

**Interim Budget 2019-2020: Thrust on Rural Economy**

- More than half of the nation's population ekes out its existence by land and agriculture down the decades even till date.
- The successive governments in the country since independence always devised farmer-friendly rural development plans and programmes.

**Steps Taken Recently:**

- The **minimum support price (MSP) of all 22 crops** at minimum 50 per cent more than the cost has been with an aim to double the income of farmers a few years ago.
- **Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)**: Under the programme, vulnerable landholding farm families with cultivate land upto two hectares, would be provided direct income support at the rate of 6000 rupees per year. This income support would be made over directly into the bank accounts of beneficiary farmers in three equal tranches of 2000 rupees each.
- Around 12 crore small and marginal farmer families are likely to benefit from this. The programme would be **retrospectively implemented from December 1, 2018** and the first tranche for the span upto March 31, 2019 would be paid during the current fiscal year itself.
- The amount of **interest subvention (subsidy) has been doubled** in order to ensure provision of affordable loans to kisans.
- The crop loan to farmers rose to 11.68 lakh crore rupees in 2018-19, besides giving farmers *soil health cards, quality seeds, irrigation scheme and neem coated urea* to remove shortage of fertilizers.
- The Government has enhanced the allocation for **Rashtriya Gokul Mission**. It is also proposed to inaugurate '**Rastriya Kamdhenu Aayog**' to upscale sustainable genetic upgradation of cow resources and to enhance production and productivity of cows.
- As the country is the second largest fish spawning nation in the world according for 6.3 per cent of world fish catch, the Interim Budget has resolved to create a **separate Department of Fisheries** to provide sustained and focused attention for the development of this vital sector.
- It is also proposed to **provide the benefit of 2% interest subvention** to the farmers pursuing the activities of **animal husbandry and fisheries**, who avail loan through Kisan Credit Card.
- Efforts are being made to ensure provision of easy and concessional credit and to bring all farmers under KCC fold through fashioning a comprehensive drive with a simplified application form.
- All **farmers hit by severe natural calamities**, where the assistance is extended from National Disaster Relief Fund (NDRF) would be *accorded the benefit of interest subvention of 2 per cent and prompt repayment incentive of 3 per cent for the entire period of rescheduled of their loans*.
- "**Pradhan Mantri Shram-Yogi Maandhan**" is launched for the unorganized workers with monthly income upto 15,000 rupees. This pension yojana would give them an assured monthly pension of 3,000 rupees from the age of 60 years on a monthly contribution of a small affordable premium during the working age.
- A **Committee under NITI Aayog** is to be set up to complete the task of *identifying de-notified, nomadic and semi-nomadic communities and tribes not yet formally classified*.
- It is also proposed to set up alongside a **Welfare Development Board** under the umbrella of the Ministry of Social Justice and Empowerment specifically for the purpose of implementing welfare and development programmes for denotified, nomadic and semi-nomadic communities.

**Agriculture- A Key Component Of Rural Development**

- The agriculture sector is facing several challenges. The **economic survey (2017-18)** had stated, “the last few Seasons have witnessed a **problem of plenty**: farm revenues declining for a number of crops despite increasing production and market prices falling below the minimum support prices (MSP)”.
- To meet the challenges faced by the agriculture sector and improving the economic condition of the farmers, an **inter-ministerial committee** has been constituted under the **chairmanship of chief executive officer, National rainfed area authority**, department of agriculture, cooperation and farmers welfare to examine issues relating to doubling the farmers income in real terms by the year 2022.
- The committee has identified **seven sources** of income growth - **improvement in crop and livestock productivity; resource use efficiency or savings in the cost of production; increased in the cropping intensity; diversification towards high value crop; improvement in real prices received by farmers; and shift from farm to non-farm occupations.**
- The committee is also looking into the Investments in and for agriculture - *increasing public investments for agriculture-rural roads, rural electricity, irrigation; the need for policy support to enable investment by corporate sector in agriculture.*

**PM-AASHA**

- The umbrella scheme - ‘**Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA)**’ provides for a holistic arrangement for assurance of a remunerative and stable price environment for growers/farmers to increase agricultural production and productivity.
- This umbrella scheme comprises the price support scheme for pulses & oilseeds, Price Deficiency Payment Scheme & Pilot of private procurement and stockiest scheme for oilseeds to ensure MSP to the farmers.

**Financial Inclusion For Economics Security**

- Components of financial inclusion include access to savings, loans, insurance, payments and remittance facilities offered by the formal financial system.
- Among the **key Financial Services** that are of great relevance here, are risk management or risk mitigation vis-a-vis economic shocks, may be an income shock due to adverse weather conditions are natural disasters, or an expenditure shock due to health emergency or accidents, leading to a high level of unexpected expenditure.
- This aspect of financial inclusion is of vital importance in providing economic security to individuals and families especially in rural India.

**Evolution of Financial Inclusion in India:**

- A recent NABARD all India rural financial inclusion survey (NAFIS) 2016-17, offers a comprehensive overview of a rural populations in terms of the status of their livelihood and level of financial inclusion as follows:
- Although the measures for *financial inclusion started way back in 1904*, with the **advent of cooperative movement**, further in **1969 with the nationalization of major banks** in India, the

issue got real impetus in 2008, when the **committee on financial inclusion, headed by Dr. C Rangarajan** was formed by RBI.

- The Reserve Bank of India has been complementing the government's efforts through its numerous initiatives like introduction of priority sector lending requirements for banks, establishment of regional rural banks (RRBs), self-help group-bank linkage programme to extend the financial services to the poor and marginalized segments of the society.
- The Government of India and Indian Bank's Association, in the beginning of 2011, jointly **launched 'Swabhiman'** to bridge economic gap between rural and urban India. It aimed at ensuring availability of banking facility within the reach of every village with a population of over 2000 by the end of March, 2012.

#### **Recent Steps:**

- This gained a momentum with the **Pradhan Mantri Jan Dhan Yojana**, aiming at ensuring universal access to bank facilities, increase in the level of financial literacy and providing access to credit, insurance and pension services as well.
- **RBI** also undertook some measures to **augment financial inclusion**, such as –
  - Granting in-principle approval to the largest Micro Finance Institutions in India to commence banking operations, Permitting Non-banking Financial Companies to act as business correspondence for banks,
  - And issuing guidelines on **differentiated banking licenses** for a Small Banks and **Payments Banks** based on the recommendations of the **committee on "Comprehensive Financial Services for Small Business and low income households"**.
- Nabard launched **Self Help Group-Bank linkage programme** in 1992 as an alternative credit delivery mechanism for reaching the unreached.
- This program besides, achieving the target of financial inclusion and financial literacy, also enabled the rural Indian women in a starting some or the other productive farm or non-farm activity. This has made them **economically self-dependent**, not only capable of being a bread earner for their families, what also a productive member of the society.
- Like self-help groups (SHGs), **the scheme of joint liability groups (JLG)** is yet another institutional invention introduced in India with a view to enable landless/tenant farmers, oral lessees, secure collateral-free loans and productive purposes from the banking system, just on the basis of joint undertaking by all the members of the group.
- In January 2006, The Reserve Bank of India, **on the recommendations of Khan Commission**, permitted banks to employ two categories of intermediaries - **Business Correspondence (BCs) and Business Facilitator (BFs)**.
- Scheduled commercial banks including regional rural banks (RRBs) and local area banks (LABs) were permitted to use the services of these agents in providing financial and banking services throughout the country, especially in remote areas.
- Ministry of Finance and National Informatics Centre (NIC) have jointly developed a mobile app called **Jan Dhan Darshak** with a view to enable common people in locating a financial service touch-point.
- **Direct benefit transfer** aims to facilitate disbursement of government entitlements.

- **Payments Bank** is a model of banks conceptualized by RBI which came just weeks after the PMJDY. It primarily focuses at enhancing **financial inclusion drive** by **widening the spread of payment and financial services** to small businesses, low-income households, migrant workforce in a secured Technology-driven environment.
- The role of **M-banking** and **Department of Post**, in this regard has also been highly significant.
- Virtually, it is the small convenience shops, Kirana-shops, fruits-shops which will serve the purpose of banks branches, thus bringing the rural unbanked people into the fold of formal banking.
- In view of the changes that have taken place in the financial sector over the years, RBI constituted a **Committee of Executive Directors** of the world to study the efficacy of the **Lead Bank scheme**.
- Twenty public sector banks and one private sector bank have been assigned Lead Bank responsibility in 714 district across the country.
- In order to have a planned and structured approach to financial inclusion, banks have been **advised to prepare Board-approved financial inclusion plans**, capturing their achievements on all parameters.
- The **National Strategy for Financial Inclusion document** is being finalised under the aegis of Financial Inclusion Advisory Committee to take forward the momentum.
- The **World bank's latest Global Findex data** proves that India has made rapid strides in improving access to formal financial Services.
- Today more than 80 percent adults have a formal bank account. At the same time, it has cut its gender gap in financial access from 20 percentage points to six.

#### **Conclusion:**

- PMJDY has opened more than 100 million new bank accounts, more women have been enrolled.
- The mobile phone is still the most promising empowerment tool for financial inclusion. There is an acute need for developing next generation payment systems which have a user friendly interface and local language.

#### **Infrastructure For Rural Transformation**

- Around 69 per cent of India's population are rural. The large magnitude of the rural population, their prevailing socio-economic conditions and the quality of life calls for an all-round development in rural infrastructure to achieve the objectives of equitable and inclusive growth with Social Justice.

#### **Steps Taken To Improve The Rural Infrastructure:**

- A specific rural infrastructure program called '**Bharat Nirman**' was launched as a time-bound business plan.
- The six components included under the program were **irrigation, drinking water, electrification, roads, housing and rural telephony**.

#### **A. Irrigation infrastructure**

- Creation of irrigation potential and expansion of installed capacity have been important policy objectives of India's development planning.
- During 2016-17, 99 on-going major/medium Irrigation projects were prioritized for early completion under **Pradhan Mantri Krishi Sinchai Yojana (PMKSY)- Accelerated Irrigation Benefits Program**.

- The union budget 2018-19 had allocated Rs. 2,600 crore to **PMKSY- Har khet Ko Pani**. It also wished to review, revive **and expedite the groundwater irrigation interventions**.
- The interim budget 2019-20 advocated **efficient use of water in irrigation using micro-irrigation techniques** only after effective consultation with all the stakeholders.
- The per capita water availability in India is reducing progressively due to increase in its population.
- The average **annual per capita water availability** in the year 2001 and 2011 was assessed at 18-16 cubic metres (CM) and 1,545 CM, respectively which may reduce further to 1,340 and 1,140 CM in the years 2025 and 2050, respectively.
- This calls for an integrated water conservation and user-interface irrigation scheme for ensuring maximum water use efficiency.
- It is desirable that the irrigation potential created over the years should be utilized fully and the gap between the potential created and the actual utilization be narrowed. The full utilization of irrigation potential requires actions like
  - I. Timely completion of field channels and drains
  - II. Appropriate land leveling and shaping
  - III. Involvement of farmers in taking decisions on usability of such created potential.

#### **B. Ruler drinking water supply**

- **The National Rural Drinking Water Programme (NRDWP)**'s concerted focus on the creation and sustaining the rural drinking water infrastructure resulted in the development of infrastructure and capacities for successful operation of drinking water supply schemes in rural areas.
- Further, the country's long term goal is to achieve '**Har Ghar Jal**' by 2030, in line with the UN's sustainable development goals i.e., providing safe and adequate drinking water to each rural household.
- The challenge before the government is to ensure:
  - (A) Safe drinking water in the slipped back habitations through the vigorous restoration and defunct bore pumps, carrying out repairs to water supply pipelines, augmentation of supply wherever required; and
  - (B) Sustainability of quality water to already covered under one or other schemes.
- The need of the hour is to ensure convergence of various rural development initiatives of like (viz. Mahatma Gandhi National Rural Employment Guarantee Act, watershed development, Restoration of water bodies etc.) backed by a need based village level water planning and budgeting.

#### **C. Rural sanitation**

- The world's largest behavioral change movement was planned and executed through India's **Swachh Bharat Mission (SBM)**.
- With concerted efforts of the Government and civil society as change makers India could achieve 98 percent rural sanitation coverage.
- Around 5.45 lakh villages have been declared open defecation free by December 2018.

#### **D. Rural electrification**

- In addition to **Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)**, the Government has launched **Prime Minister Saubhagya Yojana** for providing electricity to all households of the country.
- Under this scheme, **four crore poor households** were intended for providing with electricity connection free of charge in the interim budget 2019-20.
- To ensure quality and sustained power supply in rural areas, we now need to **switch-over from free or subsidy-driven power distribution system to a competitive user-based revenue collection and sharing model**.
- The time has come to ensure active involvement of grass-root Institutions like Panchayati Raj Institutions (PRIs), Non-government organizations (NGOs), Cooperative, etc. in revenue collection, local management, operation and maintenance of power infrastructure in rural areas to assure quality and sustainable supply of electricity.

#### **E. Rural roads**

- **Pradhan Mantri Gram Sadak Yojana (PMGSY)**- a one-time special intervention provides rural connectivity, by way of single all-weather road, to the eligible unconnected habitations in the core network.
- Since all the eligible rural habitations have been connected, it is required now to strengthen and widen its ambit further to include major link routes which connect habitations to agricultural and rural markets, higher secondary schools and hospitals-health centers.

#### **F. Rural housing**

- **Pradhan Mantri Awas Yojana-Rural (PMAY-R)** came into effect to fulfill the government's vision of "Housing for all by 2022".
- The scheme framework allows inclusion of the beneficiaries not covered under socio-economic caste census. It provides for a **separate beneficiary list** to be recorded in the gram sabha resolution.
- While the physical progress in the provision of rural housing and initiatives for inclusion of excluded eligible beneficiaries under rural housing projects is laudable, the involvement of beneficiaries in the construction of the house should be the key.
- For effective implementation of the scheme, the beneficiaries need to actively participate throughout the construction process.

#### **G. Rural telephone connectivity**

- India is trying to transform herself as a digitally empowered society by meeting the information and communications needs of citizens and enterprises.
- This is possible only when universal, strong and affordable digital communications infrastructure and services are established. The country has witnessed a rapid expansion of telecommunication in the last decade.
- To provide every Indian village with telephone access and to cover difficult areas, additional mobile towers have been sanctioned.
- Efforts are also being made to **install towers for National Highways** to strengthen transmission network.
- The **BharatNet project aims** at creating network to connect all 2.5 lakh Gram Panchayat by broadband connectivity.

## **Conclusion**

- Considering the implementation issues and challenges of execution of these plans and programmes at the grass-root level, it is expected that the program implementing agencies would bring in good governance and follow best practices to maximize the benefits of such development intervention.

## **Healthcare Interventions For Rural India**

- The national health policy (NHP) 2017 of India aimed to provide **Preventive and Promotive Healthcare** and Universal access to good quality healthcare services through the mix of public and private healthcare services.
- It expressed its vision for **Universal health coverage and creating affordable and quality healthcare** for all.
- The policies is assuring availability of free, comprehensive primary healthcare services, for all aspects of reproductive, maternal child and adolescent health and for the most prevalent communicable, non-communicable and occupational diseases in the population. It also talked about **reinforcing trust in public health care system**.
- The emphasis is on establishing the '**continuum of care**', for delivery of health services to protect health of women and children in an integrated manner at all life stages such as adolescence and reproductive age, pre and post-natal period and early childhood.
- It is planned that Healthcare services **should cover all levels of healthcare systems to reach out to rural population at household level**, community and village level through ASHA, ANM, AWW and Ayushman Mitra.

## **Key Initiative And Interventions**

### **A. Ayushman Bharat:**

- As part of Ayushman Bharat programme, two major initiatives in health sector have been taken. First is **Health and Wellness centres** and second is **National Health protection scheme (NHPM)**.
- The national health policy 2017 has envisioned health and Wellness centres **as the foundation of India's health system**. These centres will bring Healthcare system closer to the homes of people.
- Also that these centres will provide **comprehensive Healthcare**, including for non-communicable diseases and maternal and Child Health Services, free essential drugs and Diagnostic services.
- **Contribution** of private sector **through corporate social responsibility (CSR) and philanthropic institutions** in adopting these centres is also in envisaged.
- The second program under Ayushman Bharat is **National Health protection scheme**, which will cover over 10 crore poor and vulnerable families providing coverage upto 5 lakh rupees per family per year for secondary and tertiary care hospitalization.
- The benefit also includes pre and post hospitalization expenses.
- It is planned to have an '**Ayushman Mitra**' to assist patients and co-ordinate with beneficiaries and the hospital in each empanelled public and private hospital.

### **B. The National Nutrition Mission**

- The NNM is comprehensive approach towards **raising nutrition level** in the country on a war footing.

- NNM targets to reduce stunting, under-nutrition, Anaemia (among young children, women and adolescence girls) and reduce low birth weight by 2 per cent, 2 percent, 3 per cent and 2 per cent per annum respectively.
- Although the target to reduce stunting is at least 2 percent p.a., mission would strive to achieve reduction in a stunting from 38.4 per cent (NFHS-4) to 25 per cent by 2022 (mission 25 by 2022).

#### **C. Poshan Abhiyaan:**

- This is based on convergence and collaboration of all important sector considered to be important for healthy growth of the child for first 1,000 days.
- Thus it covers all schemes **Beti Bachao Beti padhao, Swachh Bharat**, Adolescent care, Prenatal and postnatal care, Supplementary Nutrition, Breast Feeding counseling, Immunization, growth monitoring.
- Under portion Abhiyan, the government has **fixed targets to reduce stunting, under-nutrition, Amaemia** (among young children, women and adolescent girls) and **reduce low birth** weight by 2 per cent, 2 per cent, 3 per cent and 2 per cent per annum respectively.
- Mission also strives to achieve reduction in the stunting from 38.4 percent (NFSHS-4) to 20 per cent by 2022.
- In this programme, greater flexibility is given to States for better implementation, and incentives for good performance are also to be provided to states and districts.
- The aim is to make this program as “**Jan Andolan**” (mass movement) to educate the people on nutritional aspects through various methods of information education and communication (IEC).

#### **D. Scheme for adolescent girls (SAG)**

- SAG was devised in the year 2010 using the ICDS infrastructure with the aim of breaking the inter-generational life-cycle of nutritional and gender disadvantage thus **providing a supported involvement for self-development of adolescent girls**.
- Realizing the multi dimensional needs of out of a school Pre-adolescent girls (11-14years) and with an aim to motivate these girls to join a school system, the government approved implementation of restricted schemes for adolescent girls (SAG) to focus on out of a school adolescent girls in the age group of 11-14 years.
- It is to be implemented using the platform of **Anganwadi Services** of Umbrella ICDS schemes through aganwadi centres (AWCs).
- The key objective of the schemes is to facilitate, educate and empower adolescent girls so as to enable them to become self-reliant and aware citizens.
- The asking is covering two components: first is **Nutrition component** in which is out of the school AGs in the age group of 11-14 years registered under the scheme will be provided supplementary nutrition similar to that of pregnant women and lactating mothers under ICDS.
- It will contain 600 calories, 18-20 grams of protein and micronutrients for 300 days in a year.
- Nutrition to be given in the form of Take of Home Ration (THR) or hot cooked meals (HCM) whichever is feasible.
- The second component is **Non-Nutrition Component**. This a scheme aims at motivating out of school girls in the age group of 11-14 years to go back to formal schooling or a skill training under non-nutrition component of the scheme.



- The Other services under non-nutrition component are IFA supplementation, health checkup and referral services, nutrition and health education, life skill education and counseling/guidance on accessing public services.
- **Pradhan Mantri Matru Vandana Yojana:** the Maternity Benefit programme is implemented from January 2017, in all the district of the country.
- Under PMMVY, a **cash incentive of Rs. 5,000/-** is provided directly to bank/post office account of pregnant women and lactating mothers for first living child of the family subject to fulfilling a specific conditions relating to maternal and child health.
- PMMVY is implemented through a centrally deployed web based MIS software application and the focal point of implementation would be the Anganwadi centre (AWC) and ASHA/ANM workers.
- Since only government hospitals have authority to register/update the MCP card, beneficiary taking services from private hospitals cannot avail the benefit of the scheme.

#### **Way Forward:**

- To assess the standards of Public Health Services, government developed **Indian public health Standards** (IPHS) and all the healthcare facilities should be monitored and regulated according to these standards.
- For effective implementation of Ayushman Bharat programme, the presence of public and Private Health care services in equitable manner is required.
- The Primary Health Care program which gives a special emphasis on preventive and promotive services is the backbone of India's health system.
- The Gram Panchayats are the most important unit of local government, these gram panchayats should be engaged in decision making through capacity building programme in order to create more empowered communities.

#### **Maternal Nutrition In India -Policies and Programmes**

- Maternal malnutrition in low-income and middle income countries encompasses both under nutrition and a growing problem with overweight and obesity.
- **Maternal undernutrition** is a significant risk factor for stunting and underweight among children.
- The national nutrition strategy launched in 2017 envisages a '**Kuposhan Mukh Bharat**' - linked to Swachh Bharat and Swasth Bharat focusing on improving health care and nutrition of most vulnerable and critical age groups.

#### **Maternal Anaemia:**

- Anaemia is a significant health problem in India, especially among women, adolescent girls and children. At least half of all women in India are anaemic, regardless of age, residence or pregnancy status with little or no change.
- India **first launched** a nationwide program for the **prevention of anaemia** among pregnant women in **fourth five year plan** (1969-74).
- In 2016-17, to bring Synergy in the existing iron supplement programs and schemes, Ministry of Health and Family Welfare developed the national iron + initiative that embraced all the programs across all population categories for addressing anaemia.

- The distribution of IFA supplements to pregnant woman has been part of the **national policy for the prevention and treatment of maternal anaemia** since the 1970s.
- Recently launched **Anaemia Mukh Bharat campaign** is planned to strengthen evidence-based strategies.

<b>Existing platforms for maternal nutrition interventions</b>		
<b>Intervention</b>	<b>Target Population</b>	<b>Platform</b>
<b>Micronutrient supplementation</b>		
IFA supplementation Calcium supplements	Pregnant women, Adolescent girls & Out-of-school adolescent girls	ASHAs, Primary health system, ICDS Secondary schools, ICDS ANM, Primary health system
<b>Food-based strategies</b>		
Take-home food rations	Pregnant women, lactating women and adolescent girls	ICDS, SABLA scheme
Hot meals	Primary school children	ICDS, Government primary schools
Distribution of fortified wheat flour	Households (selected state and districts)	PDS
Distribution of double fortified salts	Households (selected state and districts)	PDS
<b>Growth Monitoring</b>		
Weight monitoring in pregnancy	Pregnant women	Primary Health System ICDS
<b>Education and Counselling</b>		
Diet and prevention of Anaemia Adolescent health and hygiene Women's health and hygiene	Pregnant women, Out-of-school adolescent girls, adolescent girls Mother of 0-2 yr children, pregnant women Out-of-school adolescent girls Poor women	ICDS, Secondary Government Schools ASHA, primary health system ICDS Self-Help Group

**Addressing Undernutrition Among Women:**

- According to the NFHS-4, 23 per cent of women are undernourished and have BMI < 18.5.
- Food intake during pregnancy, supplemental food programs and weight gain during pregnancy are important measures for maternal undernutrition.

**Improving Diet Of Pregnant Women At Home And Supplemental Food**

- Under the **national food security act, 2013** subsidized staple food under targeted Public Distribution system is provided to 50 per cent of the urban and 75 per cent of the rural population.
- In addition to the food through TPDS, **supplemental food is provided** to pregnant woman on a weekly basis as a **take home ration (THR) or hot cooked meal** (in few States) at Anganwadi centres as part of Integrated Child Development Services scheme.

- According to NHFS-4, 51.5 per cent of pregnant women in areas within anganwadi Centre received supplementary food and even fewer women (47.5 percent) received supplemental food during lactation. Key reasons for the poor coverage and consumption were:
- **Intra-household distribution of THR.** Many women reported sharing the THR with other family members.
- **Poor quality of THR** has been cited by many woman in reports.
- **Inadequate access** to AWC services by poor families due to workload and distance has also affected the uptake of THR.
- In India, **Janani Suraksha Yojana (JSY)** pays Rs. 1,400 two women for institutional delivery and pay Rs. 600 to Asha for each woman they bring to a health facility for delivery.
- **Pradhan Mantri Matru Vandana Yojana(PMMVY)**, is for all pregnant women and lactating mothers.

Scheme	Year	Platform	Target group	Objective
Adolescent girls scheme and Kishori Shakti Yojana	2000	WCD	11-18 years	Impart vocational skills and provide nutrition & health education
Nutrition Programme for Adolescent Girls (NPAG)	2002-03			
SABLA	2010	WCD	11-18 years	Replaced KSY and NPAG provide <ul style="list-style-type: none"> <li>• Supplementary nutrition-600 calories, 18-20 grams of protein and micronutrients per day</li> <li>• IFA tablets</li> <li>• Health check-ups every 3 months</li> <li>• Life skills education</li> <li>• Vocational training</li> </ul>
Support to Training and employment programme for women (STEP)		WCD	Age group of 16 years and above	Provide skills to give employability
Beti Bachao Beti Padhao		WCD		

### Addressing Social Determinants

#### Age at marriage

- Cultural practices of early marriage lead to conception and delivery of children at a time of the lives when they are most at risk for low BMI.
- As the problem is multifactorial a multi pronged strategy is needed.

#### Age at first birth

- In India a young married woman becomes pregnant quickly, does not employ temporary family planning, and only limits birth by permanent methods when the family is considered complete.

- Family planning services till lately **emphasized societal benefits of family planning** (e.g., population control) **rather than individual/family benefits** (e.g., better health and nutrition of mother and children).
- Government policy and cultural factors (e.g., strong preference for boys and pressure on newly married couples to demonstrate fertility) are some important reasons why the majority of couples really on permanent rather than temporary contraceptive methods.

### **Connectivity: Transforming Rural India**

- “India in the 21<sup>st</sup> century must strive to meet the aspirations of its citizens where benefits and services reach the door steps of citizens and contribute towards a long lasting positive impact”.

#### **Various Initiatives In This Regard:**

- The **Digital India program** aims to transform India into a **digitally empowered society and knowledge economy** by leveraging IT as growth engine of new India.
- The **Common Service Centres (CCSs)** act as access point for delivery of various electronic services to villages in India.
- **DigiGaon or Digital Village** is conceptualized as a connected village where citizens **can avail various e-services** of the central and state governments, and private players in a rural and remote villages in the country.
- These DigiGaons are projected to be change agents, promoting rural entrepreneurship and building rural capacities and livelihoods through community participation and collective action.
- The post offices are also being made multi service delivery points and all the CSCs services can be delivered to Citizen through the post offices. **Postal department has also got a payment Bank license.**
- One of the focus areas of digital India program is **to promote digital literacy**. The government envisages making at least one person e-literate in every household.
- CSCs will also provide Diagnostic services and promote sale of generic drugs through collaboration with Ministry of Health - by setting up of the Jan Aushadhi Stores.

#### **The Vision Areas of Digital India**

##### **Infrastructure as utility to Every Citizen:**

- High speed internet as core utility shall be made available in all Gran Panchayats.
- Cradle to grave digital identity –unique, lifelong, online and authenticable.
- Mobile phone and Bank account would enable participation in digital and financial space at individual level.
- Easy access to a Common Service Centre within their locality.
- Shareable private space on a public Cloud.
- Safe and secure Cyber-space in the country.

##### **Governance and Services on Demand:**

- Seamlessly integrated across departments or jurisdictions to provide easy and a single window access to all persons.

- Government services available in real time from online and mobile platforms.
- All citizen entitlements to be available on the Cloud to ensure easy access.
- Government services digitally transformed for improving Ease of Doing Business.
- Making financial transactions above a threshold, electronic and cashless.
- Leveraging GIS for decision support systems and development.

**Digital Empowerment of Citizens**

- Universal digital literacy.
- All digital resources universally accessible.
- All Government documents/certificates to be available on the Cloud.
- Availability of digital resources/services in Indian languages.
- Collaborative digital platforms for participative governance.
- Portability of all entitlements for individuals through the Cloud.

- **National Health Agency (NHA)** which is the apex body for implementation of Ayushman Bharat - National Health Protection Mission (AB-NHPM) and Common Service Centres (CSC) scheme under the digital India program have signed an MoU to provide information and eligibility validation services to beneficiaries, especially in remote areas.
- CSC will be provided access to **Beneficiary Identification System (BIS)**, which helps in confirming application form entitled beneficiaries using SECC and RSBY databases.
- Digital India will not be successful without the affordable and regular access to electricity. Rural electrification is the backbone of rural economy and a basic input for rapid rural development.
- Under '**Saubhagya Yojana**', free electricity connection is provided to households.
- By March 2019, all willing families will get electricity connection.
- **Rural electrification Corporation (REC)** has been designated as its nodal agency for the saubhagya scheme.
- **Pradhan Mantri Gram Sadak Yojana (PMGSY)** aims at providing all weather road connectivity to the eligible unconnected habitations in rural areas of the country.
- The BPO movement is slowly making inroads to smaller towns to create employment opportunities and promote IT-ITeS industry and aims to secure a balanced regional growth.

**Agricultural Sustainability Under Resource Scarcity****Resources under stress: Statistics**

- About 70 per cent of India's arable land is **drought prone**, 12 per cent is **flood prone**, and 8 per cent is **cyclone prone**.
- **Evaporation rates** are likely to increase, potentially increasing the need for irrigation in both the river and groundwater dependent lands.
- The **Fifth Assessment Report** of the IPCC predicts a **significant drop in Indian agricultural yield** owing to temperature rise.

- **Oxford Martin Future of Food Program** estimates that more than a quarter of all climate-related deaths due to change in food production, and subsequent change in diets and body weight, **will occur in India.**

### **Agriculture and Greenhouse Emission**

- Agricultural production also **contributes to climate change**, accounting for 17.6 per cent of gross greenhouse gas emissions in India.
- Add emissions related to consumption, including electricity, diesel and fertilizers, and that figure rises to 27 per cent.
- The **policy debate** however is dominated by the *provision of subsidised electricity and the resulting excess withdrawal of groundwater.*
- Agriculture dominates India's freshwater use, accounting for 70 per cent of total consumption according to some estimates.
- **Nearly half of this water comes from groundwater.** Since electricity subsidies were introduced in the early 1970s, the area irrigated by groundwater has almost quadrupled.
- The **use of chemical fertilizers** has significantly increased.
- By 2015-16, it had risen to 26.2 MT. Although India's **average fertilizer consumption is relatively low (at 128 kg per hectare)**, it varies across states.
- Again, the increasing use of fertilizers is driven by continued government subsidies. After food and petroleum, fertilizer is the next most-subsidised product.

### **Way forward**

- The Economic Survey 2015-16 makes the case for '**a new paradigm**' for agricultural development aimed at **getting more from less resources.** It specifically points out the need to economize the use of water in agriculture.
- Raising similar concerns, **Niti Aayog paper** claimed that the "*area under irrigation can be doubled in the country without extra water if we attain water use efficiency level of countries like China USA and Brazil.*"
- It made a strong suggestions to **improve water and fertilizer use efficiency** and highlighted the need to ensure remunerative prices for farmers, measures necessary to raise productivity and **spread green revolution to Eastern states.**
- The call '**Per Drop More Crop**', is for promoting farming through optimum utilization of water.
- The vision to double farmers' income has evoked strong responses.
- An appropriate strategy is required to deal with resource scarcity and environmental degradation.
- The **National Mission for Sustainable Agriculture** was conceptualized in 2008 to make agriculture more productive, sustainable, remunerative and climate resilient by promoting location specific integrated farming system.
- In 2014, the **National Mission on Agricultural Extension and Technology** was initiated to restructure and strengthen agricultural extension to enable delivery of appropriate technology and improved agronomic practices to the farmers.

### **Conclusion:**

- An alternative approach is needed to change entrenched practices. This need to acknowledge the scarcity value of interlinked resources and the costs of their use and understand how they feature in farm-level decision making and village economies.

- With this knowledge, a range of levers would be available to influence consumption and production choices.
- There is a need to reorient and align policies that affect land use, crop choices, fertilizers use, irrigation practices and energy inputs to complement each other towards the common goals of sustainability and growth.
- Policies will need to combine sticks with carrots and both with weather information.

### **Farm Technologies To Counter Climate Change**

- Global mean temperatures have risen by 0.6°C in the last century with the last decade being the warmest on record.
- Global environmental issues such as land degradation, loss of biodiversity, stratospheric ozone depletion along with human induced climate change have exacerbated the complicated situation.
- Climate change is expected to adversely impact socio-economic sectors, including water resources, agriculture, forestry, fisheries, and human settlements ecological systems and human and animal health in many parts of the world.
- Under the scenario of 4°C warming, the west coast and southern India are projected to shift to new high temperature climatic regimes with significant impacts on agriculture.
- Magnitude and geographical distribution of such climate-induced changes may affect our ability to expand the food production globally by 70 per cent to feed around 9 billion mouths in 2050.

### **Greenhouse gases emissions**

- The majority of agricultural GHG emissions occurs at the primary production stage and is generated through the production and use of agricultural inputs, farm machinery, soil disturbance, residue management and irrigation, and the rising population of livestock.

### **Global Warming Impacts on Agricultural Productivity in India**

- **Climate change affects agriculture in a number of ways**, including changes in average temperature, rainfall and climate extremes; changes in pests and diseases; change in atmospheric carbon dioxide and ground-level ozone concentrations; changes in nutritional quality of some foods and changes in sea level.
- Experimental evidences confirm **possibility of reducing CH<sub>4</sub> emissions** - Specifically, *changing continuously-flooded system to intermittent irrigation*.
- Although some studies shows **N<sub>2</sub>O emissions main increase** under intermittent irrigation, the **decreases in CH<sub>4</sub> emissions is more** than that compensates this effect.
- Over the past 25 years changes in temperature of 1° C or more have been observed in Northern India during the Rabi (winter) cropping season. A studies at Indian Agricultural Research Institute (IARI), New Delhi, show that **every rise in 1° C has a potential to reduce wheat production by 4-5 million ton** in the country.
- By 2030, rice and wheat are likely to see about 6 -10 percent decreases in yields.
- **Crops like potatoes, soybean, chickpea and mustard** are the crops on which climate change will have a **neutral or positive impact**.
- Crops like soybean and chickpea are likely to **benefit from higher level of CO<sub>2</sub> in the atmosphere**, a phenomenon referred to as **CO<sub>2</sub> fertilization**.

- A lot more depends on the net sown area and the geographical location of a region where a particular crop is sown. Mustard, for example will experience and **neutral-to-positive impact in Northern India** especially in Punjab and Haryana, where winter temperatures are very low and 1° C rise in temperature will not have much impact on production in this region.
- However, a **similar rise in temperature in eastern and Central India** will have a **negative impact**.
- **Kharif (rainy season)** crops **will be affected more** by rainfall variability, while Rabi (Winter) crops will be impacted more by minimum temperature.
- Similarly, **legumes are going to be benefited** because of elevated level of atmospheric CO<sub>2</sub>.
- Climate change will probably increase the **risk of food security for poverty stricken population**.

### **Mitigation and Adaptation Technologies**

#### **(A) Mitigation strategies**

##### **1) Soil Management**

- **Soil Conservation** – Leaching, the movement of dissolved substances through the soil, issues of soil contamination, soil erosion etc. are common threats to soil conservation efforts.
- Farmers should use **contour ridges** as a strategy to minimize soil erosion to encourage better root penetration and enhance moisture conservation.
- *Natural mulches* moderate the soil temperatures and extreme, suppress diseases and harmful pests, and conserve the soil moisture.
- **Carbon sequestration** - It is the process involved in *carbon capture and the long-term storage of atmospheric carbon dioxide* or other forms of carbon to mitigate or defer global warming.
- Soil quality is **closely related to soil organic matter**; *high soil organic matter means high potential productivity* and better health of soil. **Soil organic matter is a key element a responsive to global warming**. It improves and stabilizes the soil structure so that the soils can absorb higher amount of water.
- **Crop Residue management** - Rice and wheat straws left in the field after combine harvesting are generally burnt by the farmers to facilitate seed bed preparation and seeding.
- Burning of crop residues in the states like Punjab, Haryana, Uttar Pradesh and Rajasthan has significantly contributed to deterioration of air quality.
- The government is encouraging the farmers to go in for **mechanized options of Residue Management** by way of providing subsidies on purchase of Machines and equipments.
- For crop residue management, under **Sub-Mission on Agriculture Mechanization**, the Department of Agriculture Cooperation and Farmers Welfare has allocated funds to Punjab, Haryana, Rajasthan and Uttar Pradesh.
- **Conservation agriculture (CA)** - the CA based system **substantially reduced the production cost** (upto 23 percent) but produces **equal or even higher** than conventional system; thereby increasing economic profitability of production system.
- CA based production system also **moderates the effect of high temperature** and increases irrigation water productivity by 66-100 percent compared to traditional production systems.
- **Minimum Tillage** - While intensive soil tillage reduces soil organic matter through aerobic mineralization, low tillage and the maintenance of a permanent soil cover (through crops, crop



residues or cover crops and the introduction of diversified crop rotations) increase the soil organic matter.

## 2) Nutrient Management

- Balanced and efficient use of fertilizers practiced on each and every holding **based on 4R principle** i.e., *right nutrient, right quantity, right time, right method of application* is an attractive proposition.
- Use of fertilizers in conjunction with organic manures, biofertilizers etc. on **the principle of integrated nutrient supply system** is a right prescription to increase nutrient use efficiency, minimise use of mineral fertilizers, and reduce GHG emissions.
- Use of **nitrification inhibitors** will regulate nitrification and **leaf color chart will ensure judicious use of N-fertilizers**, increase N use efficiency and reduce N<sub>2</sub>O emission and also cut on the fertilizers cost.
- **Integrated nutrient management -**
- Use of fertilizers along with Organic manures, green manures, vermin compost, biofertilizers, neem, *karanj*, pongamia cakes etc. color chart and nitrification inhibitors will improve nutrient use efficiency and improve the soil health.
- Use of Rhizobium cultures in pulses and *Azotobacter* in rice wheat etc. help cutting costs on fertilizers **through benefits of symbiotic and asymbiotic nitrogen fixation**.
- Many **nutrient solubilizing bacteria**, for example, K and Zn solubilizers are of great help. Use of phosphate solubilizing bacteria (PSB) is well known tool to **solubilize natives soil P**.
- **Sea weeds like Sagarika** may play a great role to boost crop growth and also mitigate weather adversities.

## 3) Water Management

## 4) Energy Management

- 5) **Reforestation** – It is the natural or intentional restocking of existing forest and Woodlands (forestation) that have been depleted, usually through deforestation.

## (B) Adapting Agriculture To Climate Change

### 1) Early Warning And Information System (EWIS)

- It can help in getting prepared for disaster management preparedness and mitigating the potential risks.

### 2) Selection of suitable crops and crop cultivars

### 3) Preference to less water and less nutrient demanding crops –

- Crops such as coarse cereals, smaller millets (nutri-cereals), pulses and oilseeds are less nutrient and water demanding crops and also thrive well under extreme temperature and drought conditions.
- Replacing the traditional crops with this climate replacing the traditional crops with this climate smart crops can help in combating the adverse effect of global warming.

### 4) Selection of Crops and Cultivars Tolerant to Abiotic and Biotic Stresses

- 5) **Crop diversification** - Crop diversity is a high priority adaptation measure in both irrigated and non-irrigated areas.

### 6) Change in Cropping Pattern And Calendar Of Planting

**7) Mixed cropping/intercropping –**

- Mixed cropping/ intercropping involves growing two or more crops in proximity in the same field.
- The system is commonly practiced in India where cereals (Maize, sorghum) legumes and nuts (groundnuts) are grown together.
- The advantages of mixing crops with varying attributes are in terms of maturity period (e.g., maize and beans), drought tolerance (maize and sorghum), input requirements (cereals and legumes), and end users of the product (e.g., maize as food and sunflower for cash).

**8) Integrated Cropping System:**

- Trees and shrubs in farming system (including Agroforestry) can play a significant role in mitigating the impacts of extreme events and the resulting threats to food security.

**9) Integration of agriculture with traditional knowledge:**

- The traditional knowledge and crop varieties of indigenous people and local communities could prove even more important in making agriculture adapt to climate change.

**10) Integrated Pest Management (IPM):**

- To minimize the incidence of pests and enhancing the use of pesticides, IPM is an ideal option. Summer ploughing, green manuring, use of biopesticides etc. should constitute the key components of IPM.

**11) Integrated Farming System (IFS):**

- Integration of agriculture with livestock, poultry, fishery, bee keeping etc. is known as Integrated Farming System (IFS). Small and marginal farmers having subsistence farming need assistance for making agriculture profitable so that they could adopt mitigation and adaptation measures.

**12) Enhancing Carbon Removal:**

- All crops absorb CO<sub>2</sub> during growth and release it after harvest. The goal of agricultural carbon removal is to use the crop and its relation to the carbon cycle to permanently sequester carbon within the soil.
- This is done by selecting farming methods that return biomass to the soil and enhance the conditions in which the carbon within the plants will be reduced to its elemental nature and stored in a stable state.

**Conclusions**

- Reduction in the GHG emissions from agricultural intensification should be the main thrust.
- State and local governments must integrate policies and technologies that enhance farmer access to new innovations like *zero tillage and irrigation*, and provide more information on climate change vulnerability, mitigation and adaptation.