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Discussion Paper: Structural Reforms and Governance Issues in Indian Agriculture

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I. Background

An examination of India's agricultural development since Independence brings to light the structural and institutional reforms that have been effected. The most significant advances were: consolidation of land holdings, public investment in agriculture and major and medium irrigation systems, improved price and procurement policies and regulated marketing of agri-produce. In addition, the availability of institutional credit improved as a result of changes in the financial architecture comprising commercial banks, regional rural banks and cooperatives. The Food Corporation of India (FCI) enabled easy procurement of wheat and paddy at pre-announced minimum support prices (MSP) while the establishment of regulated wholesale markets facilitated the sale of produce under the Agriculture Produce Market Committee (APMC) Act, 1966. Stocking limits for cereals and pulses prescribed under the Essential Commodities Act (ECA), 1955 helped check hoarding. The government also enlisted agri-input companies for uninterrupted supply of seeds, fertilizer, pesticides and other inputs to farmers at prices lower

than their existing market rates, assuring them timely payment and compensation for any loss incurred.

The political unanimity for a state-led model of development and the proactive interventionist policy of the Centre transformed Indian agriculture. Two northern states – Punjab and Haryana – were pioneers in the adoption of the High Yielding Varieties (HYVs) of seeds, and allocation of sizeable area to wheat and paddy during late 1960s and the 1970s. In due course, a few southern states, notably Andhra Pradesh and Tamil Nadu, also witnessed higher innovation, private investment and production of diversified and value-added products. The Green Revolution took agriculture on to a higher growth path and India achieved the overriding goal of food security and self-sufficiency, which significantly contributed to lessen hunger and rural poverty.

These achievements were followed by impressive successes in the White and Yellow Revolutions during the 1980s. Unfortunately, by that time, productivity growth in agriculture had started to decline due to the reduction in public investment on major and medium irrigation projects, delay in the completion of existing projects and the emergence of anti-dam movements (Gulati and Bathla, 2001). The diminishing returns from public investment in irrigation also set in, along with an unsustainable use of natural resources. The government's efforts to support agriculture through subsidised inputs failed to accelerate productivity of land and provide alternative occupations to rural households. Even during the economic reforms of the 1990s, agriculture remained a neglected sector with insignificant policy interventions. It was only towards the end of the 1990s when the Centre gave handsome increases to the MSP of wheat and paddy and encouraged exports of rice and other commodities, that the terms of trade (agriculture price relative to industry price) became favourable to agriculture. India's comparative advantage was identified in cotton, groundnut seed, soybean seed, protein meals, spices and basmati rice. To realise the potential of these crops in the global markets and be compatible with the stipulations under the Agreement on Agriculture (AoA) of the World Trade Organisation (WTO), the government reduced farm protection by lowering tariffs as well as non-tariff barriers. However, as envisaged, an increase in exports could not help revive agricultural growth. Cereals exports became uncompetitive owing to increase in their support prices. The exports were also affected by price volatility in the global markets, transboundary threats, surge in imports and higher competition.

Agriculture continued to face serious challenges including uneven regional growth, rising fiscal constraints, mounting subsidies, failing institutions that manage public canals, increasing fragmentation of holdings, labour-intensive farming, and depleting groundwater and solid nutrients. These were serious impediments for sustained agricultural growth and farmers' livelihoods (Singh, 2019). From the early 2000s, the Centre focused on structural changes through increased budgetary outlays towards major, medium and micro irrigation projects, rural infrastructure, fertilizer and power subsidies, various flagship programmes, including that on irrigation, and the initiation of income support schemes for farmers. The MSPs of food grains were hiked and far reaching reforms were initiated in the marketing of agri-produce, the major ones being allowing inter-state grain movement and contract farming under the aegis of the Model APMC Acts of 2003 and 2017.[1] These measures, however, could not make uniform progress across states. In some, private investment increased, and the transition began. In others, especially in the eastern regions which also lacked public investment in irrigation, roads and other infrastructure and marketing support, stagnation continued. Implementation of the Bringing Green Revolution to Eastern India (BGREI) programme initiated during 2010/11 (now a sub-scheme of *RAFTAAR-Rashtriya Krishi Vikas Yojana*[2]) helped in the adoption of technology, building of assets, farm renovation, seed production and distribution, backed with the procurement of paddy at MSP. Agriculture growth did pick up in the eastern states but they continued to face low levels of productivity and risks relative to other states due to variations in weather and commodity prices (Joshi and Kumar, 2016; Hoda, Rajkhowa and Gulati, 2017).

The output price increases barely corresponded with the rise in input costs and resulted in an agrarian crisis in many regions. The worst affected were smallholders and rural labourers who not only lack technical know-how and access to finance but also have low risk-bearing capacity to shift to non-farm activities. Agriculture, with 15 percent share in the national income, still absorbs more than 45 percent of the labour force, indicating limited success in achieving structural transformation. Binswanger-Mkhize and D'Souza (2012) maintained that India's structural transformation process is atypical, due to the slow pace of reallocation of labour from a

[1] The Model APMC Act of 2017 is termed as Agriculture Produce and Livestock Contract Farming and Services (Promotion and Facilitation).

[2] *Rashtriya Krishi Vikas Yojana* (RKVY), a National Agriculture Development Scheme, aims to give a fillip to agriculture. It was rebranded as RAFTAAR, which is the Hindi word for speed and is the acronym for Remunerative Approaches for Agriculture and Allied sector Rejuvenation.

low productivity sector, namely agriculture, to high productivity sectors. It is also characterised as "stunted," with the exiting labour moving primarily into the rural non farm and informal sector instead of industry and services and also becoming increasingly `casualised'.

The COVID-19 pandemic in 2020 has added a new dimension to the entire gamut of issues that the agriculture sector has been facing for long. Government intervention in this sector is considered necessary to boost production as well as to maintain supply in order to keep commodity prices at manageable levels. The Centre has spearheaded institutional reforms backed with a financial stimulus in order to reinvigorate private investment, infrastructure development and post-harvest technology. It has also passed three Acts with the objective of addressing the structural weaknesses inherent in the sale, marketing and stocking of agri-produce being governed under the state-run APMC markets. Since agriculture is a subject in the state list of the Constitution of India, it is important to consider how the states should amend their existing policies and institutions and adapt to the new Central laws so as to raise the income levels of farmers and ensure sustainable agriculture.

This paper has done an in-depth analysis of four critical areas and attempted to unravel the governance issues under each:

(a) Centre-state fiscal relations and shared responsibilities for agriculture development;

(b) public expenditure policy to compare spending on investment and subsidies in agriculture relative to other economic sectors and the relationship between public investment in agriculture and private (farm household) investment;

(c) interventions in the input and output subsidy regimes and the feasibility of replacing the existing price support system with direct income support to farmers; and

(d) reforms in agriculture pricing and marketing and the implications of the three new Acts.

The rest of the chapter is organised into four sections. Section II sets out India's federal structure, focusing on agriculture development and the Centre's role in the form of various schemes and grants. Section III analyses public spending on capital formation and input subsidies in agriculture vis-à-vis other economic sectors and their relation with private (farm household) investment and national income. It also examines possible ways to augment private investment in

agriculture and rationalise input subsidies through alternate methods, including direct income support. Section IV analyses state intervention in transactions relating to agriculture output, focusing on procurement of grains at MSP, and also explains the implications of the three new laws enacted in 2020 for state governments and the farmers. Finally, Section V sums up the chapter and suggests the way forward.

II. Agriculture under a federal structure in India

The power, functions and responsibilities of the Centre and the states are primarily governed by the Constitution of India. The subjects that each can legislate on and administer are set out in three lists – Union, State and Concurrent list. There is, however, an asymmetry in the fiscal relations, with the states having larger expenditure responsibilities than the Centre but lesser sources of revenue. Tiwari and Surya (2019) and Sahoo (2015) have highlighted the fact that the fiscal deficit and the revenue deficit of states has been growing due to an excess of their budget expenditure (excluding borrowings) over budget receipts and revenue expenditure over revenue receipts. A shortfall in the revenues over the requirements reflects the inefficiency of the respective governments to meet their regular or recurring expenditures.

States finance their expenditures through their own tax and non-tax resources, transfers from the Centre (their share in the net proceeds of the Centre's tax revenues set out by the Finance Commissions[3]), grants and transfers for implementation of Centrally sponsored schemes[4] (CSSs) and borrowings. States have, over the years, been demanding a larger share in the tax revenue of the Centre[5] as well as greater flexibility and autonomy in the implementation of CSSs (as these come with conditions attached to them, failure to meet which results in withholding of funds).

[3] The Finance Commission is a constitutional body set up by the President every five years mainly for the purpose of the distribution between the Centre and the states of the net proceeds of taxes and setting the principles, which should govern the grants in aid of the revenues of the states out of the Consolidated Fund of India.

[4] CSSs form a major part of the Central assistance given to states to implement development initiatives in certain priority areas. In 2016/17, the Central government approved merging the 147 CSSs and bringing the number down to 66 for effective implementation and monitoring. The number has been further rationalised to 28 umbrella schemes of which ten are funded fully by the Central government and the remaining are funded in the ratio of 60:40 between the Centre and the states.

[5] The fund distribution among the states is based on a formula recommended by successive Finance Commissions, with some changes in the percentage assigned under each category. For instance, the Fourteenth Finance Commission (2015-2020) recommended fund distribution on the basis of population (17.5 percent); area (15 percent); forest cover (7.5 percent); demographic changes (10 percent); and income distance between states (50 percent). The Fifteenth Finance Commission (2020-2025) has recommended inclusion of tax effort as another criterion under which states with higher tax collection efficiency should be rewarded.

Successive Finance Commissions have tried to give more financial autonomy to the states – the Fourteenth Finance Commission increased their share in the pool of taxes from 32 percent to 42 percent. However, states continue to feel less empowered in decision-making (Singh and Singh, 2016; Patnaik, 2018).

Coming specifically to Centre-state relations in the primary sector, Singh (2008) adopted both the constitutionalist and issue-oriented approach.[6] Under both, the issue of fiscal federalism assumes importance as it has implications for devolution of funds to states and possible ways to resolve the conflicts that may arise due to the criterion adopted to share revenues and the use of various types of taxes by different levels of government. The Constitution places agriculture and allied activities and irrigation (including flood control) sectors under the jurisdiction of states (Items 14 to 17 in List II of the Seventh Schedule). However, the Centre plays a vital role in these sectors in many ways. Through the Union Budget, it provides financial outlays to the Indian Council of Agriculture Research (ICAR) to disburse funds to the State Agricultural Universities for research and development. It provides funds for inter-state rivers and fisheries outside territorial waters. The expenditure on fertilizer and food subsidies is borne entirely by the Centre, with the objective of real-time monitoring of commodity prices, production and other factors that may result in food insecurity. Similarly, it bears the entire cost of procurement of food grains at MSP and its distribution through fair price shops under the public distribution system (PDS). From 1970 to 1980, it executed 'Operation Flood' (White Revolution) to create a nationwide milk grid. The National Dairy Development Board was permitted to retain money received from the sale of skimmed milk powder and butter oil gifted by the European Union through the World Food Programme.

Though the Centre implements several programmes to meet the national goals of food security, elimination of hunger, malnutrition and poverty, and financially supports states in such endeavours, the discontent of the states has endured. Almost every state is confronted with revenue deficits and resorts to borrowings, either from the Centre or from other funding sources

[6] The constitutionalist approach underlines the fact that agriculture and related activities are subjects within the jurisdiction of states (List II of the Seventh Schedule of the Constitution). The Centre encroaches on states' sphere through the use of constitutional provisions - the Centre can overrule the states in matters of 'national interest'. This approach thus focusses on the degree of states' autonomy in agriculture vis-à-vis Centre's control by analysing the case of Punjab where agriculture was made a dominant economic activity during the 1960s to help attain national food security. In contrast, the issue-oriented approach identifies specific issues involving Centre-state relations, such as CSSs, pricing of agricultural commodities, input supply, credit and research and development.

to meet the revenue shortfalls. The fiscal burden of states has also been increasing due to farm loan waivers and initiation of income support schemes,[7] similar to that of the Central government's *Pradhan Mantri Kisan Samman Nidhi* (PM-KISAN). A few state governments allocated between 9 percent and 43 percent of their agriculture budget to targeted income and investment support schemes (Tiwari and Surya 2019). This combination of expenditure on loan waivers and income support schemes has resulted in higher cutbacks, in particular on investments in agriculture and irrigation. Even if the Central funds are available to the states, they come with certain conditions, which states may not able to fulfil and, hence, be unable to spend the allocated amount. For instance, under RAFTAAR, a few states have not spent the allocated amount under two heads - micro irrigation and machinery - perhaps due to lesser requirements by the farmers for these, indicating that states may be given some autonomy to redirect such expenditures (Bathla and Kannan 2020).

Based on the recommendations of the Fourteenth Finance Commission, the Centre increased the share of states in the net proceeds of its tax revenues. In 2015/16, the Centre initially decided to reduce its share in all CSSs, which was in the range of 75 percent to 100 percent, to a uniform 50 percent, which meant states would have to bear a higher share of the expenditure. Several schemes of the Ministry of Agriculture and Farmers' Welfare (MoAFW)[8] were to follow this changed pattern of funding. However, following protests by state governments, the Centre constituted, in March 2015, a sub-group of ten Chief Ministers and one Lieutenant Governor on rationalisation of CSSs. On 17 August 2016, the Government revised the sharing pattern based on the recommendations of the sub-group. The existing 66 CSSs were merged into 20 core schemes, six core of the core schemes and two optional schemes. The Centre's share of funding stayed at 100 percent in the core schemes. For the other two categories, the Centre bore 90 percent of the expenditure in the case of the eight north eastern states and the Himalayan states of Uttarakhand, Himachal Pradesh and erstwhile Jammu and Kashmir; these states were to

[7] Andhra Pradesh - YSR *Rythu Bharosa*; Haryana – *Mukhyamantri Parivar Samman Nidhi*; Jharkhand – *Mukhyamantri Krishi Aashirvaad* ; Odisha – *Krushak* Assistance for Livelihood and Income Augmentation (KALIA); Telangana – *Rythu Bandhu*; West Bengal – *Krishak Bandhu;* Chattisgarh – *Rajiv Gandhi Kisan Nyaya Yojana*.

[8] These include Mission for Integrated Development of Horticulture, RAFTAAR, National Livestock Mission, National Mission on Sustainable Agriculture, Dairy *Vikas Abhiyaan*, Veterinary Services and Animal Health (Dairy Development Mission), National Rural Drinking Water Programme and *Pradhan Mantri Kisan Samman Nidhi* (PM-KISAN).

contribute 10 percent of the expenditure. In the case of all other states, the sharing ratio was fixed at 60:40 between the Centre and states respectively. In another significant change, the funds for CSSs were now to be routed through the budgets of state governments instead of the earlier practice of the Centre directly releasing the funds to the implementing institutions.

In the case of irrigation water, during the Twelfth Five-Year Plan period (2012-17), the Command Area Development and Water Management Programme (CADWM) was implemented *pari-passu* with the Accelerated Irrigation Benefit Programme (AIBP). In the Union Budget of 2014/15, INR 89.92 billion was provided for AIBP. Since 2015/16, the programme is being implemented under the *Pradhan Mantri Krishi Sinchai Yojana* (PMKSY) – *har khet ko pani* (water for every farm). The ongoing CADWM programme has now been restricted to the implementation of command area development works of 99 prioritised AIBP projects. In 2016/17, the Central government initiated an innovative model of funding the prioritised projects through extra-budgetary resources (EBR). A Long-Term Irrigation Fund (LTIF) was created in the National Bank for Agriculture and Rural Development (NABARD). NABARD provides loans, with a 15-year tenure, to cover the share of the Centre as well as the states. The Central share is provided to the National Water Development Agency (NWDA), which comes under the jurisdiction of the Ministry of Jal Shakti; loans for the state share is given to the state governments. Since April 2018, loans towards the Centre's share are entirely funded through EBRs in the form of fully-serviced Government of India bonds while the state's share (increased from about 10 percent to 40 percent of the project cost since 2015-16) is entirely funded through market borrowings by NABARD. NABARD extends loans to states at 6 percent per annum, and the Central government compensates the cost that NABARD incurs through interest subvention. The Union Budget for 2020/21, allocated INR 19 billion for payment of interest and INR 4.75 billion for payment of principal for the NABARD loan to the NWDA.

While the Constitution places agriculture production and irrigation development (including flood control) squarely under the jurisdiction of states, it has taken a different approach to the marketing of agri-produce. Article 301 says trade and commerce will be free across all of India, while Article 302 gives Parliament power to legislate on inter-state trade (See Box 1: Constitutional provisions on trade). The idea behind this is to break inter-state barriers in order to make the entire country as one market. Its interpretation by the government is that the freedom of

trade is not confined to only inter-state trade but it also extends to intra-state trade and commerce.[9] States, on the other hand, quote Article 304 to aver that the state legislature has powers to legislate on trade and commerce and can impose tax and restrictions on intra- and inter-state trade in the public interest. In particular, state governments cited Article 304 (b) to justify the restrictions on trading imposed through the Model APMC Acts (2003 and 2017) as these were considered reasonable and in public interest.

Box 1: Constitutional provisions on trade

Article 301 - Freedom of trade, commerce and intercourse:

"Subject to other provisions of this Part, trade, commerce and intercourse throughout the territory of India shall be free".

Article 302 - Power of Parliament to impose restrictions on trade, commerce and intercourse:

"Parliament may by law impose such restrictions on the freedom of trade, commerce or intercourse between one State and another or within any part of the territory of India, as may be required in the public interest".

Article 304 - Restrictions on trade, commerce and intercourse among States:

"Notwithstanding anything in Article 301 or Article 303, the Legislature of a State may, by law:

(a) impose on goods imported from other States or the Union territories, any tax to which similar goods manufactured or produced in that State are subject, so, however, as not to discriminate between goods so imported and goods so manufactured or produced; and

(b) impose such reasonable restrictions on the freedom of trade, commerce or intercourse with or within that State as may be required in the public interest: Provided that no Bill or amendment for clause shall be introduced or moved in the Legislature of a State without the previous sanction of the President".

[9] Even during the initial period of lockdown due to COVID-19 (from 24 March to 3 May 2020), the movement of agricultural produce between the states of Karnataka and Kerala was stopped. The Government of Karnataka decided to block all 23 roads connecting the state with Kerala because Kasargode in north Kerala was a hotbed of coronavirus cases.

However, increased grain production over the last three decades demanded a less restrictive marketplace. The APMC Act of 1966 and related regulations restricted fair competition not just within the states but also within the wholesale markets, popularly known as *mandis*. Restrictions were imposed on the number of new licences issued to traders within a *mandi*, and a separate licence was required for every *mandi*. So constricting was the implementation of the Act by most states that, over time, it prevented the entry of new market players within APMCs and even outside. APMCs also discouraged contract farming as companies have to register with *mandis*, pay market fee and levies without receiving any services, and often face restrictions on stock holdings of produce.

In many places, the auction of produce was seen as opaque, resulting in denial of fair competition and prices to farmers. States earn substantial revenues from *mandi* fee/cess/taxes, which, in some cases, was fixed as high as 6.5 percent over and above the *arhatiya*'s (commission agents) commission of 2.5 percent, with little infrastructure and facilities being provided to the farmers (Acharya, 2017). All this explains why agri-markets continue to be less competitive and inefficient in terms of proper discovery of commodity prices, have low margins for producers and high margins for wholesalers.

The Centre, in several Union Budgets, proposed reforms to improve the marketing system. A few states, namely Punjab, Karnataka and Maharashtra, have amended their APMC Acts, encouraged contract farming,[10] and introduced direct farm-to-kitchen models, but clear-cut rules on these have mostly been missing.

A breakthrough came in June 2020 when the Centre promulgated three ordinances (which were later legislated into Acts by the Parliament in September 2020) with the objective of enabling one common market for agri-produce across the country, freeing farmers from stringent restrictions on selling their produce anywhere, enabling them to enter into contracts with processors, aggregators or other agencies for better prices, lowering their risks and enabling them to earn a higher income. These laws have been criticised by some state governments on the grounds of having been bypassed and that they would have the effect of (a) reducing or doing away with grain procurement at MSP, (b) reducing market fees earned from transactions and (c)

[10] As of October 2016, 20 states amended their APMC Acts to provide for contract farming, whereas Punjab adopted a separate law on contract farming. In all, 14 states notified rules related to contract farming.

putting agriculture in the hands of the private (corporate) sector. Details of these laws as well as the underlying implications of each are discussed in Section IV.

In sum, the Centre has never been disconnected from agriculture, as the Constitutional provisions would suggest. Agriculture serves certain national development goals and thus requires considerable handholding, especially during times of natural calamities and market risks. States, in turn, lack resources and are highly dependent on the Centre for funds and grants. Both have to work in tandem, even if there are conflicts in their respective agriculture policy agendas. Marketing is a key example, where states have built a monopoly and earn significant revenues from levies, taxes and cess on transactions in the wholesale/regulated markets without realising the adverse impact this has on price stability, efficiency, farmers' income and the formation of supply chains. However, states also have their compulsions. With no revenues from tax on land and agriculture income, they have a high level of dependence on *mandi* fees and taxes. Their reliance on the Centre for financing of the agriculture and irrigation sectors will, therefore, continue in the future as well. The question of whether such interventions are seen as an assault on the federal structure and autonomy of the states will remain.

The Centre follows the recommendations of Finance Commissions on the sharing of revenues with the states. However, the level of agriculture development differs across the states and a one-size-fits-all approach in the Central government's agriculture policies may not suit the specific needs of states. For instance, grants under CSSs have conditions attached to them and the states lack flexibility to modify spending in line with their requirements. Institutions such as the Inter-State Council and NITI Aayog should be involved in resolving disagreements, if any. In order to ensure proper spending of assigned grants, there needs to be more coordination within the existing institutional structure to prevent overlapping or duplication of schemes and their effective implementation.

III. Public spending on investments and subsidies in agriculture

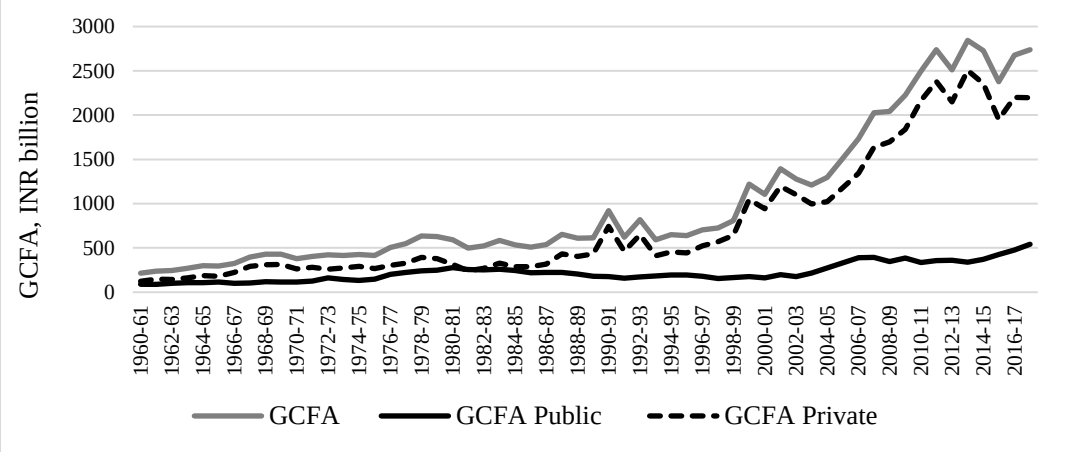
Sen (2016) highlights the fact that despite an increase in the devolution of funds from the Centre, state budgets show fiscal deficits. Hence, states have to either adjust spending patterns between revenue and capital accounts, or bring modifications in the budgetary outlays across various activities, or resort to borrowing. This section looks at the long-term trends in public expenditure

(on capital and revenue accounts) to gauge how far agriculture and irrigation have borne the brunt of the resource crunch that states face. Since public investment in agriculture and irrigation has a 'crowding-in effect' on private (farm household) investment, the section also examines trends in the latter. The analysis would be useful in understanding the expenditure policy in terms of directing resources towards the capital account (for asset creation) or revenue account (for provision of subsidies), and exploring ways to increase fiscal space for investments in agriculture.

As shown in Figure 1 and Table 1, during the 1960-70 period, the average gross capital formation in agriculture and allied activities (GCFA), at constant 2011-12 prices, was INR 314 billion, which significantly increased to INR 566 billion during the 1980-90 period. It then remained somewhat stagnant for many years but increased from the early 2000s to reach INR 1 583 billion during 2000-09 and then to INR 2 639 billion during 2010-18. The change in stock (CIS) varies but roughly constitutes 5 to 9 percent in the total GCFA, which is at a reasonable level. The private GCFA – mainly by the farm households – witnessed a steady increase compared to public GCFA. The latter picked up from 2003/04, showed a declining trend during 2007-12 but again increased from 2013/14.

Figure 1: Gross capital formation in agriculture & allied sector: 1960-61 to 2017-18

(at 2011-12 prices)



Source: National Accounts, various years, National Accounts Division, MoSPI

http://www.mospi.gov.in/National Accounts Statistics

Table 1: Public and private GCFA, GDPA: 1960-61 to 2017-18

(at 2011-12 prices)

	INR Billion				**Annual Rate of Growth (percent)**			
Average	***GCFA***	***GCFA Public***	***GCFA Private***	***GDPA***	***GCFA***	***GCFA Public***	***GCFA Private***	***GDPA***
1960/61 to 1969/70	314	106	209	4 145	8.43	2.56	11.56	1.51
1970/71 to 1979/80	478	174	304	5 215	5.97	8.97	4.37	1.74
1980/81 to 1989/90	566	234	332	6 716	1.56	-3.96	5.43	2.97
1990/91 to 1999/00	770	175	595	9 245	2.66	-0.15	3.38	3.34
2000/01 to 2009/10	1 583	287	1 296	11 926	7.89	11.28	7.22	2.57
2010/11 to 2017/18	2 639	401	2 238	16 450	0.39	6.68	-0.76	4.10

Source: Source: National Accounts, various years, National Accounts Division, MoSPI - http://www.mospi.gov.in/National Accounts Statistics;

Note: 1. GDPA (gross value added in agriculture and allied activities) is represented by GVAA (gross value added in agriculture and allied activities;

2. Data is converted into real prices at 2011-12 base using gross domestic product (GDP) and gross domestic capital formation (GDCF) deflators.

Comparing estimates on GCFA shows that both public and private GCFA have increased three times during the 2000s as compared to the 1990s. Private household investment accounts for a significant share (83 percent) in total investment. Although many private companies are making forays into agriculture, their share in total GCFA remains low and stagnant at almost 3 percent.

Public GCFA mainly pertains to major, medium and minor irrigation systems, and its share has consistently fallen from 33.76 percent during the 1960s to 15.19 percent during 2010-2018. A steady decline in the share of public GCFA in total investment has been explained by the bias in government expenditure towards the revenue account in the form of an increase in input subsidies and day-to-day expenses, inadequate funds and low priority towards spending on agriculture and rural development in comparison to that in other sectors (Chandrasekhar and Ghosh, 2002; Bathla, 2014).

As Table 1 shows, the annual growth rate of public and private GCFA declined between the 2000/01 to 2009/10 period and the 2010/11 to 2017/18 period. A slower increase in private investment during the 1980s and the 1990s has been attributed to deceleration in the rate of growth of public investment, unfavourable terms of trade, and an inadequate flow of institutional credit (Bathla et al. 2020). A revival of private GCFA since the 2000s is explained by a big push in public GCFA, complemented with favourable terms of trade, weather conditions and adequate flow of institutional credit. Other factors may include an increase in the number of holdings due to fragmentation, diversification towards high-value crops, coupled with an increase in the demand for processed food (Chand and Kumar 2004; Bathla 2014). Increased levels of investments on public and private accounts, complemented with other factors seem to have helped agriculture sustain a steady rate of growth close to 3 percent per annum for three decades (1980-2000s) (Chand and Parappurathu, 2012; Bathla and Kumari 2017). In 2010/11 to 2017/18 period, India, for the first time, achieved a higher rate of growth at 4.10 percent.

Notwithstanding an impressive rate of growth in GCFA, its share in gross domestic capital formation (GDCF) has been declining. It was 16.56 percent in 1960/61, rising to 21.47 percent in 1968/69 and then decelerating for at least two subsequent decades. Although some improvement was observed in the share of GCFA in GDCF in 2001-02, at 11.89 percent, it fell to 6 percent again in 2017-18 (Annex Figure 1). As depicted in Annex Figure 2, a significant fall can be attributed to public GCFA whose share in public GDCF decreased from 16.4 percent in 1960/61 to 5.26 percent by 2017/18. During the second half of the seventies, the government prioritised investment, which is visible in the form of a high share of public GCFA in public GDCF, at almost 20 percent.

A fall in the share of GCFA in GDCF may suggest that the latter, which constitutes almost 35 percent of GDP, has been increasing due to higher investments in the non-agriculture sectors relative to the agriculture sector. The share of GCFA in GDP improved from 6 percent in 1960/61 to 18 percent in 2013/14, which subsequently fell to 14 percent in 2016/17. This demonstrates that state governments accord less priority to agriculture and irrigation in comparison to this sector's contribution to national income. The state level agriculture orientation index (AOI) confirms the low priority given to agriculture. As Annex Table 1 shows, the index has improved in Chhattisgarh, Gujarat, Himachal Pradesh, Karnataka, Kerala, Punjab and Uttarakhand, but weakened in Haryana, Jharkhand, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal.

While this aspect merits attention, it needs to be noted that that the official estimates (National Accounts Statistics or NAS) on public GCFA relate to major, medium and minor irrigation systems and not agriculture. Investments in 'agriculture and allied activities' such as in crop and animal husbandry, soil conservation, forestry, livestock, storage etc., are not accounted for in the official statistics; instead, these are listed under the economic and functional classification in the System of National Accounts. A closer look at the magnitude of GCFA shows underestimation of investment in this sector. On average, public investment in agriculture-forestry-fishing was INR 107 billion during 2011/12 to 2017/18 and was much lower than the GCF in water supply (INR 146 billion) and transport and communication (INR 761 billion). It is somewhat higher than that in other economic activities such as mining, manufacturing, construction, electricity and gas etc. In relative terms, agriculture GCF accounted for 9.1 percent share in total GCF, almost the same as in the case of irrigation investment (public GCFA) in Annex Figure 1.

Besides asset formation in irrigation and agriculture segments, the government incurs expenditure to support farmers and meet its own running expenses. The support is mainly to incentivise farmers to increase production, maintain price stability and ensure food security through input subsidies (the major ones being fertilizer, irrigation and electricity). Another significant expenditure is on account of procurement of wheat and paddy directly from farmers at the MSP, their storage and distribution at subsidised rates – this is the food subsidy for consumers. The NAS provides estimates on subsidy in agriculture and in other economic sectors but does not provide disaggregated data on input and output subsidy.

Averaged for 2011/12 to 2017/18 at 2011-12 prices, data reveals that government expenditure on asset formation in agriculture was INR 517 billion (INR 107 billion in agriculture-forestry-fishing plus INR 410 billion in irrigation). However, the amount spent on subsidy in this sector is almost double at INR 964 billion. Table 2 shows that the agriculture and allied sector alone accounts for INR 964 billion (25.8 percent of the total subsidy of INR 3 733 billion across all economic activities), though it is somewhat close to the mining-manufacturing-construction sectors at INR 880 billion and lower than that given to `other economic activities at INR 1 079 billion. It is important to mention that these official estimates on subsidy may be on the lower side. The data collated from budget and other sources indicate higher estimates of subsidy (fertilizer, power, credit, irrigation and crop insurance) at INR 1 290 billion, and food subsidy to consumers at INR 986 billion, averaged during 2011/12 to 2017/18 at 2011-12 prices.

Not only is the amount of farm input subsidy higher than public investment, statistics show that only 45 percent of capital expenditure in agriculture is actually utilised for asset formation. Other sectors, namely water supply, transport, communication etc., allocate more than 75 percent of capital outlays towards asset formation. This clearly indicates a relatively lesser public investment in agriculture and irrigation relative to other sectors, which is perhaps sought to be compensated by higher and increasing expenditure on input subsidies. One favourable inference drawn from Table 2 is a positive and higher rate of growth in GCF compared to that of subsidies in each economic activity. Among all the economic sectors, only agriculture and mining-manufacturing-construction show a negative rate of growth in subsidies during 2011-12 to 2107-18. General administration and energy sectors have the highest annual rate of growth at around 16 percent each.

Table 2: Magnitude of GCF and subsidy under various economic activities per year

(INR billion, averaged 2011-12 to 2017-18 at 2011-12 prices)

Value of each Sub Sector under Economic Activity	Capital Expenditure (CE)	GCF	Subsidy	Percentage Share GCF in CE
General Administration, Regulation & Research	387	31	3	7.98
Agriculture, Forestry & Fishing	235	107	964	45.72
Mining, Manufacturing & Construction	148	66	880	44.45
Electricity, Gas, Steam and Other Sources of Energy	237	36	519	15.36
Water Supply	183	146	1	80.14
Transport and Communication	920	761	287	82.68
Other Economic Services	46	34	1079	73.80
Total Economic Activities	2155	1181	3733	54.82
Annual Rate of Growth (Percentage)				
General Administration, Regulation & Research	11.61	37.20	16.29	
Agriculture, Forestry & Fishing	10.31	9.26	-0.74	
Mining, Manufacturing & Construction	26.43	27.57	-10.96	
Electricity, Gas, Steam and Other Sources of Energy	5.94	10.43	16.41	
Water Supply	18.57	20.71	NA	
Transport and Communication	12.82	13.41	6.60	
Other Economic Services	1.51	11.57	9.05	
Total Economic Activities	12.59	14.83	2.28	

Source: National Account Statistics, various years Statement S - 4.2

III.1 Accelerating public investment in agriculture and irrigation

Estimating public GCFA at disaggregated level

The NAS provides national-level estimates on public and private GCFA based on budget expenditure, the decennial *All India Debt and Investment Survey* (AIDIS) conducted by the National Sample Survey Organisation (NSSO) and other surveys. State-level estimates are available only for some. This should be estimated for all the states to enable a location-specific plan for future investment requirements in agriculture and irrigation and the dedicated budgetary outlays.

Increasing the magnitude of public GCFA, efficiency and governance

The quantum of public GCF in agriculture is much lower than in other sectors. More fiscal space must be given to agriculture and irrigation in the expenditure policy of governments because a majority of the population is dependent on agriculture for its livelihood. As per the report on *Doubling Farmers' Income Report* (MoAFW, 2017), in order to double farm income by 2022/23, the required rate of growth in public investment (weighted agriculture, irrigation, rural roads-transport and rural energy) must be 14.17 percent per year (with 2015/16 as the base year). The rate of growth for private investment is estimated at 7.86 percent per year. As earlier shown in Table 1, the current rate of growth rate in investments is much lower at 6.68 percent and -0.76 percent respectively.

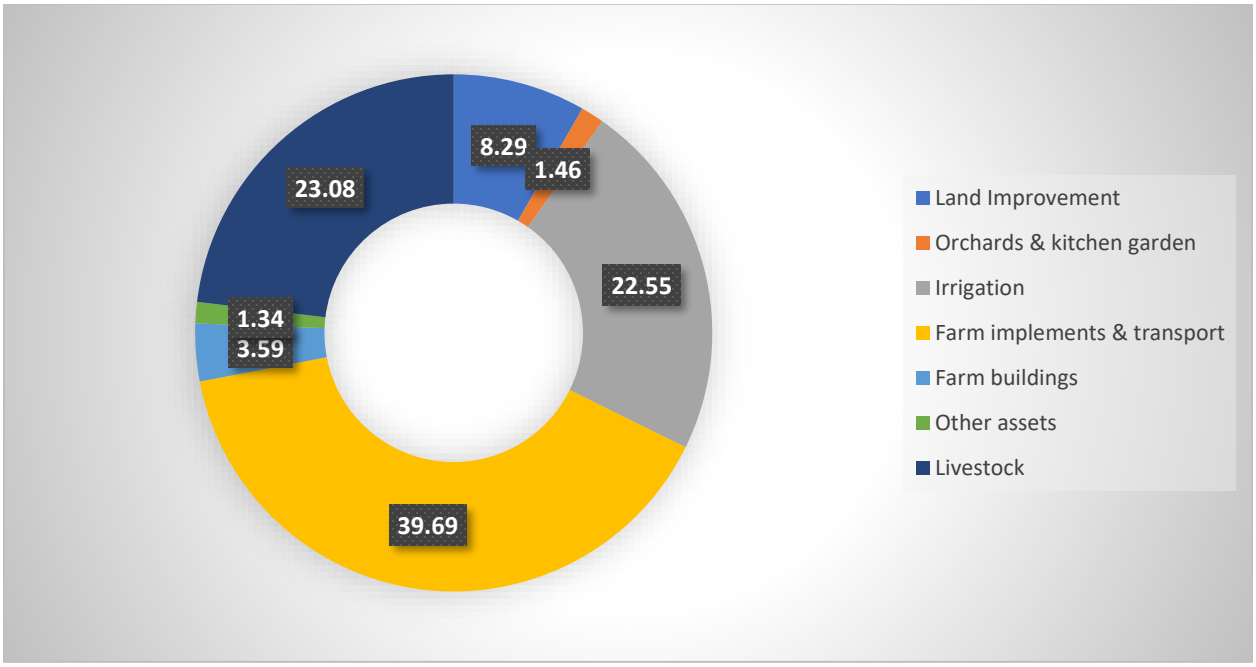
Further, attention needs to be paid to bringing efficiency in public canal irrigation and related infrastructure projects. These have long gestation periods and have not yielded satisfactory outcomes when assessed by the amount spent, net area irrigated, percentage of irrigation potential utilised and the gap in irrigation potential created and utilised (Gulati and Banerjee, 2017). Bathla and Kannan (2020) found that, on an average, public canals operate at about 59 percent technical efficiency, with wide inter-state variations. Between capital and revenue expenditures, the low efficiency score is found mainly due to capital expenditure, which calls for faster completion of irrigation projects and their improved management and governance. Kannan *et al.* (2019) constructed a state wise irrigation water governance index and found it had a positive impact on the performance of public (canal) irrigation systems, which, in turn, can significantly augment farm productivity.

Synchronising public and private GCFA requirements

The thrust of government efforts continues to be skewed towards major and medium irrigation projects and, of late, minor irrigation, while farmers' capital needs have moved beyond irrigation to machinery, implements, livestock, land improvement and non-farm businesses. Annex Table 2 shows that during triennium ending (TE) 2015-16, 72 percent of budgetary allocations (capital plus revenue) within irrigation was for major and medium irrigation, 20 percent for minor irrigation and the remaining for command area development and flood control. The share of these categories in capital expenditure is slightly higher, except for command area development where the share of revenue expenditure is 3.29 percent, and capital expenditure a low 1 percent. In the case of capital and revenue expenditure for agriculture and allied activities, crop husbandry accounts for the highest share, followed by forestry and wildlife, food storage and warehousing, and soil and water conservation. Outlays on food storage and warehousing have increased over time due to higher grain procurement.

In contrast, farmers' asset preferences have changed significantly between 1981/82 and 2012/13. The AIDIS 2013 (the latest available) shows that expenditure on land improvement, machinery, transport, irrigation structures and livestock together account for 80 percent of the rural household's investments (Figure 2). As expected, farmers in the hilly regions tend to spend more on land improvement, livestock and farm buildings and those in the less developed states have higher expenditure on irrigation. An increasing number of farmers are opting for micro-irrigation (drip/sprinkler) and farm machinery and implements for increasing mechanisation, productivity and higher water use efficiency. This development is more pronounced in agriculturally developed states and, of late, is visible in the less developed states as well (Bathla *et al.*, 2020; Bathla and Kumari, 2017).

Figure 2: Percentage share of components of private investment in agriculture by rural households, 2012-13



Source: AIDIS 2013 (Schedule 18.2).

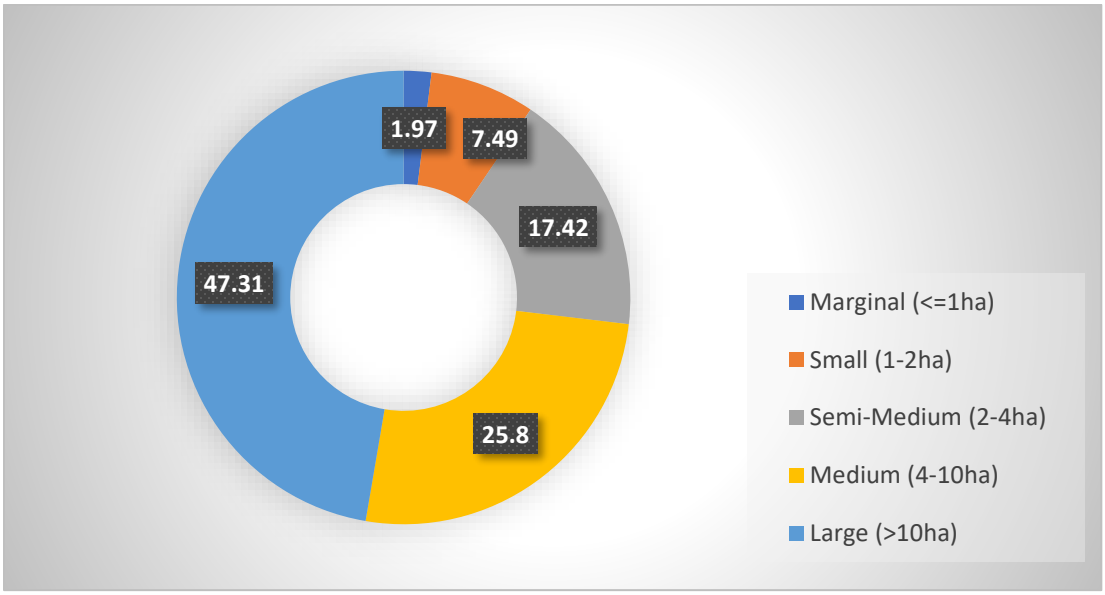
This indicates that the government should favour investments that correspond to the requirements of farmers across the country such as storage infrastructure, soil health and solutions for post-harvest losses and other bottlenecks. This also intensifies the 'crowding in' effect of public GCFA on private GCFA. For instance, there are lesser outlays for animal husbandry, dairy development, fishery and bee keeping – activities that poor households mostly engage in. Governments can open veterinary hospitals and training centres for farmers interested in allied activities. The public expenditure policy should be reassessed, primarily to address the mounting problems due to climatic changes, disasters, crop failure, depleting water resource and so on. Investment support to farmers for micro and minor irrigation is given through RAFTAAR. However, India needs much more investments in water recycling, bio-fertilizers and pesticides, weather information satellite mapping of crops, precision farming and so on. The use of artificial intelligence – drones, satellite imagery, robotics, sensors, etc. – to diagnose diseases in plants and monitor storage conditions is also growing. Israel has used these latest technologies to shape its agriculture in the face of water scarcity and other geographical constraints. The private corporate sector must be encouraged to invest in agriculture – perhaps on the public-private

partnership model similar to those in the power and airport sectors. Investments by start-ups in geographic information system (GIS), app-based weather advisories and other digital technologies should be scaled up by offering incentives.

Financial inclusion and outreach

Small and marginal farmers, who account for 86 percent of total cultivated area, have a less than 10 percent share in total investment, with the share of marginal farmers at a mere 1.9 percent.[11] In contrast, medium and large farmers account for 25.8 percent and 47.3 percent share in total investment respectively (Figure 3). The marginal and small farmers have limited access to institutional credit and are unable to spend on asset creation (MoAFW, 2017; MoAFW, 2015, 2019).

Figure 3: Percentage share of private investment in agriculture as per landholding size, 2012-13



Source: AIDIS 2013 (Schedule 18.2).

Furthermore, of the total investment made by farmers, 13.8 percent is through their own resources, 53.8 percent is through borrowings from formal (institutional) sources and the

[11] Small and marginal holdings of up to 2 ha. account for 86.21 percent of the 146 million land holdings which operated on an area of 157.14 million ha. in 2015/16, an increase of 1.24 percent over 2010/11. The share of landholdings between 2 ha. and 10 ha. was 13.22 percent in total number of holdings, but had 43.61 percent of operated area. In contrast, the large holdings (>10 ha.) were hardly 0.57 percent of total landholdings but had an operated area of 9.04 percent in 2015/16, little less than 10.59 percent reported during 2010/11.

remaining 32.5 percent through borrowings from informal (non-institutional) sources. The share of borrowings from formal sources is much higher across all the land size holders except in case of marginal farmers (Annex Table 3). Data further shows that the percentage share of investment from formal sources is 63.4 percent as compared to 36.6 percent from informal sources such as moneylenders, traders and input dealers. In the case of small, medium and large farmers more than 67 percent of investment is through borrowing from formal sources while the same in case of landless farmers is 59.4 percent, and marginal farmers is 47.9 percent. The marginal and landless farmers depend more on informal sources for their investment needs. While they have to pay exorbitant rates of interest when they borrow from informal sources, the medium and large farmers get subsidised loans from formal sources[12] (Kumar *et al*., 2017). The credit policy should aim at expanding financial inclusion, given that India has large inter-farm and inter-regional disparities along with a growing number of women farmers, tenants and labourers in agriculture and related activities.

Public investment in agriculture versus input subsidies

Public expenditure on input subsidies is more than double the investments made in agriculture and irrigation. Does higher public expenditure on input subsidies cut down public GCFA and incentivise farmers to make investments? A positive and significant impact of input subsidy and on private GCFA and productivity has been reported in Kannan (2012), Gulati and Chopra (1999), and Terway (2020). Figure 4 shows an increasing trend in investments and subsidies over the period from 1980/81 to 2017/18 (Figure 4).[13] Increased budgetary outlays towards input subsidy lowered public GCFA for quite some time. However, both accelerated from the early 2000s, thus defying the argument that a hike in expenditure on subsidy lowers public investment. An increase in public GCFA also confirms a 'crowding in' effect on private GCFA, which became blurred from the 1980s to the mid-1990s. In fact, private GCFA and input subsidy have consistently shown an increasing trend up to 2008/09, followed by a decline. The estimated value

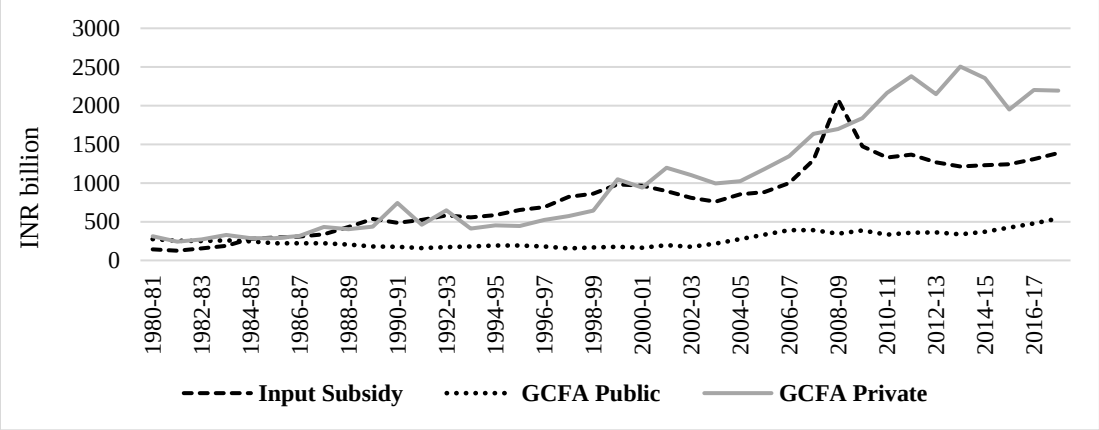
[12] Institutional sources extend loans at a 7 percent rate of interest under the interest subvention scheme, which reduces to 4 percent in cases of early repayment.

[13] The primary sources of data on subsidies are: Expenditure Budget; irrigation subsidy - Ministry of Statistics and Programme Implementation (MoSPI), and Reserve Bank of India (RBI); power subsidy - Power Division of the erstwhile Planning Commission, the Working on State Power Utilities and Electricity Departments, General Review Report (All India Electricity Statistics) and Tariff and Duty of Electricity Supply in India (Central Electricity Authority).

of the correlation coefficient between public and private GCFA is 0.78, and that between private GCFA and input subsidy is 0.87. Going by this and other studies, the government should encourage private (household) investments by investing more, along with extending subsidised credit and subsidies on purchase of assets namely, micro irrigation, and tractor and farm machinery. However, unabated rise in expenditure on subsidies has to be checked in order to improve expenditure efficiency and promote inclusive growth.

Figure 4: Input subsidy, public and private GCFA

(2011-12 prices)



Source: National Accounts and Union Budgets, various years
Note: Input subsidy is the sum total of subsidy on account of power, fertilizer, irrigation and credit (including crop insurance). The data is converted into real prices using the wholesale price index at 2011-12 base.

III.2 Reforming the input subsidy regime

Public expenditure on agriculture has revived from the mid-2000s. Though spending on agriculture and irrigation accounts for nearly 11 percent of GDPA, only 3 percent of this is directed towards asset formation; the remaining 8 percent is for supporting inputs. The expenditure on input subsidy is INR 1 290 billion (at 2011-12 prices averaged during 2011-18), which is close to 1.5 percent of GDP. Within the total input subsidy bill, fertilizer and power had the majority share, at 45.6 percent and 30 percent respectively, followed by irrigation (16.4 percent), credit (5.07 percent) and crop insurance (2.69 percent). Tiwari and Surya (2019) confirmed that states, on an average, spent 6.5 percent of their budget on agriculture and allied

activities during 2015-20. This constitutes 0.6 percent of budgeted capital outlay and 5.9 percent of the budgeted revenue expenditure. In some states, underspending (spending less than the allocated amount) in agriculture and irrigation was found to be to the tune of 8 percent and 16 percent respectively. Further, this underspending was more on the capital account, implying that states were unable to meet their development targets during that period or cut back expenditure in order to meet fiscal deficit targets.

The usefulness of input subsidies is often questioned on the grounds of the financial burden they impose on the exchequer.[14] Gulati and Narayanan (2003), Fan and Hazell (2000) have argued that input support might be useful in the short run, especially in regions where input use, productivity and farm income is low. Gulati and Terway (2019), Bathla *et al.* (2020) estimated that additional public spending on investment yield higher marginal returns as compared to that from subsidies. The returns from fertilizer subsidy are found to be higher in less developed states, indicating that it should be targeted towards the disadvantaged, rainfed and low productivity states, which have a high proportion of small and poor farmers. Similarly, rationalisation in power and urea subsidy is a must in the north and north-west regions, in view of intensified cultivation of water-intensive crops, continuous depletion of groundwater and imbalanced nitrogen, phosphorous and potassium (NPK) ratio (Chand and Pandey, 2008; Sharma, 2013).

The broad consensus, therefore, is that if public policy continues with lopsided support in favour of select crops and irrigated zones, it will further reduce land productivity and returns to farmers – outcomes that are diametrically opposite to the intent (Gautam, 2015). Moreover, subsidies must cover the marginal cost in the long run. Rationalisation of subsidies in the name of efficiency, targeting and saving of public resources has to be based on the development level of a region and the prospects of private investment and growth in output there. Any recovery model, be it through *neem*-coated urea, use of solar pumps or direct income support in lieu of the existing price-based support system has to be inclusive, equitable and backed with a corresponding increase in public investment in agriculture.

[14] An additional burden is that of loan waivers, which, according to the *Report of the Internal Working Group of the RBI to Review Agricultural Credit* (RBI, 2019), may not address the underlying causes of farm distress, may destroy the credit culture, potentially squeeze investment and harm farmers' interest in the long run.

In the case of the fertilizer subsidy, the Central government introduced the nutrient-based subsidy (NBS) scheme during 2010, under which the prices of P and K fertilizers were partially decontrolled under a fixed subsidy regime in which N (urea) was not included. As a result, subsidy on DAP (di-ammonium phosphate) and MOP (muriate of potash) is just about 25-30 percent of their cost of production or import while that on urea continues to be in the range of 75 percent of its cost of production. Chand and Pavithra (2015) found excessive use of urea in several states, including Andhra Pradesh, Bihar, Haryana and Punjab, while in other states, hnotably Chhattisgarh, Kerala, Rajasthan and West Bengal, its consumption is much less than the norm for the crops grown. The authors pointed out that if urea prices are decontrolled, and the subsidy amount is transferred directly to farmers, the amount required would be INR 7 000 per hectare (ha). The cash transfer estimated in Bathla *et al.* (2020) is somewhat lower at INR 5 250 per ha at 2017-18 prices. Chand (2019) explored the possibility of merging all types of subsidies into one pack for distribution to farmers on a per acre basis. However, the main hurdles to this are assessing the exact magnitude of various subsidies given by the Central and state governments, estimating the amount of cash transfers in each state and devising a criterion for payment to farmers.

There are several other implications of switching over to direct income support, such as exclusion of tenants or sharecroppers and women farmers, and the likely reduction in fertilizer which could adversely affect productivity. We believe that if fertilizer prices are completely decontrolled, the price at which they will flow from factories to distributors and then to retailers will be higher by about 60 percent to 80 percent. Therefore, the requirement for working capital by distributors, retailers and other participants of the supply chain (private and cooperatives) will increase. Banks will then have to raise the working capital limits sanctioned at various levels for handling the same quantity of fertilizers. Since complete decontrol of urea prices at one go may not be possible, bringing urea under the NBS may be a better option. The subsidy will be capped at the current level, and an increase in prices may get reflected in retail prices. One consequence of complete decontrol will, however, be the closure of several uneconomic urea manufacturing plants.

Similarly, in order to reduce the subsidy bill on account of electricity used to extract ground water for irrigation, a formula needs to be devised to reward states that save energy (through the installation of meters or solar pumps) and to penalise the wrongdoers. The State of Uttar Pradesh

has taken the lead in the installation of solar pumps. There is apprehension that if income support is substituted for subsidised electricity, farmers may grow less water-intensive crops because extracting groundwater will become more expensive. It may also alter the cropping pattern as per the irrigation water productivity (IWP). For instance, the IWP of rice in Punjab and Haryana is low as compared to several other states, especially Chhattisgarh. Income transfer can also spur investment in infrastructure in the eastern states which have higher IWP (Sharma *et al.* 2018). More research needs to be done on these issues and concerns raised.

On the issue of irrigation subsidy, the Fourteenth Finance Commission recommended the formation of the Water Regulatory Authorities (WRA) for water pricing. The pre-requisite for this is an ex-ante assessment of the capacity and potential of different irrigation models, that is institutional arrangements, and ensuring the efficiency of departments engaged in the supply of canal irrigation water.

As in the case of support for inputs, the government incurs sizeable expenditure on the interest subvention scheme for agriculture. The subsidy on interest subvention on short-term crop loans in the budget estimates of the Union Budget of 2020/21 is INR 178.63 billion, which is way below the fertilizer subsidy of INR 799.98 billion. A sum of INR 136.41 billion has been allocated for subsidy on crop insurance. The expenditure of states has also escalated due to loan waivers since 2014/15.[15]

There are reports of beneficiaries not using loans given against gold for agricultural operations. The *Report of the Internal Working Group of RBI to Review Agricultural Credit* (RBI, 2019) has recommended that the scheme should be replaced with direct benefit transfer (DBT) for small and marginal farmers. The group has also recommended that tenant farmers, sharecroppers, oral lessees and landless labourers may also be covered as individual borrowers or through self-help group/joint liability group (SHG/JLG) model with an overall limit of INR 300 000 per farmer. Since there is no record of tenants, sharecroppers and oral lessees, it would not be possible, in the first phase, to reach the DBT to them. If interest subvention is paid through DBT, farmers will have to avail loans from bank at market rates. In that event, the bank managers will also be more

[15] According to information given in reply to starred question no. 172 in the Rajya Sabha, Parliament of India, on 6 March 2020, the loan waivers announced by states varies from INR 1.29 billion in Chhattisgarh to INR 302 billion in Maharashtra. In Tamil Nadu, Maharashtra, Uttar Pradesh and Punjab, the loans of only small and marginal farmers were waived.

prudent while sanctioning the loans. Moreover, farmers will borrow only as much as is required for inputs. In the current situation, the extent of finance available is high for some crops and very low for others. This encourages the farmers to avail a loan for one crop and cultivate another crop. The working group also found that some states in the southern and western region have been availing agri-credit higher than their share in agri GDP, while states in the central, eastern and northeastern regions get credit lower than their proportion of agri-GDP.

In sum, public expenditure on investment as well as on input subsidies can incentivise farmers to undertake investments. At the same time, states have budgetary constraints and tend to neglect asset creation in agriculture, relative to other economic sectors. However, spending on subsidies (done from revenue account) has been on the increase despite enormous fiscal constraints. It is, therefore, vital for states to allocate more resources towards the capital account and hence capital formation in their expenditure policy, bring in better governance in canal irrigation departments/systems and, at the same time, rationalise expenditure on input subsidies. Efforts should be made to ensure that support reaches the poorer states and farmers who are at the bottom of the income pyramid. The ongoing initiatives in fertilizer subsidy based on NBS can help to lessen the financial burden of the Centre. For reforms in the pricing of power, irrigation and other inputs, states have to be proactive in devising appropriate systems and assuring improved governance. Where shifting to cash transfers is concerned, each state should first examine its feasibility and then estimate the amount, intended beneficiaries (farmers, tenants/landless cultivators or both), possibility of changes in the cropping pattern and, hence, fertilizer application and its consequent impact on the environment.

IV. Reforming agriculture price policy and marketing

Replacing minimum support price with income support

Two institutions – the Commission for Agriculture Cost and Prices (CACP) and the FCI – were established in 1965 to formulate and implement policies related to agriculture and food. The MSPs of paddy and wheat and other selected crops are determined by the CACP based on the cost of production, demand and supply, movement of domestic prices, intercrop price parity, and terms of trade between agriculture and non-agriculture sectors. The FCI was entrusted with the task of procuring wheat and paddy at MSP, maintaining the stocks to meet emergency needs and ensure price stability and distribution through the PDS and its network of fair price shops.

The CACP recommends MSP for 23 crops,[16] but its major focus has been on wheat and paddy for enabling procurement by the FCI and state agencies, mainly from Punjab, Haryana and Madhya Pradesh. After the global food crisis of 2006-07, procurement of wheat and paddy has expanded in other states as well. Procurement of pulses has picked up in the last five years; the National Agricultural Cooperative Marketing Federation of India Ltd (NAFED) procures and maintains the buffer stock of 2 million tonnes under the Price Support Scheme. The National Food Security Mission (NFSM) launched in 2006 also gave a fillip to food grain production and its procurement.

While the price support policy has incentivised farmers to increase investment and production and helped the government to maintain price stability and food self-sufficiency, its deleterious effects – regional bias,[17] mono-cropping and environmental degradation[18] – must not be ignored In 2018/19, out of total procurement, that of wheat was to the extent of 72.62 percent from Punjab and 79.67 percent from Haryana. In contrast, Bihar accounted for only 0.005 percent procurement. Despite an improvement in the production and productivity of paddy in the eastern states, its procurement is sporadic and poorly organised. Furthermore, since procurement is confined to wheat and paddy, farmers in Punjab have largely moved away from maize, bajra, oilseeds and pulses. A similar situation prevails in Haryana and, lately, in Madhya Pradesh where, after an increase in the irrigated area, farmers have switched to wheat cultivation.

[16] The *kharif* crops include common and grade A variety of paddy, jowar (sorghum), bajra (pearl millet), ragi (finger millet), maize, arhar (pigeon pea), moong (green gram), urad (black gram), groundnut, sunflower seed, soybean, sesamum, nigerseed, and cotton. The six *rabi* crops are wheat, barley, gram (chickpea), lentil, mustard and safflower. In addition, the CACP recommends support prices for sugarcane (called Fair and Remunerative Price), copra and jute. The sugar mills are bound by law to purchase sugar cane at this price. The difference between MSP and procurement price, however, became blurred over the years.

[17] Madhya Pradesh and Uttar Pradesh are two states where wheat is procured in large quantities. Andhra Pradesh, Chhattisgarh, Madhya Pradesh, Odisha, Telangana, Uttar Pradesh and West Bengal have also geared up their machinery for procurement of paddy. Bihar is the only major paddy producing state where procurement is still largely ignored. The AIDIS 2013 shows that the output price policy benefitted only 10 percent of farmers and that too in select states. Price distortions happen due to delays in procurement and other inefficiencies in regulated/wholesale markets because of cartels formed by wholesalers, inadequate storage and other infrastructure (Birthal *et al.*2015).

[18] Assured MSP for wheat and rice has resulted in expansion of area under these crops in water-stressed regions at the cost of the environment. Punjab, for example, witnessed a massive depletion of the water table, at an alarming rate of 70 cms per year during 2008-12. Since farmers are not charged for the electricity used to pump groundwater and the canal network has also not expanded, the area irrigated by tube wells has soared and led to overexploitation of water in 80 percent of the blocks (CGWB, 2016).

Another major outcome of the price policy is an excessive build-up of stocks (also called central pool stocks) from time to time. Procurement of wheat and paddy at MSP is open-ended, that is, government agencies are mandated to procure whatever quantity is offered by the farmers. The stock of rice and wheat has surpassed the buffer norms,[19] and this has put tremendous pressure not only on state finances but also on the storage capacity of FCI and state warehouses. The central government has, on several occasions since 1999/2000, resorted to open market sale of grains for domestic consumption and exports. While revising the buffer norm in 2015, the government decided that if the stock of grain in the central pool was more than the revised norms, it will offload excess stock in domestic markets through open sale or exports.[20] Moreover, subsidising exports has become increasingly difficult because of the WTO stipulations.[21]

The fixation of MSPs of wheat and rice has also become highly politicised with states recommending their own prices over and above the price recommended by the CACP. OECD-ICRIER (2018) found domestic price support in agriculture commodities to be negative in most of the years from 2000 to 2016, implying a price gap between their producer price and the reference (international) price. This indicates that India imposes an implicit tax on domestic producers through lower MSP, aggravated by regulations on trade, inefficiencies in agriculture markets and weak infrastructure. Farmers are also affected by a continuous increase in the input cost relative to output price, which results in lower net returns. On the demand of farmers, from the *kharif* season of 2018, the Centre fixed the MSP to ensure at least 50 percent return on overall paid out cost (A2+FL).[22] In the *kharif* marketing season of October 2019-September

[19] The current buffer norms of wheat and paddy are: 21.04 in million tonnes on 1 April); 41.12 million tonnes on 1 July; 30.77 million tonnes on 1 October and 21.42 million tonnes on 1 January.

[20] The Inter-Ministerial Group (IMG) recommended better management of food stocks as the economic cost of wheat in the central pool was higher than the prevailing international prices, making exports impossible without a subsidy being given.

[21] A communication from the United States of America to the WTO 9 May 2018 highlighted certain measures/notifications through which India provided market price support to rice and wheat.

[22] A2+FL is actual paid out cost plus imputed value of family labour. The MSP for paddy (common variety) was increased by 12.90 percent. There was hefty increase in MSP of other crops as well (52.45 percent in the case of ragi and 45.11 percent in nigerseed). Since these crops are not procured by the Central government, there was no impact on central pool stocks.

2020, a much higher procurement of rice at 44.1 million tonnes might result in central pool stocks exceeding 80 million tonnes by 1 July 2020 and the subsidy bill soaring.[23]

Should India move away from a system of price support to other fiscally sustainable alternatives that would also shield farmers' from price risk? A high-level committee studied the grain policy and management and recommended several measures, which were never implemented (FCI, 2015). Chand (2019) suggested an "area-based income compensation" based on the difference between the market price received by farmers and the MSP for various crops, popularly known as price deficiency payment system. The State of Madhya Pradesh initiated such a scheme under which farmers were compensated in cash when commodity prices fell below a certain level. The policy, however, was not successful (Gulati, Chatterjee and Hussain, 2018). Yet another suggestion is to adopt market-based instruments such as derivative market, that operate through options, forwards and futures in order to effectively cover the price risk of farmers.

Direct income support, implemented in Jharkhand, Karnataka, Odisha, Telangana and West Bengal seems transparent, less distortionary and equitable. According to Gulati *et al.* (2018), in this model, farmers sell grains in the market and the government provides income support in unfavourable situations. Assuming all farmers get INR 10 000 per ha, irrespective of the crops they grow and whom they sell to, the estimated cost at the national level will be approximately INR 1.97 trillion. The cost will be much lower if farmers, who have sold their paddy and wheat at MSP to government agencies and sugarcane at Fair and Remunerative Price (FRP)/State Advised Price (SAP) to sugar mills, are excluded from this system of payment.

India can also experiment with a system modelled on China's targeted price policy and direct compensation scheme. China followed a price support system, including buffer stock similar to India, and the country faced a situation of bulging grain stocks. The food grains purchased at intervention price were much higher than the global prices. As part of reforms, the procurement price of wheat was reduced twice by USD 8.6 per tonne for 2018 and 2019. For 2020, the price has been retained at the 2019 price of USD 320 per tonne.[24] When market prices are high, China sells from its reserves in weekly auctions of grains, akin to the open market sales scheme

[23] The food subsidy bill has soared to INR 1 403 billion in 2016-17, from INR 6.50 billion in 1980-81. The food subsidy bill (excluding market price support) constitutes 1 percent of India's national income averaged from 2011 to 2018.

[24] Source:http://www.fao.org/giews/food-prices/food-policies/detail/en/c/1238526/

followed in India. However, unlike India where MSP is uniform across the country even though the cost of production differs widely across states, China follows a differential price policy across provinces. For cotton and soybeans, the target prices are fixed and combined with compensatory, direct payments to farmers, based partly on the area planted. In due course, China proposes to dilute the link between compensatory payments and production decisions on a historical production basis by making them conditional on environmentally friendly cultivation practices (OECD, 2015). However, these measures have to be supported by land reforms, improvements in marketing, research, infrastructure, innovation, extension services, and accessibility to good education and health care for productivity gains in the long run.

Legislation and regulations in agriculture marketing

As noted in Section II, agri-markets governed under the APMC Act restricted farmers, and traders to certain geographical zones and forced them to pay a cess on any transaction within or outside the marketing yard of the APMC. Stringent rules on intra and inter-state trade together with improper price discovery and a long chain of intermediaries made markets uncompetitive and unfair to farmers for decades. Though the model APMC Acts of 2003 and 2017 encouraged farmers to enter into contracts with private companies and retail chains to realise better prices, the monopoly of state-run *mandis* continued.[25] Contract farming could not take off due to the requirement of compulsory registration with *mandis*, payment of fees, levies and other market regulations, as well as coordination with farmers to build their confidence in the contractual arrangement.

On 5 June 2020, the Centre promulgated three ordinances – Farmers' Produce Trade and Commerce (Promotion and Facilitation) Ordinance, 2020, Farmers' (Empowerment and Protection) Agreement on Price Assurance and Farm Services Ordinance, 2020 and the Essential Commodities (Amendment) Ordinance, 2020. In September 2020 these were introduced as bills in Parliament and became laws after the President of India gave his assent. According to Chand

25 A reply to Unstarred Question No 291 in the Lok Sabha, Parliament of India, on 19 November 2019 stated that Andhra Pradesh, Assam, Chhattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Maharashtra, Madhya Pradesh, Mizoram, Nagaland, Odisha, Punjab (separate Act), Rajasthan, Sikkim, Telangana, Tripura, Tamil Nadu (separate Act) and Uttarakhand had made provisions in their respective APMCs to allow contract farming.

(2020), these three laws are the most prominent structural reforms in this sector in the last few decades.

The Farmers' Produce Trade and Commerce Promotion and Facilitation (FPTC) Act, 2020 allows sale and purchase of agricultural commodities outside the physical boundaries of APMC *mandis*. So far, such transactions attracted fees and other charges applicable to trading inside the APMCs. Only licensed traders were allowed to do business within these and such licenses were not freely available.[26] Instead of a license, now anyone having a valid permanent account number issued by the income tax department is allowed to purchase or sell agricultural produce in the trade area. More importantly, such transactions will not attract any market fee or other charges which are levied on transactions inside the mandis. In the trade area, there is also complete freedom to operate an online trading portal. This need not be linked to the e-NAM (electronic National Agriculture Market). However, the Central and state governments can frame rules for registration, code of conduct and procedure for trading on such platforms.

The Farmers' (Empowerment and Protection) Agreement on Price Assurance and Farm Services (FAPAFS) Act, 2020 brings uniformity in contract farming. Prior to its enactment, contract farming was governed under the AMPC Act of individual states. The FAPAFS Act facilitates a written contract between the farmers and a sponsor (which could also be a company). The contract can mention the terms and conditions of quality, grade, time of supply and the price of the commodity being cultivated. The Act prescribes a minimum period of one year and maximum period of five years for such an agreement. It further stipulates that for any additional amount in excess of the agreed price, the benchmark will be the prevailing price in the APMC *mandi* or an electronic portal like e-NAM. The contracts could be for any foodstuff, including edible oilseeds and oils, cereals like wheat, rice or coarse grains, pulses, fruits, vegetables, nuts, spices and sugarcane. Contracts can also cover poultry, piggery, goatery, fishery and dairy, intended for human consumption in its natural or processed form as well as cotton, jute and cattle fodder.

Importantly, the Act provides that the specifications of quality, grade and standards for pesticide residue and food safety standards can also be part of the agreement. Such specifications are

[26] In fact, even an autonomous society promoted by the MoFAW's small farmers' agribusiness consortium (SFAC) failed to secure a license to trade in Delhi's Azadpur *mandi* on the ground that it did not possess a shop in the *mandi*.

especially important for contracts for export-oriented produce, specifically for perishables. Since Indian agriculture is dominated by small and marginal farmers, the Act protects their interests by clearly specifying that an agreement cannot involve any sale, lease and mortgage of the land. Moreover, no permanent structure can be raised on the land unless the sponsor agrees to remove it on the conclusion of the agreement.

The Essential Commodities (Amendment) Act (ECA), 2020 seeks to deregulate the supply of food stuff, including cereals, edible oils, oilseeds, pulses, onions and potato by removing them from the purview of the ECA, 1955. The main objective of the 1955 law was to protect the interests of consumers by preventing hoarding of essential commodities by enabling the Centre to impose restrictions on their storage and movement. The Centre enabled the states to issue control orders through which they could impose such restrictions. The amended ECA limits the Centre's power to impose restrictions to only extraordinary circumstances like famine, war, extraordinary price rise and grave natural calamity. It allows the Central government to impose stock limits in certain circumstances. In the case of perishable horticultural produce, stock limits can be imposed only if there is a 100 percent increase in retail price over the retail price in the preceding 12 months or the average retail price of the last five years, whichever is lower. For non-perishable produce, the restrictions under can be imposed only if the price rise is 50 percent over the price in the previous 12 months or the last five years.

These laws have a multitude of far-reaching implications. The privately owned markets and non *mandi* transactions between farmers and consumers will run parallel with the existing APMC markets. There is a provision to establish a state-level Contract Farming (Promotion and Facilitation) Authority to ensure implementation of the Act. The authority can levy facilitation fees and resolve any disputes that may arise. There is also a proposal to allow private entities and Farmer Producer Companies (FPCs)[27] to transact directly in the e-NAM and ease the supply chain. However, this freedom to trade can be subject to regulation as the government has retained the right to notify any document other than a PAN card as a requirement for trading in the future. A system for registration of traders, modalities of transactions and the modes of

[27] Satyasai and Singh (2020) reported the success of FPCs in strengthening backward linkages with farmers and forward linkages with food processing units for value addition. With support from NABARD, the FPCs in the northeast region have facilitated higher income to growers through consolidation of produce, access to inputs and integration with processing units.

payment to farmers has to be prescribed. Furthermore, compared to physical trading where delivery is on the spot, trading on electronic platforms will require better oversight and regulations, as some agency or intermediary is needed to facilitate transactions between farmers and/or aggregators with the buyers.

State governments have to draw up a blueprint for the entry of the private sector in agri-markets and push for speedy implementation of regulations specified in the respective Acts. Appropriate institutional arrangements have to be formed for aggregators, FPCs, SHGs, cooperatives and agri-start-ups that help in reducing the transaction costs of farmers and providing them grading and standardisation facilities. Such interventions have to be supported through adequate finance such as the support given by NABARD to the FPCs. The role of the Warehousing Development and Regulatory Authority (WDRA) will be crucial.[28] As the notified warehouses and private online markets will be deemed markets for direct sale of produce, these can be regulated by the WDRA. On the flip side, there might be no incentive for any warehouse to register with the WDRA, as all warehouses can now act as market places without paying any fee or charges to APMCs. However, since business in trade areas is going to be deregulated entirely, it is necessary to make registration of warehouses with WDRA mandatory so that the privately-held stocks in warehouses are known to the government. This will help the government to take informed decisions and intervene in markets to check hoarding of commodities and price fluctuations that could be detrimental to consumers' interests.

One important concern is that the warehouses and factory premises may apply for de-notification and sub-market yards in order to take advantage of the zero tax structure. States may have to bear some loss of revenue because of trade moving out of their jurisdiction as well as losing out on the market fee that was earlier levied on every transaction. Another issue is ensuring timely payment to farmers, which was earlier regulated by the APMCs. According to the FPTC Act, the payment will be made on the same day, but if procedurally required, it

28 The WDRA was set up by the Central government in 2010 to ensure implementation of the Warehousing (Development and Regulation) Act, 2007. It was envisaged to create a digital, online, web-based ecosystem of electronic negotiable warehouse receipts (e-NWR), similar to the issuance of financial securities like equity shares/bonds. The WDRA has set up two repositories namely, M/s CDSL Commodity Repository Limited and M/s National E-Repository Limited, for creation and management of e-NWR. The registered warehouses shall issue e-NWRs on any of the repositories for the stocks stored. WDRA has notified 123 agriculture and 26 horticultural commodities for registered warehouses to issue e-NWRS.

can be done in three working days. In this situation, the farmers will have to be given a receipt of delivery of produce in which the due amount will be mentioned.[29] Since the trade area is not under regulation, it is necessary to ensure that the farmer is either paid in cash or by electronic transfer into his bank account on the same day before the delivery of the produce. This will eliminate the possibility of disputes between farmers and purchasers. For dispute resolution, the Act prescribes conciliation through a board appointed by the Sub-Divisional Magistrates (SDMs). Since SDMs and their officers also perform myriad other duties, it would be unrealistic to expect them to find time for settling disputes. Making same day payment mandatory will forestall disputes relating to payments. The farmers should be encouraged to use the e-NAM platform for more competition and better dissemination of commodity prices.

All these steps will enable the smallholders, with less than two ha. of land, be part of competitive agri-markets. The smallholders are unorganised and have to be securely linked with both back-end service providers and front-end agri-processors. Contrary to popular perception, studies indicate that the productivity of smallholding is not lower than that of the larger holdings.[30] However, this conceals the challenges that the small and marginal farmers face in two significant respects – accessing credit for production and marketing their produce.

RBI (2019) noted that only 41 percent of small and marginal farmers are able to get credit from public and private sector banks (as per priority sector advances annual return of 2015-16). Under priority sector lending norms, all the scheduled commercial banks have been given a target of 40 percent of their adjusted net bank credit (ANBC) or credit equivalent of off-balance sheet exposure, whichever is higher. Banks are also mandated to provide 8 percent of ANBC for small and marginal farmers. The RBI working group further noted that in 2015/16, only 40.9 percent of the 125.6 million small and marginal farmers, had accounts with scheduled commercial banks. Farmers having Kisan Credit Cards (KCC) get loans against negotiable warehouse receipts for the produce stored in warehouses registered with the

29 In Nashik, the largest grape exporting district of Maharashtra, grapes have been out of the purview of APMC and the crop is sold by farmers outside the *mandi*s. There are reports in the media about traders defaulting on payment of millions of rupees. This year, taking the excuse of COVID-19, the traders and exporters would probably want farmers to waive off 30 percent of their price.

30 Based on NSSO, 2014 the per ha value of output is INR 14 754 for marginal farmers, INR 13 001 for small farmers, INR 10 655 for medium farmers and INR 8 783 for large farmers.

WDRA. They also get the benefit of interest subvention of 2 percent for six months after harvest to prevent distress sales. These initiatives are not adequate as small farmers face several hurdles in accessing loans. Kumar *et al.* (2020) found that access to credit in eastern India benefitted farmers, and those who availed credit from formal sources are much better off than others who borrowed from informal channels. They suggested that the credit policy must offer a variety of loan products to cater to the requirements of different households.

Birthal *et al.* (2015) have maintained that smallholders prefer to cultivate higher value crops such as vegetables, fruits and milk. This is because they lack storage facilities for crops like sugarcane, wheat, paddy, pulses and cotton for which they can get a remunerative price through the government procurement system. However, because of the relatively smaller quantity of produce, small farmers do not find it viable to hire transport to go to procurement centres and so their produce is sold to traders within the village. In such cases, even for wheat and paddy crops that are procured at MSP, they realise a lower value since they lack bargaining power.[31] Extending support to smallholders through contract farming under the new Act, supplemented with subsidised credit and insurance, can go a long way to improving their condition. According to Joshi (2015), small farmers should be organised across the entire value chain as technology, information, finance and markets are sometimes inaccessible to them due to low marketed surplus or other reasons. India needs location-specific, differentiated programmes for smallholders and clear responsibilities for the public and private sectors in order to make farming viable. The Centre must give states flexibility in spending and in strategising plans that help small farmers enter into contracts with private agencies.

[31] For instance, in May 2019, farmers in Gulabbagh in the State of Bihar sold maize at INR 1 100 to INR 1 200 per quintal even though the MSP announced was INR 1 765 per quintal. (10 quintal equals 1 tonne)

V Conclusions and way forward

This chapter provided a historical perspective of the key reforms initiated in Indian agriculture and the structural changes that have taken place with the objective of highlighting some important governance issues for further action. The paper began by delving into the relationship between the Centre and the states in the devolution of funds and their shared responsibilities towards agriculture development. Though under the Constitution of India, agriculture and irrigation fall within the jurisdiction of states, the Centre has a crucial role to play in the form of release of funds/grants, subsidies and price support for agriculture inputs and output and pursuing the national development agendas of food and nutrition security, elimination of poverty and hunger. In doing so, it is important that the Centre should give flexibility to states in strategising action plans to encourage farmers and the private sector that are suited to their particular requirements. There is a strong need for convergence of various schemes and hence effective coordination across Central ministries for which an empowered group of ministers should be formed. Within the States, cabinet sub-committees on agriculture and related departments (including of irrigation and power) should be constituted.

Almost every state in India is confronted with a fiscal crisis, and the brunt of the resource crunch has largely been borne by agriculture and irrigation, indicating a lower priority accorded to this sector in the expenditure policy. Public investment, which has always been skewed towards major and medium irrigation, has to be synchronised with the changing investment requirements of farmers, such as micro irrigation, storage, mitigating post-harvest losses, soil health and allied activities. This will intensify the 'crowding in' effect of public investment on private household investment.

Government spending on input and output subsidies is much higher than that on investment; it is important to target such support towards the less developed states/regions and small and marginal farmers for higher productivity as well as alleviating poverty. Replacing the existing price support system with direct income support to farmers or encouraging them to use *neem*-coated urea and solar pumps has to be backed with a corresponding increase in public investments in the agriculture sector. Direct income support may assure efficiency in input use and financial autonomy to farmers, but the amount of cash transfers has to be estimated and aligned with the existing cropping pattern in each state as well as usage of inputs and presence of

tenants and sharecroppers. Similarly, the recently introduced marketing reforms laws – FAPAFS Act, FPTC Act and the ECA – can yield the desired results only if adequate investments are made in rural and marketing infrastructure and adequate flow of credit and extension services to farmers is ensured. The way forward for States is to initiate reforms in agri-markets and create an enabling environment that incentivises the cooperatives, agri-businesses and private companies to enter the sector and also undertake investments in handling perishables. Institutional support can be taken from various industry forums, export houses, NAFED and the National Centre for Cold-chain Development. Subsequent to the enactment of these laws, states have initiated measures in their respective markets, whereas some like Punjab, Haryana, Uttar Pradesh, Rajasthan and Tamil Nadu opposed these laws mainly on grounds of loss of revenue and the apprehension that this will lead to the Centre reducing grain procurement at MSP, leading to a fall in the market price of grains. States do have autonomy to bring suitable changes in the laws but it is important that they frame rules for registration and code of conduct for trade as well as procedures for trading on newer, even online, platforms, which can also be linked to e-NAM.

In Punjab and Haryana, a major proportion of market arrivals of wheat and paddy (about 99 percent in the case of Punjab) are procured by government agencies. In Punjab, such transactions attracted market development fee (MDF) and rural development fee (RDF) of 3 percent each. In Haryana, the MDF and RDF fee was 2 percent each. In both the states, the *arhatiyas* were paid 2.5 percent of MSP as commission. The marketing boards of Punjab and Haryana earned about INR 35 billion and INR 16 billion respectively on this account. The Centre has since decided not to pay the MDF on paddy procured in the *kharif* marketing season 2020-21 (October to September). The difference in fees between APMC *mandis* and other markets has already prompted other state governments to reduce the fee within the former. Within days of the Centre notifying the FPTC Act, the Government of Punjab reduced the MDF and RDF on basmati paddy from 2 percent to 1 percent each.[32] Similarly, Haryana also reduced MDF and RDF on wheat and rice from 2 percent each to 0.5 percent each. Madhya Pradesh too reduced the *mandi* tax from 1.70 percent to 0.5 percent. On 6 November 2020, Uttar Pradesh reduced the *mandi* tax from 2 percent to 1 percent.

[32] The MDF and RDF for basmati rice was 2 percent each while for common and grade A paddy it was 3 percent.

It is hoped that the enactment of the FPTC law will force state marketing boards to upgrade infrastructure in the existing regulated markets and make operations in these more efficient and transparent. Even though their income may decline due to the reduction of fees, it is possible that the state governments will provide them required funds from the budget. Since the difference in tax between trade area and APMC will now be just about 0.5 to 1.5 percent, it is possible that *mandis* will continue to be the preferred places for trading.

APMCs own large tracts of land, mostly in towns and cities. So far there have been few cases of public private partnership to create modern infrastructure for sorting, grading, drying and storage in these. It is possible that state governments will look for private collaborations to modernise the facilities within APMCs so that they remain competitive. In our opinion, private players may not venture into agri-business/marketing in the short run. However, in the medium to long term, they can be expected to engage in agri-marketing, provided state governments facilitate such business practices and develop adequate infrastructure. We expect that by 2030, exporters and processors may set up their own purchase centres in the trade area which will provide facilities specific to a particular commodity or group of commodities. In all likelihood, both food grains and perishable horticulture produce will attract investment. This could be higher in the case of perishables, due to relatively less quantum of arrivals as well as the additional space required for their transactions. Even before the enactment of the FPTC Act, fruits and vegetables have largely been traded outside the APMCs. In the last few years, states like Delhi and Maharashtra had delisted them from the purview of the APMC Act. The emerging ecosystem of startups may see investment flowing into the establishment of value chains connecting producers with the processors and consumers.

The amended ECA will hopefully reduce regulatory interference in business transactions. The latest example of such interference is the Centre using the powers under the Act in October 2020 to impose stock holding limits on onions, stipulating that the wholesalers cannot store more than 25 tonnes and retailers not more than two tonnes. India's surpluses for most agricultural produce are marginal. India is a large importer of some commodities like edible oils and pulses and any natural calamity can cause damage to pulse crops, resulting in shortages. In the last three years, India had to allow import of maize (in 2019) as well as onion and potato (in 2020). From 2000 to 2015, the government has often resorted to restrictions on the movement, stocking and export of

wheat, maize, chickpea, potato, onion, sugar, cotton and milk (OECD-ICRIER 2018). Due to such adhocism, India may not be seen as a reliable exporter.

The amendment in the ECA is seen as a step towards making the regulatory regime more predictable so that private investment can be attracted into the agri-supply chain. At present, the private sector is reluctant to make any investment as the government can suddenly impose stock limits or restrictions on the movement and export of agricultural produce. If India's crop productivity increases and the demand-supply situation improves, it is possible that the private sector may see opportunities to invest in the creation of infrastructure as well. A successful export-oriented supply chain of grapes and buffalo meat has already been created almost entirely by the private sector. By 2030, if there are surpluses in agricultural produce, such investment can be expected in other areas as well. The Agriculture Export Policy, 2018[33] already provides an assurance that organic produce and processed agricultural products will not be subject to any export restriction by way of minimum export price, export duty, ban on export, export quota, export capping, export permit etc. However, the government has retained the powers to impose export restrictions on primary produce or non-organic produce. States must also devise some ways to record commodity stocks available with the private agencies, perhaps through registration with the WDRA.

The FAPAFS Act aims to bring uniformity in contract farming. India already has a successful model in poultry and seed production. Under the contract system, aggregators provide extension services, including feed and medicines to small farmers who provide space and labour to grow one-day old chicks, also provided by the aggregators. The marketing risk is not borne by the farmers. It is estimated that about 66 percent of India's poultry production is under contract arrangements. Most of sugarcane production is also through a form of contract farming under which an area is reserved for supplying sugarcane to sugar mills. The farmers are assured of the FRP with the mills having to pay the SAP, which is higher than the FRP in some states. This system of assured marketing has, however, provided a perverse incentive to farmers to grow sugarcane even in water-stressed regions. As a result, India produces more sugar than required for its domestic consumption. In the case of perishables, a few companies – Adani Agri Fresh Ltd., MAHAGRAPES, Mother Dairy-SAFAL, Haldiram Foods International Ltd. etc. have

[33] https://commerce.gov.in/writereaddata/uploadedfile/MOC_636802088572767848_Agri_Export_Policy.pdf

entered into contracts with farmers in several commodities for both retail and value addition but their penetration is still very low. This is despite the fact that the farmers in selected regions in Haryana and Himachal Pradesh got at least INR 100 to INR 150 per quintal[34] more for their produce from Mother Dairy-SAFAL compared to those selling to commission agents/traders (Bathla, 2016).

It is hoped that a legal framework for contract farming can provide the much-needed fillip and scaling up to these arrangements. In addition, it may encourage the production of better quality and high value produce. Going forward, one can expect that by 2030, Indian farmers will have sufficient incentive to enter into contracts for export-oriented agriculture and horticulture produce which will meet international standards of quality and food safety. Since contract farming has the potential to bring businesses and farmers together, it can enable the farmers to use better practices, including more appropriate use of fertilizers and pesticides. It can introduce appropriate technology in farming and in allied occupations like dairy, fisheries and beekeeping etc. It can also incentivise farmers to conserve water by adopting micro irrigation and fertigation practices. It is, therefore, imperative for states to strengthen institutional support, provision of credit and extension services that instil confidence among small and marginal farmers to engage in contract farming.

[34] 10 quintals equal 1 tonne

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Annex Tables

Annex Table 1: Agricultural Orientation Index (AOI) of public spending on agriculture and irrigation

States	TE 1983-84	TE 1993-94	TE 2003-04	TE 2012-13	TE 2015-16
Andhra Pradesh	0.46	0.51	0.49	0.90	0.85
Assam	0.55	0.40	0.26	0.37	0.38
Bihar	0.28	0.19	0.17	0.29	0.30
Gujarat	0.76	0.80	0.76	0.69	0.90
Haryana	0.51	0.44	0.34	0.52	0.34
Himachal Pradesh	0.57	0.54	0.41	0.54	0.57
Jammu & Kashmir	0.58	0.46	0.39	0.47	0.47
Karnataka	0.65	0.65	0.84	1.01	1.49
Kerala	0.44	0.45	0.35	0.52	0.63
Madhya Pradesh	0.75	0.54	0.48	0.56	0.44
Maharashtra	1.43	1.43	1.30	1.12	1.15
Odisha	0.54	0.50	0.41	0.79	0.73
Punjab	0.40	0.28	0.17	0.22	0.43
Rajasthan	0.52	0.46	0.36	0.30	0.25
Tamil Nadu	0.59	0.73	0.67	0.50	0.64
Uttar Pradesh	0.50	0.38	0.31	0.23	0.27
West Bengal	0.43	0.33	0.19	0.18	0.18
Chhattisgarh*	-	-	0.63	0.78	1.26
Jharkhand*	-	-	0.53	0.40	0.41
Uttarakhand*	-	-	0.58	0.86	0.95
Bihar-Jharkhand	0.28	0.19	0.25	0.32	0.33
Madhya Pradesh-Chhattisgarh	0.75	0.54	0.53	0.61	0.60
Uttar Pradesh -Uttarakhand	0.50	0.38	0.33	0.27	0.31
All 20 States	0.60	0.52	0.48	0.54	0.59

Source: Bathla et al. (2021)

Note: 1. TE – triennium ending

2. AOI serves as an indicator of the degree to which the share of agriculture and irrigation in public expenditure is commensurate with the weight of the sector in GDP. Irrigation expenditure excludes flood control. Data is derived from Finance Accounts and GoI-NAS.

* Till 2000, these were part of Madhya Pradesh, Bihar and Uttar Pradesh respectively.

Annex Table 2: Composition of revenue and capital expenditure on irrigation, agriculture & allied activities

(2011-12 prices)

Expenditure Heads	Revenue Expenditure (percentage share)	Capital Expenditure (percentage share)	Revenue Expenditure (INR billion)	Capital Expenditure (INR billion)
	TE 2015-16	TE 2015-16	TE 2015-16	TE 2015-16
Irrigation and Flood Control	**100**	**100**	**248.96**	**488.59**
Major & Medium Irrigation	70.28	72.44	175.39	354.29
Minor Irrigation	21.40	18.45	52.98	89.73
Command Area Development	3.29	1.01	8.08	4.92
Flood Control and Drainage	5.03	8.10	12.51	39.65
Agriculture and Allied Activities	**100**	**100**	**790.21**	**75.92**
Crop Husbandry	39.21	12.53	312.76	9.30
Soil and Water Conservation	2.42	16.50	19.04	12.47
Animal Husbandry	9.50	6.16	74.54	4.49
Dairy Development	2.38	0.45	18.59	0.37
Fisheries	1.96	6.35	15.43	4.69
Forestry and Wildlife	13.76	23.11	107.95	16.49
Plantations	0.01	0.01	0.082	0.006
Food Storage and Warehousing	12.68	19.65	99.37	15.79
Agricultural Research and Education	6.65	1.59	52.17	1.15
Agricultural Financial	-	-	-	0.003

Institutions								
Cooperation		8.23		11.77		63.45		9.66
Other Agricultural Programmes		3.21		1.89		26.82		1.49

Source: Based on Finance Accounts, GoI. The expenditure is taken for 20 major states.

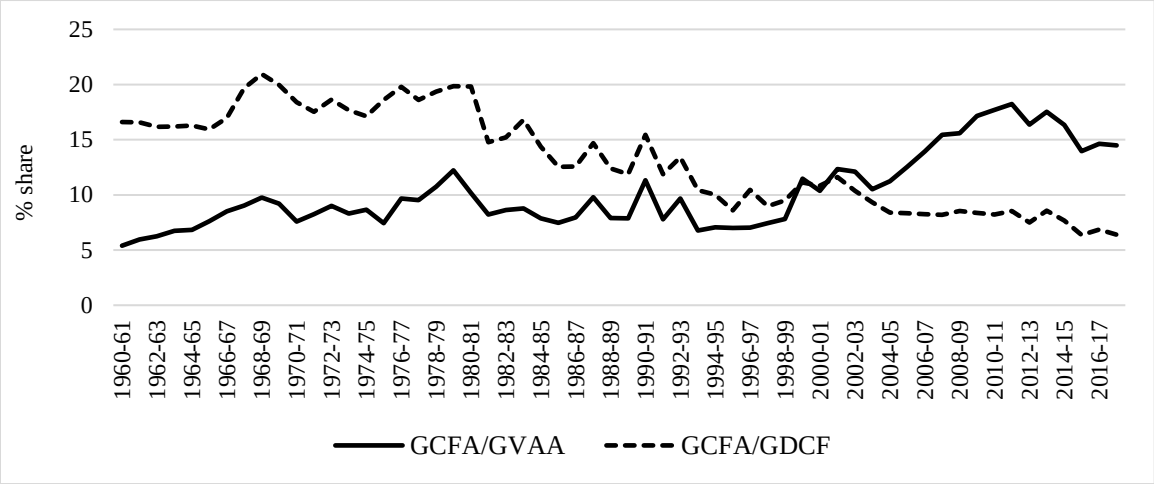
Note: TE – triennium ending

Annex Table 3: Percentage share of sources of credit in private investment in agriculture, 2012-13

Land Class	Distribution of farm expenditure as per source (percent)			Percentage share of investment from	
	Own source (non-borrower)	***Borrowing from formal sources***	***Borrowing from informal sources***	***Formal (institutional sources)***	***Informal (non-institutional) sources***
Landless	18.6	48.4	33.0	59.4	40.6
Marginal	17.4	39.6	43.0	47.9	52.1
Small	13.9	59.6	26.5	69.2	30.8
Medium	10.9	60.6	28.6	67.9	32.1
Large	7.40	73.2	19.4	79.1	20.9
All Classes	13.8	53.8	32.5	63.4	36.6

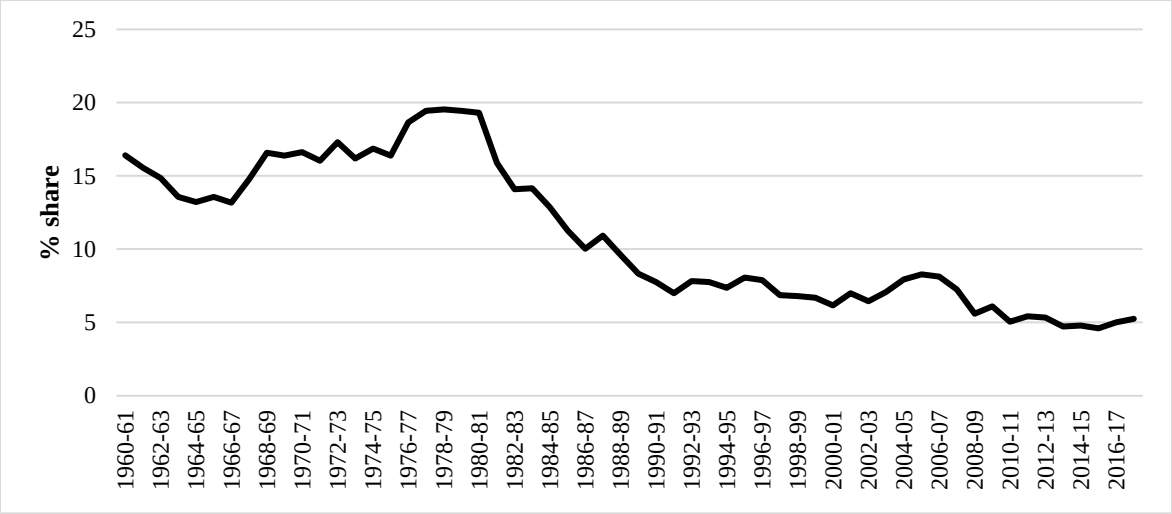
Source: *AIDIS*, 2013. Schedule 18.2

Annex Figure 1: Percentage share of GCFA in GDCF and GCFA in GVAA



Source: GoI-NAS

Annex Figure 2: Percentage share of public GCFA in public GDCF



Source: GoI-NAS

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