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PAPER  
122**

# **Beyond Price Support and Subsidy**



**NATIONAL ACADEMY OF AGRICULTURAL SCIENCES, NEW DELHI**

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**NATIONAL ACADEMY OF AGRICULTURAL SCIENCES, NEW DELHI**

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## Preface

To incentivize farming communities to adopt modern technologies and practices, alleviate their liquidity constraints on the purchase of inputs and services, and ensure fair and remunerative prices for produce, the central and state governments have been following an integrated approach encompassing the provision of subsidies on critical inputs, and the procurement of farm produce, mainly rice and wheat, at the guaranteed minimum support prices. This approach has performed extremely well, and propelled the country into self-sufficiency of several food and non-food commodities. It, however, has excessively favored staple food crops, rice and wheat, leading to their mono-cropping, loss in biodiversity, and damage to natural resources, that is groundwater and soils. Now, there is an increasing realization that continued farm support in its present form is not desirable from the perspective of inter-generational equity in the use of natural resources, and technology-based transformation of agri-food production system.

The National Academy of Agricultural Sciences (NAAS) organized a Brainstorming Session on September 30, 2022 to relook into the existing farm support mechanisms, and identify and suggest alternative pathways that can lead to sustainable development of agriculture without causing any significant damage to the natural resources and reducing the farmers' welfare. Several issues regarding the need for extending financial support to farmers, repurposing the existing farm support regime, and alternative mechanisms for rationalizing and repurposing the farm support were deliberated upon. This policy paper is an outcome of these deliberations.

I, on behalf of the Academy, sincerely thank Drs P.S. Birthal, S.K. Srivastava and Prabhat Kishore for convening brainstorming session on this contemporary and nationally relevant topic, and synthesising the opinions, comments and suggestions of the participants in the form of this document. I am grateful to all of the participants for their contribution to the deliberations. I also thank to Drs Malavika Dadlani and V. K. Baranwal for their editorial support.

May, 2023  
New Delhi



**(Himanshu Pathak)**  
President, NAAS



# Beyond Price Support and Subsidy

## 1. BACKGROUND

Ever since the beginning of the Green Revolution in the mid-1960s, India in its endeavor of achieving self-sufficiency in food, and ensuring sufficient and affordable food to all at all times, has followed an integrated policy approach, encompassing the provision of subsidies on critical inputs (i.e., seeds and fertilizers), machines and equipment for the use in agriculture, and the procurement of farm produce at the pre-determined minimum support prices (MSP). Input subsidies could help alleviate the liquidity constraints on the farmers' purchase of modern inputs, essential for harnessing the potential of high-yielding seeds, and reduce their financial dependence on informal lenders. Likewise, the procurement of produce at MSP could provide assured prices to farmers for their produce, and reduce their exploitation by the informal local traders and commission agents in the output markets. The foodgrains so procured are meant for building buffer stock, and distributing to the poor at highly subsidized prices through the public distribution system (PDS).

This strategy has done extremely well in achieving the intended objectives of assured and remunerative prices to the farmers, and the nation's food security. Agricultural productivity and food supplies increased significantly, making the country self-sufficient in food and non-food commodities, and even an exporter of some of them. In 2021-22, India produced 316 million tons of foodgrains, and exported agricultural commodities valued at US\$ 49.6 billion, besides building a stock of 43 million tons of rice and wheat (as on October 2022) for the public distribution system and meeting the unforeseen contingencies due to the risks and uncertainties and the supply chain disruptions. It is worth mentioning that during the Covid-19 pandemic, India not only ensured adequate food to its own people, but also to the people in several food-deficit countries.

Nevertheless, India's agri-food policy, of late, has come under criticism from several fronts. First, the policy has centered primarily on rice and wheat, encouraging their mono-cropping, and hence the loss in agro-biodiversity, especially in the northwestern irrigated states of Punjab, Haryana, and Uttar Pradesh. Second, by concentrating on the irrigated regions, it has led to an increase in regional disparities in agricultural development, leaving behind the rainfed regions. Third, since the use of subsidized inputs and the sale of produce are directly proportional to farm size or marketed surplus, the larger farmers have benefitted more than the small

farmers. Fourth, the continuance of input subsidies has acted as a disincentive to private investment in eco-friendly innovations, including the bio-fertilizers, bio-pesticides and bio-agents, and in energy-, and water-efficient techniques such as the pressured micro-irrigation systems. Fifth, the procurement of staple cereals at MSP has also acted as a disincentive to private investment in markets, storage and warehouses, which is crucial for diversification and commercialization of agriculture. Sixth, the economic cost of holding stocks of foodgrains has increased considerably, creating an increased burden on the public exchequer. Seventh, India's stockholdings of foodgrains have come under scrutiny of some member-countries of WTO for their potential market distortionary effects. Finally, the subsidies and support prices have given rise to several hidden costs or negative externalities, for example, the depletion of groundwater resources, reduction in agro-biodiversity, and greenhouse gas emission, compromising the inter-generational equity and sustainability of the natural resources.

The political economy of the public support to agriculture is complex. Once provided on a large scale, it is difficult to withdraw it. India has continued with the same set of policies of input subsidies and minimum support prices ever since their introduction in the late 1960s and the early 1970s. And, these have rarely been aligned to the concomitant challenges to the natural resources, environment and human health, and the emerging opportunities in the domestic and international markets. It is mentioned that any attempt of reforming agricultural policies is often resisted by the farmer-lobbies. On June 5, 2020, the Government of India brought three ordinances, viz., (i) the Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Service Act, 2020, (ii) the Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020, and (iii) the Essential Commodities (Amendment) Act, 2020. Subsequently, these were passed in both the houses of the Parliament and were notified on September 27, 2020. Farmers, however, dissented these Acts on the ground of their being anti-farmer, and organized protests by surrounding the National Capital Region of Delhi. Ultimately, these Acts were repealed on November 30, 2021.

The current agricultural policies provide incentives for unsustainable patterns of agricultural production, and therefore need a re-look from the perspective of future growth of agriculture, and to repurpose these in a manner that leads to efficient, equitable, and sustainable growth of agriculture without compromising the farmers' welfare. Some of the Indian states have been experimenting with alternative mechanisms for disbursement of input subsidies to ensure their efficient and sustainable use. The central government has also started piloting experiments on the relative effectiveness of direct cash transfer of food subsidy vis-a-vis in-kind



transfer of food. The experiences from such schemes can be critically examined for rationalizing and repurposing the existing farm support from the perspective of producers and consumers as well.

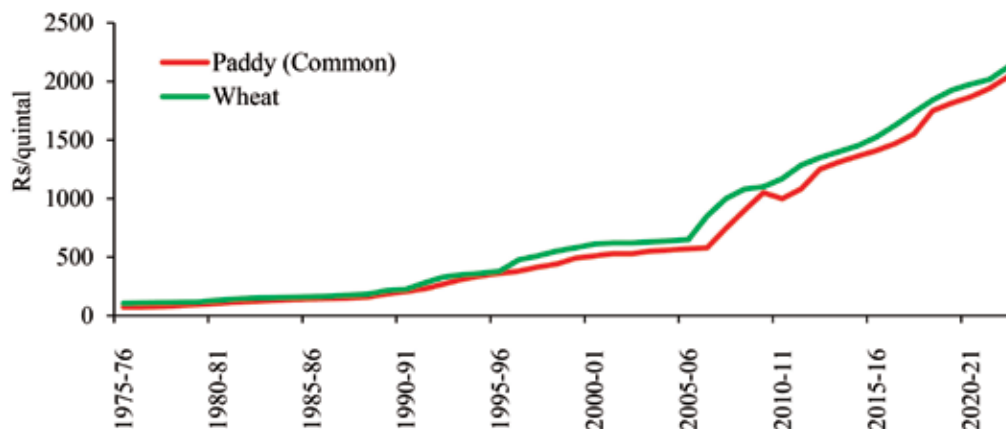
This paper looks into the status of farm support, in terms of input subsidies and price support for farm produce; discusses their positive and negative externalities to the natural resources, environment and human health; and draws lessons for rationalizing and repurposing farm support for efficient and sustainable development of agriculture without compromising farmers' welfare.

## **2. FARM SUPPORT, FARMERS' WELFARE, AND FOOD SECURITY**

Farm support, in terms of input subsidies and minimum support prices for produce, plays an important role in enhancing agricultural productivity, farmers' income, food supplies and food security, especially in countries, like India, which are dominated by smallholder farmers, who often lack access to markets and finances for the adoption of productivity-enhancing technologies and inputs. Moreover, the input and output markets are fraught with significant imperfections due to the dominance of intermediaries, long supply chains and asymmetric information between buyers and sellers.

The agricultural productivity remains low on account of the sub-optimal use of inputs, constrained by farmers' lack of resources for purchasing quality inputs. In such a situation, the government often relies on subsidies as an instrument to empower farmers in adopting modern technologies and inputs, and to encourage their optimal use. Besides, the government also extends credit support to farmers at subsidized rates of interest to incentivize them to invest in land and water management and farm assets, and adopt improved technologies and inputs. Importantly, the availability of subsidized credit provides a safeguard to farmers against usury in the informal credit market.

On the output side, the procurement of foodgrains at MSP provides farmers a succor against price fluctuations, improves their bargaining power, and act an incentive to adopt yield-enhancing technologies and inputs. Figure 1 shows the trend in MSP of rice and wheat. The grains so procured by the government parastatals, mainly the Food Corporation of India (FCI), are distributed to the poor at highly subsidized prices through the public distribution system (PDS) in order to improve their access to food. Importantly, the distribution of foodgrains helps poor households smoothen their food consumption during the supply shocks induced by the extreme climate events and the supply chain disruptions as evidenced during the Covid-19 pandemic. Thus, the agri-food policy is inextricably linked



**Figure 1.** Trend in Minimum Support Prices (at nominal prices) of rice and wheat

to the productivity improvements, agricultural growth, food supplies and national food security.

The impacts of farm support are apparent from the strong positive trends in the production of rice and wheat, the main staple foods of Indians. Between 1966-67 and 2020-21, the production of rice increased from 30.44 million tons to 122.27 million tons and of wheat from 11.39 million tons to 109.52 million tons.

### 3. FARM SUPPORT AND FOOD SUBSIDIES

#### 3.1 Input subsidies

Both the central and state governments spend significantly on agricultural and food subsidies. In 2019-20, about six lakh crore rupees were spent on subsidies, approximately 1.7 times more than in 2011-12 (Table 1). Of the total public expenditure on subsidies, the agricultural subsidies (including subsidies on fertilizers, power, short-term credit, and others) account for 37.1 percent, and the food subsidies 18.3 percent.

During the last decade, the expenditure on agricultural subsidies has almost doubled, from Rs. 1.18 lakh crore in 2011-12 to Rs. 2.21 lakh crore in 2019-20. The share of agricultural subsidies in the total subsidies increased from 33.6 percent in 2011-12 to 37.1 percent in 2019-20, but with minor ups and downs. In the total agricultural subsidy amount, the fertilizer and power have almost a similar share, i.e., about 37 percent, and the interest subvention on short-term credit 7.3 percent. Note, the subsidy expenditure on fertilizers and credit is borne by the

**Table 1. Trend in food and agricultural subsidies in India***Rs. crore (current prices)*

Year	Food subsidy	Agricultural subsidy*	Total Subsidy#	Share in total subsidy (%)	
				Food	Agriculture (incl. power)
2011-12	76920	118063	351614	21.9	33.6
2012-13	90915	131996	415353	21.9	31.8
2013-14	99825	127600	417893	23.9	30.5
2014-15	125218	138689	464334	27.0	29.9
2015-16	129990	164130	460608	28.2	35.6
2016-17	110173	158994	465402	23.7	34.2
2017-18	101282	194689	485880	20.8	40.1
2018-19	101327	205678	514942	19.7	39.9
2019-20	108688	220666	594288	18.3	37.1

\*Includes fertilizer, power for irrigation, interest subvention on short-term credit, and others.

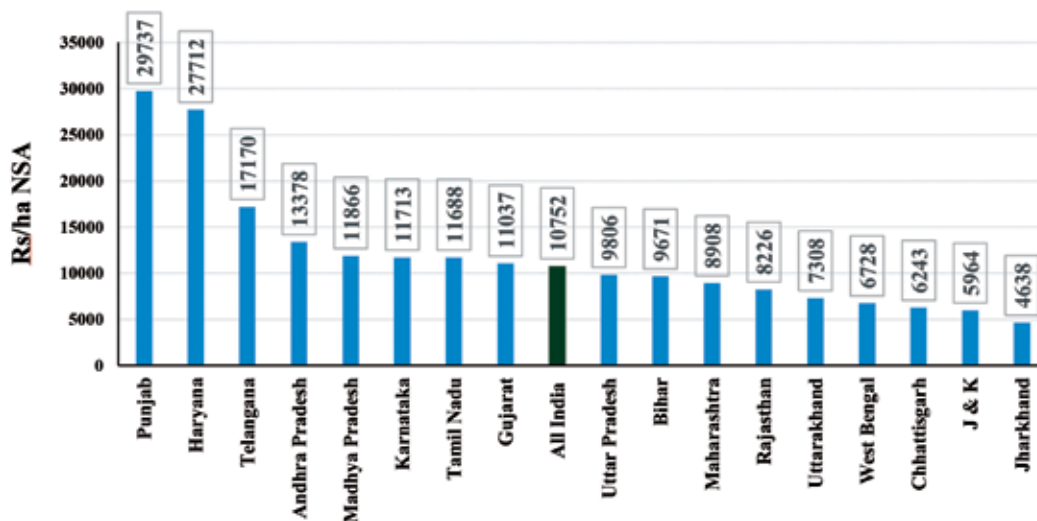
#Includes subsidies by central and state governments on general public services, defence, public order & safety, economic affairs, environmental protection, housing & community amenities, health, recreation, culture & religion, education, and social protection.

Sources: (i) National Accounts Statistics, 2021, Ministry of Statistics and Programme Implementation, (ii) Food subsidy from Accounts at a Glance, Ministry of Finance, (iii) Power subsidy estimated by authors using data from Power Finance Corporation Ltd.

central government, while the state governments bear the subsidy expenditure on power. On per hectare basis, the expenditure on agricultural subsidies has been estimated at Rs. 15835, equalling to 18.2 percent of the total input cost (including the farm wages).

Input subsidies are not provided directly to the farmers. Instead, they are provided as subsidized supplies of inputs, and the difference between the actual costs of their supplies and the prices paid by the farmers is reimbursed to input suppliers. The agricultural subsidies are, thus, imbedded in the inputs, and hence, their quantum is directly proportion to the use of inputs.

The use of inputs differs across states, and therefore, the benefits of subsidies are also disproportionately distributed at the sub-national level. Figure 2 shows the state-wise expenditure on fertilizer and power subsidies per hectare of the net sown area for the biennium ending 2020-21. Punjab with a subsidy expenditure of Rs. 29737/ha tops the list, and is closely followed by Haryana (Rs. 27712/ha).



**Figure 2.** State-wise agricultural subsidy (fertilizer and power) in 2018-20

Source: Estimated by authors using the data from fertilizer Association of India and Power Finance Corporation Ltd.

The intensity of agricultural subsidy is the lowest in Jharkhand (Rs. 4638/ha), about one-sixth of that in Punjab. Over 90% of the cropped area in Punjab and Haryana is irrigated. The cropping intensity is also very high in these states (over 190%). Thus, the intensity of agricultural subsidies is directly related to the irrigation coverage. Further, given the highly unequal distribution of landholdings, the benefits of subsidies are directly associated with farm size.

### 3.2 Price support and food subsidy

Food subsidy is estimated as the difference between the economic cost of acquisition and distribution of foodgrains and the central issue price (CIP), the price at which the foodgrains are supplied to the consumers under various social welfare schemes. The economic cost represents the total cost of the acquisition of grains from farmers and their distribution to beneficiaries. The acquisition cost includes the pooled cost of grains (at MSP) and the procurement incidentals (i.e., state taxes, commission to middlemen or societies, bagging materials, mandi labour charges and transportation cost). The distribution cost includes the cost incurred in transferring the grains from the first point of godown to the targeted places.

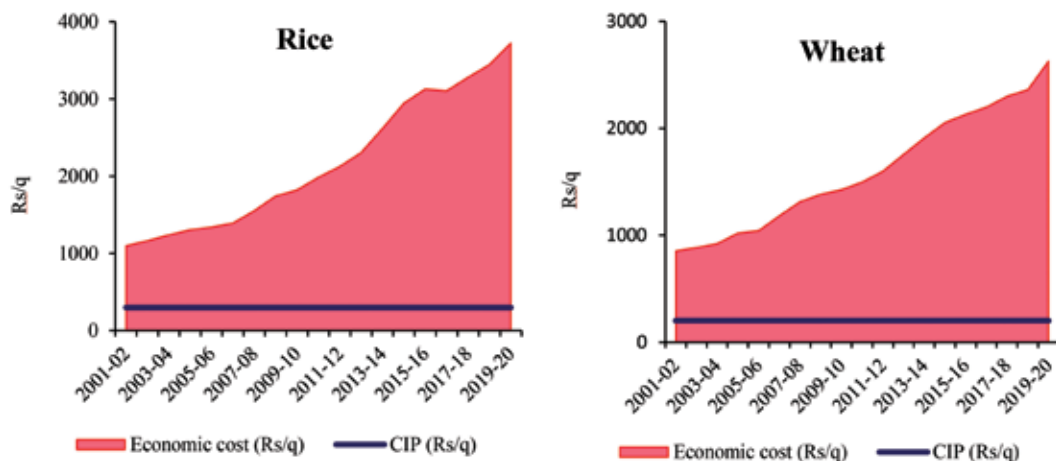
Table 2 shows the economic cost incurred in the acquisition and distribution of rice and wheat. The economic cost is estimated at Rs. 3562 per quintal for rice and Rs 2468 per quintal for wheat. On the other hand, the revenue realized from their sales is meagre, i.e., Rs 274 per quintal from rice and Rs 441 per quintal from wheat.

The difference between the economic cost and the subsidized sale price (i.e., CIP) is the food subsidy. In 2021-22, the subsidy on rice was estimated at Rs. 3288 per quintal, and on wheat Rs. 2026 per quintal. It is to be noted that the economic cost of acquisition and distribution of foodgrains has increased, but their sale price has not changed since long (Figure 3). This has led to a significant increase in the government' fiscal burden. Between 2011-12 and 2019-20, the food subsidy bill has increased by 41 percent, from Rs. 0.77 lakh crore to Rs. 1.09 lakh crore (see, Table 1).

**Table 2. Economic cost and central issue price (CIP) for rice and wheat in 2021-22**

(Rs./quintal)		
Particulars	Rice	Wheat
Acquisition cost	3,248	2,202
Pooled cost of grains	2,732	1,916
Procurement incidentals	516	286
Distribution cost	314	266
Economic cost	3,562	2,468
Sale realization/CIP	274	441
Subsidy	3,288	2,026

Source: Food Corporation of India (FCI)



**Figure 3.** Trend in economic cost and central issue price of rice and wheat

Source: Food Corporation of India (various years)

Apart from the rising economic cost, the increasing procurement of foodgrains has also contributed to the rising food subsidy bill. The procurement of rice has increased from 35 million tons (33% of production) in 2011-12 to 60 million tons (48% of production) in 2020-21. During this period, the procurement of wheat has increased from 28 million tons (30% of production) to 39 million tons (36% of production). This implies a significant expansion of the price support operations of the government.

The benefits of food subsidy are not equally distributed across states and farm classes. This is reflected in the significant variation in the contribution of states to the total production and procurement of rice and wheat (Table 3). Punjab, Telangana and Haryana, which had a significant share in the paddy procurement earlier, has almost doubled their share in 2019-20. On the other hand, Uttar Pradesh and West Bengal have less share in the total procurement compared to their share in the total production. Similar inequalities exist in the case of wheat.

**Table 3. Share of states in total production and procurement of rice and wheat in 2019-20**  
Percent

State	Rice		State	Wheat	
	Share in procurement	Share in production		Share in procurement	Share in production
Punjab	22	10	Punjab	35	16
Telangana	15	7	Madhya Pradesh	27	17
Andhra Pradesh	10	7	Haryana	23	11
Odisha	9	7	Uttar Pradesh	10	32
Chhattisgarh	9	6	Rajasthan	5	10
Uttar Pradesh	7	13	Other states	0.27	13
Haryana	7	4	India	100	100
Tamil Nadu	5	6			
Madhya Pradesh	4	4			
West Bengal	3	13			
Uttarakhand	1	1			
Others	8	23			
India	100	100			

Source: Estimated by authors using data from FCI and Directorate of Economics and Statistics, Ministry of Agriculture and Farmers' Welfare, Government of India

The data from the Situation Assessment Survey of the National Sample Survey Office (NSSO) 2018-19 reveal inequalities in the farmers' access to public procurement operations, and therefore, in the food subsidies. In case of paddy, only 13 percent of the marginal farmers sold their produce at MSP as compared to 47 percent of the large farmers. Similarly, in case of wheat, only 7 percent of the marginal farmers sold their output at MSP as compared to 30 percent of the large farmers. This is a clear evidence of the skewness in the benefits of MSP across farm classes.

#### **4. EXISTING MECHANISM OF FARM SUPPORT TRANSFER**

Both the central and state governments provide input subsidies: on fertilizers, power, seeds, micro-nutrients, farm machineries, short-term credit, crop insurance premium, etc. Fertilizer and power are supplied to farmers at subsidized rates, and the difference between their actual prices and costs of supply is paid as subsidy to their suppliers.

Fertilizer subsidy is provided by the central government, whereas the state governments provide subsidy on power for pumping irrigation water. Input subsidy is directly proportional to the use of a specific input. The central government also subsidizes interest on short-term credit as to ensure sufficient liquidity in agriculture. The interest subvention subsidy is available to farmers on cultivated area basis and is given to the financial institutions, including the commercial banks, regional rural banks and credit cooperative societies. Similarly, the farmers are provided crop insurance at a subsidized cost and the subsidy on premium is paid to the insurance companies. Subsidies on other inputs and services (i.e., seeds and farm machineries) are programme-oriented and are available to the select beneficiaries as identified by the implementing agencies.

On the output side, the price support measures for farmers as well as consumers are implemented by the central government. Foodgrains are procured from farmers at MSP (usually higher than market prices) and supplied to consumers at CIP (lower than market prices). The central government bears the cost of acquisition and distribution of foodgrains.

Thus, the subsidies on inputs and output support prices are embedded in the prices of inputs and outputs, and are directly proportional to the consumption of inputs, farmers' marketed surplus, and consumers' access to public distribution system. This mechanism of farm support has several benefits but drawbacks also.

## 5. ADVANTAGES AND DISADVANTAGES OF EXISTING SUPPORT MECHANISM

### 5.1. Advantages

**Farm support helps improve agricultural productivity and production:** Subsidies play an important role in the adoption of modern technologies, inputs and practices by making these affordable for the farmers. Generally, the new technologies and inputs are more productive, but at the same time their acquisition is also costlier. The provision of subsidy enables farmers to access new technologies and modern inputs, which, in turn, lead to an improvement in agricultural productivity and production.

**Supporting farms contribute to improving their economic viability:** Farm enterprises in India operate at a very low absolute margin due to their smaller scale. Input subsidies help smallholder farmers to produce at a reduced cost, which contributes to improving their economic viability. In fact, the input subsidies have become an important tool to provide protection to farmers from the rising cost of inputs. The lower cost of production also makes agriculture competitive in international markets.

**Farm support controls cost push inflation:** Agricultural inputs supplied at prices lower than their actual costs (for non-tradable inputs) or open market prices (for tradable inputs) bring down the cost of production. The lower cost of production translates into lower prices of agricultural commodities. Controlling the cost push inflation is one of the principal advantages of input-based subsidies.

**Subsidies lower cost of production and improve welfare of the poor:** Food production at a lower cost on account of input subsidization improves the availability and affordability of food to the poor consumers.

**Farm support improves food and nutritional security:** Food subsidies through the public distribution system significantly contribute to the food and nutritional security of the poor. Note that, MSP provides a floor price for farmers, and it also helps overcome the price volatility in wholesale as well as retail prices.

### 5.2 Drawbacks of existing support mechanism

**Subsidies are a disincentive for efficient use of resources:** Subsidy does not reflect scarcity value of an input, and therefore, acts as a disincentive for farmers to use that input efficiently. Many a times, the inefficiency in input-use



leads to over-exploitation of the natural resources and negative externalities to the environment. The over-exploitation of groundwater (due to free/subsidized electricity) and deterioration of soil fertility (due to imbalanced use of fertilizers on account of highly subsidized urea) are glaring examples of the negative externalities of input subsidies. This harms long-term prospects of sustaining agricultural growth. Subsidized inputs also create conflicts between what is considered socially optimal use of inputs and what is its actual use.

***Subsidies and support prices lead to distortions in crop patterns and production mix:*** Assured offtake of select crops at the government-administered MSP artificially raises farm profitability and reduces market or price risk. The availability of subsidized inputs incentivizes farmers to cultivate such crops even in the regions where their natural resources do not support their cultivation. In India, the subsidies are one of the causes of the emergence of unsustainable cropping pattern in some parts of the country. For instance, the spread of water-intensive crops like rice in the semi-arid regions is mainly because of the provision of subsidies on irrigation water and power. This has been posing a serious threat to the sustainability of already stressed water resources.

***Subsidies and support prices aggravate inter-regional and intra-personal inequalities:*** Input use varies significantly across states and ecosystems. Thus, the subsidy on an input is directly related to the level of use of that input, leading to the disproportionate distribution of subsidy across states, ecosystems and farmers. As the input intensity is directly proportional to the intensification of agriculture, the benefits of subsidies have been biased in favor of agriculturally more developed regions; and the less developed regions lag behind in receiving benefits of subsidies. For instance, the use of fertilizers is strongly associated with irrigation coverage. According to the Input Survey, 2011-12, average fertilizer use in rainfed agriculture is 43 percent of that in irrigated agriculture. Based on the existing pattern of fertilizer use based subsidy, the rainfed agriculture is spread over more than 50 percent of the agricultural land, but receives less than 40 percent of the fertilizer subsidy. Similarly, the input use based subsidy is biased towards rich farmers who can afford purchasing the costlier inputs or possess necessary infrastructure for their application. For instance, the power subsidy benefits those farmers who have their own electric pump sets for irrigation. While, the farmers who do not own such assets do not benefit. Further, as the input use is directly related to land ownership, input subsidies accentuate economic inequalities in agriculture. So is in the case of output price support, which is often skewed towards few states and large farmers.

**Subsidies restrict choices of inputs, and price support of crops:** The existing system of subsidy distribution restricts farmers to use only the specified inputs. The subsidy on chemical fertilizers limits the use of organic and eco-friendly inputs. Similarly, the price support limits the procurement of staple food crops for food security, thus putting their competing crops to a disadvantage. For example, the economic incentives in terms of minimum support prices have led to rise of mono-cropping of rice or wheat in Punjab, displacing pulses, millets and oilseeds. Thus, the existing mechanism of subsidy disbursement is not input-, and crop- neutral, and limits the choices for crops and inputs to a narrow range.

**Support prices are market-distorting, leading to scrutiny by international organizations:** Large-scale procurement of foodgrains for public stockholding is often seen as market distortionary by the member-countries of the WTO. The existing level of market support is within the prescribed limits of the WTO provision, and is also protected under the *peace clause* but it cannot be extended beyond certain limits, in quantity as well as time.

**Input subsidies and price support crowd out investment:** Subsidies are short-term measures of providing immediate support to the target beneficiaries, but cannot be a substitute of the benefits of the investments in infrastructure, market, and value chains. Excessive and continuous subsidy support restricts the public investment in productive assets, and thus hamper agricultural progress in the long-run. A large share of select chemical fertilizers in the total fertilizer subsidy has been a deterrent to private investment in manufacturing of eco-friendly inputs such as bio-fertilizers and bio-pesticides and also their adoption by the farmers. Similarly, the procurement of foodgrains at MSP acts as a disincentive to private investment in markets, storage and warehouses, critical to the diversification and commercialization of agriculture. Akber and Paltasingh (2019) have shown that public investment is more effective than expenditure on subsidies in raising agricultural productivity in short-run as well as long-run. It is, therefore, necessary to rationalize the farm support to avoid crowding out the investment.

**Continued farm support leads to unsustainable fiscal deficit:** Apart from limiting the prospects for investments, the subsidies put pressure on the public exchequer and are also less efficient in meeting the intended objectives. Gulati and Terway (2018) observed that the marginal returns, in terms of number of people uplifted from poverty, from spending Rs 1 million in public investment is 326 as compared to 26 if it is spent on input subsidies. Bathla *et al.* (2017) observed that the spending on irrigation and power subsidies in raising agricultural income is more effective in low-income states than in high-income states.

## 6. RATIONALIZING AND REPURPOSING FARM SUPPORT

The discussion so far has brought out that although subsidies are a necessary short-term welfare measure, their quantum and disbursement mechanisms need to be reviewed in the light of the costs associated with their negative externalities or social costs. Ecological sustainability, equity and effectiveness are the major arguments for rationalizing and repurposing subsidies and price support in India. In recent years, both the central and state governments have started experimenting with the direct cash transfer for farm inputs, income transfer, price deficiency payment, etc. This section looks into such initiatives along with other ways of rationalizing and repurposing subsidies and price support.

**Land holding linked direct farm income support:** In addition to the subsidies, several farm income support schemes linked to landholdings (owned or possessed) have been initiated recently. A glimpse of these is provided in Table 4. On February 24, 2019, the Government of India launched a central sector scheme, the *PM-Kisan Samman Nidhi (PM-KISAN)*, to provide income support to all landholding farm families to supplement their financial needs for the purchase of inputs for use in agriculture as well as for other domestic requirements. An income support of Rs.6000 per year in three equal installments is provided to all landholding farm families. The beneficiaries (agricultural land owning farm families) are identified by the states based on the exclusion criterion, and the financial support is directly transferred to the beneficiaries' bank accounts (DBT). Similarly, Telangana, Andhra Pradesh, Odisha and West Bengal have initiated their own farm income support schemes. The level of financial support and modalities of the schemes vary across states (Table 4).

Telangana's *Agriculture Investment Support Scheme (Rythu Bandhu)* provides Rs. 5000 per acre each season for the purchase of inputs like seeds, fertilizer, pesticides, labour, and undertaking investments in field operations of farmers' choice as to improve farm productivity, support their income and break the vicious cycle of rural indebtedness. Prior to launching the scheme, the state carried special drive to update the land records.

Andhra Pradesh also extends financial support of Rs. 7500 (*Rythu Bharosa*) over and above the Rs 6000 from PM-KISAN in three installments in a year per family to land owners (irrespective of the land size) and landless cultivators belonging to the Schedule Tribes (ST), Schedule Castes (SC) or backward minority under the recognition of Forest Rights. The benefits are directly transferred to the bank account of the farmers.

**Table 4. Farm income support schemes**

Particular	Centre	Telangana	Andhra Pradesh	Odisha	West Bengal
Name	PM KISAN scheme	Rythu Bandhu Scheme	Rythu Bharosa	KALIA	Krishak Bandhu
Year of announcement	2019	2018	2019	2018	2018
Basis of calculation	Absolute	Per acre basis	Absolute	Absolute	Per acre
Annual Amount (Rs)	6000	10,000	7,500	5,000	5,000
No. of installments	3	2	Unclear	2	2
Eligibility	Land owners	Land owners	Land owners & tenant cultivators	Land owners & tenant cultivators	Unclear
Annual budget allocation (Rs crore)	75000	12,000	8,750	5,611	3,000
Targeted beneficiaries (millions)	120 (households)	6 (farmers)	4 (farmers)	7.5 (farmers)	7.2 (farmers)

Source: Thomas *et al.* (2020)

Government of Odisha has been providing a comprehensive financial support package to small and marginal farmers, tenants, landless agricultural labourers and vulnerable agricultural households under the *Krushak Assistance for Livelihood and Income Augmentation (KALIA)* scheme since the *rabi* season 2018-19. The benefits are provided as DBT for five components, namely, (i) financial assistance of Rs. 25,000 per farm family over five seasons to small and marginal farmers for purchasing inputs and undertaking other investments, (ii) financial assistance of Rs. 12,500 to each landless agricultural household for agricultural allied activities such as goat rearing, poultry, fisheries, mushroom cultivation and bee keeping, (iii) financial assistance of Rs. 10,000 per family per year to vulnerable cultivators/landless agricultural labourers (old aged, disabled, diseased, etc.) to enable them to take care of their sustenance, (iv) life insurance cover for cultivators and landless agricultural labourers, and (v) interest free crop loans up to Rs. 50,000 to vulnerable landless labourers, cultivators, share croppers and agricultural families. This scheme covers 92 percent of all cultivators and almost all needy landless cultivators under its umbrella and aims to lend farmers' an all-inclusive and flexible support.

West Bengal provides direct financial support of Rs. 5000 per year per acre to land owners and registered share croppers in two equal installments under the *Krishak Bandhu (Assured Income)* scheme and one-time grant of Rs. 200000 in the event of a farmer's death (18-60 years) to the nominee or eligible family member.

The direct cash transfer through such schemes offers several distinct advantages over the existing input and output support mechanisms. First, the monetary benefits are not market-distorting, and thus these schemes remain outside the purview of the WTO reduction commitments. Second, the benefits are neutral to the choice of inputs and crops, which can reduce the negative externalities due to the injudicious use of selected inputs. Third, these can enhance the competition in the markets for inputs and outputs. Fourth, these can improve the input-use efficiency as the inputs have to be purchased at unsubsidized prices, and given the positive marginal cost, the farmers will use these judiciously. Fifth, these can significantly reduce transaction costs of transferring subsidies. Based on these benefits, it is advisable to shift towards DBT in a phased manner.

However, the acreage-based DBT mechanism poses several challenges as well. First, implementing such a mechanism requires efficient land record system, which can generate accurate and readily available information on land ownership. Second, the change in the subsidy regime to financial assistance for the purchase of inputs at market prices will raise input prices, which may result in cost push inflation unless it is accompanied by a net reduction in the production cost or an improvement in the input-use efficiency. Third, the proposed alternate mechanism requires a fair prediction of the input price inflation and the adjustment of subsidy every year to protect farmers from the rising input prices. Fourth, as the composition of input use varies across crops, regions, and farmers, hence predicting the required expenditure on subsidy is a challenging task. It may involve danger of over-payment to the those who do not use all the inputs covered under the subsidy structure, and *vice-versa*. Fifth, the existing input use based subsidy mechanism is simple to administer as it does not involve the settlement with individual farmers who purchase inputs as and when required at subsidized prices. In DBT mechanism, the subsidy payment has to be made ahead of the sowing season so that farmers can purchase the required inputs from the market at unsubsidized prices. This warrants development of efficient and transparent mechanism so that farmers do not face financial constraints in purchasing inputs. Sixth, the challenge in implementing the area-based subsidies through DBT relates to the monitoring; the subsidy amount received is spent on the purchase of agricultural inputs and is not diverted to non-farm purposes.

Thus, reforming subsidy disbursement mechanism (area-based DBT) can reduce the negative spill overs of the subsidy on the natural resources, environment, human health, and farm economy. However, the DBT has its own challenges, which needs to be addressed before implementing it. The experiences from the ongoing direct income support schemes being implemented by the central and state governments can provide useful insights for devising modalities of the subsidy disbursement mechanisms to overcome these challenges.

**Payment for ecosystem services:** During the last five decades, the technological changes and policy supports have accelerated agricultural growth, making the country self-sufficient in food. But some of the economic incentives have now become less relevant, and have started causing damage to the natural resources and environment. For instance, the subsidies on fertilizers and power along with output price support have contributed to the degradation of land and water resources beyond their sustainable limits in some parts of the country. It is, therefore, essential to relook into the existing agricultural incentives and explore the alternatives that can improve sustainability of the agricultural production systems. The payment for ecosystem services is one of the options of incentivizing sustainable agricultural system. Agriculture is man-made ecosystem that produces both positive (nutrient cycling, water recharge, carbon sequestration, etc.) and negative ecosystem services (chemicalization of soil, greenhouse gas emission, soil sedimentation, etc.) depending on the agricultural practices adopted by the farmers. Farmers can be incentivized for the adoption of sustainable technologies and practices that produce positive ecosystem services. As ecosystem services conserve environment and do not distort market, the subsidy provisions based on these qualify for the exemption under the green box provision of the WTO. Thus, the payment for ecosystem services can serve as a basis for repurposing existing subsidies and can be extended as income support to farmers. It is to be noted that monetization of ecosystem services is inherently difficult primarily because of the lack of scientific information on their bio-physical parameters required for their economic valuation. Further, the markets for ecosystem services rarely exist in developing countries. It is, therefore, essential to make efforts for the delineation and valuation of the ecosystem services and mainstreaming these in the policy process.

**Price deficiency payment:** Although the outreach and penetration of the existing price support based public procurement operations has improved, their benefits are inequitably distributed across states and farm classes. This along with the rising food subsidy burden necessitates looking for alternative means of supporting farmers. Chand (2003) conceptualized an alternative to the procurement operations circumventing overstocking of foodgrains and providing price assurance to farmers

across regions. He suggested that instead of procurement of commodity at MSP, the government can pay the difference between MSP and price realized by the farmers in open market directly in the bank accounts of the beneficiaries. This mechanism is known as price deficiency payment. It has been piloted in Madhya Pradesh as *Bhavantar Bhugtan Yojna* in 2017. Haryana also experimented it as *Bhavantar Bharpai Yojna* in 2018 for selected vegetables, i.e., onions, tomatoes, potatoes and cauliflower. The central government also initiated a *Price Deficit Payment Scheme (PDPS)* as a component of the *Pradhan Mantri Annadata Aya Sanrakshan Abhiyan (PM-ASHA)* in 2018 to ensure remunerative prices to producers of oilseeds. The scheme envisages direct payment of the difference between MSP and the market price to farmers selling the produce in the notified APMC yards through a transparent auction system.

Sekhar (2022) assessed the financial implications of a hypothetical price policy mix, wherein the government procures 30 percent of the marketed surplus of paddy and wheat for the public stockholding and pays the price difference for the remaining 70 percent of the marketed surplus, assuming a 20 percent fall in the market price below the MSP. In such a situation, the government will require Rs. 2.47 lakh crore as subsidy payment to the FCI and the state government agencies for procuring 50 million tons (30% of the marketed surplus) of paddy and wheat, well above the buffer stocking norms. On the other hand, for the remaining 70 percent of the marketed surplus, the government may require only Rs. 81,000 crores as a price deficiency payment to be directly transferred to farmers. This shows that the price deficiency payment is much less expensive than the procurement based on MSP, and it can cover a much higher proportion of the marketed surplus. In other words, the price deficiency payment offers a great scope to extend the price support to farmers without distorting the market. The government can devise an optimum policy mix of procuring a certain proportion of the marketed surplus of crops to meet the requirements of welfare schemes, and paying the price deficiency for the remaining marketed surplus directly to farmers.

Operationalizing the system of price deficiency payment, however, has few challenges. First, there could be a possibility of collusion between traders and farmers, leading to suppression of the market prices. Second, there could be a problem of moral hazards on the part of the farmers, in terms of disposition of inferior quality produce. Third, ascertaining actual price at which farmers sell their produce in the market is a daunting task. Such operational issues need to be addressed for successful implementation of the price deficiency payment system.



**Leveraging market based instruments to manage price risks:** Despite a massive food subsidy bill, the price uncertainty remains a serious concern. Often, it is recommended to transit from subsidy-based support to market-based instruments (MBI), which are arguably more effective. The commodity derivative market offers such an instrument, which not only reduces the downside price risk but also allows farmers to retain the upside benefits in case the prices move up. In November 2020, the National Commodity and Derivatives Exchange Ltd (NCDEX) in collaboration with the Securities and Exchange Board of India (SEBI) piloted a price protection programme for farmers through the Farmer Producer Organizations (FPOs) using 'put option'. Buying the 'put option' in commodities gives FPOs the choice to sell produce of its member-farmers either on the exchange platform at a pre-decided strike price or at a higher price in the spot market/mandi by squaring off the position on exchange at a prevailing market price. This flexibility comes at the cost of a premium to be paid for buying the 'put option'.

In the pilot programme, the premium cost up to a fixed amount paid by the FPOs for purchasing the 'put options' was reimbursed by the NCDEX from the fund created out of the regulatory fee forgone by the SEBI. Forty-one FPOs participated in the programme and locked-in price by buying the 'put option' for 1,030 tons of chana (gram) and 1,980 tons of mustard seed. Premium cost of Rs. 83 lakhs for buying the 'put options' was subsidized under this programme. By adopting the method of locking-in price through the 'put option', the FPOs not only insulated their member-farmers against the unexpected downside price risk until the crop harvest, but also retained the benefit of upside gain if the price crossed the locked-in price. Such instruments act as a pseudo-insurance and the government can share the cost of premium to incentivise FPOs to participate in the market. The success of such measures, however, depends on the success of the FPOs. Further, the commodity markets in India are often seen as speculative business rather a risk management instrument. Nevertheless, the limited scale pilots on such instruments can generate useful insights for rationalising subsidies.

**Diversify subsidy basket in favor of eco-friendly inputs and healthier foods:** The development agenda in Indian agriculture has transitioned from production to income improvement, food security to nutritional security, and input intensive to sustainable intensification of agriculture. Also, with the changing lifestyle and improving per capita income, the consumption pattern is shifting away from rice and wheat (main commodities supported by subsidies) to high-value, nutrient- rich food commodities, which do not receive much farm support. It is, therefore, pertinent to diversify the PDS food basket. Recently, the nutri-cereals and pulses have been included in the PDS and ICDS (Integrated Child Development Programme) in several of the



states. Further, the subsidies are extended for greener inputs (e.g., bio-pesticides and bio-fertilizers) and sustainable practices such as natural and organic farming, micro-irrigation and solar energy. Efforts should be made to repurpose the subsidy support in favour of eco-friendly inputs, practices, and technologies.

**Subsidize recycling of waste by rationalizing input subsidies:** Agricultural processes generate huge amount of waste as crop residues and dung, which are often burnt causing hazards to the environment and human health. Such bio-wastes are now seen as a 'resource' as their recycling as manures for crop production, bio-gas for cooking, and electric power for irrigation can foster sustainable development of agriculture and higher income for farmers. The Union Budget 2023-24 has announced the establishment of 10000 Bio-Input Resource Centres for the manufacturing and distribution of bio-fertilizers and bio-pesticides for the use in natural farming. Allocation of financial resources for such initiatives can make immense contributions towards arresting the qualitative degradation of natural resources, reducing the air pollution, and improving the quality of agricultural produce. Besides, these will gradually reduce the imports of agrochemicals and consequently the subsidy burden.

**Cash transfer of consumer subsidies:** Often, it is argued that direct transfer of food subsidy to consumers is more effective than in-kind transfer as it provides consumers a wider choice of foods. Although there exists no consensus on the relative advantages of cash transfer vis-à-vis in-kind transfer, such measures can be experimented to design alternatives to the existing food transfer system. The central government has piloted studies on the direct cash transfer in three Union Territories, namely Chandigarh, Dadar and Nagar Havelli, and Puducherry to analyze efficacy of such interventions.

**Invest in R&D to lower water and carbon foot-prints of crops:** The promotion of crops requiring less water, and water- and fertilizer-saving techniques can significantly reduce subsidy on inputs like fertilizers and power (for irrigation). R&D efforts should be strengthened for developing and standardizing technologies/practices that reduce water use and greenhouse gas emission.

**Promote crop planning with economic incentives:** Crop planning is the key to ensuring inter-generation equity in the use of natural resources and sustainable development of agriculture. The current incentive structure is a disincentive to regional crop planning as farmers grow crops where the policy support creates a comparative advantage without taking into consideration the regional resource endowments. Negi *et al.* (2020) have shown that cereal-centric price policy has discouraged diversification of agriculture into pulses, oilseeds and vegetables even

in the regions where the natural resource endowments support their cultivation. It indicates the need for evolving regionally-differentiated crop plans but with provision of economic incentives for crops that best suit the region's natural resource endowment. This could provide a basis for initiatives like 'one-district one-product', and compensation for the loss due to substitution of high-profit crops with the less profitable but environment—friendly crops.

## 7. RECOMMENDATIONS

India's agri-food policy has fulfilled its intended objective of achieving food security. However, its benefits are not equitably distributed across regions and farmers, and are also not environmentally sustainable. Given the changing paradigm towards nutritional security and sustainable food production, it is essential to effect a change in the policy stance, and rationalize and repurpose farm support. Some of the recommendations in this context are as follows:

- ◆ The present system of farm support is simple to administer and has several inherent benefits. It has served its intended purpose but needs to be reviewed primarily on the premises of the negative environmental externalities, inequitable distribution of benefits, and changing developmental agenda at the national and international level.
- ◆ In the short-run, the present system of farm support may continue. Meanwhile, the potential of alternate mechanisms, such as area-based farm income support through DBT that have potential to prevent the negative externalities of the existing support mechanisms, should be ascertained and implemented gradually. This can be done by evaluating the impact of ongoing initiatives. Such an assessment would provide a blueprint for the transition towards a sustainable and effective mechanism of extending farm support.
- ◆ DBT is a certainly an effective and transparent mode of extending farm support. This approach provides scope to delink subsidy benefits from the use of the subsidized inputs, and thus, improves equity in the distribution of subsidies across states, ecosystems (rainfed/irrigated) and landholding classes. Pilot studies on extending subsidies on inputs (e.g., fertilizer and power) can be commissioned to assess the benefits and emerging challenges. Accordingly, the necessary infrastructure and institutions be developed for successful implementation of DBT for input subsidies.
- ◆ Ecosystem services offer a basis for repurposing agricultural subsidies as the 'payment for ecosystem services'. Given the lack of scientific evidence on the

value of ecosystem services and their markets, the R&D efforts should focus on delineating and monetizing ecosystem services. Markets for intangible ecosystem services should be developed as in the case of carbon.

- ◆ The price deficiency payment for extending farm price support appears a cost-effective (with high scalability to the marketed surplus) and non-market distorting mechanism. State-wise and crop-wise likely payouts needs to be calculated and the mechanisms should be evolved to allow farmers to sell their produce at different points of time and at varying prices at various places in APMC markets and outside APMC markets. Effective operational guidelines should be prepared to regulate market collusion and unscrupulous trade practices. The government should devise an optimum mix of the physical procurement (to meet the requirement of public welfare schemes) and the deficiency payment targets for rationalizing food subsidies.
- ◆ Market-based instruments should be leveraged to manage the price risks. Commodity derivative market should be strengthened for efficient price discovery and risk management. The government may initiate a pilot on subsidizing premium for the 'put option' purchased by the FPOs.
- ◆ Subsidies are indispensable for farmers' welfare. However, these crowd out the investments. Gradually, the trade-off between subsidies and investments needs to be optimized. Further, within the subsidy basket, the priority should be accorded to the environmental friendly-inputs and healthier farm products.
- ◆ Crop planning at regional level is required for developing sustainable food system and repurposing subsidies towards pulses, nutri-cereals and oilseeds. Similarly, the subsidies should be rationally allocated across crops, livestock, fisheries for promoting a diversified food production system.
- ◆ The effective partnership with state governments is necessary in planning and implementing the alternative mechanisms of farm support.

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