the bovine population.

FEATURES-

- Distribution of disease- free high genetic merit bulls for natural service
- Upgrading nondescript cattle using elite indigenous breeds
- Creation of an e-market portal for bovine germplasm to connect breeders andfarmers
- Increasing trade of livestock and livestock products by meeting sanitary and phyto-sanitary (SPS) issues.

29. **CM's Krishi Smujh Yojana (CMKSY)** — Arunachal Pradesh

CM's Krishi Samuh Yojna is based on fund flow and expenditure mechanism and focuses on the Formation & Nurturing of FPOs to empower the farmers through acooperative approach by Institutionalisation of FPOs and infusing timely supportof good agriculture practices and marketing interventions for better price realisation and doubling farmers' incomes. Eligible projects undertaken underCMKSY include organic farming activities, employment generation in animalhusbandry, employment generation in fisheries, and activities under the Agri-Horti sector,among others.

FEATURES-

- State and district-level society for planning, administration, implementation,and monitoring
- Creating a digital directory of farmers associated with these organisations
- Participation of FPOs in buyers and sellers meet/ Agri-Horti expos