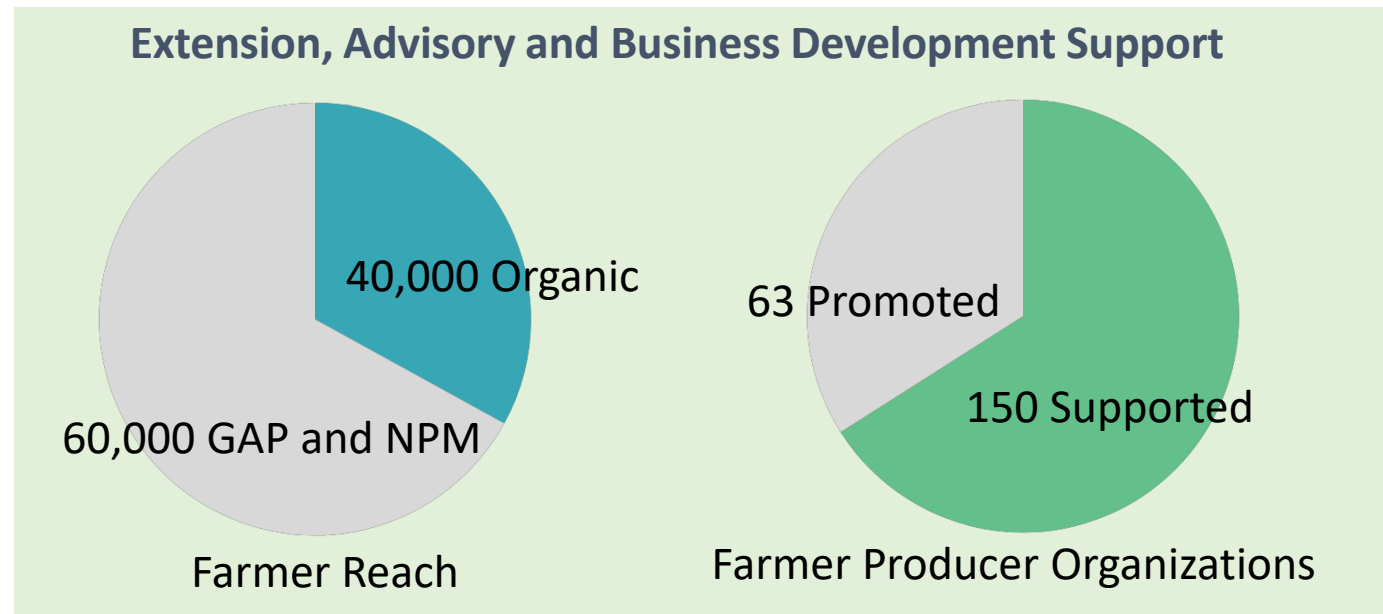
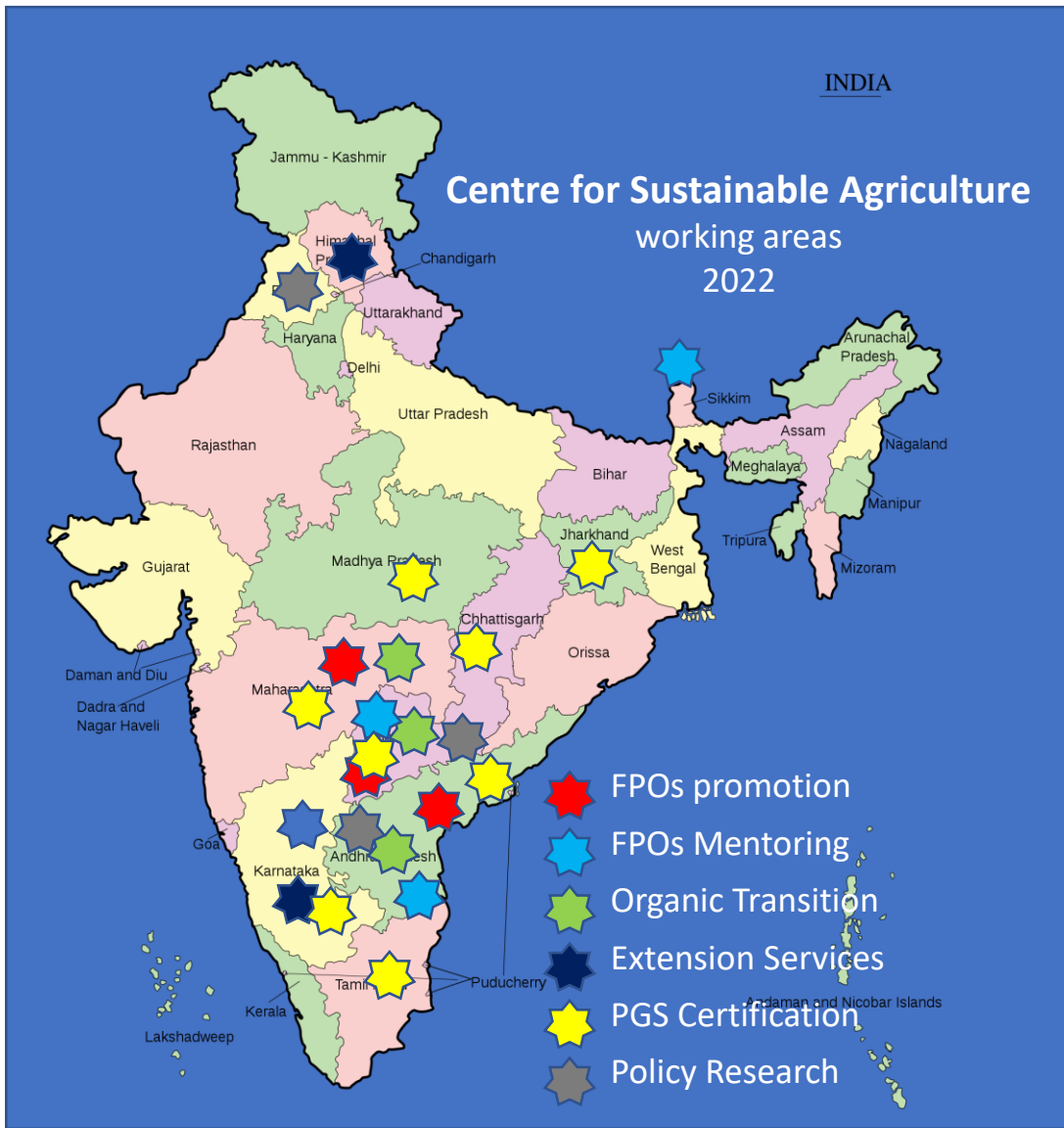




Current Challenges faced by Indian Agriculture and strategies to deal with them

Ramanjaneyulu



Agroecology

Resilient livelihoods

Building FPOs

Innovating markets

Public Policy

Support Services

Key challenges

85% of the farmers income is less than their expenditure is around Rs. 96,000 per year

Economic crisis

- **Limited opportunities:** reducing income baskets
- **Unremunerative prices:** low price realisation for most of the farmers and most of the crops, animal products
- **Large no. of unskilled/unorganised workers:** depending on daily wages
- **Reducing Government Support:** Investments and Regulations
- **Exposed to larger monopolies and market anomalies :** Exclusive controls, Dumping

Ecological crisis

- **Depleting and degenerating natural resource base:** water, soil, biodiversity, air quality etc
- **Increasing risks due to climate change:** extreme weather events like droughts and floods
- **Biosafety:** occupational hazards, pollution, health
- **Inefficiency:** fertilizer/pesticides/water use

Source: (NSSO, 2019, NAFIS, 2016, DFI, 2019)

Climate Change Emergency

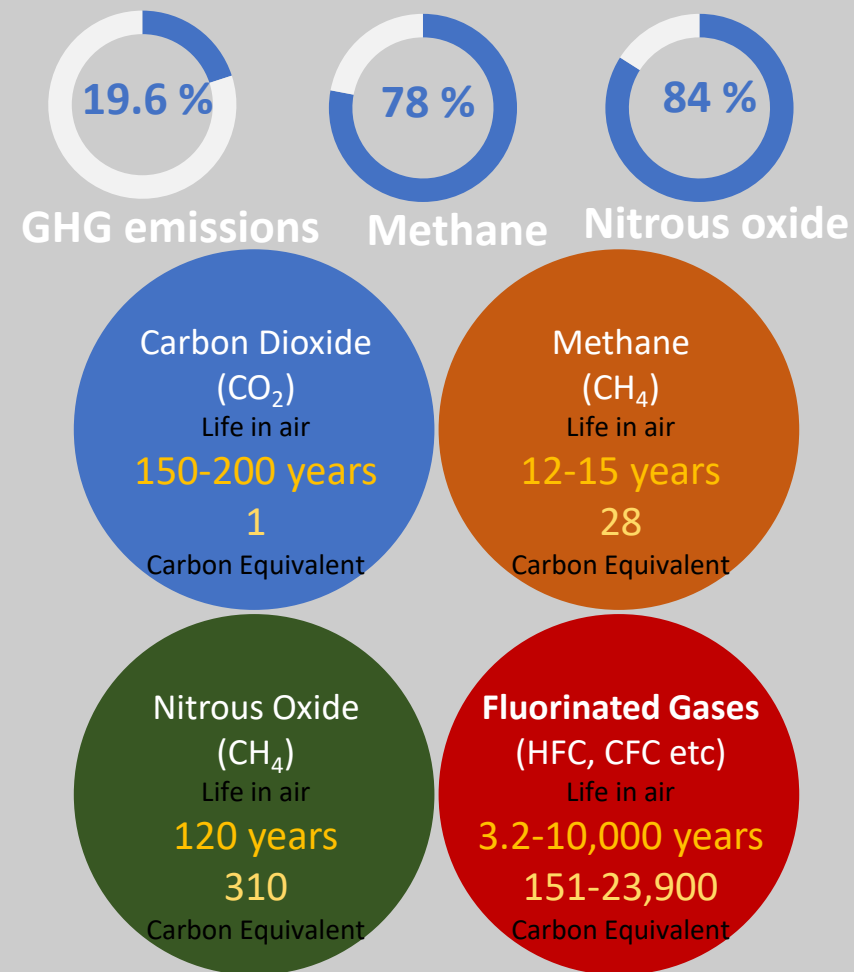
- Wildfires, floods, extreme rains, droughts, cold bursts,
- Gases have long residence time in atmosphere: past matters
- CO2 emissions are linked to economic growth so we need to share growth along with atmospheric space and responsibility to keep it safe



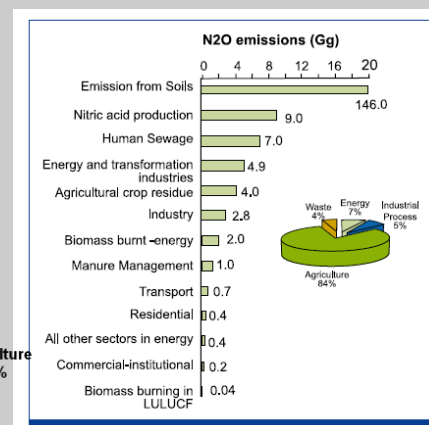
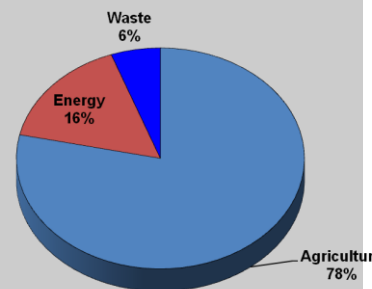
Greenhouse Gas (GHG) emissions

- India emitted 2,299 million tonnes of [carbon dioxide](#) (CO₂) in 2018, IPCC
- This accounts for 7 per cent of global GHG emissions.
- Agriculture and livestock account for 18 per cent of gross national emissions.
- A study by CIMMYT pointed out that India has the potential to cut 18 per cent of its annual greenhouse gas emissions from agriculture and livestock sector
- The study estimated that 50 per cent of this reduction could be achieved by
 - Efficient use of fertiliser,
 - adoption of zero-tillage and
 - management of water used to irrigate paddy.

Sources: IPCC



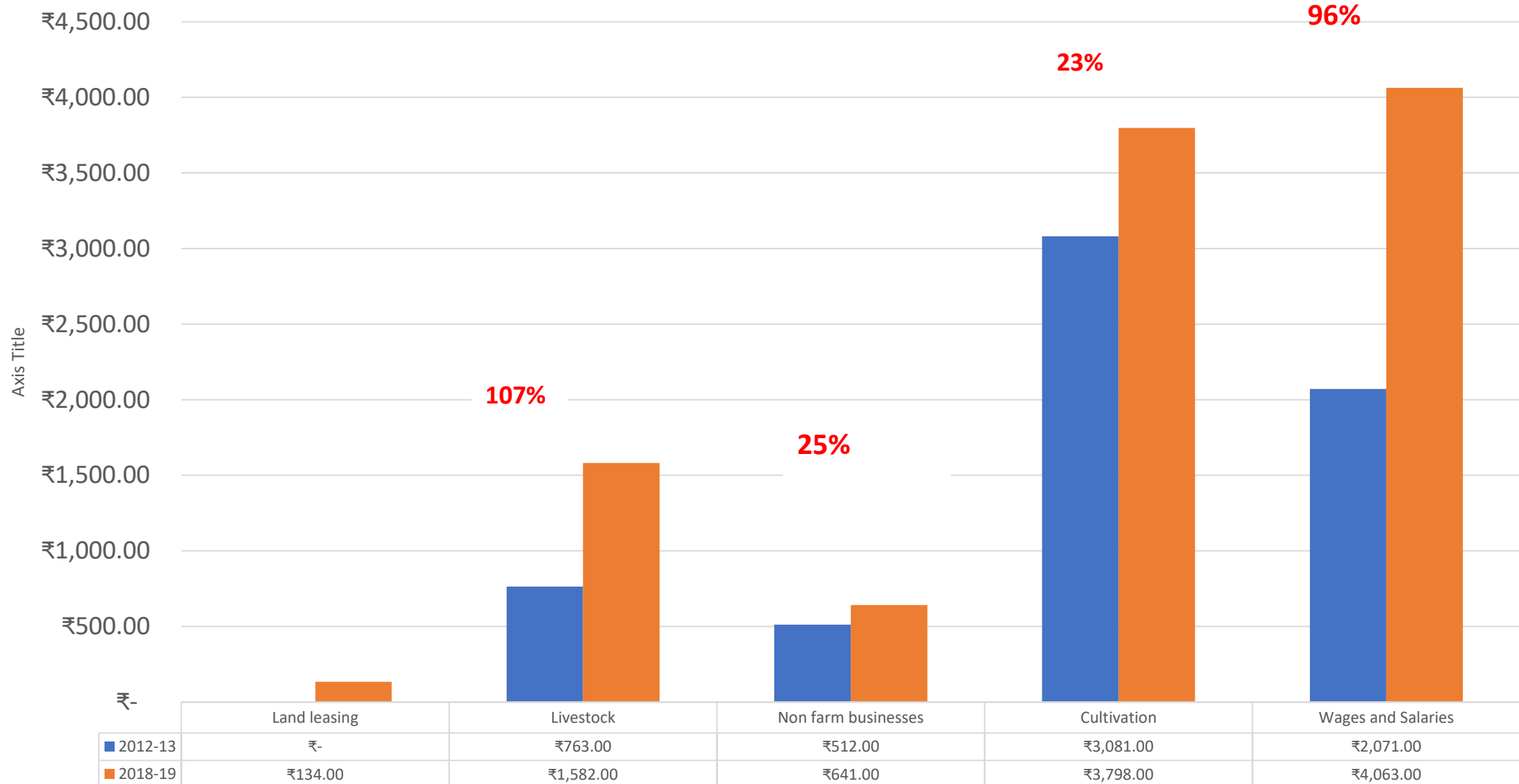
India CH₄ Emissions



Rural Income Distribution (Rs/month)

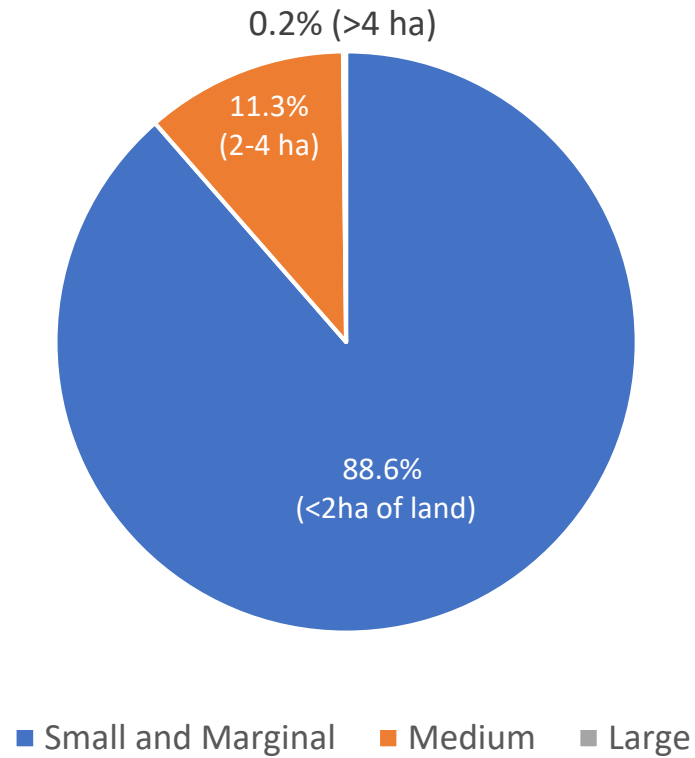
	2012-13	2018-19
Total Monthly Income	₹6,426.00	₹10,218.00
Total Annual Income	₹77,112.00	₹1,22,616.00

Average monthly household income

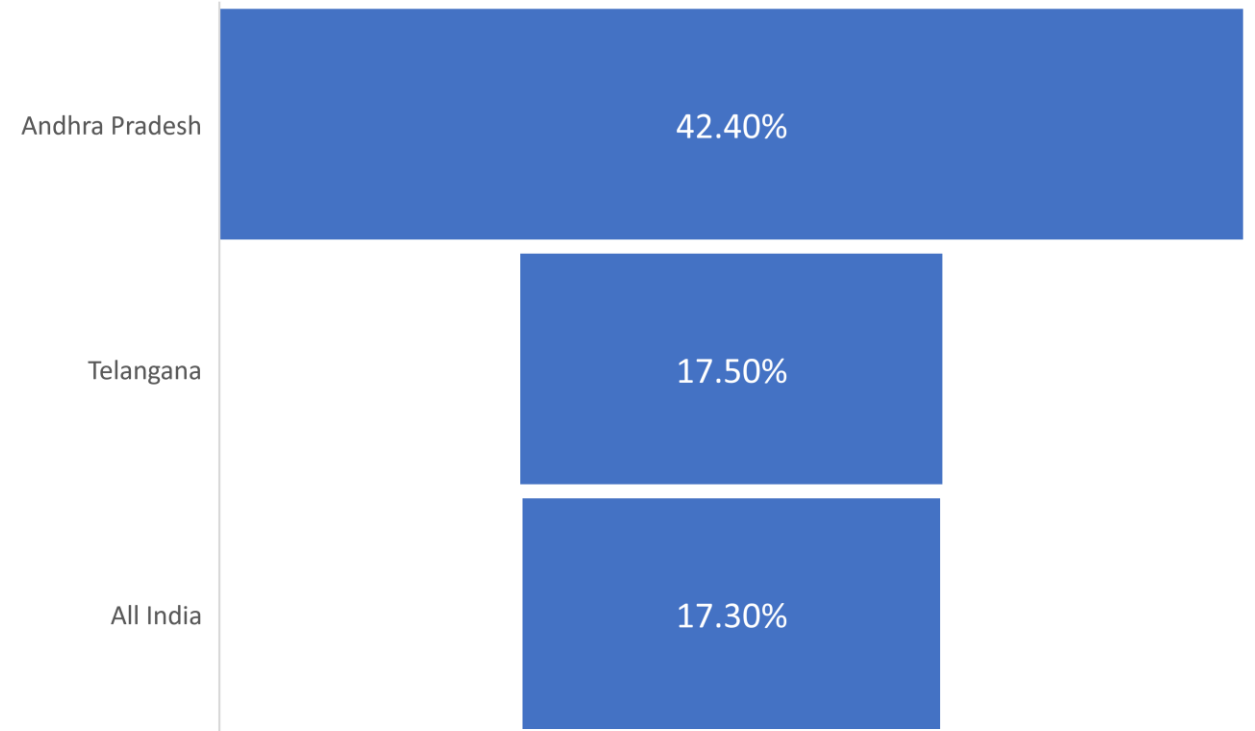


Land ownership and Tenancy

Landholdings in Andhra Pradesh and Telangana

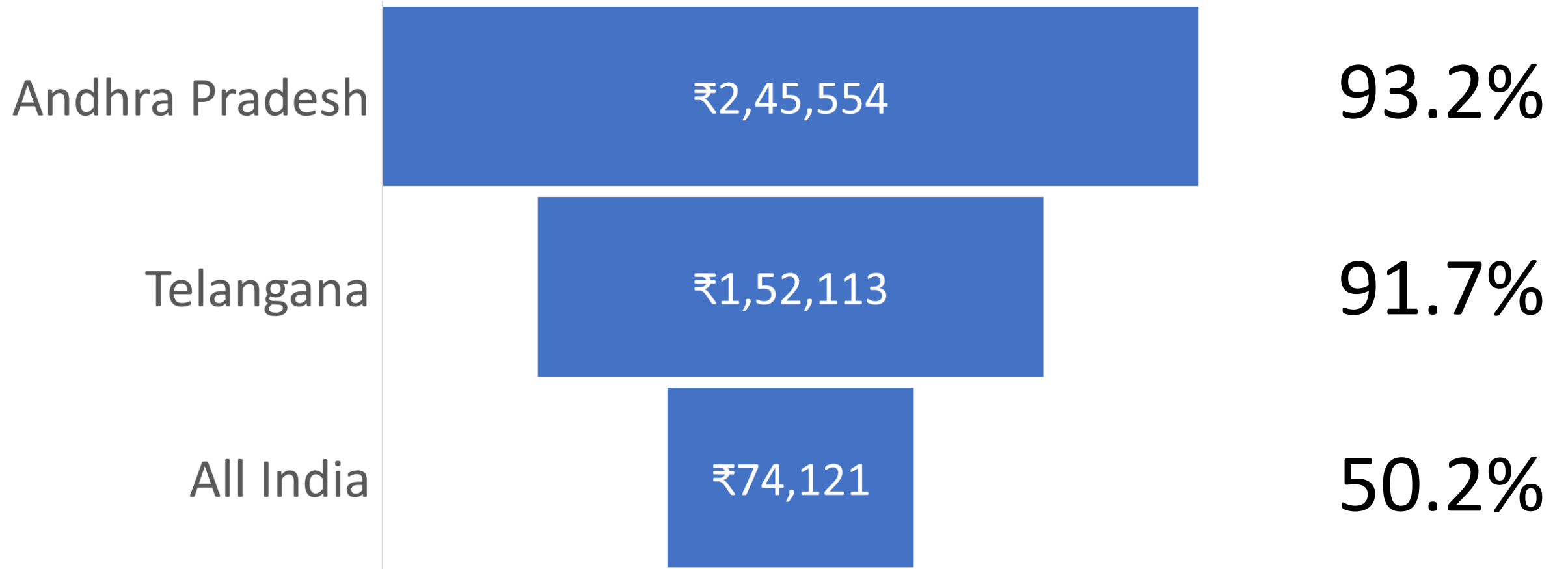


Percent of Tenant Holdings

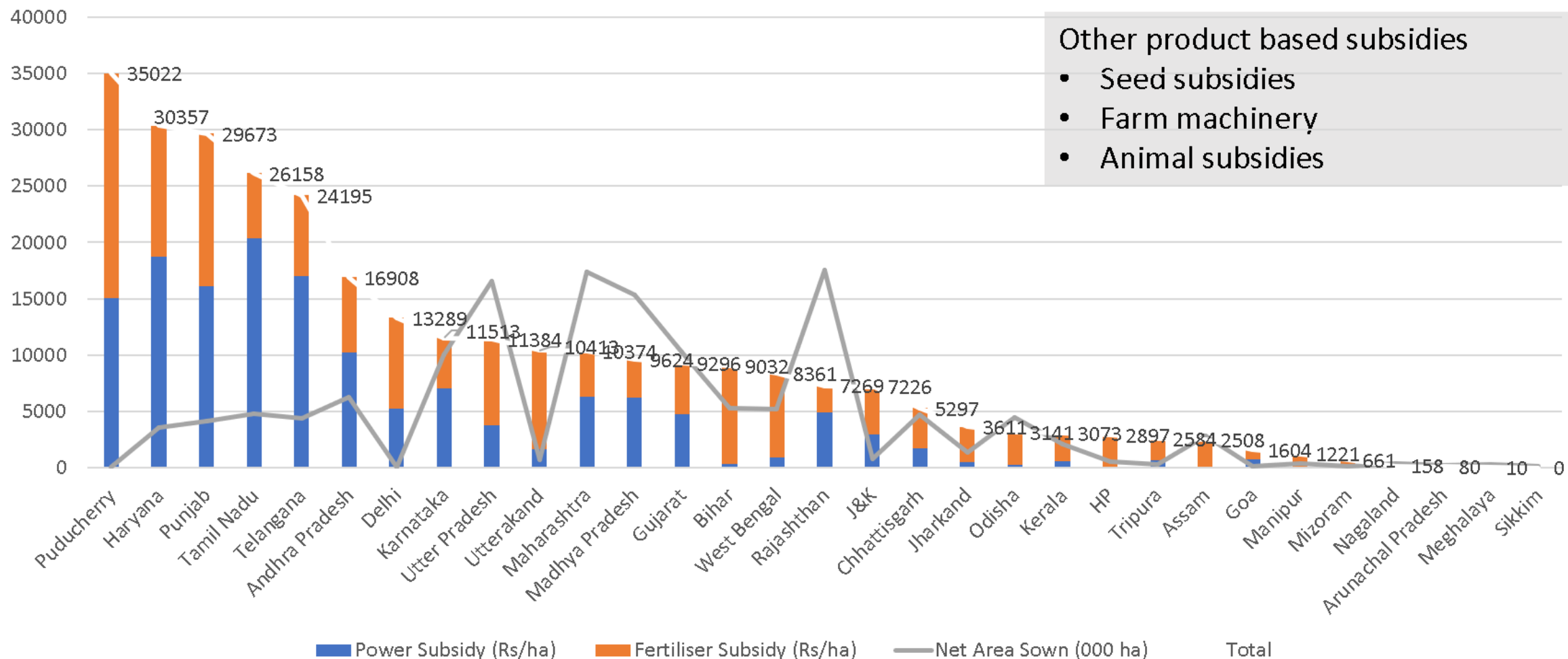


Source: NSSO, 2019

Rural Indebtedness



State wise subsidy on fertilisers and power per ha of net sown area (Average of 2014-15 and 2015-16)



Access to credit

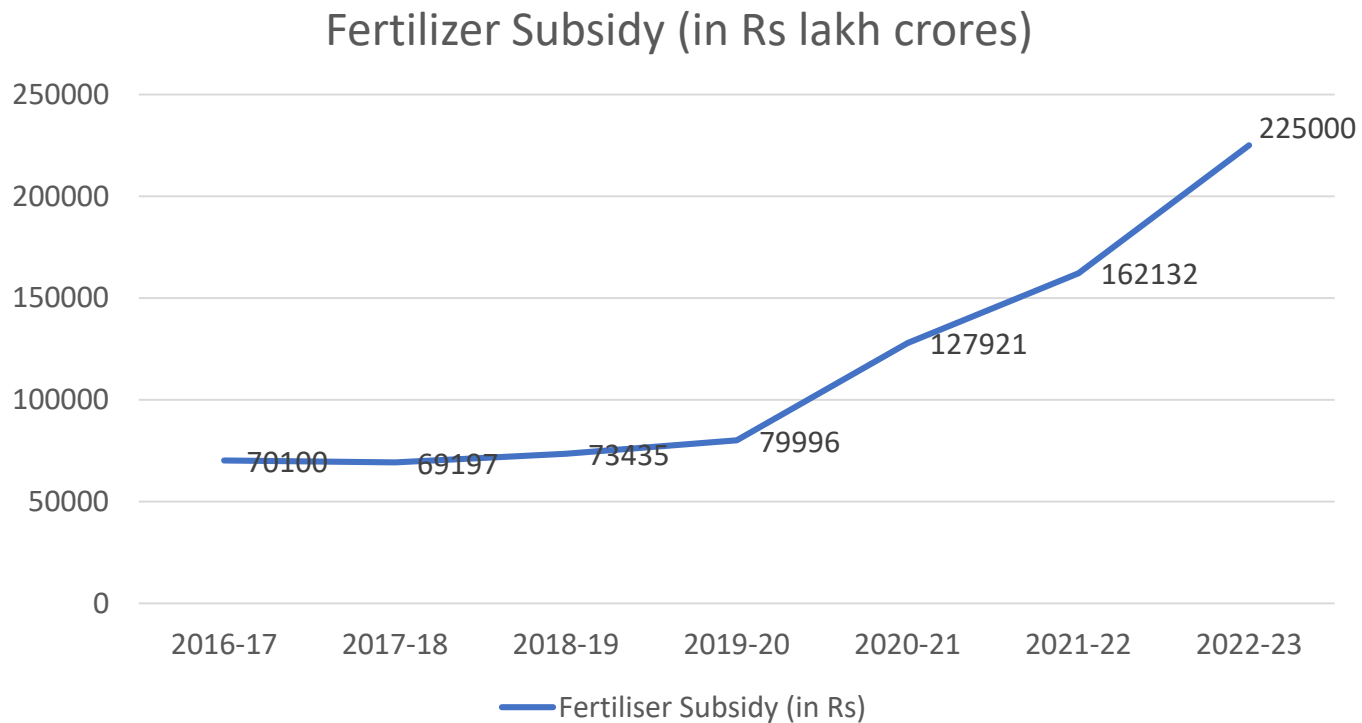
- Andhra Pradesh has highest indebtedness (93.2%) among agriculture households with an average outstanding loan of Rs. 2.45 lakhs (NSSO, 2021)
- Telangana has on average Rs. 1.52 lakhs out standing loans with 91.7% households in indebtedness category
- 23% of farm credit goes to Hyderabad city in Telangana
- Telangana promise of loan waiver decreased access to loans to farmers
- National average indebtedness is 50.2% households with average outstanding of Rs. 74,121
- High numbers of tenant farmers do not have access to institutional loans
- RBI mandates crop loans/KCC up to Rs. 1.5 lakhs without collateral but no use.
- In AP still we have 150 villages with more than 5000 population which do not have bank branches
- AP has brought in Money Lenders Regulation Act 2017 to curb exploitative practices of Money lenders and call money kind of schemes
- Hence providing access to institutional credit to all is all more important now

Increasing access to institutional credit

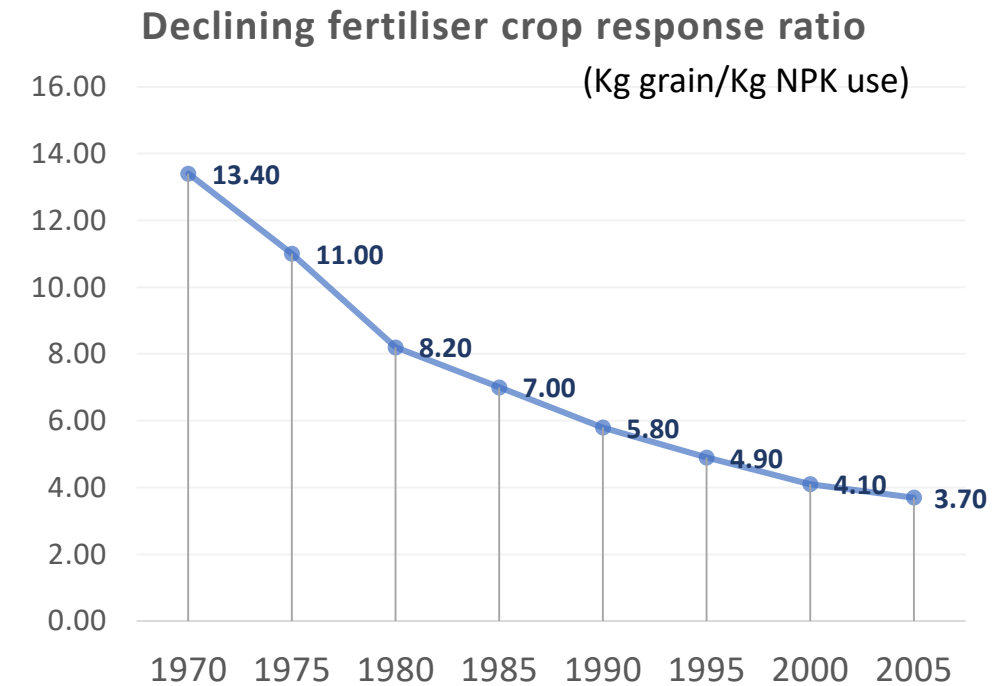
- Tenancy
 - Loan Eligibility Cards by Andhra Pradesh and Telangana
 - Joint Liability Groups by NABARD
 - Kudumbashree model in Kerala
- Loans as per the scale of finance
- Addressing indebtedness
 - Debt swapping
 - Restructuring with simple interest
 - Debt relief

Issues with chemical fertilizers

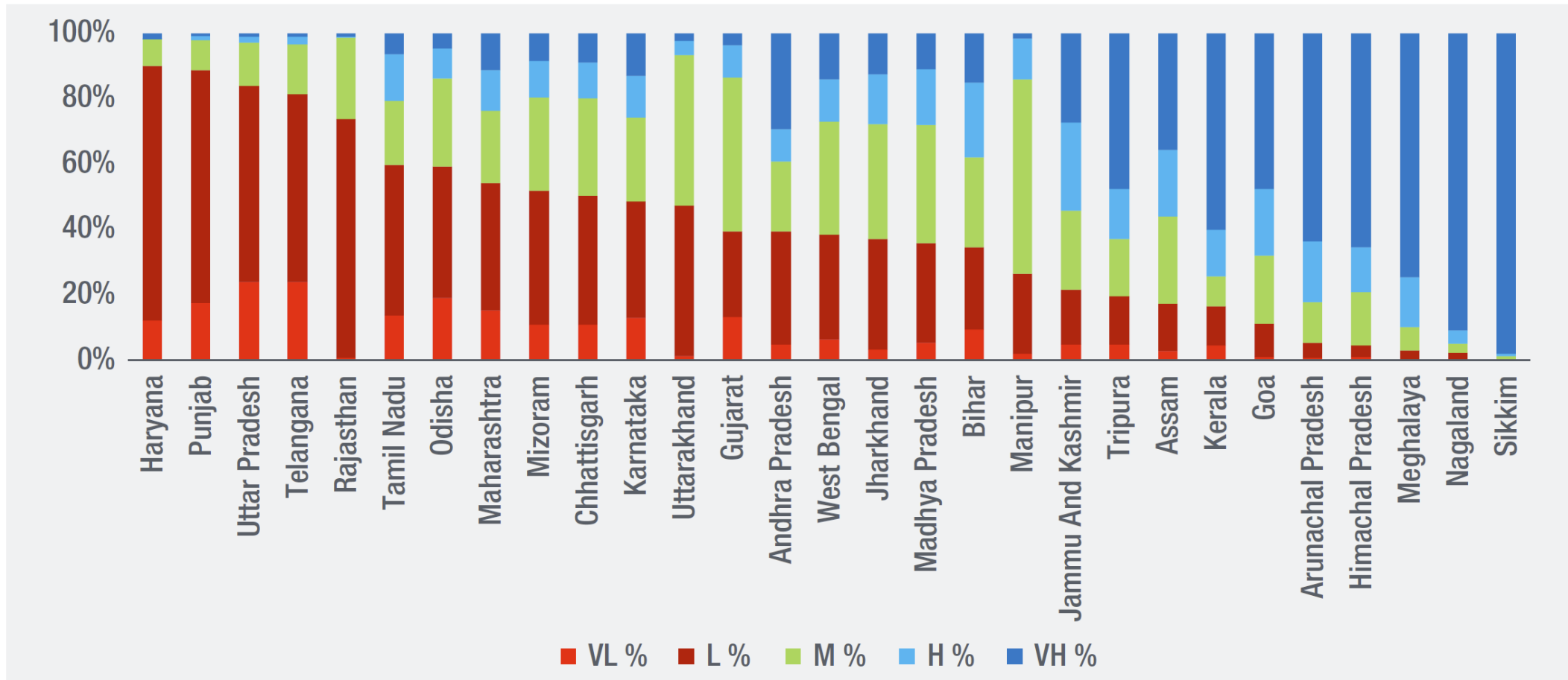
- 2022-23: Fertiliser subsidy touched Rs. 2.25 lakh crores and expected to increase by 70% by 2023-24



Source: Reports, Department of Fertilisers and News Papers



Source: Biswas & Sharma (2008), Department of Fertilisers



Soil Organic Carbon Status based on SHC Scheme: 2017-19

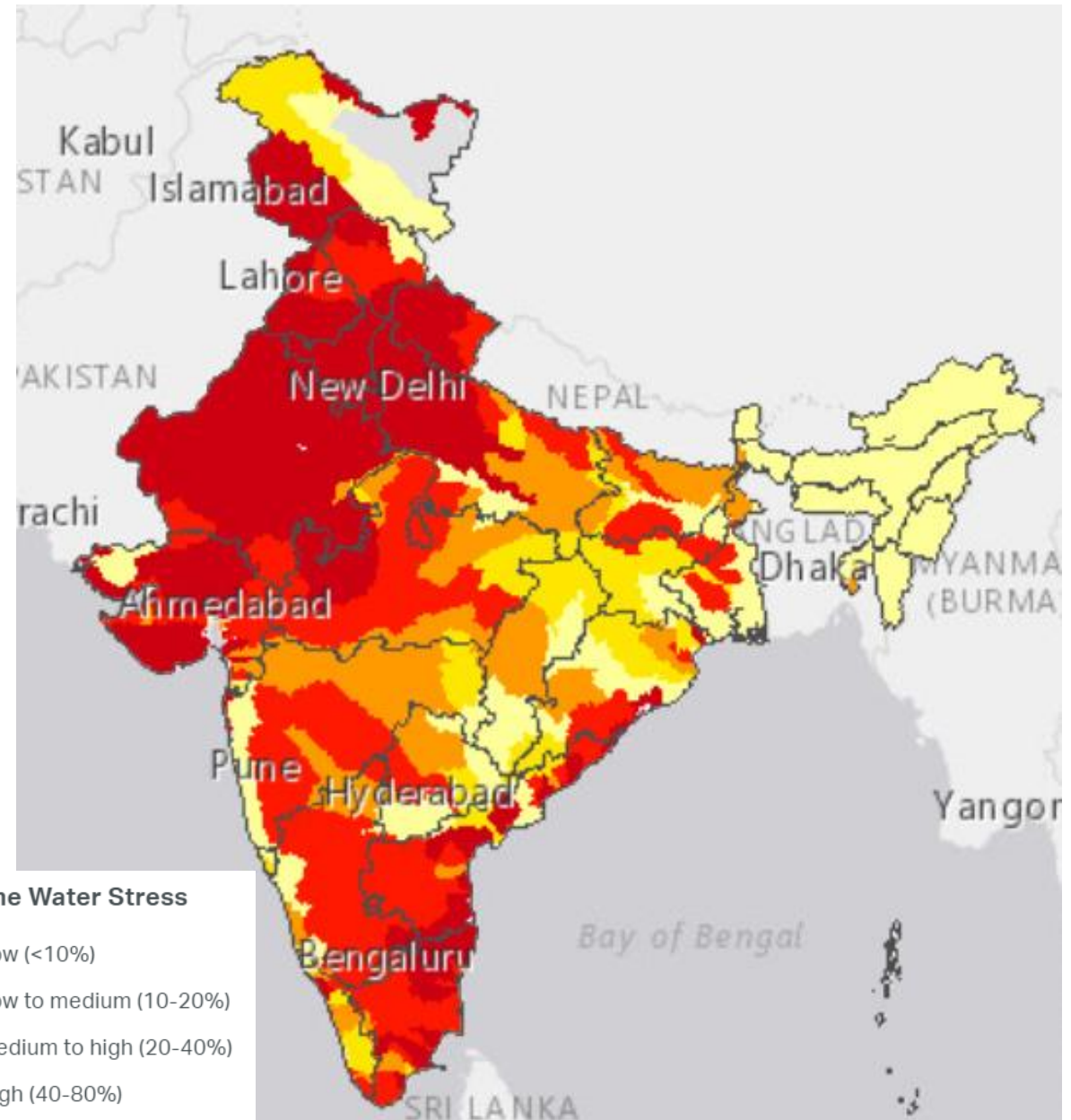
Source: Soil Health Card Portal, Ministry of Agriculture & Farmers Welfare, Government of India

67% of the soils have lower soil organic carbon

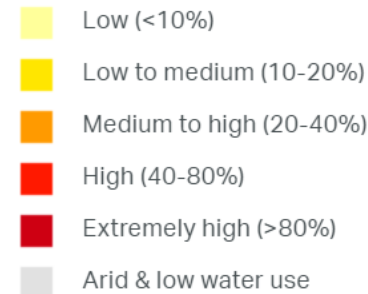
Groundwater situation

- The estimates show that groundwater irrigation emits 45.3–62.3 MMT of carbon annually, contributing 8–11% of India’s total carbon emission.
- deep tubewells have a larger carbon footprint, and their growing number is a serious environmental concern.
- Spatial analysis reveals India’s western and peninsular region, which houses 85% of the country’s over-exploited groundwater blocks, contributes most to carbon emission.
- this region hosts 27 districts which are groundwater–energy–climate nexus hotspots, together accounting for 34% of carbon emissions from groundwater irrigation
- carbon emission from groundwater irrigation nearly doubled between 2000 and 2013

Study: Abhishek Rajan et.al (2020) ‘Carbon footprint of India’s groundwater irrigation’



Baseline Water Stress



Virtual Water Use for Crops

Crop	India	US	China
Rice	4,254	1,903	1,972
Wheat	1,654	849	690
Soyabean	4,124	1,869	2,617
Sugarcane	159	103	117
Cottonseed	8,264	2,535	1,419

Source: National Water Mission, Ministry of Jal Shakti. Note: Units in M3/Tonne.

Core approaches

Forward linkages

Value Addition | Marketing

Non Pesticidal Management

Integrating Livestock

Water and Moisture Management

Organic Seed System

Sustainable Nutrient Management

Adaptive Cropping Systems

Support Systems

Extension Services | Inputs | Custom Hiring Services

Carbon Equivalent Emissions from crop Fields Conventional Vs Organic/Natural

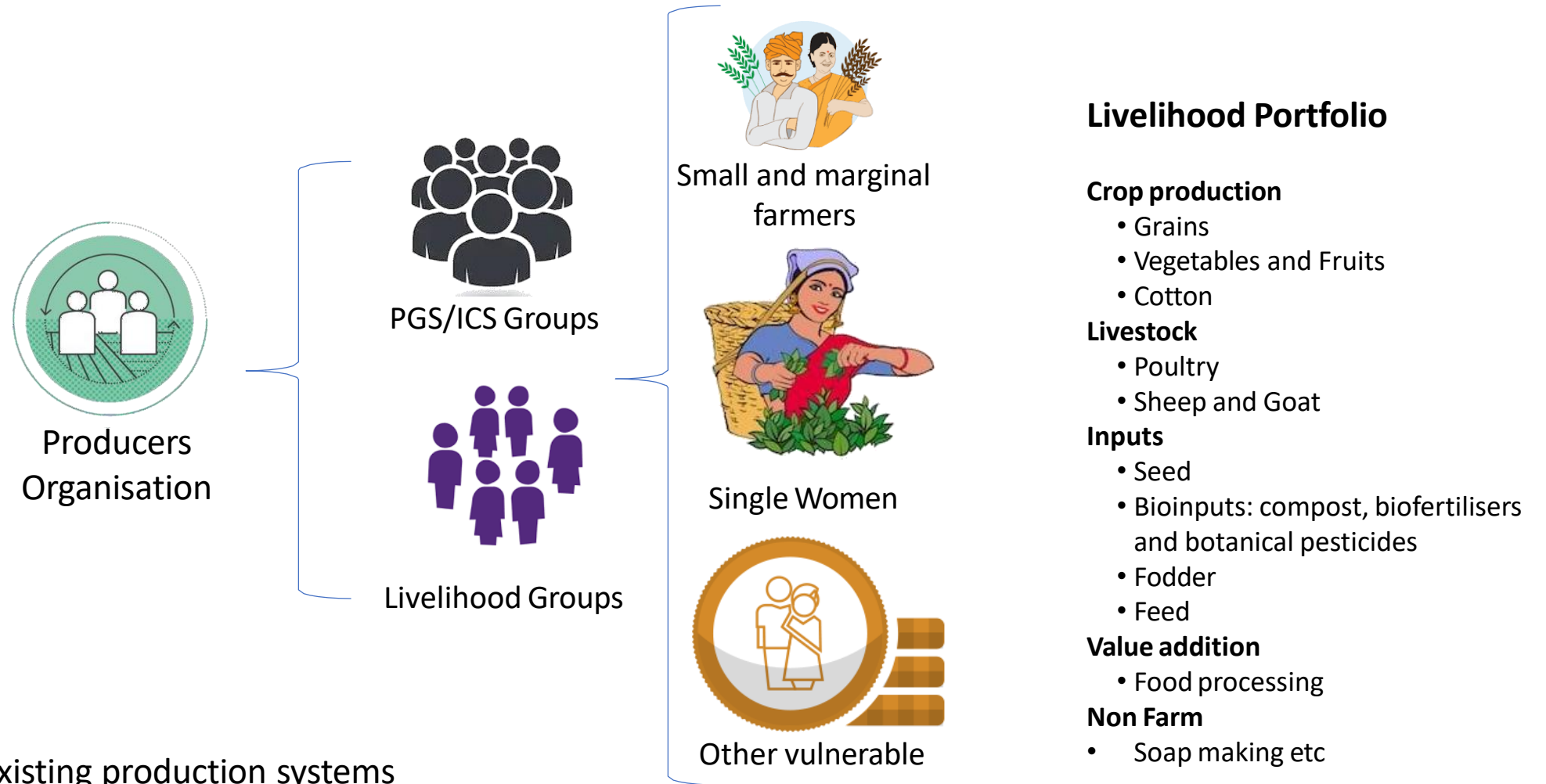
	paddy		Wheat		Groundnut		Tomato		Papaya	
Factors	Kg CO2 eq/ha	Kg CO2 eq/ha	Kg CO2 eq/ha	Kg CO2 eq/ha	Kg CO2 eq/ha	Kg CO2 eq/ha	Kg CO2 eq/ha	Kg CO2 eq/ha	Kg CO2 eq/ha	Kg CO2 eq/ha
fertiliser production	2,664.47	657.79	177.13	597.99	1,709.00	-	1,345.73	920.91	5,826.94	4,609.22
direct and indirect field N2O	1,103.22	116.43	817.87	576.88	782.90	554.45	3,819.34	411.02	13,051.38	734.55
paddy methane	20,223.13	12,580.91								
Pesticides	82.00	20.50	20.50	-	41.00	5.13	151.70	20.50	82.00	124.64
crop residue management	-	226.69	-	162.93	-	200.69	-	285.27	-	1,763.67
carbon stock changes	-	(248.99)	-	(629.41)	-	(219.27)	-	(199.57)	-	(1,218.33)
field energy use	6,240.27	4,159.70	2,546.00	1,909.50	1,909.50	1,909.50	4,254.80	4,133.94	8,265.41	7,871.60
primary processing	94.87	94.87	47.44	47.44	47.44	47.44				
off-farm transport	353.65	353.65	424.38	424.38	353.65	353.65	70.73	70.73	353.65	353.65
Totals	30,761.61	17,961.56	4,033.32	3,089.72	4,843.49	2,851.59	9,642.31	5,642.81	27,579.39	14,238.99
% reduction	42%		23%		41%		41%		48%	

Innovating markets for farmers

- **Direct Marketing:** agri entrepreneurs providing wide range of services to farmers, Sahaja Aharam Organic Retail is an initiative to link urban consumers directly to rural organic producers.
- **Farmers market platform:** FPOhub Farmers' Market Place connects farmers to retail and bulk buyers.
- **Quality Assurance and Traceability:** Building traceability system to know where, how and who grow the food.
- **Consumer engagement:** to create conscious and responsible consumption
- **Value Addition:** local value addition, ethnic foods, minimal processed



Farmer Producer Organization



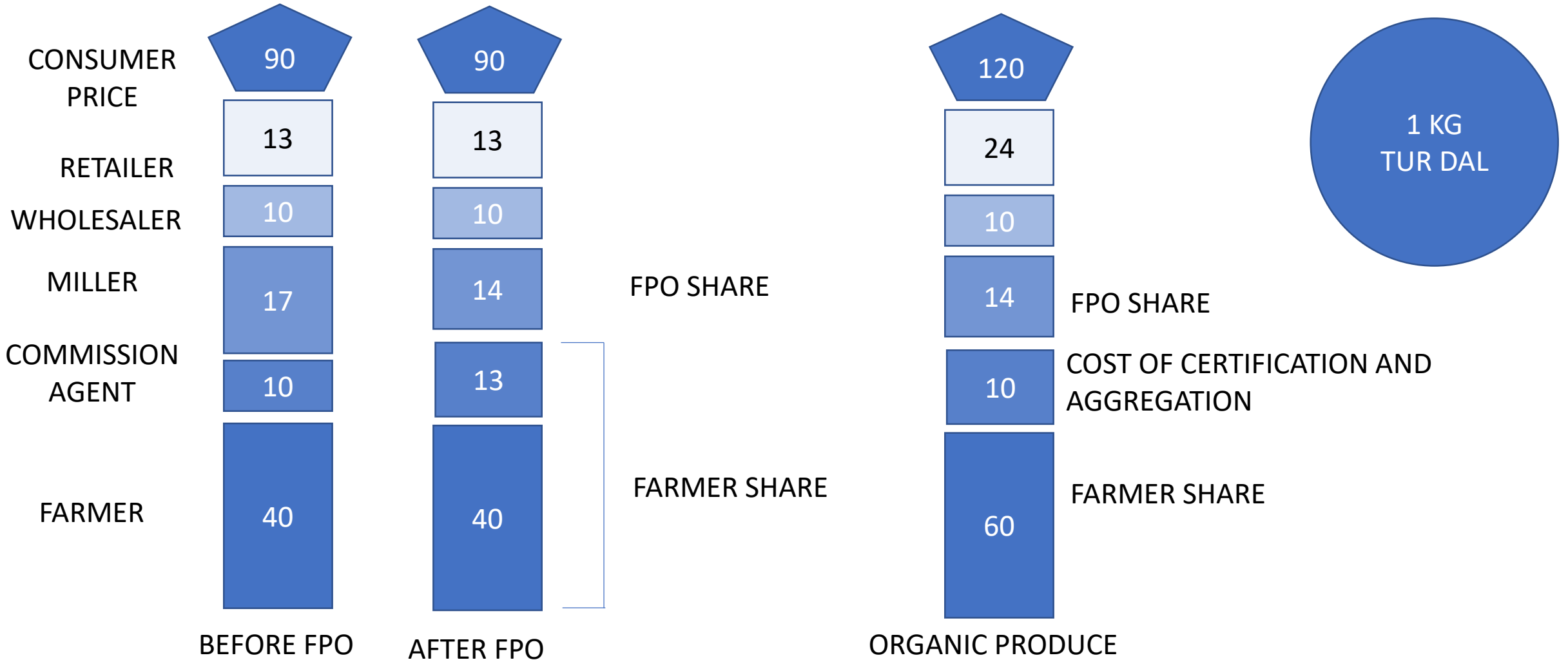
Main objectives

- Strengthening existing production systems
- Increasing livelihood opportunities
- Improving the backward linkages by aggregating services

VALUE ADDITION

Farmers Price @SAPCO

- 50% over costs of cultivation
- 15% over domestic market price
- 50% of consumer price



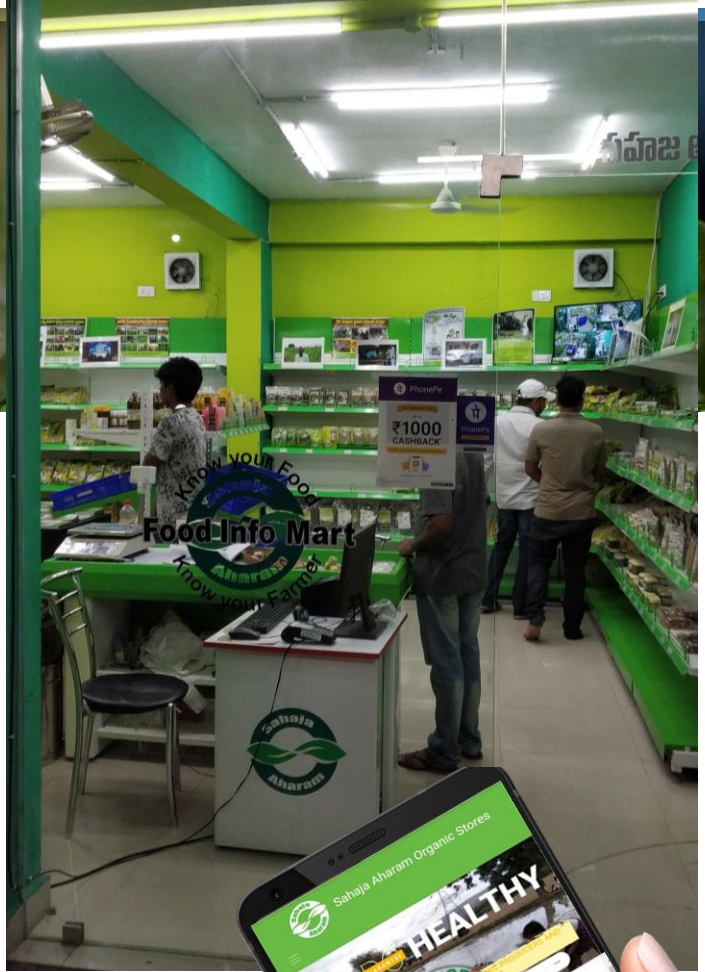
Collectivisation and linking to markets

- Organising into FPOs and their federation
- Kisan business schools
- FPOhub to provide support services
- market linkages
- focus on local markets
- focus on increasing farmer share in consumer price



Sahaja Aharam Phase 1.0

Retail Shops | Mobile | Online



Grade A&B for Retail market



Grade C/Surplus/ unsold



Federation of women farmers in Telangana



- 6 FPOs and now expanding to 50 FPOs
- 1.5 cr share capital
- Rs. 40.00 cr turnover during 2022-23
- 55 commodities
 - Vegetables
 - Fruits
 - Grains
 - Chillies
- Planning to launch retail sales by march



Connecting PGS farmers to Temples in Andhra Pradesh

2021-22

- Supplied 1,306 MT of Bengal gram to Tirumala Tirupati Devasthanam for laddu making
- 608 farmers certified
- 401 farmers received 10% premium price
- Pesticide residue test showed 99% samples residue free

2022-23

- Supplying 12 commodities from 20 districts
- 31,000 MT of rice, Bengal gram, blackgram, redgram, jaggery, groundnut, black pepper, turmeric, coriander, mustard and tamarind
- 32,000 farmers to get benefited
- to reach 2.5 lakh farmers by end of the year



Policy ecosystem

- Farmer income security framework
- Balancing between
 - Costs of cultivation incurred
 - Price realization
 - support received, and
 - costs of living
- Green revolution ecosystem: New varieties, fertilisers under subsidy, Free/subsidies seeds and National seeds corporation, Food corporation of India, Minimum support price, procurement and distribution, bank nationalization, priority sector lending, NABARD, APMCs, irrigation dams, agricultural universities, T&V system etc
- New policy ecosystem: equitable support to organic/natural farming, incentivizing ecosystem services, livelihood support, creating vibrant markets, investment on local infrastructure with FPOs, risk coverage, direct income support

Direct income Support: Telangana Rytu Bandu Scheme

- Telangana government started this initiative in 2016
- Investment Support Agriculture and Horticulture crops by way of grant of Rs. 5,000/- per acre per farmer each season for purchase of inputs like Seeds, Fertilizers, Pesticides, Labour and other investments in the field operations of Farmer's choice for the crop season.

Some features and issues

- It is disbursed in two instalments.
- Only land owners are considered as beneficiaries
- No cap on the maximum land holding hence no cap on amount paid.
- Problems and suggestions for Telangana Rytu Bandu model
 - it should be modified to support cultivators and extended only to lands under cultivation otherwise absentee land lords will increase and they would be most benefiting
 - Not all farmers take same amount of risk hence it cannot be uniform across board for eg dry land farmers may face more risk, small farmers may face more risk. There should be state level mechanism of accessing and indexing it to the risk each category of farmer face and to inflation.
 - It should be institutionalised like employees salaries and DA and not just a political dole during every election
 - All other support systems like access to institutional credit, crop insurance, subsidies, support prices have to be implemented properly and this is a last resort to compensate

AP: Rytu bharosa

- Every farm household gets Rs. 13,500 per annum (which includes Rs. 6000 from PM Kisaan) in three installments
- Mechanism to identify tenant farmers defined in 'Crop cultivators rights act 2019'

West bengal: Krishak Bandu

- every enrolled farmer is eligible to get financial support of Rs. 5000/- per year per acre of cultivable land owned, payable in two equal instalments i.e. @ Rs. 2500/- (Kharif & Rabi) once during Kharif and thereafter during Rabi season.
- Farmers having less than one acre of land will be eligible for assistance on pro rata basis subject to a minimum of Rs. 2000/- per farmer per year.
- Tenant farmers also eligible

KALIA (Odisha): Krushak Assistance for Livelihood and Income Augmentation was announced by the Odisha government with a budget allocation of Rs. 10,000 cr. in 2017 The scheme has five different components.

- **Support for Cultivation:** 30 lakh small and marginal farmers will be provided Rs 10,000 per family as assistance for cultivation. Each family will get Rs 5,000 separately in the kharif and rabi seasons, for five cropping seasons between 2018-19 and 2021-22
- **Support for Livelihoods:** 5 lakh landless households, and specifically SC and ST families will be supported with a unit cost of Rs 12,500 for activities like goat rearing, mushroom cultivation, beekeeping, poultry farming and fishery.
- **Financial Assistance:** up to Rs. 10.00 lakhs to vulnerable agriculture households and land less labour
- **Interest free crop loans:** to all farmers upto Rs. 50,000

PM Kisan (Central Government): PM Kisan Samman Nidhi Scheme

Under this programme, vulnerable landholding farmer families, having cultivable land will be provided direct income support at the rate of `6,000

- This income support will be transferred directly into the bank accounts of beneficiary farmers, in three equal instalments of ` 2,000 each.
- Around 12 crore small and marginal farmer families are expected to benefit from this.
- The programme would be made effective from 1 st December 2018 and the first instalment for the period up to 31st March 2019 would be paid during this year itself.
- This programme will entail an annual expenditure of ` 75,000 crore.

Chattisgarh: Rajiv Gandhi Kisan Nyay Yojna

- Under the scheme, Rs 5,750 crore will be disbursed in four instalments to farmers of 14 different crops in the state.
- Sugarcane farmers will get a grant of Rs 13,000 per acre, while paddy farmers will get Rs 10,000 per acre.
- farmers also got a minimum support price (MSP) of Rs 2500 on paddy procurement directly into their account.
- Rajiv Gandhi Grameen Bhumiheen Kisan Mazdoor Yojana: landless agricultural labourers and those who make a living from traditional occupations will be given Rs 6000/- annually directly into their bank account.

Insurance schemes

- **Telangana: Farmers Group Life Insurance Scheme (Rythu Bima)**
 - to provide financial relief and social security to the family members/ dependents, in case of loss of farmer's life due to any reason
 - Farmers in the age group of 18 to 59 years are eligible for enroll under the scheme. The entire premium is paid by the government
 - In the event of the death of the enrolled farmer due to any cause including natural death, the insured amount of 5.00 Lakhs INR (Approx. USD 6928) is deposited into the designated nominee account within (10) days
- **AP YSR Crop Insurance Scheme.** Under this scheme crop Insurance will provide to the farmers for the loss of all the notified crops due to natural calamities. There will be around 22 notified crops. This crop Insurance will be free of cost.
- **Odisha Kalia Life Insurance cover:** of Rs. 2.00 lakhs and additional personal accident cover of Rs. 2.00 lakhs to 57 lakh households of cultivators and landless agricultural labor.

Structural changes

- Chattisgarh: NGGB-Naruva, Garuva, Garuwa and Badi
- AP: Rytu Bharosa Kendra, Community Managed Extension
- Telangana: Rytu Smanvaya samiti

Other schemes

- Andhra Pradesh: APCNF
- Himachal Pradesh: ZBNF
- Loan waivers in five states
- Kerala
 - Debt relief
 - MSP to vegetables
- Odisha
 - Millet mission
 - FPO fund
- Telangana:
 - Regulated cropping systems
 - Dalit bandu
- Gujarat: 900 Rs/cow for maintenance
- Madhya Pradesh: Mukya mantri Bavantar Bhugtan yojana

Central govt

- PM Kisaan
- 10,000 FPOs
- Natural farming
- Farmers income insurance scheme (tried earlier)

Basket of measures for farmer incomes

- Pricing policy including MSPs should be strengthened. Price Guarantee system (or Deficiency Price Payments) should be used – applying to all 25 crops, independent of procurement
- Reduce Cost of Cultivation – promote low-cost methods
- Farmer collectives for production, marketing, processing – with farmers getting bigger share of value chain
- Access to timely credit at low interest
- Crop insurance & Disaster Compensation
- Producer Bonus for ecological farmers & rainfed agriculture
- Social Security system for all unorganized sector

Disaster Relief and Crop Insurance

- Loss of crop and livestock due to natural disasters is a major cause for indebtedness and destitution
- Timely and adequate compensation for crop loss (Rs.10,000 per acre) and livestock loss
- Measures to protect crop and livestock during impending or ongoing disaster situation
- Effective crop insurance which should be available for all farmers for all crops

Comprehensive Social Security

- A strong social security system should be in place to provide health-care, pensions and accident/life insurance for all agricultural workers and farmers
- Education system and other rural amenities should be strengthened so that it is attractive for future generations to remain in the rural areas

Payment for Ecosystem services

- Ecosystem services are the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life
- Payments for Ecosystem services recognises that farmers contribute not just the
 - **tangible outputs** of food, fibre, fodder and fuel to the world, but also many
 - **intangible benefits** including the protection of biodiversity, soil and water conservation, protection of natural land scape, ethical treatment of animals, lower use of fossil fuels as well as reduced levels of nitrate leeching into the soil due to changes in farming practices

PM PRANAM

- PM Promotion of Alternate Nutrients for Agriculture Management Yojana
- to reduce the subsidy burden on chemical fertilisers, which is expected to increase to Rs 2.25 lakh crore in 2022-2023, which is 39% higher than the previous year's figure of Rs 1.62 lakh
- the scheme will not have a separate budget and will be financed by the "savings of existing fertiliser subsidy"
- 50% subsidy savings will be passed on as a grant to the state that saves the money, sources said, and that 70% of the grant provided under the scheme can be used for asset creation related to technological adoption of alternate fertilisers and alternate fertiliser production units at village, block and district levels
- remaining 30% grant money can be used for incentivising farmers, panchayats, farmer producer organisations and self-help groups that are involved in the reduction of fertiliser use and awareness generation
- government will compare a state's increase or reduction in urea in a year, to its average consumption of urea during the last three years

What is required to do?

- Agroecological sustainability frame work to assess performance of agriculture and support systems
- Develop transition plans at farm, district and state levels
- Recasting support systems and subsidies
- Three to five years of handholding support during transition
- Institutionalising community extension and marketing systems
- Decentralise procurement to meet local needs
- Reorient agricultural research and education
- Support for FPOs

Policy Shift

- Reduce risk in agriculture
 - Suitable cropping patterns, crops and varieties
 - Integrated farming
 - Protective irrigation
 - Natural resource management
- All policies should be brought under one umbrella which can ensure income security to producers
- Farmers income commission to balance between costs of cultivation, costs of living, public support and prices
- Increase budgetary allocations to 20% at state level and 10% at national level



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