Ag-tech Delivery: Reaching the Grassroots?

The 'Har Khet ko Pani' Conundrum

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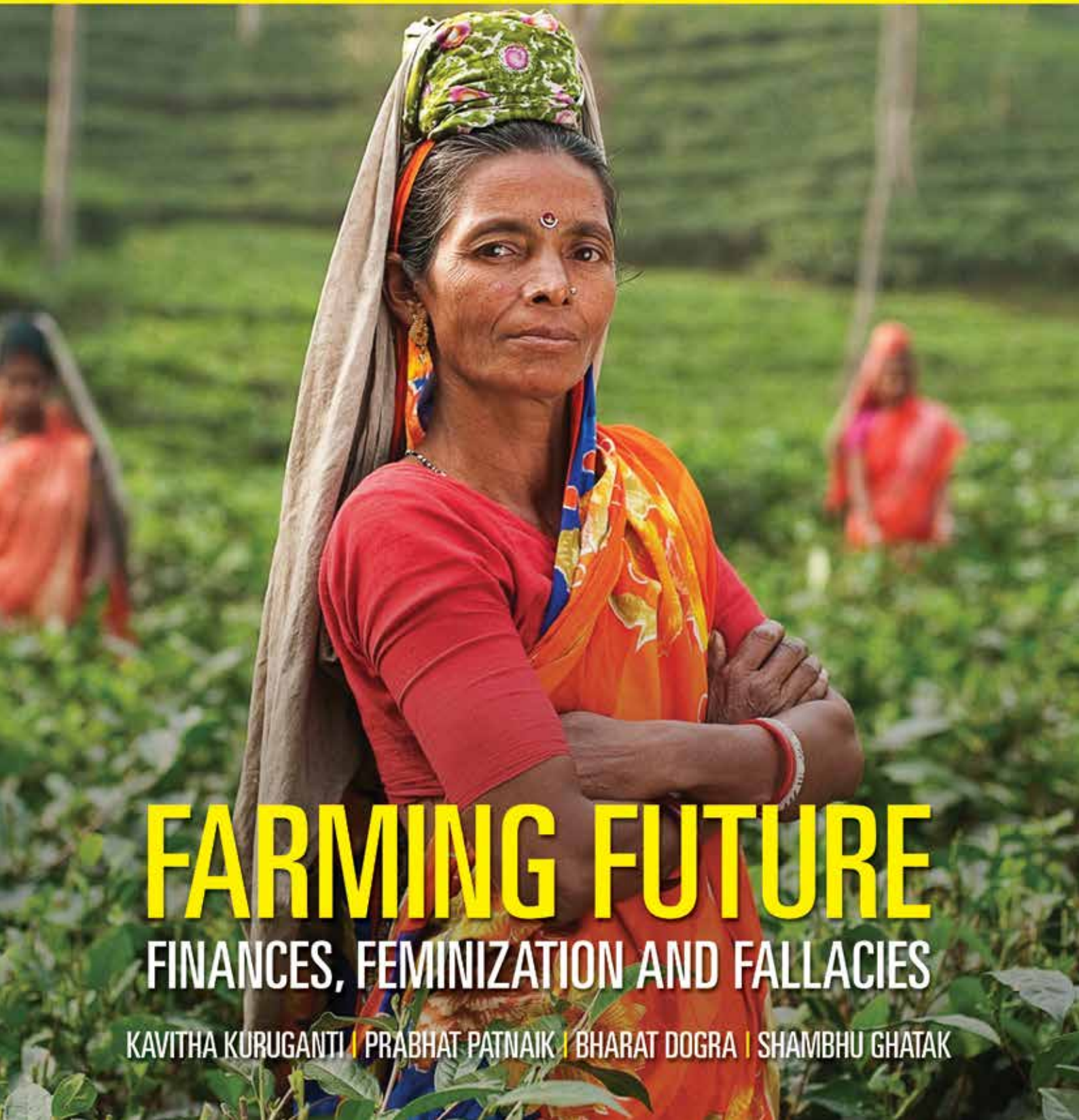
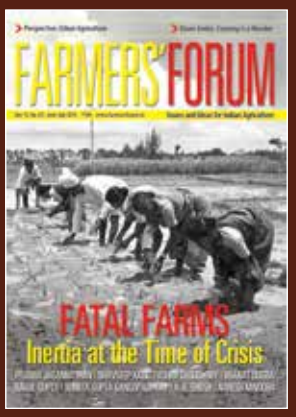
Issues and Ideas for Indian Agriculture



FARMING FUTURE

FINANCES, FEMINIZATION AND FALLACIES

KAVITHA KURUGANTI | PRABHAT PATNAIK | BHARAT DOGRA | SHAMBHU GHATAK



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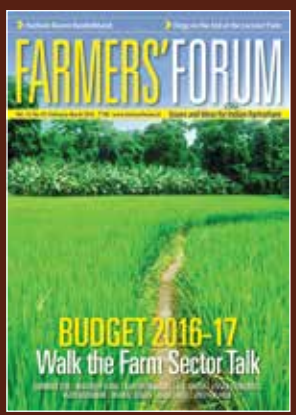

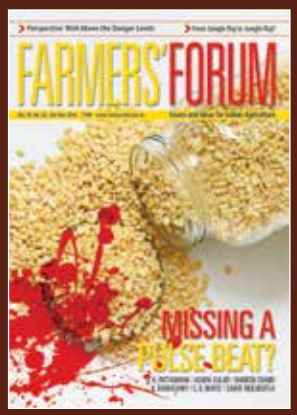

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When Ballots Hold No Hope

At a time when politics dominates not just economics and society but even critical matters of national security, it has been satisfying to be able to tell a gathering that the Bharat Krishak Samaj is gifted with a heavy ideological endowment from the environment and nature that has constantly shaped its policy preferences, which do not need strong political convictions or moorings.

In less than a hundred days from now, the country will decide Prime Minister Narendra Modi's electoral future as the head of the government and the final, pre-ballot, budget of his government was expected to contain announcements to stem the angst arising out of the bleak rural landscape.

Rural India has been on the verge of becoming a maelstrom that threatens to suck in the entire country. After four years of slogans and promises not delivered, everything that this government says is discredited by the fact that the government said it. Farmers have stopped believing in miracles because it has been a long time since they have experienced any.

Since the grandstanding announcement in 2016 of doubling farmer income, the real income of farmers has actually fallen. Data confirms this. It rarely happens that the growth of gross value added for agriculture at current price is not higher than what it is at constant prices. Agriculture prices have remained below the rate of inflation of between three and four per cent. This is possibly the third time that this has happened since India became independent.

The announcement of the Pradhan Mantri Kisan Samman Nidhi scheme is a measure to transfer ₹6,000 a year, amounting to ₹75,000 crores to farmers owning up to five acres of land, which will act as a stimulus for the rural economy. Sadly, it excludes tenant framers and landless labour.

Even if it did, it would have been challenging to identity each one and quantify their benefits. While this could be done by having them registered, it would require a firm commitment and a longer period of time to implement. The first big challenge lies in ensuring that all targeted farmers get the announced amount for the first time. The state government will be uploading the farmers' list on a web portal for the central government to transfer the funds.

What is, however, not realized is that all the proposed schemes are actually exclusionary by nature because of the guidelines, prepared with great

ALL SCHEMES ARE ACTUALLY EXCLUSION SCHEMES WHERE GREAT CARE IS TAKEN TO EXCLUDE BENEFICIARIES, BY MAKING THE GUIDELINES OF EXCLUSION VERY CREATIVE

care and creativity, cleverly exclude beneficiaries, as is the case with the state farm loan waivers across India. Invariably, many beneficiaries will be left out due to paucity of quality data and information.

Doubling of interest subvention for crop loans, two to three per cent subvention for animal husbandry and fisheries, two to three per cent subvention for timely repayment of rescheduled loans to farmers impacted by natural calamity are welcome steps but one had hoped that interest subvention would be extended for farmer's term loans.

Income-tax benefits should also have been extended to animal husbandry and fisheries by classifying them as agriculture income but these measures were overlooked. It goes without saying that the net loss to farmers over last few years is far more than that can be compensated by better announcements made in the budget 2019.

THE DISSATISFIED, ASPIRATIONAL GENERATION AND FEARS OF RE-ELECTION WILL HAUNT THE MEMBERS OF PARLIAMENT IN THE DAYS TO COME

It is just as important to realize that budgets have lost relevance after the GST announcement and the government allowing non-state actors to influence the narrative. The unfolding consequences are telling. Again, one is not being facetious while using the example of funding for cows through the Gokul mission and Rashtriya Kamdhenu Ayog to make a point. While they seem good on paper, on the ground, farmers are busy chasing stray cattle from the fields and would have been happier to get subsidy for fencing of farm lands.

The bigger questions are whether the budget can create jobs, increase fruit and vegetable processing or transform livelihoods and the answer is clearly in the negative. It is more like using a band-aid where surgery was required. The finance minister, without acknowledging government mistakes made over the past four years, tried to assuage feelings of distressed sections of society that government policies have decimated economically.

Photo: Dinodia

This is a pivotal moment in Indian politics. The exodus of farmers to other livelihood options and the increasingly larger share of non-agriculture component in rural income will reduce those dependent on agriculture, as the ranks of consumers, who constantly demand lower food prices, swell.

Therefore, this might be the last general election in which farmers can influence the results decisively. However, the dissatisfied, aspirational generation and fears of re-election will haunt the members of parliament in the days that follow and one can say with a great measure of confidence that upwards of 70 per cent of the members will not return to the hallways of the parliament.

Regrettably, as Tom Perkins, the pioneering Silicon Valley venture capitalist, said, "after the battle was won, they found that the horse ate, as usual, too much hay, and crapped, as usual, all over the land scape". Irrespective of who wins the electoral battle, there is a sense of dismay that has persisted over several months because of the prevailing sense of futility. Truth to tell, India and Indian farming in particular are witnessing not only risks of policy failure but of political success too. ●

TRUTH TO TELL, INDIA AND INDIAN FARMING IN PARTICULAR ARE WITNESSING NOT ONLY RISKS OF POLICY FAILURE BUT OF POLITICAL SUCCESS TOO

Ajay Vir Jakhar
Editor
twitter: *@ajayvirjakhar*
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To the Editor

Waiver Wave

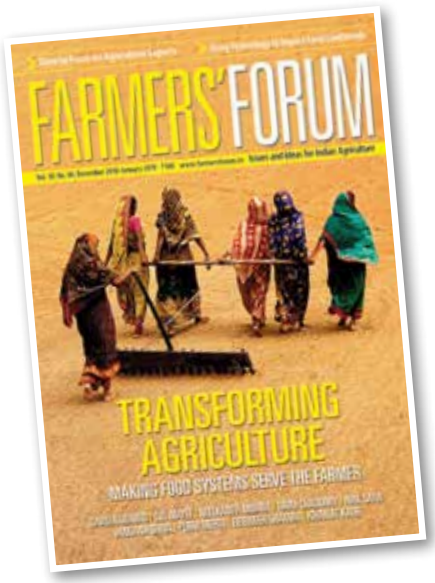
Sir, Apropos of your editorial, "Not By Loan Waivers Alone" (*Farmers' Forum,* December 2018-January 2019), you are right on point when you say that that an effective solution or even a smart way forward would entail doing due diligence while implementing the waiver so that the money is not grabbed by interlopers and middlemen whose 'rights' seem to be what always take precedence. Farmers have to actually feel the power of effective governance coming to their rescue in the states where they have voted for change.

Sujoy Saha
Patna, Bihar

Wasted Waivers

Sir, One gets the uncomfortable feeling that superficial efforts to appeal to the farmer, even by waiving loans without addressing problems, will sink the farming scene in a bigger mess. Also, as you so rightly emphasize in your editorial, "Not By Loan Waivers Alone" (*Farmers' Forum*, December 2018-January 2019), the loan waiver environment is surrounded by politics that cannot deliver profound change. When will the agriculture ministry and even the Niti Aayog move out of New Delhi and start working at the farm level? One is not suggesting that their hearts are not in the right places but their minds and actions should be better informed.

Mynah Batra
Surajkund, Faridabad, Haryana



Crippling Agriculture Academia

Sir, C. D. Mayee's "Invest in Research or Perish" (*Farmers' Forum*, December 2018-January 2019) makes a very valuable concluding point that we are treating academic affairs around farm research very shabbily, with even PHD students nor receiving their fellowships and stipends for months. How does Indian agriculture expect to progress if research is crippled?

Vishnu Parekh
Ahmedabad, Gujarat

Impressive Deliberations

Sir, The level of deliberations at the Workshop on "Food Systems Dialogues" organized by Bharat Krishak Samaj was outstanding. The range of speakers was very comprehensive and you lived up to your reputation as an exemplary purveyor of information. "Time to Focus on Agriculture Exports", by Neelkanth Mishra (*Farmers' Forum*, December 2018-January 2019), makes a particularly valuable point that agriculture provides enormous domestic value-addition and that nearly a third of export value-add comes from agriculture. Most exports do not achieve that in India but we seem not to recognize this feather in the agriculture cap.

Rajender Kumar
Kolkata, West Bengal

Increased Productivity; Income Drop

Sir, Devinder Sharma's point in "The Curious Case of Denied Farmer Incomes" (*Farmers' Forum*, December 2018-January 2019) that it "is not the farmer who has failed the country; it is the agricultural economist who has failed the farmers by misleading people into believing that a rise in productivity leads to a rise in income" rings so true. It is almost futile to ask when this country will come to its senses and understand that food security cannot be guaranteed without an understanding of what leads to farmer well being.

Manish Jain
Jaipur, Rajasthan

CONTENTS

PERSPECTIVE

Of Defeminization in Indian Agriculture and Gender Disaggregated Data 14

Kavitha Kuruganti

INTERIM BUDGET AND THE RURAL SPACE

Only a Blast of Hot Air

Prabhat Patnaik

Edited excerpts of article appearing on
https://www.newsclick.in/interim-budget-blast-hot-air

Photo: Dinodia

PRABHAT PATNAIK
Indian Marxist Economist and Political Commentator

Time was when the annual budget of the central government used to be a serious affair. It reflected, no doubt, the government's class bias but how exactly this class bias was expressed through the various budgetary proposals had to be established by scrutinizing budgetary figures, which did signify something. There was always, of course, some window-dressing but only at the fringes; the core of the budget was a matter for serious scrutiny. Such is no longer the case under the Narendra Modi government. Little credence can now be attached even to the most significant budget proposals.

Consider the most striking proposal of the 2019-20 interim budget, namely, the provision of ₹6,000 per household to all households with ownership holdings of two hectares or below. The very day after the stand-in Finance Minister, Piyush Goyal, had made this announcement in the budget, the actual Finance Minister Arun Jaitley stated that in 2019-20 itself the centre would ask the state governments to share in the financing of this transfer, to the tune of 40 per cent (to the centre's 60 per cent). Clearly, if the Centre had actually arranged the funds for these transfers, Arun Jaitley would not have converted it to a de facto centrally-sponsored scheme; his remark proves that the funds shown for this scheme in the budget are non-existent; that the budgetary figures are a sham.

Both the receipt and expenditure side consist of a lot of hot air but the 2019-20 budget quite unashamedly shows little concern for the poor. The MGNREGA (rural job guarantee scheme) allocation is less than that for 2018-19 by ₹1,000 crore. Considering the fact that the 2018-19 allocation had already got exhausted by the end of the third quarter – that too despite the well-known phenomenon that a good deal of demand for employment under MGNREGA does not get registered at all – the government's allocating even less than in 2018-19 shows a total disregard for this scheme and, hence, its millions of poor beneficiaries. Likewise, there are absolute cuts in allocations for schemes for scheduled castes and scheduled tribes.

What is more, even the cash transfer scheme for agricultural households has cut out the poorest from its ambit. Since the scheme covers only those who are land-owners (with "land" excluding "homestead land"), landless labourers are clearly out of its purview. Since it is ownership holdings to which the transfers are to be made (little is known about operational holdings anyway because of lack of information about tenancy, which is quite substantially "informal"), tenants are also out of its purview. Thus the poor in the agricultural sector, namely the labourers and the tenants, have been completely cut out of the cash transfer scheme. This callousness towards the poor has also been accompanied by reduced allocations in absolute terms even for the flagship programmes of the government, such as the Pradhan Mantri Awas Yojana, and Swachh Bharat Mission.

Photo: Dinodia

Arun Jaitley's remark that the Pradhan Mantri Kisan Samman Nidhi would have to be funded by state governments to the tune of 40 per cent in 2019-20 is significant

All these are cuts that already figure in the budget; the point to note, however, is something quite different. If receipts are exaggerated in the budget, further cuts are inevitable even in the allocations that actually figure in the budget; and this would be the case notwithstanding all subterfuges involving PSU accounts that the government may resort to.

It is in this context that Arun Jaitley's remark that the Pradhan Mantri Kisan Samman Nidhi would have to be funded by state governments to the tune of 40 per cent in 2019-20, assumes significance. It clearly suggests that the BJP-led National Democratic Alliance government will not continue with this programme in 2019-20 and spend the ₹75,000 crore on it, which is envisaged in the budget. It is a useful propaganda ploy before the elections. After the elections, if the NDA comes to power, the programme will be abandoned and the blame put on the state governments for their non-cooperation. The fact of agriculture being a subject in the state list of the Indian Constitution will be dragged in for good measure to justify the central government's unwillingness to unilaterally keep funding this programme.

The ₹20,000 crore to be spent as cash transfers in the current financial year itself, before the elections, however, is on a different footing. Despite the shortage of resources owing to the shortfall in tax receipts compared with the 2018-19 BE, this additional expenditure, or a good part of it, is likely to be incurred. The question is: who are likely to be the beneficiaries? Land records in the country as a whole being abysmally poor, clearly the identification of who owns which land is almost impossible. The selection of beneficiaries, therefore, will be quite arbitrary and the poor peasants, even if they happen to be land-owners, are likely to be further excluded, with the money going largely to influential farmers who are seen as being likely to influence the electoral outcome.

Such a denouement, together with the income tax concession in the budget, which exempts persons with up to ₹5 lakh income per annum from paying any income tax, suggests that the BJP is attempting to win the support of the intermediate strata of the population while totally ignoring the poor. This assertion may appear to be contradicted by the pension scheme for unorganized workers that the budget has introduced. This scheme, however, does not cover the existing old people and does not provide pension amounting to half of the minimum wage, which has been a long-standing demand. It is actually contributory in nature.

A person who just turns 29 will have to pay ₹100 per month every month until the age of 60 in order to qualify for a pension of ₹3,000 per month thereafter. But a male worker paying this amount would have contributed ₹1,50,000 at eight per cent compound interest rate anyway when he reaches

Governments provide "sops" before elections but for 2019-20, a government with a term that expires barely two months after the start of the new financial year has presented a full-fledged budget, which is unconstitutional

Photos: Dinodia

60; and given the mean life expectancy of 65 for males, the pension he would draw thereafter for the remainder of his expected life would effectively be getting financed from his own savings. The government's role in this contributory scheme is, therefore, virtually negligible; the unorganized sector workers are being basically asked to save for their own old age.

Governments, of course, do provide "sops" before elections. What distinguishes the 2019-20 budget is not only that a government with a term that expires barely two months after the start of the new financial year has presented a full-fledged budget, which is un-Constitutional; but also that the figures in this budget are simply a lot of hot air. Barring some concessions for a thin stratum of the intermediate segment of the population, they are meant only to create electoral hype; they do not offer any succour to the people at large. ●

Edited excerpts of article appearing on *https://www.newsclick.in/interim-budget-blast-hot-air*

PERSPECTIVE

Of Defeminization In Indian Agriculture and Gender Disaggregated Data

Kavitha Kuruganti

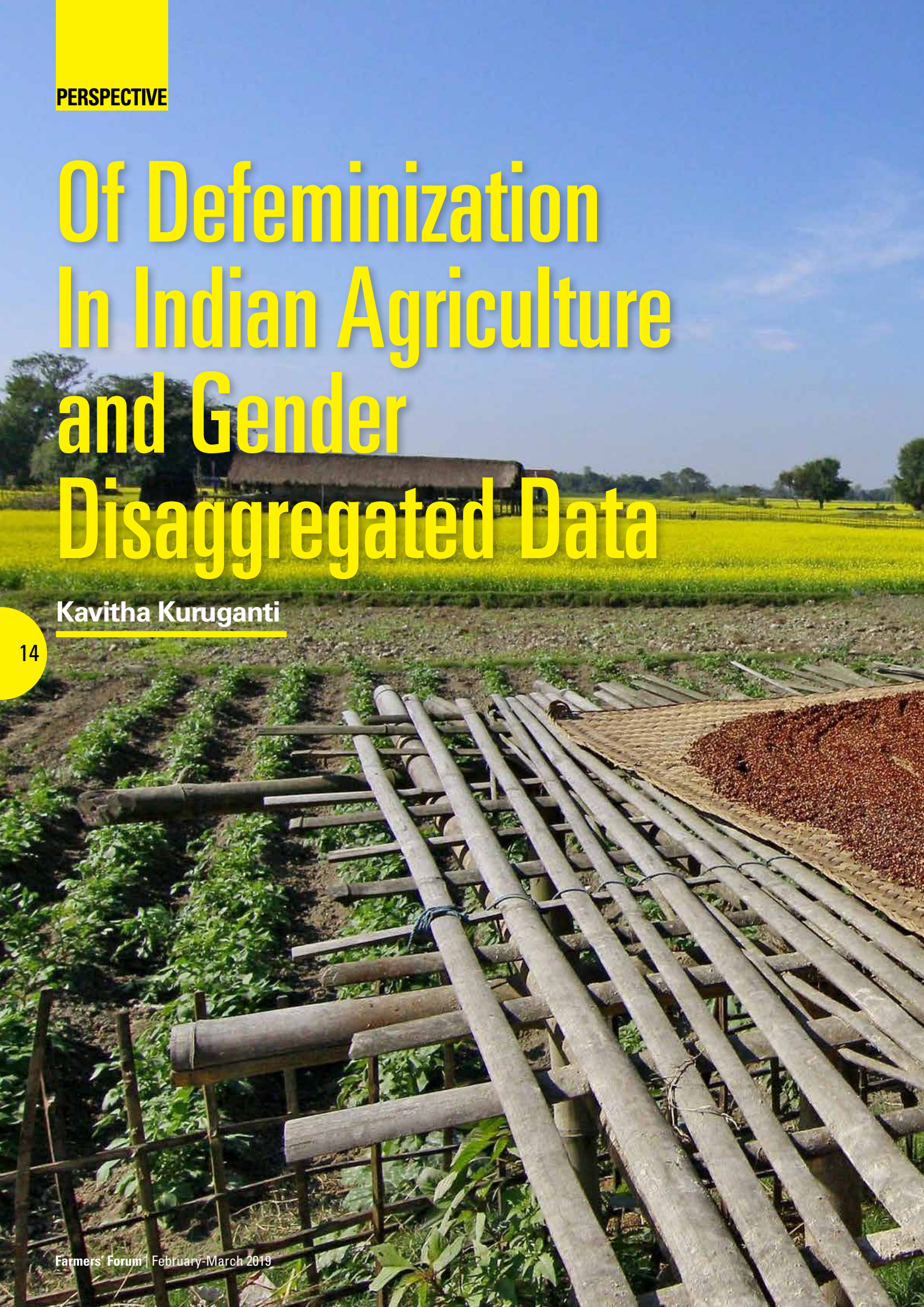


Photo: Pixabay

KAVITHA KURUGANTI
Convenor of Alliance for Sustainable & Holistic Agriculture (ASHA); also associated with Mahila Kisan Adhikaar Manch (MAKAAM)

There is frequent talk about feminization of agriculture in policy-making circles in India and in academic and activist circles too, with media headlines highlighting this ever since the Economic Survey of 2018 (Volume 2) talked about this phenomenon. "Move over men, Economic Survey 2018 talks about feminization of agriculture", said one headline while others said, "Need women centric policy with feminization of agriculture". A boxed item, on page 103, on "Agriculture and Food Management" talked of the significant role that women play in agriculture and allied fields. *(See box below)*

While there is no contention around the need for women-centric agriculture policies, the question of whether there is indeed such a "feminization" of Indian agriculture – and, if so, in what areas because information to support this position is scant – survives. On page 104, the Economic Survey said that "with growing rural to urban migration by men, there is 'feminization' of agriculture sector, with increasing number of women in multiple roles as cultivators, entrepreneurs and labourers". That is the only reference to this so-called feminization phenomenon, with scarce data in support.

> Women play a significant and crucial role in agricultural development and allied fields including in the main crop production, livestock production, horticulture, post-harvest operations, agro/social forestry, fisheries, etc. is a fact long taken for granted (NCW, 2001). For sustainable development of the agriculture and rural economy, the contribution of women to agriculture and food production cannot be ignored. As per Census 2011, out of total female main workers, 55 per cent were agricultural labourers and 24 per cent were cultivators. However, only 12.8 per cent of the operational holdings were owned by women, which reflect the gender disparity in ownership of landholdings in agriculture (Table 1) Moreover, there is concentration of operational holdings (25.7 per cent) by women in the marginal and small holdings categories.
>
> — Economic Survey, 2018

Photo: Pixabay

Table-1: Percentage of Operational Holdings Owned by Women

Size Group	2000-01	2005-06	2010-11
Marginal (Below 1.00 ha.)	11.8	12.6	**13.6**
Small (1.00-2.00 ha.)	10.3	11.1	**12.2**
Semi-Medium (2.00-4.00 ha.)	8.7	9.6	10.5
Medium (4.00-10.00 ha.)	6.9	7.8	8.5
Large (Above 10.00 ha.)	5.2	6.0	6.8
All Size Groups	10.8	11.7	**12.8**

Source: Agriculture Census, 2010-11

Without taking away from the right arguments in the box that also states that "with women predominant at all levels – production, pre-harvest, post-harvest processing, packaging, marketing – of the agricultural value chain, to increase productivity in agriculture, it is imperative to adopt gender-specific interventions. An "inclusive transformative agricultural policy" should aim at gender-specific interventions to raise productivity of small farm holdings, integrate women as active agents in rural transformation, and engage men and women in extension services with gender expertise". *(See Box page 13; from the Economic Survey 2018)*

Feminization is seen as a broadening and deepening of the involvement of women in agriculture. It is understood as a measurable increase of women's participation in the agricultural sector. This is either an increase in the percentage of women in the agricultural workforce within overall female workforce or because of an increase of women relative to men, because fewer men are working in agriculture. It is also sometimes seen as women taking over those gendered agricultural tasks that were once done only by men. Another aspect to "feminization" can be understood to be explicit visibilization of women's involvement and participation in agriculture.

While it might indeed be true that there is feminization in such sense in some pockets of India, with men migrating out of agriculture or even from villages searching for opportunities outside agriculture or responding to opportunities in urban centres, the national picture based on macro-economic data belies any feminization phenomenon in India. The NSSO and census data clearly point towards a de-feminization of our agriculture, whereas it is only the quinquennial Agriculture Census surveys that points to some slow feminization trends when it comes to the picture of operational holdings.

A monograph by Vikas Rawal and Partha Saha (2015) titled "Women's Employment in India

The national policy for farmers presents all women farmers as farmers in their own right but mindsets are steeped in looking at farmers in relation to land ownership and gender

There is a great deal of gender-disaggregated data that affects how women's rights get treated, especially in the context of women farmers. For decades there has been talk of adding one more column in the basic land records along with the serial number, name of the land owner: gender of the land owner but that will not get done. Similarly, the Reserve Bank of India collects data from banks about male and female account holders but never puts it out in public domain. This problem of the missing gender-disaggregated data will thwart the tracking of progress.

— From the author's presentation at the Bharat Krishak Samaj's Food Systems Dialogue, October 25 and 26, 2018, New Delhi

- What do recent NSS Surveys of Employment and Unemployment Show?" looked at trends in employment of women between 1999-2000 and 2011-12, using the 55th, 66th and 68th rounds of NSSO's Employment and Unemployment Surveys (keeping out the 61st Round)[1]. The main points and conclusions of Rawal and Saha are:

- It is well noted that a smaller proportion of working age women are in the work force than working age men. It is noteworthy though that the gap between work participation rates among men and women increased significantly between

1 Vikas Rawal and Partha Saha (2015): Women's Employment in India – what do recent NSS surveys of employment and unemployment show? - Society for Social and Economic Research Monograph 15/1

Photo: Pixabay

1999-2000 and 2011-12 (the difference grew to over 48 percentage points in 2011-12 compared to 44 percentage points in 1999).

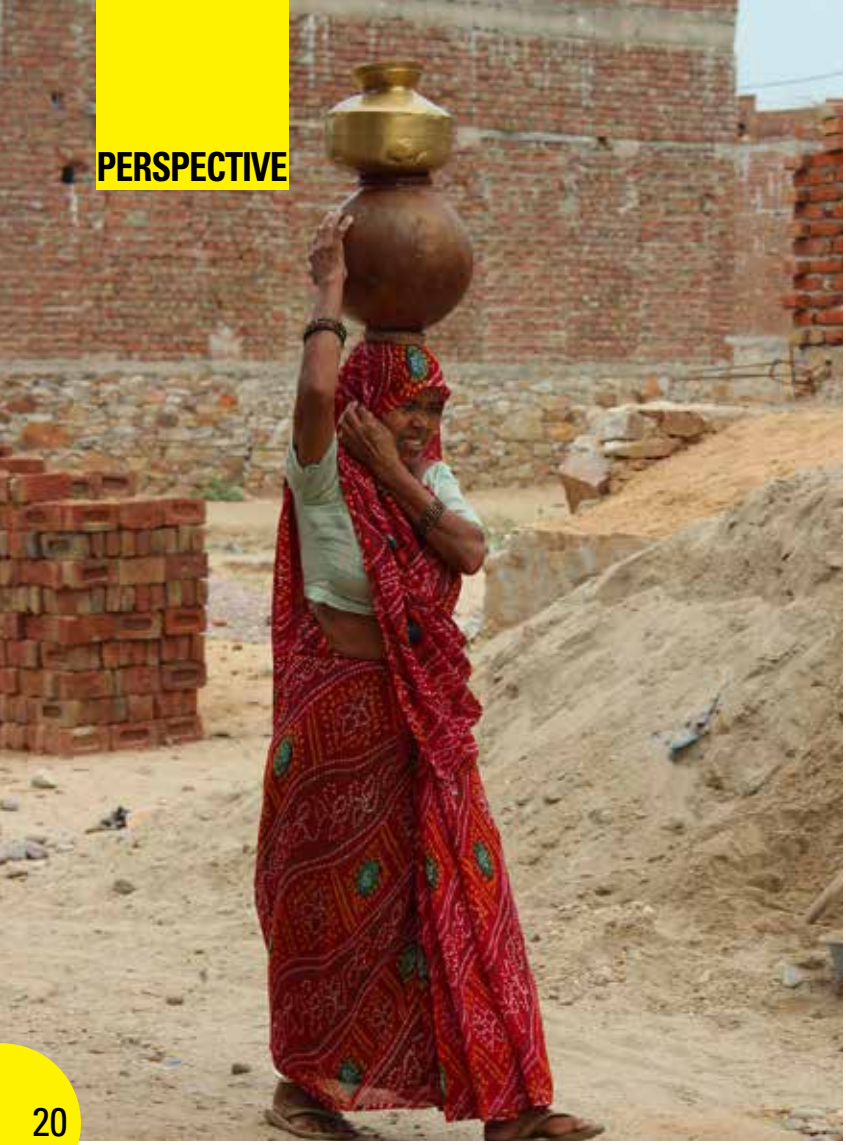
- This is mainly due to collapse of rural employment, which has particularly hit rural women as women are primarily employed in rural areas, with limited opportunities in an urban economy.
- The contraction of employment among rural women was driven almost entirely by a drop in availability of employment in agriculture, which is the mainstay of women workers in rural India. In 1999-2000, about 41 per cent of rural working-age women were employed in agriculture. This fell to less than 28 per cent in 2011-12. The small increase in other sectors was too small compared to the steep decline in work availability for women in agriculture. In contrast, employment for men declined by 11 percentage points in agriculture and increased by about six percentage points in construction in the same time period.

With growing rural to urban migration by men, there is 'feminization' of agriculture sector, with increasing number of women in multiple roles as cultivators, entrepreneurs, and labourers. Globally, there is empirical evidence that women have a decisive role in ensuring food security and preserving local agro-biodiversity. Rural women are responsible for the integrated management and use of diverse natural resources to meet the daily household needs (FAO, 2011). This requires that women farmers should have enhanced access to resources like land, water, credit, technology and training which warrants critical analysis in the context of India. In addition, the entitlements of women farmers will be the key to improve agriculture productivity. The differential access of women to resources like land, credit, water, seeds and markets needs to be addressed. Towards the, government has been implementing various schemes which help improve the entitlements of women farmers, which will prove to be advantageous in bridging the policy gaps which exist in the sector. The following measures have been taken to ensure mainstreaming of women in agriculture sector:

- Earmarking at least 30 per cent of the budget allocation for women beneficiaries in all ongoing schemes/programmes and development activities.
- Initiating women centric activities to ensure benefits of various beneficiary-oriented programs/schemes reach them.
- Focusing on women self-help group (SHG) to connect them to micro-credit through capacity building activities and to provide information and ensuring their representation in different decision-making bodies.
- Recognizing the critical role of women in agriculture, the Ministry of Agriculture and Farmers Welfare has declared 15th October of every year as Women Farmer's Day.

With women predominant at all levels- production, pre-harvest, post-harvest processing, packaging, marketing- of the agricultural value chain, to increase productivity in agriculture, it is imperative to adopt gender specific interventions. An 'inclusive transformative agricultural policy' should aim at gender-specific interventions to raise productivity of small farm holdings, integrate women as active agents in rural transformation, and engage men and women in extension services with gender expertise.

— Economic Survey 2018



Photos: Pixabay

The decline in proportion of self-employed women was primarily driven by a sharp increase in landlessness among rural households, driving women who worked on their own lands out of the labour force

- The sharp decline in proportion of women who were self-employed was primarily driven by a sharp increase in landlessness among rural households, which drove a large proportion of women who worked on their own lands out of the labour force (a decline from 22.8 per cent in 1999-2000 to 17.7 per cent in 2011-12 of proportion of working-age women who worked on their own household landholdings).
- There was also a decline in the proportion of working age women who worked as wage labourers in agriculture declined from 18 per cent in 1999-2000 to less than 10 per cent in 2011-12. The authors assume that greater adoption of labour displacing technology (in particular, increasing use of machines and weedicides), caused by increasing concentration of landholdings and increasing cost advantage of using labour displacing techniques, among other factors, may have been an important factor behind the decline in overall level of labour absorption in agriculture.

Coupled with barriers to mobility of women workers, including safety, these push factors in agriculture have led to a decline in employment of women. This then, is clearly a de-feminization of agriculture in India and not feminization. Meanwhile, the ones getting pushed out of this "counted" workforce are reporting themselves to be primarily engaged in household work.

In the NSSO categories, Code 92 and 93 represent this "household work" and, as Rawal & Saha point out, the clear distinction between these two is not very apparent. Here, maintenance of Kitchen Gardens, work in household poultry and dairy, food gathering, food processing and such others are all listed.

The number of women workers in these categories has swelled and corresponds very

Absolute Numbers and Percentages Between 2001 and 2011 of Cultivators and Agriculture Labourers, Men and Women

	2001 Census			2011 Census		
	Total	Male	Female	Total	Male	Female
Cultivators, Absolute Nos	12,73,12,851	8,54,16,498	4,18,96,353	11,86,92,640	8,27,06,724	3,59,85,916
Out of Total Cultivators	100	67.1	32.9	100	69.7	30.3
Agri Labourers, Absolute Nos	10,67,75,330	5,73,29,100	4,94,46,230	14,43,29,833	8,27,40,351	6,15,89,482
Out of Total Agriculture Labourers	100	53.7	46.3	100	57.33	42.67
Total workers in Agriculture	23,40,88,181	14,27,45,598	9,13,42,583	26,30,22,473	16,54,47,075	9,75,75,398
Out of Total Workers in Agriculture	100.0	61.0	39.0	100	63	37
Cultivators' Percentage Within M/F		60%	46%		50%	37%

Source: Compiled by the Author from Census 2001 and 2011 Data

well to the decline in the 'counted' workers, who themselves were invisible as farmers even though they were counted in the SNA (system of national accounts). "About 45 per cent of the rural household worker women were engaged in various activities for obtaining food for the household.

About 24 per cent rural household workers worked in maintenance of kitchen gardens for household use, about 22 per cent regularly worked to maintain household animal resources, about 19 per cent were engaged in collection of food and about 14 per cent regularly worked in specified food processing activities", as per Rawal & Saha. Going by the definition of a 'farmer' as per the National Policy for Farmers in India (2007), all these women are indeed farmers but not recognized or supported as such.

The other source of data that is reflecting the defeminization trends in Indian agriculture is the Census data. Here, the population data is further presented as a segment called "Workers". As per Census 2011, 39.79 per cent of India's population is classified as Working Population – within this, 53.26 per cent was male workers and 25.51 per cent was female. In rural India, the working population

"Data on employment conditions of women workers from recent NSSO surveys show an extremely dismal picture. There has been a steep decline in the availability of work for women. With rising landlessness and declining labour absorption in agriculture, there has been a sharp contraction in availability of employment in agriculture. Given lack of basic amenities and serious problems of security, most women are unable to access urban non-agricultural employment. This has resulted in a significant increase in proportion of rural working-age women who were engaged in housework. A very large proportion of such women are engaged in unremunerated work to obtain different commodities for their households. Accounting for such women as unemployed shows that unemployment rate in India is extremely high and has risen significantly over the last decade.

— Vikas Rawal and Partha Saha (2015); "Women's Employment in India – What do recent NSS Surveys of Employment and Unemployment Show?"

The RBI collects data from banks about male and female account holders but never puts it out in public domain. This problem of the missing gender-disaggregated data will thwart the tracking of progress

was 41.83 per cent of the total population with 53.03 per cent of men being 'workers' and 30.02 women in the population classified as 'workers'. In 2001, the corresponding figures were 52.11 for men and 30.79 for women (this is the work participation rate). Here, the following is the picture in absolute numbers and percentages between 2001 and 2011.

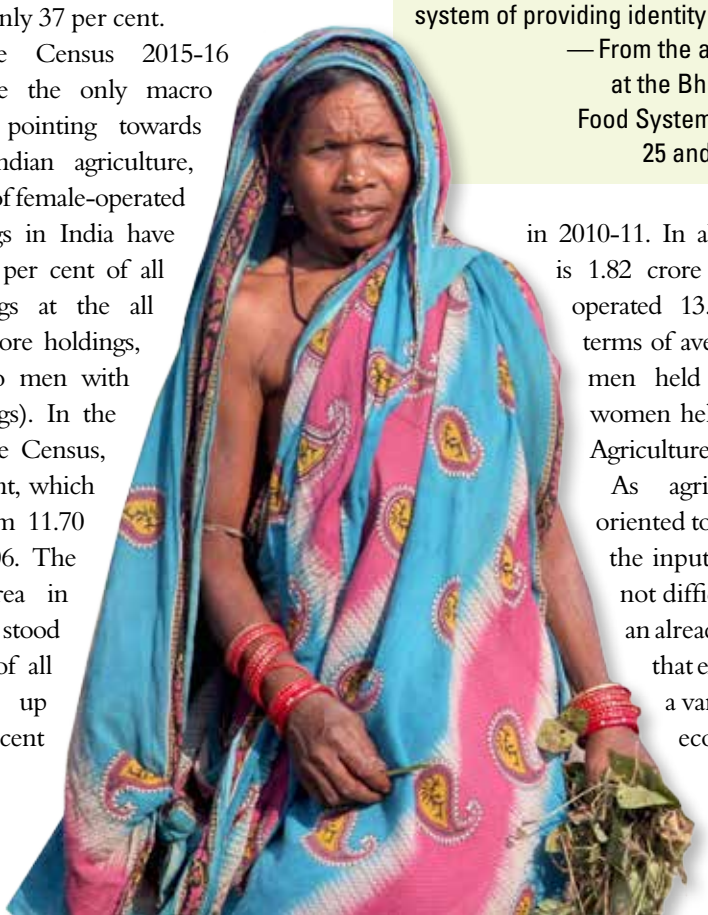
Clearly out of the total workers in agriculture, 39 per cent were women in 2001 and 61 per cent were men. However, one decade later, out of the total workers in agriculture, only 37 per cent were women and 63 per cent were men. This then is a taking over by men of the proportion of space that women used to occupy in this field, and is de-feminisation. Within male workers, while 60 per cent used to be cultivators as per Census 2001, by 2011, this percentage fell to 50 per cent. Amongst women in agriculture, while 46 per cent reported themselves as cultivators in 2001, by 2011, this proportion fell to only 37 per cent.

The Agriculture Census 2015-16 appears to provide the only macro data set that is pointing towards feminization of Indian agriculture, where the number of female-operated operational holdings in India have increased to 13.87 per cent of all operational holdings at the all India level (2.02 crore holdings, when compared to men with 12.52 crore holdings). In the 2010-11 Agriculture Census, it was 12.79 per cent, which itself increased from 11.70 per cent in 2005-06. The female-operated area in India in 2015-16 stood at 11.57 per cent of all operational area, up from 10.36 per cent in 2010-11. In absolute numbers, this is 1.82 crore hectares, while men operated 13.7 crore hectares. In terms of average landholding size, men held 1.10 hectares while women held 0.90 hectares as per Agriculture Census 2015-16.

As agriculture gets more oriented towards markets both at the input and output end, it is not difficult to imagine that in an already asymmetrical access that exists to markets, due to a variety of socio-cultural-economic reasons, men

The national policy for farmers presents all women farmers as farmers in their own right but mindsets are steeped in looking at farmers in relation to land ownership and gender. The policy defined the beekeeper as a farmer, agricultural labour as a farmer, a forest gatherer as a farmer, a livestock rearer as a farmer, a tenant farmer as a farmer. Women farmers fit into all these categories. However, India has not figured out how to actualize this definition of a farmer into the entire establishment's thinking and create the results framework or documents around how to tailor schemes, policies and programmes around them and, if required, bring in new legislations to cater to this definition of a farmer. This is not just an issue for agriculture but for empowering women per se. One cannot talk of Sustainable Development Goals (SDGs) or about equitable development if one cannot figure out how to take the women along, especially the poorest women, rural women and the marginalized women. India needs to get its asset ownership parity right and for that to happen, the Hindu Succession (Amendment) Act must be pursued more rigorously. That will address a large number of private land-owners in the country. Over a period of time in some state there may be a 50-50 land ownership between men and women but land is not the only asset. There are tools, machines and so on but this issue cannot be addressed overnight and there must be a system of providing identity to women farmers.

— From the author's presentation at the Bharat Krishak Samaj's Food Systems Dialogue, October 25 and 26, 2018, New Delhi



Photos: Pixabay

"There was a sharp decline in female workforce participation rate from 41 per cent in 1999-2000 to 32 per cent in 2011-12. This decline was sharper in rural areas (from 48 per cent in 1999-2000 to 37 per cent in 2011-12) and can be primarily attributed to massive contraction of employment opportunities in agriculture, which was not compensated by rising employment opportunities in rural non-farm sector.

In contrast, among men, decline in the availability of employment in agriculture was compensated in part by the expansion of employment in construction. Looking at rural and urban areas together, employment for men declined by 11 percentage points in agriculture and increased by about six percentage points in construction between 1999-2000 and 2011-12.

Three important factors are likely to have contributed to a decline in the levels of employment of women:

- Proportion of households that did not have any land to cultivate increased from about 41 per cent in 1999-2000 to about 49 per cent in 2011-12. Women are primarily employed in agriculture. Decline in proportion of households that cultivated land directed resulted in a decline in proportion of women who were self-employed in agriculture. With a clear cost advantage in mechanization over use of animals for draught power, there has been an increasing adoption of labour-displacing technology in agriculture. Increased concentration of operational holdings is also likely to have contributed to a greater adoption of labour-displacing technologies in agriculture as large cultivators deploy labour-displacing technology to a greater extent. Adoption of labour-displacing technology results in a decline in overall labour absorption in agriculture.
- Lack of access to basic amenities and serious problems of safety for women impede physical mobility of women. Very few rural women migrate or commute to urban areas to take advantage of whatever non-agricultural employment is available in the towns and cities. Proportion of rural women who did some work in urban areas is minuscule and increased only marginally from about 0.22 per cent in 1999-2000 to only about 0.46 per cent in 2011-12. Although small in magnitude, the direction of change in the proportion of urban women working in rural areas is noteworthy. Mainly driven by a small increase in absorption of women in manufacturing enterprises located in rural areas, the proportion of urban women doing some work in rural areas increased from 2.57 per cent in 1999-2000 to 4.02 per cent in 2011-12.
- Finally, with dismal levels of education and technical training, women are marginalized from the limited opportunities for more remunerative skilled work. In 2011-12, only 0.66 per cent of rural working-age women workers and only 7.6 per cent of urban working-age women workers had received secondary-level education and some technical training. Even among women employed in education and health care services, a vast majority did not have secondary-level education and technical training".

— Vikas Rawal and Partha Saha (2015); "Women's Employment in India – What do recent NSS Surveys of Employment and Unemployment Show?"

The pronoun for the farmer is 'he'

Despite pockets of feminization, there is a greater trend towards masculization and of women getting marginalized from decision-making related to farming simply because there exists an asymmetry in the market interface between men and women both at the input and output ends.

It is important to look at an ecological agriculture paradigm, depending on nature's free resources, commons, to bring in equity rather than depending on markets and to talk about ecological agriculture in the context of a vision for women farmers. In meeting after meeting, women farmers have been demanding another farming paradigm for themselves, possibly because of the gender roles that are thrust on them relating to nutrition and food security for the household. This ecological agriculture paradigm has to be promoted on a large scale but few people talk about it when talking about food systems or at food security discourses.

The 2011 census first showed the absolute decline in the number of cultivators, the rise in agricultural labourers but not about the decline in the number of women cultivators, which was sharper than the decline in the number of male cultivators. The census provides for a self-declaration by the respondent that is not based on land records. What then obtains is that, within agriculture, there is a smaller proportion of women than in 2001 who are actually getting employed and engaged in agriculture.

In the overall scenario too more men are employed in agriculture than women. In terms of agriculture labour, it is very clear that for every acre of land under any crop, across any region of India – except for the new phenomena of men sleeping in their fields, night after night, guarding crops against wild animals – women put in a lot more work than men. There are numerous micro studies showing that 70 per cent of the labour that goes into growing any crop comes from women and not men.

Unfortunately, even in the course of this Food Systems Dialogue, save for one suggestion that all income transfers should be into joint accounts with no woman left out, most references to farmers have been gender-biased; the pronoun for the farmer being 'he'. This invisibility of women needs to be addressed and there is need for more feminization and in a larger sense than the need for women to be 'visibilized'. Women farmers must be explicitly talked about, acknowledged, recognized and identified.

Coupled with barriers to mobility of women workers, including safety, these push factors in agriculture have led to a decline in employment of women. This, then, is clearly a de-feminization of agriculture in India and not feminization.

— From the author's presentation at the Bharat Krishak Samaj's Food Systems Dialogue, October 25 and 26, 2018 at the Kamaladevi Complex, India International Centre, New Delhi

are likely to take over more and more decision-making spaces. These are questions like which seed to sow, which brand to opt for, which chemical to use, who to bring credit from to finance cultivation costs, where to sell, at what price and even what to do with the income that comes into one's hand. Patriarchal norms that govern mobility, education levels, capacity to interface with the external world, amongst others, push women to more marginal roles in this market-oriented paradigm of farming. Meanwhile, monocropping that goes with such market orientation would increase the burden of practical needs of women in terms of food and fodder security.

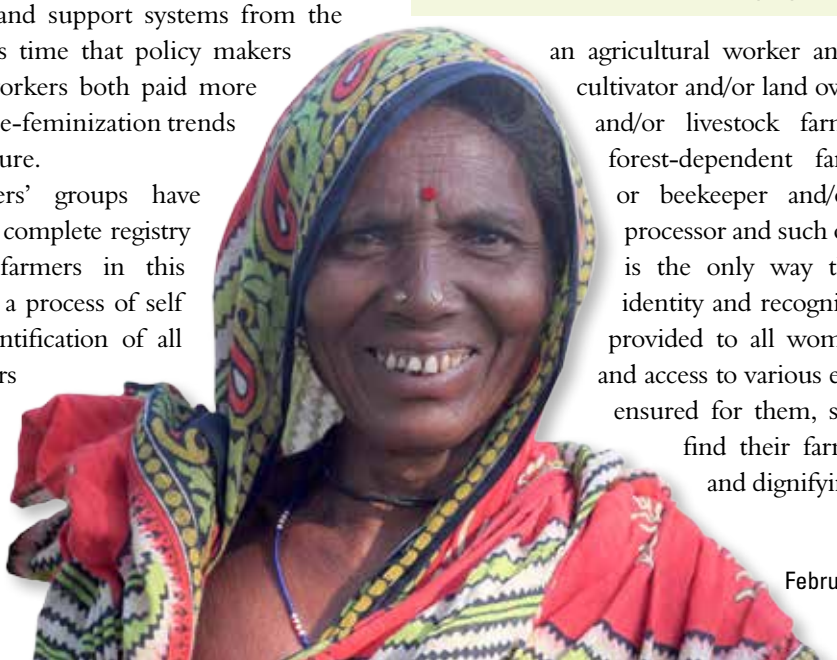
Farming, however, does not constitute only cultivation but is also about livestock farming, which is increasingly contributing more incomes to Indian agricultural households. Though women put in more work than men in livestock rearing too, their presence is not concomitant or more at least in this sector. Dairy co-operatives often have more men as members and this is all the more so at the governance level of these co-operatives and their federations.

Evidence has emerged in the recent past that with good investments that are going into FPOs, along with gender blindness that accompanies them, there might be an inadvertent widening of the gap between men and women farmers on numerous fronts and it is important to recognize and address this defeminization by policy makers and grassroots workers.

Part of the problem lies in women who are retreating into household (unpaid) work not being counted as workers. The fact that they are being pushed back is a problem in itself but explicitly identifying them as farmers, even in their household roles is important, so that they receive various services and support systems from the government. It is time that policy makers and grassroots workers both paid more attention to this de-feminization trends in Indian agriculture.

Women farmers' groups have been asking for a complete registry of all women farmers in this country, through a process of self and multiple identification of all women farmers (the woman herself opting to call herself as an agricultural worker and/or tenant cultivator and/or land owner farmer and/or livestock farmer and/or forest-dependent farmer, and/or beekeeper and/or primary processor and such others. This is the only way that explicit identity and recognition can be provided to all women farmers and access to various entitlements ensured for them, so that they find their farming viable and dignifying. ●

> "As per the UN System of National Accounts, persons engaged in activities that result in production of different commodities for household use should be considered a part of the labour force. However, in the NSSO Surveys of Employment and Unemployment, women engaged only in housework are considered out of labour force even if the housework involves regular participation in activities for producing/acquiring food, fuel, fodder, clothing and other commodities. With contraction of employment opportunities for women, proportion of rural working age women who were principally engaged in housework increased from about 55 per cent in 1999-2000 to about 62 per cent in 2011-12… In addition to care-work for the household, a substantial proportion of women who were reported to be principally engaged in housework were also engaged in activities for obtaining different commodities for household use. This was particularly important for rural women. In 2011-12, about 58 per cent of rural working-age house-worker women regularly worked to obtain fuel or fodder for household use. Similarly, about 45 per cent of rural house-worker women regularly worked to obtain food for the household. About 31 per cent of rural house-workers had to regularly fetch water from outside and about 30 per cent had to regularly work to prepare clothing for household use. Among urban working-age women who were principally engaged in housework, about 25 per cent worked to make clothing for household use, and about 13 per cent worked to obtain food for household use".
>
> — Vikas Rawal and Partha Saha (2015); "Women's Employment in India - What do recent NSS Surveys of Employment and Unemployment Show?"

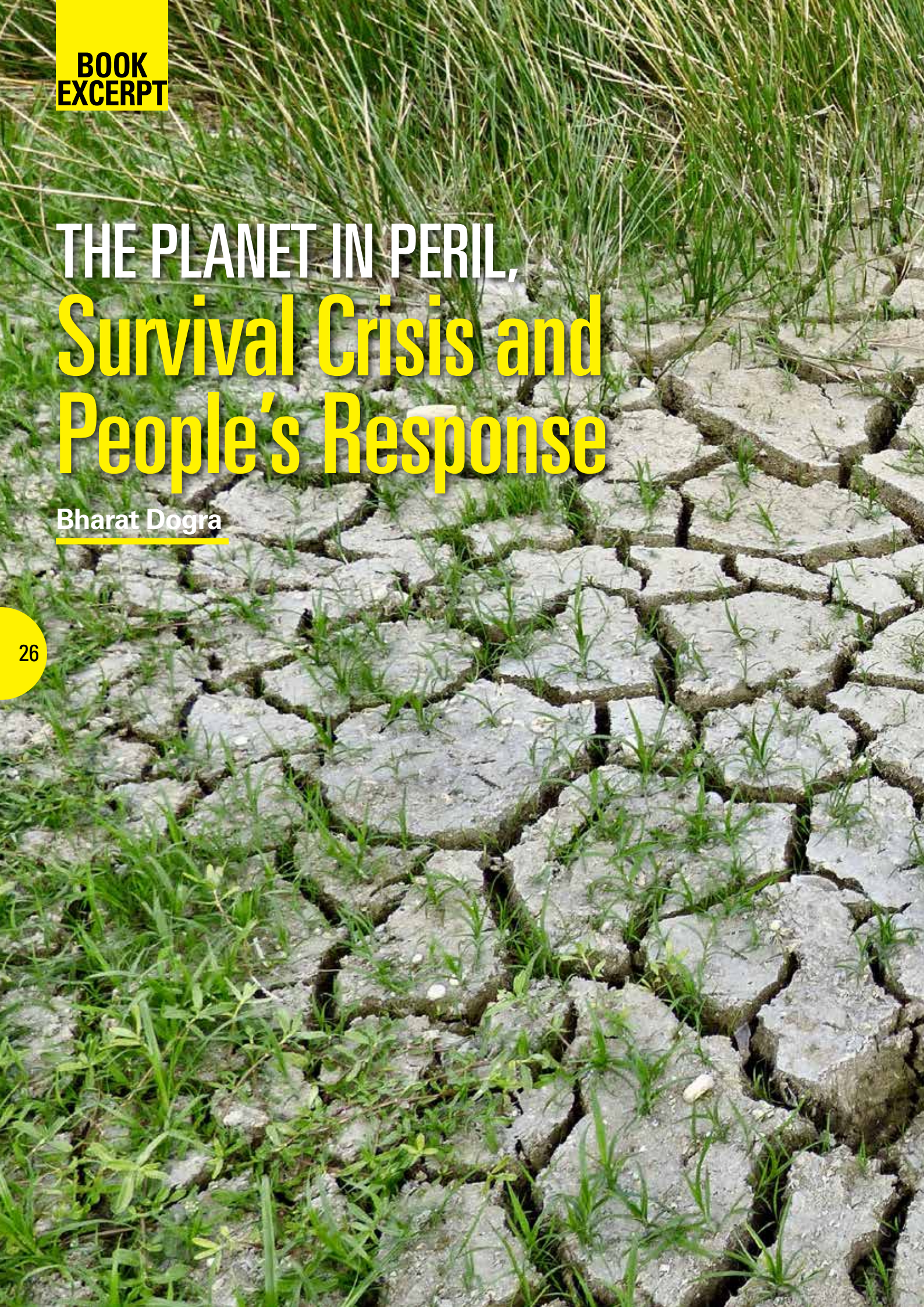


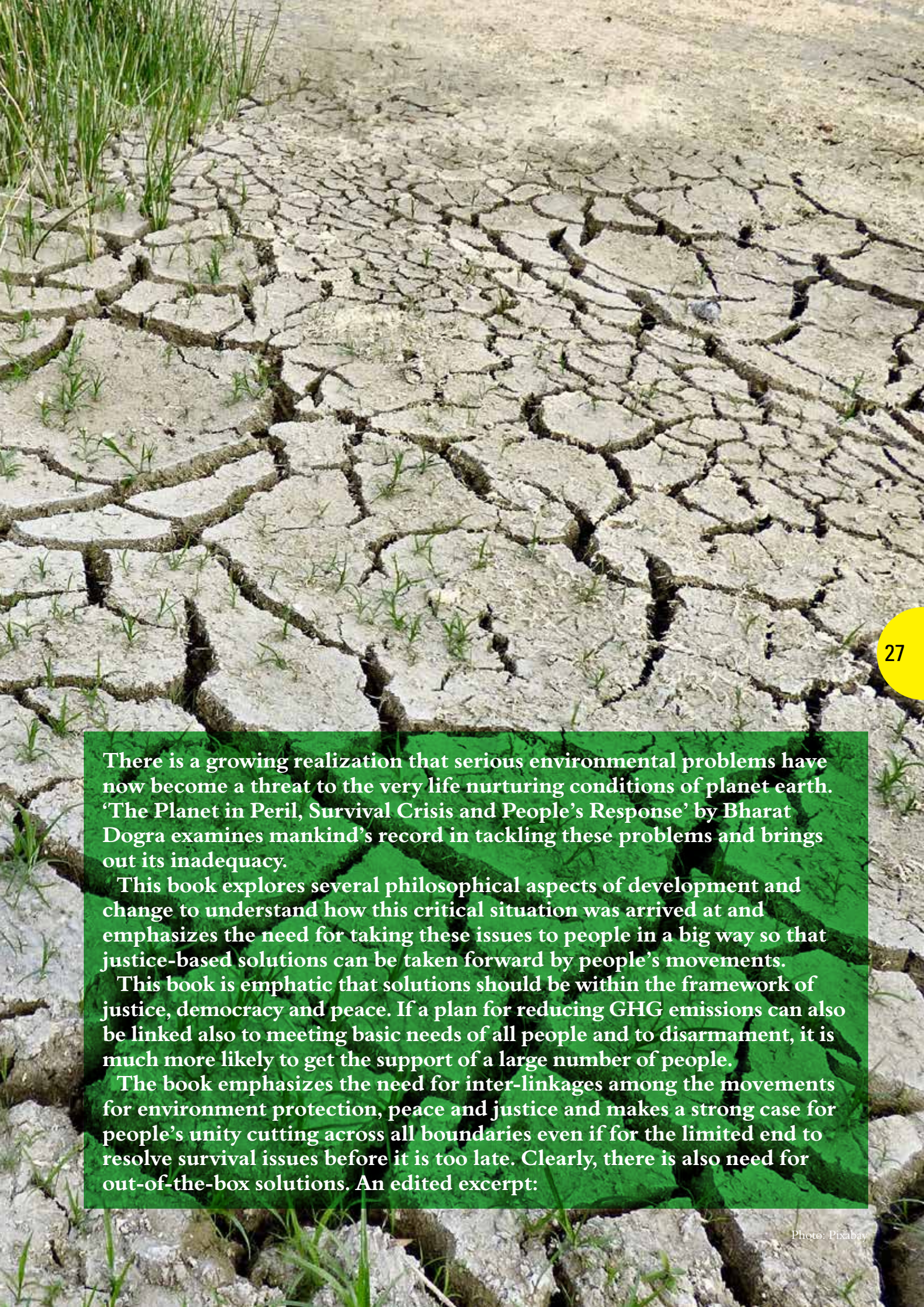
Photos: Pixabay

BOOK EXCERPT

THE PLANET IN PERIL, Survival Crisis and People's Response

Bharat Dogra





There is a growing realization that serious environmental problems have now become a threat to the very life nurturing conditions of planet earth. 'The Planet in Peril, Survival Crisis and People's Response' by Bharat Dogra examines mankind's record in tackling these problems and brings out its inadequacy.

This book explores several philosophical aspects of development and change to understand how this critical situation was arrived at and emphasizes the need for taking these issues to people in a big way so that justice-based solutions can be taken forward by people's movements.

This book is emphatic that solutions should be within the framework of justice, democracy and peace. If a plan for reducing GHG emissions can also be linked also to meeting basic needs of all people and to disarmament, it is much more likely to get the support of a large number of people.

The book emphasizes the need for inter-linkages among the movements for environment protection, peace and justice and makes a strong case for people's unity cutting across all boundaries even if for the limited end to resolve survival issues before it is too late. Clearly, there is also need for out-of-the-box solutions. An edited excerpt:

Photo: Pixabay

BOOK EXCERPT

Food and Farming System to Feed the Hungry and Protect the Environment

BHARAT DOGRA
Senior journalist, specializing in the farm sector

It is widely agreed that increasing land availability for the poorest peasants and reducing inequalities in the distribution of agricultural land are highly desirable for reducing hunger and malnutrition in the world. Despite this inequalities in the distribution of agricultural land remain at high levels in many countries probably reaching the peak in some Latin American countries.

Inequality is often expressed by a statistical measure called the "Gini Coefficient", which varies from zero (equal assets for everybody) to 1 (one person owns everything). In most Latin American countries, the Gini Coefficient for land distribution is around 0.8. The inequalities in agricultural land may be most acute in Latin America but also exist to a significant extent in most other countries of the world.

In a widely quoted publication, 'Agriculture Towards 2000', the Food and Agriculture Organization has emphasized that more equal land distribution is likely to increase productivity of land: "It is important to stress here that yields per hectare are as high on small as on large farms or, under traditional agriculture, even higher.

"Invariably I found in rice areas some rice growers taking keen interest in their local rice varieties as they are very much absorbed in them and they have all praise for them, so much so that they trace back the history of individual rice varieties to their ancestry with their utility... I also observed that some of them identify their rice varieties in their own way (not in terms of the modern knowledge of Botany) which amounts to thousands. This inherent and intuitional facility of selections and maintenance of thousands of rice cultivars gradually being accumulated and descended upon for unknown centuries, ever since rice first originated must be preserved... Some of these varieties of rice were known for their high yield, some for their great cooking qualities, some for their aroma and some for other cherished qualities".

— Dr R. H. Richaria on Indian farmers of yore

With a few notable exceptions, total output per hectare is higher on small farms, chiefly because their intensity of land use is higher. A more equal distribution of production inputs, including services, can only help to strengthen the role of the small farm in expanding production. The fact that some attempts at radical redistribution of land have led initially to lower production does not invalidate the conclusion that after some years a more even distribution of farming resources and inputs should help rather than hinder growth of output."

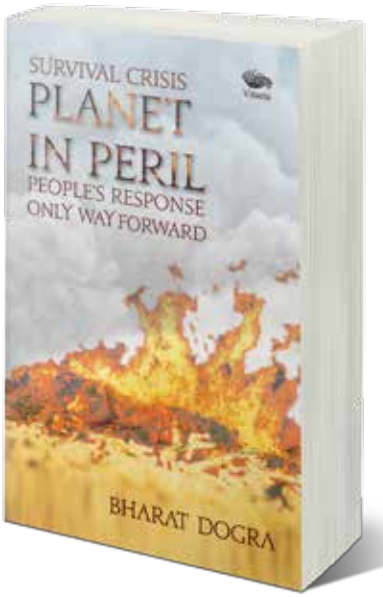
This view of the FAO is supported by a six-country study by the International Labour Organization (ILO), which estimated that "If land were equally distributed among all agricultural families (including the landless), and the new equal holdings achieved yields equal to present holdings of the same size and used a similar level of inputs, food output could potentially rise by anything from 10 per cent (Pakistan) and 28 per cent (Colombia and a rice-growing Malaysian region) to 80 per cent

Photo: Dinodia

in northeastern Brazil. Such a radical redistribution is, of course, rarely attempted but the figures indicate the theoretical potential."

Therefore, the evidence in favour of small farms and for having a more equal distribution of agricultural land is quite strong. It is another matter that as vested interests opposing redistribution are quite strong, the land reform effort can face several obstacles due to which there can be temporary setbacks. Such resistance can come from large landowners as well as corporate interests promoting large-scale farming of commercial crops with a big share of export crops.

The distortions created by local inequalities and an unequal international trade system in fact feed on each other. The local



The evidence in favour of small farms and a more equal distribution of agricultural land is strong; so are the vested interests opposing it

powerful elites are eager to get luxury consumer goods while foreign companies are only too happy to meet these demands while gaining access to the cheap land and labour of these countries. The ultimate victims are the marginal groups on whom all the pressure of meeting the unreasonable demands of local and foreign elites is passed on.

So empowerment of these poor and marginalized groups in their struggles to save their livelihood is the most important factor in fighting hunger and famine. They do not need emergency food aid shipments (which in any case will probably never reach them in time) as much as the support of solidarity groups to save their livelihood base from the onslaughts of selfish, powerful interests at home and abroad.

In Africa, in the wake of the growing concern over diminishing per capita production of food, some ambitious food production schemes were initiated with the support of international aid agencies but they failed to meet the needs of the worst affected, most needy, precariously placed groups.

As Barbara Dinham and Colin Hines wrote in a critique of these schemes in the Ecologist, "Large-scale food producing by-passes the problems confronting peasant communities who have been moved into smaller and less fertile land, who are not paid a sufficient price for the crops they produce for the market, who are ill-served by distribution of storage networks, and whose needs for investment in education, health and water supplies are ill-met."

The real concern should not be just to increase production but to increase it on such farms, in such ways as to meet the food needs of the most needy households. Otherwise we will face such cruel distortions as those seen at the time of the Sahelian famine when vegetables were being

BOOK EXCERPT

airlifted for exports from famine affected countries! The need is not just for more food but for food that reaches the hungry of the world.

In recent years, as growing concern has been expressed about the hazards of excessive use of agri-chemicals, particularly chemical pesticides, there has been increasing interest in alternative technologies which reduce or even eliminate the use of agri-chemicals while relying more and more on various natural processes and organic materials to get good yields, thereby also maintaining long term fertility of land.

According to the World Resources Report, "When on-farm and off-farm soil and surface water resource cost were included resource-conserving farming out-performed conventional approaches by almost a two-to-one margin in net economic value per hectare (including off-site environmental costs)."

In Indonesia, a very instructive effort was launched in 1986 to avoid excessive chemical sprays of rice crops and replace the heavy dependence on chemical pesticides with a many-sided effort called 'integrated pest management', which included many non-chemical methods of facing the threat of pests. As Peter Kenmore, a USA scientist closely involved in this effort, explained less than two years after launching this effort, the use of chemical pesticides declined steeply while the yields of rice increased to a significant extent.

According to case studies of successful vegetable and rice farms using ecological methods in Philippines, in the largest set of adjacent farms totalling 1,000 hectares using the bio-dynamic farming method there was a yield increase of 50 to 100 per cent and an increase in net income by farmers of 200 to 270 per cent, compared to the green revolution methods.

Nicanor Perlas, a Fillipino agricultural scientist said while presenting these case studies that a rapid transition from chemical farming to sustainable agriculture is possible if correct technical principles are followed.

The real concern should not be just to increase production but to increase it on such farms, in such ways as to meet the food needs of the most needy households

Photo: Dinodia

Growing a wide variety of indigenous crops should be encouraged. The richest knowledge of the biologicial diversity of a region is likely to be available only with local farmers. The eminent rice scientist of India, Dr R. H. Richaria, identified nearly 17,000 rice cultivars and varieties in the Chhattisgarh region of India with the help of farmers particularly tribal farmers and his co-workers about whose wisdom he wrote *(see box)*.

"Invariably I found in rice areas some rice growers taking keen interest in their local rice varieties as they are very much absorbed in them and they have all praise for them, so much so that they trace back the history of individual rice varieties to their ancestry with their utility... I also observed that some of them identify their rice varieties in their own way (not in terms of the modern knowledge of Botany) which amounts to thousands. This inherent and intuitional facility of selections and maintenance of thousands of rice cultivars gradually being accumulated and descended upon for unknown centuries, ever since rice first originated must be preserved... Some of these varieties of rice were known for their high yield, some for their great cooking qualities, some for their aroma and some for other cherished qualities".

In particular, an effort should be made to support those locally useful crops and crop varieties, which have been displaced thoughtlessly in recent years. Legume crops deserve special attention. Frances Moore Lappe and Joseph Collins, write in "Food First – beyond the myth of scarcity," the beans and corn diet of Latin America, the lentils and rice of India, and soyabean and rice diet of China appear to most Americans as starchy and nutrient poor. In fact they are not.

"The task of agriculture is thus not confined to obtaining the biological product but extends to constant maintenance and augmentation of soil fertility. Otherwise, we will very quickly consume what by right belongs to our children, grandchildren and great-grandchildren, to say nothing of more distant descendants. ...our generation lives to a certain extent at the expense of the coming generation, thoughtlessly drawing on the basic reserves of soil fertility accumulated in the millennia of the biospheric development, instead of living off the current annual increment, that causes the increasing concern of scientists dealing with the state of the planetary soil cover."

— B.Z. Rozanon, Scientist

BOOK EXCERPT

Photo: Dinodia

Given the importance of cereals and legumes for a balanced diet, experts refer to the diminishing production of pulses as the divorce of agriculture from nutrition

Such diets evolved because they work. As basic dietetic staples, these combinations are, in fact, quite ingenious. In each case the two items together give more biologically usable protein than if each were eaten separately." In view of this importance of mixing cereals and legumes to get a balanced diet, some experts have gone to the extent of referring to the diminishing production of pulses (or other legumes) as the divorce of agriculture from nutrition. This is particularly bad for the weaker sections who do not have access to other, more expensive proteins. Therefore, top priority should be given to increasing the production and availability of pulses.

An effort should be made to look at the entire agro-eco system instead of examining individual crops and grain yield in isolation. As an organic farmer of India, G.R. Iyengar, said: "Few of us realize the havoc that modern agricultural practices are wreaking on our countryside. Farmers have forgotten the habits that supported a wide variety of wildlife and countless varieties of wild plants, flowers and trees that are essential for profitable and sustainable agriculture. What is happening in farming today is that agriculture technology is acting in isolation, treating organisms in isolation, which leads to a disturbance of the natural system of checks and balances. It should be a sensitive balance of organisms in nature that should be allowed to spread. Few people realize today that there is a certain symbiosis between the various elements of nature like between flowers and pollen, soil and organisms. The role of the ecological balance in managing habitat has to grow."

Reversing the degradation of land, which has been continuing for so long, will involve several bold initiatives, including some that can be expected to evoke a lot of resistance among strong vested interests. Yet there is no doubt that such initiatives have to be taken and cannot be delayed for too long. Protection of our precious cropland and soil is too important a task to be neglected any longer, particularly keeping in view the needs of the next few generations.

The World Commission of Environment and Development had recommended that "The legislative, policy and research capacity for advancing non-chemical and less-chemical strategies must be established and sustained." However, in practice few countries have followed this advice. In principle it is widely agreed that agricultural polices should be guided by the objectives of protection of environment and sustainability.

In the real world, are agricultural policies really guided by these noble objectives? There is a growing suspicion that narrow-minded, short-term profit considerations have a far more powerful influence in real life farm policy decisions.

The World Resources Report minces no words in making a firm statement on this issue: "Current farm practices in industrialized countries have created incentives for farmers to use environmentally damaging practices and in many cases, penalized farmers for switching to more sustainable practices." For example, the report says, the system of farm programme payments in the USA has worked against long-term rotations and reduction of chemical inputs. In the European Community, price policies have discouraged production of pulses. Although mixed crop-livestock systems can be the basis for environmentally-sustainable farming, distorted price structures have tended to push agriculture in the other direction.

Over 20 UK farming, consumer, organic, animal welfare, environmental and Third World groups have formed the Sustainable Agriculture, Food and Environment (SAFE) alliance. According to SAFE's campaign statement: "Agriculture is about more than simply producing food. It is a way of life and makes a vital contribution to the health of rural communities. SAFE seeks to switch farm subsidies away from price support towards payments for sustainable and environmentally enhancing farm management practices agreed on a whole farm basis. All the land on any one farm would be included in the scheme and payments made would be tiered on an acreage basis."

The effect of these whole farm management agreements, argues SAFE, would be to put smaller family farms (the mainstay of many rural communities) back on a level playing-field with much larger farms and to remove the present in built bias towards increased farm size." Such agreements would both encourage participating farmers to modify their production methods to take full account of environmental factors and also reward those, such as organic farmers, already practising environmentally-sensitive methods. The SAFE Alliance has tried to define the requirements of good agricultural system:

- An agriculture that is supportive of rural communities, which halts the decline in full-time farm employment and provides a stable livelihood for farmers and farm workers;
- An agriculture that does not jeopardize the health of those who work or live on the land or the consumer through the use of polluting or toxic production methods;
- An agriculture that is capable of flexible response to national food and nutrition goals designed to improve public health;
- An agriculture that produces affordable food, of high nutritional quality and that minimizes chemical and microbiological contaminants;

Photo: Dinodia

- An agriculture that does not lead to the reduction of soil fertility, which minimizes reliance on non-renewable resources and that is sustainable;
- An agriculture that both conserves and enhances the countryside, not only in its visual aspect but also in terms of its resources and wildlife;
- An agriculture that respects the welfare needs of farm animals;
- An agriculture that does not threaten the development and maintenance of food security and sustainable agriculture in other countries, especially those in the Third World. ●

AG-TECH DELIVERY:
Reaching the Grassroots?

A Farmers' Forum Report

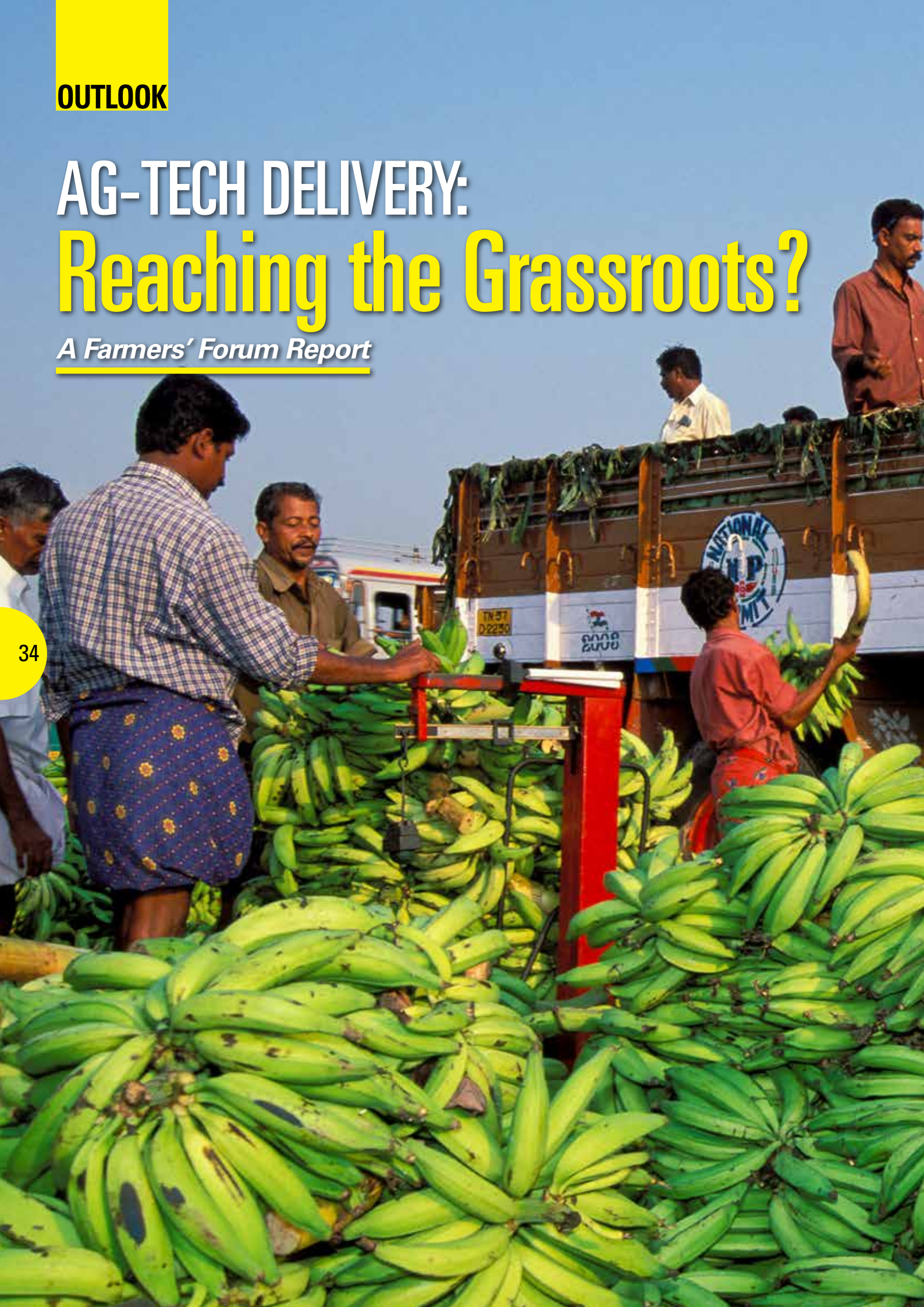


Photo: Dinodia

Much has been said in recent months about the yawning gap between the two ends of India's food spectrum. The country's fragmented supply chain, featuring small and marginal farmers and service providers and the technology-driven aggregators at the other end, increasingly delivering food to the table, from Big Basket to the pizza delivery boys.

The focus of finance and technology has been the consumer end that manages to secure policy support but the root problems featuring real, struggling people has eluded remedy thanks to inadequate policy, political will and basic ignorance at the policy-making level. Is there an opportunity here for disruptive technology to come to the rescue of the small farmer? Or, will it address the needs of the middle class but not quite reach the roots of the problem in a manner that will impact the farmscape.

Arguably there have been start-ups such as Kheyti that is small farmer focused. Based in Andhra Pradesh, it wants to make a smart farmer of a small farmer through its "greenhouse in a box, a 4,000 square feet greenhouse integrated with services that increase farm yields by seven times and ensures constantly weekly income", reports Entrepreneur India[1].

India AgriFood Startup Funding Overview 2013-2017

$1.66bn	558	$150m	$996m
Total Investment	Deals	Largest Deal	Investment in Food Delivery

Upstream

Ag Biotech, Farm Management 5W, Farm Robotics Euipment, Bioenergy & Biomaterials, Novel farming, Agribusiness Marketplaces, Midstream Technologies, Fintech

$189m
Investment

146
Deals

$10m
Largest Deal

Downstream

In-store Restaurant & Retail, Online Restaurants, eGrocery, Restaurant Marketplaces, Home & Cooking, Premium Branded Foods & Restaurants

$1.475bn
Investment

412
Deals

$150m
Largest Deal

Source: India AgriFood Startup Investing Report 2013-2017

1 https://www.entrepreneur.com/article/275491

Photo: Pixabay

Indian AgriFood Startups raised $1.66 billion between 2013 and 2017 with investments from a mix of major global venture capital investors, multinational tech corporations...

Thus far, however, start-ups have mainly focused downstream, particularly on tech-enabled food delivery offerings as the country's growing middle class in cities demanded more convenient solutions. India AgriFood Startup Investing Report 2013-2017 has an interesting story to tell.

India AgriFood Startups raised $1.66 billion between 2013 and 2017 with investment from a mix of major global venture capital investors, multinational tech corporations, impact investors and dedicated agrifood funds. How this is impacting on the grassroots is another question but the demands of a growing middle class and a broken supply chain have driven, according to the report, "much of the innovation and investment during the period, while upstream, farm tech startups, picked up steam in the latter years".

India's humungous food needs and its broken agricultural supply chain are what innovative technology can impact on and the growing interest of funders may be of some value. It is early days though because $1.66 billion over a five-year space seems of little consequence compared to the $10 billion raised globally in 2017 alone. Indian startup funding deals were "relatively lower than in developed nations, deal activity was high, representing 10 per cent of global deal count, emphasizing the need for disruptive technology to improve India's agrifood supply chain".

India's grocery market, the sixth largest in the world, is reportedly worth $600 billion though with only five to eight per cent of grocery stores in the organized sector. Small retailers lack the technology and logistics to exploit this market opportunity. "There are 4.8 crore SMEs in India that need to secure bulk supplies, making the B2B ecommerce

Key Insights: 2013-2017

Middle Class Demands Drive Investment

- Innovation and investment in India's agrifood industry can be characterized by the country's consumer story, which is driven largely by rising middle class incomes and aspirations. Middle and upper middle class households increased from 24 million in 2005 (11% of population) to 57 million (21% of population) in 2016.
- Aided by the proliferation of affordable mobile devices and data packs, this growing middle class started to demand more variety as well as tech-enabled food offerings, particularly food delivery services.
- With a long tradition of food delivery through dabbawalas, doodhwalas, and kirana shops, the application of technology to home and office food delivery was a logical next step.
- Increased awareness of food quality, rising incomes, greater demand for convenience, and a growing willingness to experiment with new ingredients, gave rise to several consumer food startups. New brands in categories such as ready-to-cook, craft beer, and healthy snacks gained momentum.
- Demand for high quality foods and experiences also saw the growth of new restaurants offering premium experiences.

Investment Fluctuations

- Total investment in agrifood startups in India grew over the five year period to $342m in 2017 from $89m in 2013. But investment peaked in 2015 at $681m as VCs started writing larger cheques for early stage agrifood startups, particularly at the consumer end of the supply chain.
- Food delivery startups were especially popular among investors in 2015, when the average Series A deal in the eGrocery category increased to $9.2m from $5m in 2014.
- Investment activity fell off in 2015 after the failure of multiple VC-backed startups in the hyperlocal food delivery space, including PepperTap, an eGrocer that had raised over $50m, and TinyOwl, a restaurant marketplace that had raised over $30m.
- These failures prompted some acquisition activity in the food delivery segment.
- Funding activity picked up again towards the end of 2016, with larger follow-on funding rounds into more mature startups in the sector.
- Deal activity grew overall during the period to 147 deals in 2017 from 45 in 2013, peaking at 158 deals in 2015.

Downstream Deals Dominate

- Downstream companies, at the consumer end of the supply chain, drew in 90% of total investment over the five year period from 2013 to 2017. In contrast, the global split between startup funding downstream (58%), and funding to startups closer to the farm (42%), was more balanced in 2017.
- Investor momentum around the theme of India's techenabled consumption directed capital towards eGrocery and Restaurant Marketplaces in particular. Online restaurants, such as Faasos, Box8, and FreshMenu also received significant VC funding.
- Generalist venture capital funds, including Sequoia Capital, Accel Partners, Bessemer Venture Partners, and SAIF Partners, dominated funding in downstream startups.
- Later stage deals also saw participation from long-term, large corporates like Japan mega investor Softbank, Chinese tech giant Alibaba, and South African media company Naspers.

Upstream Acceleration

- Small landholdings and fragmented supply chains, as well as the penetration of smartphones, offer a significant and compelling opportunity for disruption around the themes of precision agriculture and supply chain efficiency. With a large single market, Indian agtech startups could be a dominant export to smallholder farmers globally and investment in startups closer to the farm grew nearly seven times over the five-year period.
- But companies in the upstream categories – Ag Biotech, Farm Management Software, Sensing & IoT, Farm Robotics, Bioenergy & Biomaterials, Midstream Tech, Agribusiness Marketplaces, and FinTech – only represented 26% of deal activity by number and 10% by value from 2013 to 2017.
- Agribusiness Marketplaces ($78m) and Midstream Technologies ($54m) startups raised the lion's share of upstream funding, while Farm Management Software, Sensing and IoT startups raised just $21 million between 2013 and 2017, as a relatively untapped technology in India so far.
- With the exception of US-headquartered Accel Partners, specialist funds dominate upstream funding activity in India. These include Omnivore – India's only dedicated agrifoodtech fund – as well as impact funds Aavishkaar, Aspada, and Ankur Capital. Other active upstream investors include Qualcomm Ventures, Mistletoe, and 500 Startups.

Source: India AgriFood Startup Investing Report 2013-2017

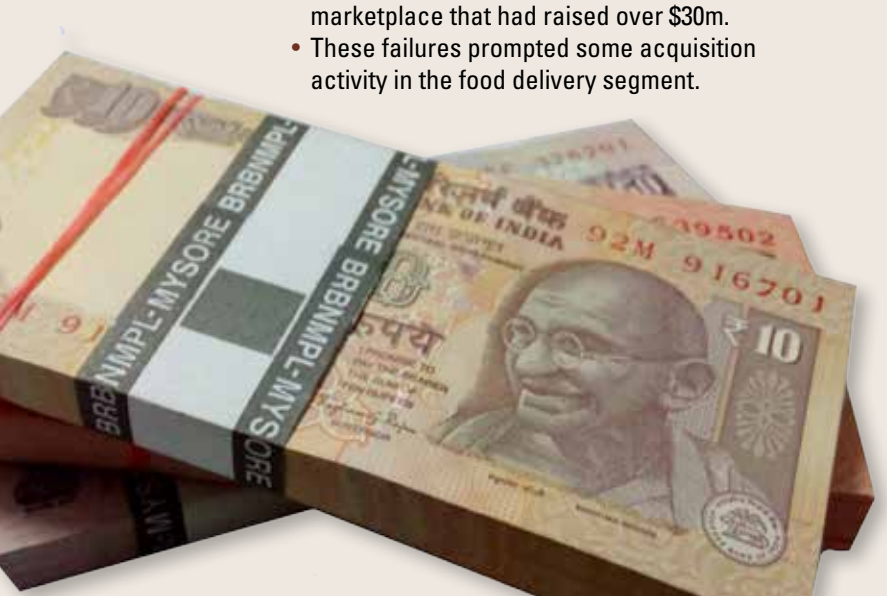


Photo: Pixabay

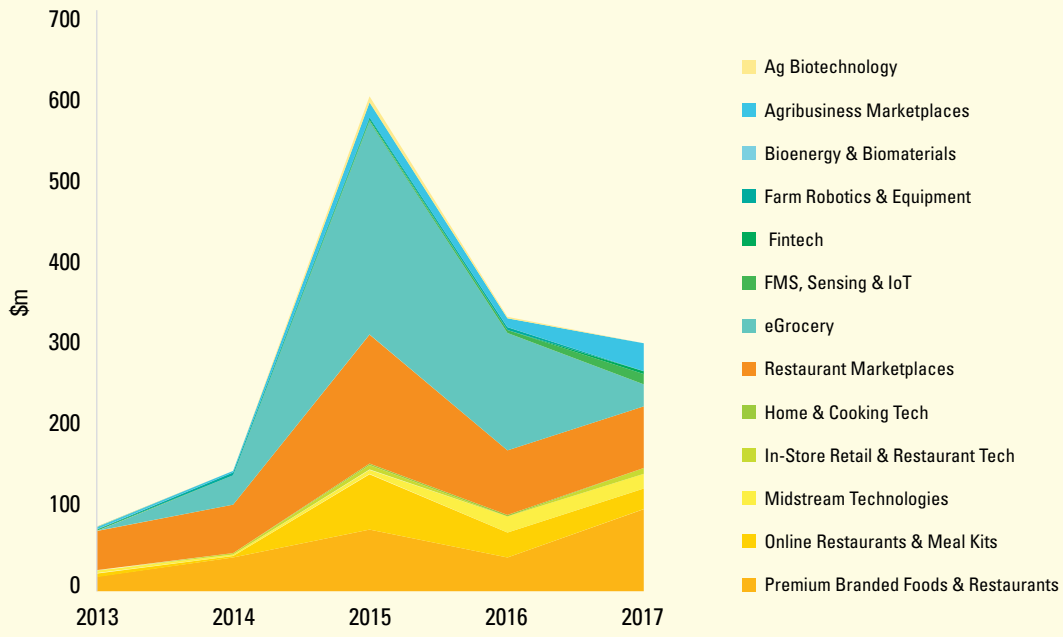
market a much bigger opportunity than B2C. Both wholesalers and retailers are now opening up to the possibilities of online purchasing[2]." Technology has reached HoReCa (hotels, restaurants and cafes) businesses, retailers and suppliers to help improve margins, achieve quick turnarounds and smaller inventories. "A bunch of startups in India are using advanced technology".

Some 558 deals in the India agrifood supply space represent around 10 per cent of the global deal activity between 2013 and 2017 but the focus is on establishing the middle class connect with deep inroads into the food-producing sector still some distance away. Funding has come the start-ups' way from various consumer funds, large multinational tech companies, generalist venture capital firms supporting the small but growing number of startups and investors aiming to increase the efficiency and profitability of Indian agriculture, all along the supply chain.

They include the high profile Bill Gates and the SoftBank family's Mistletoe venture firm with its agrifood tech accelerator. Thus far, most investment in upstream startups has come from agrifood specialist funds, such as Omnivore and other impact investors. The most active investor in downstream agrifood startups close to the consumer included Sequoia Capital with most of

Photo: Pixabay

Annual Growth by Category



AgFunder

Source: India Agrifood Startup Report: Five Year Review 2013-2017 | Agfunder.com

2 https://yourstory.com/2018/06/8-startups-winning-600-billion-grocery-game-e-commerce/

Photo: Dinodia

Investment in the country's agrifood startup industry fluctuated after the failure of some food delivery startups in 2016. Larger, later stage investments are expected

its investments in the Premium Branded Food & Restaurants category.

The most prominent include craft beer brand Bira91, healthy juice brand Raw Pressery and ethnic beverages brand Paper Boat. Besides, there were DSG Consumer Partners and Fireside Ventures both focused on early stage investments in Premium Brands such as Epigamia, Yoga Bars, Veeba, Vahdam Teas. Saama Capital has been an active mid-stage investor in this category and Accel, Nexus, SAIF focused on investments in the Restaurant Marketplace (Swiggy) and eGrocery categories (PepperTap).

Amongst the more active upstream investors is Omnivore, the only agrifood tech focused investor in India that backed 13 companies across a cumulative 30 deals, including nine upstream companies. Prominent investments by the VC include weather services provider Skymet, dairy IoT player Stellapps, micro-cold storage startup Ecozen and aquaculture IoT startup Eruvaka. Besides, Aspada Investments has invested actively in agribusiness marketplaces with a strong focus on farm procurement, including Lawrencedale Agro (Leaf), INI Farms, and Allfresh, the report says.

Impact investor Aavishkaar has made seven deals in three upstream companies, the most prominent among them being agri inputs distribution platform Agrostar. Ankur Capital invested in three companies during the period, investing the majority in Farm Management Software startup Cropin. Accel Partners is the only generalist VC with notable deal activity in farm technoogy. Accel has backed input distribution platform Agrostar, farm-to-fork Ag Marketplace Ninjacart and Midstream Tech Samunnati.

"Overall, investment activity in the country's agrifood startup industry fluctuated during the period, particularly after the failure of some food delivery startups in 2016. But we expect to see larger, later stage investments and some consolidation in this category going forward",

says Louisa Burwood-Taylor, Head of Media & Research, and the AgFunder team.

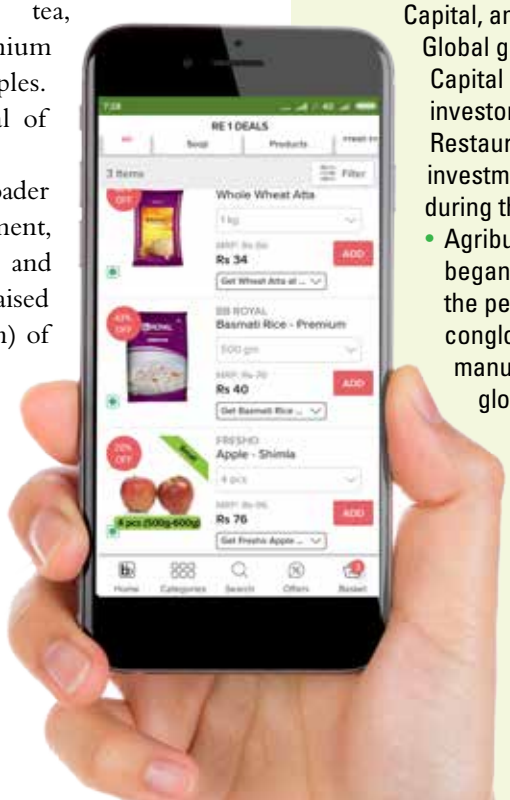
Broadly, agrifood tech startups are primarily aiming to solve the following challenges: food waste, CO_2 emissions, chemical supply chains and distribution inefficiencies, food safety and traceability, farm efficiency and profitability and unsustainable meat production. New food brands and restaurant startups have achieved a fair amount of domination in this funding landscape over the period, as has been the experience in many parts of the emerging economies.

India and such other economies have consumers seeking new food experiences and formats such as ready-to-eat. These generate scepticism around the actual impact on the marginal producer.

A pullback in funding in 2015 after the collapse of some of the many food delivery options "pushed the focus on to other categories and funding for upstream, farm tech startups gathered pace, particularly agribusiness market places that aim to improve farmer access to much needed inputs and tools". Realistically speaking, none of them have achieved the desired penetration; the only bright spot is the middle-class convenience segment, driven by the "e-commerce-focused global investors betting on the Indian consumption story".

The demand for quality and convenience and greater consumer exposure to global tastes and seemingly healthier food options led to the increased focus on the premium branded foods and restaurants, making it the third best funded category. Healthy juices, snacks, superfood ingredients, premium tea, artisanal coffee, and premium restaurants are a few examples. The category raised a total of $318m over the period.

The report says that broader food delivery segment, comprising eGrocery and Restaurant Marketplaces, "raised close to 60 per cent ($996m) of the total funds raised by agrifood startups in the five-year period between 2013 and 2017 but met moderation in investment activity post 2015 after multiple VC-backed failures".



Key Insights – Investor Activity

- The agrifood tech space in India experienced growing participation from generalist investors, both domestic and global. The investment thesis largely rests on the story of tech-enabled consumption in the middle classes.
- Particularly active international investors included Sequoia Capital, and Accel Partners, among others. These investors focused largely on the downstream sectors and also drew in larger late stage funding from large international corporates from other industries like Naspers (media), Softbank (finance) and Alibaba (internet).
- While upstream investing activity was much lower compared to downstream activity in number of deals and dollars invested, it did see more focused participation from agrifood tech specialists like Omnivore and impact funds such as Aavishkaar, Ankur Capital, and Aspada. Impact investors were more interested in connecting farmers through ecommerce via investments in Agribusiness Marketplaces while sector specialists invested in Farm Robotics and Farm Management Software & IoT.
- The upstream space also began to see interest from generalist VCs with Matrix Partners (Gobasco), Kalaari Capital (Jumbotail), IDG Ventures (Agrostar) and Nexus Venture Partners (Jumbotail) all made their first bets in the space. Accel Partners was the most active generalist VC investor in upstream deals.
- The growth of Premium Foods & Restaurants caught the attention of consumer-focused funds like DSG Consumer Partners, Saama Capital, and Fireside Ventures. Global generalist fund Sequoia Capital remained the largest investor in the Premium Foods & Restaurants space, and downstream investments overall with 37 bets during the five year period.
- Agribusiness corporates also began investing in India during the period. Mahindra, an Indian conglomerate that is the leading manufacturer of tractors globally, invested in GoldFarm. Syngenta Ventures made its first deal in India in midstream player Farmlink while Schreiber Foods invested in premium dairy brand MilkLane.

Source: India AgriFood Startup Investing Report 2013-2017

Photo: Dinodia

Most Active Venture Funds: Downstream

- Sequoia Capital was the most active investor in downstream agrifood startups close to the consumer. Most of its investments are in the Premium Branded Food & Restaurants category. The most prominent include craft beer brand Bira91, healthy juice brand Raw Pressery and ethnic beverages brand Paper Boat.
- DSG Consumer Partners and Fireside Ventures both focused on early stage investments in Premium Brands such as Epigamia, Yoga Bars, Veeba, Vahdam Teas. Saama Capital has been an active midstage investor in this category.
- Accel, Nexus, SAIF focused on investments in the Restaurant Marketplace (Swiggy) and eGrocery categories (PepperTap).

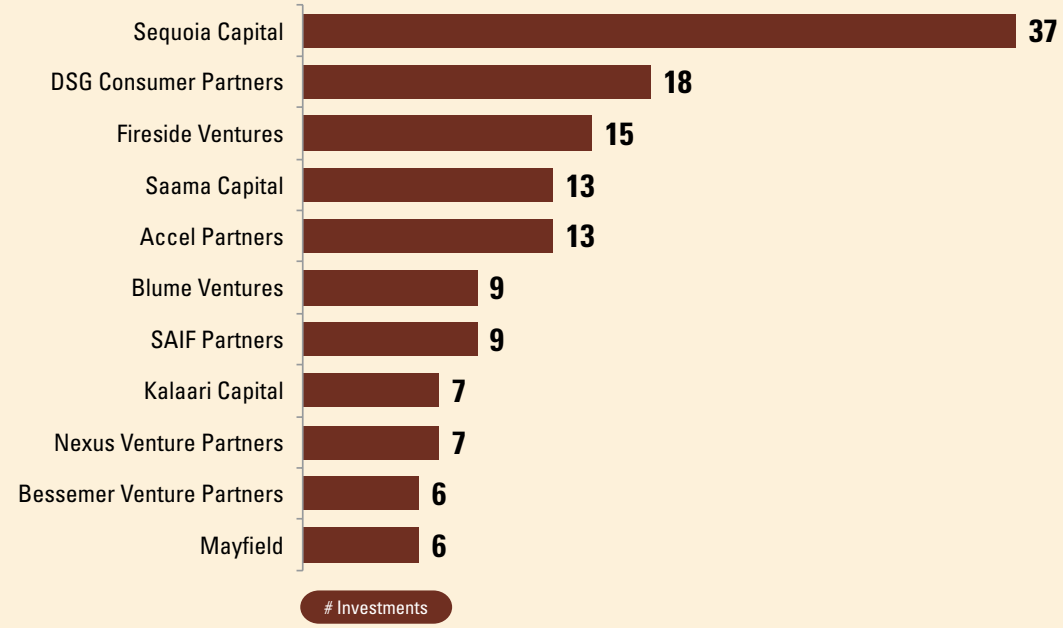
There were some 100 deals, in the eGrocery segment in the five-year period and 47 per cent of total investment in the space was raised by a single startup, BigBasket, that has Sharukh Khan as its brand ambassador. BigBasket's $150m Series D in 2017 saw the entry of Chinese tech giant Alibaba into the Indian agrifood tech sector.

BigBasket and Grofers together raised 78 per cent of funding for eGrocery startups. "Grofers raised $120m in 2015 backed by Softbank, Tiger Global and Sequoia Capital. BigBasket raised $150m in 2016 from a posse of big name investors that included Helion, Bessemer Venture Partners, Zodius, Sands, Abraaj Capital and International Finance Corp in the largest single round in the eGrocery space", the most active segment in the agrifood tech space in India between 2013 and 2017.

Besides, PepperTap raised $40m in 2015 from Sequoia Capital, SAIF Partners, Jaffco, ruNet and Beenext. It shut down operations a year later and was assimilated by logistics company Shadowfax. The demand for fresh and high quality meat saw Licious raise $10m from Mayfield Fund, Sistema, 3one4 Capital and Neoplux in 2017. 20

Restaurant Marketplaces also dominated the sub-sector, raising around 27 per cent of the total funds over the five-year period with main investments from global interests; the two significant ones being Ola acquiring FoodPanda and Zomato

Most Active Venture Funds: Downstream



AgFUNDER

Source: India Agrifood Startup Report: Five Year Review 2013-2017 | Agfunder.com

Photo: Pixabay

Challenges that agriculture start-ups face arise from farming problems such as indebtedness, last mile delivery, low demand and data aggregation from small farms

acquiring Runnr. Investments in this space were driven by the popularity of the online shopping experience and restaurant startups, which raised a $147 million between 2013-17.

Upstream agrifood tech startups started to catch investor interest in the second half of the period, constituting 26 per cent of total deals by number and 10 per cent by value, the strongest support going to the agribusiness marketplaces that raised $78m over 35 deals in the Seed to Series B stages. Midstream Technologies picked up some early mover investors raising $54m over the period, while investment in other upstream interventions such as Farm Management Software, Sensing & IoT remained at the early stages, the report says.

Asha Impact, an impact investment platform (*http://ashaimpact.com/*), talks of the seven-pronged challenges that agriculture start-ups face. These are derived from farm sector problems: farmer indebtedness; demand generation and aggregation at the last mile from scattered small and marginal farmers who are difficult to access; missing implementation guidance by advisory services to accompany new input marketplace model that make for an added cost base and not a revenue-generating vertical; last mile delivery with the geographic spread and lack of customer density increasing logistics costs; seasonality in input purchases weakens the capital cycles of businesses; building customer trust for which there is need for an offline presence.

"This is probably the most interesting and counter-intuitive challenge to people not familiar with agriculture in India. The purchase of inputs is an essential livelihood purchase for farmers and thus requires a significant amount of trust to be placed on the retailer/supplier. The intangible of trust is essential to understand", says the analysis. ●

STATE BUDGET AGRICULTURE ANNOUNCEMENTS

Will These Help The Farmer?

A Farmers' Forum Report

***Farmers' Forum* provides a glimpse into some highlights of the state budgets**

The people of India have become fed up with false dreams which come untrue. They are now acutely realizing that all the assurances given to them are only pipe-dreams. The toiling farmers of the country were assured that the income would be doubled. Far from doubling their income, the country is facing severe and unprecedented farm distress. A few thousands of farmers have committed suicide being unable to bear the mounting debt in different parts of the country.

— Amit Mitra,
West Bengal Finance Minister

Photo: Pixabay

Bihar

The department of agriculture received an allocation of ₹2,958.77 crore in 2019-20, which is 1.48 per cent of budget estimates. The government is also creating a separate agriculture feeder for providing irrigation facility to every field by the end of December 2019, with a total outlay of ₹5,823 crore.

Kerala

The government allocated ₹1.42 lakh crore budget for reconstruction following the devastation to the countryside by the flood with major afforestation initiatives and crop specific measures. Coffee beans grown in the carbon-neutral Wayanad hills will be branded globally as Malabar Coffee and efforts and the hilly district will be helped to reduce carbon emissions with major plantations to absorb residual carbon gases. Besides, ₹50 would be given as loan every year for each tree repayable only when the tree is cut down. The state government will provide the bank guarantee for this. Other value-added products such as jackfruit will be focused on along with high-range areas in the 'rebuild project' that bore the brunt of the floods.

There is a ₹70 crore is allocation for raising coconut production and earning a 20 per cent higher price with ₹100 crore to be provided from co-operative banks, local governments and the coir department. Also, international standard rice parks will be set up in Palakkad, Thrissur and Alappuzha. For rubber, the budget has proposed a ₹500 crore support price. A company in the pubic-private partnership model will be set up for promoting value-added products.

Odisha

The Orissa budget (₹1.32 lakh crore) allocates ₹4,461 crore for its cash transfer scheme for farmers named KALIA, along with interest subvention worth ₹800 crore. The state has launched the State Food Security Scheme to cover left out beneficiaries under National Food Security Scheme.

Other moves include a ₹1,028 crore allocation to rice at ₹1 per kg and ₹2,100 crore set aside for pension for 48 lakh people in the state. Announcements include a ₹200 crore allocation towards interest subvention to farmers (subsidy in interest of farm loans); ₹400 crore for PEETHA (sub-scheme of Ama Gaon Ama Bikash); ₹2,935 Basudha (rural water supply); ₹500 crore for Gopabandhu Grameen Yojana: ₹1,777 crore for Parvati Giri Mega Lift Irrigation, amongst others.

Photo: Pixabay

Andhra Pradesh

To addresses agriculture distress in the state the budget has allocated ₹5,000 crore for a grant to farmers. Of the erstwhile Annadatha ki Apathbandavudu to alleviate the debt burden of farmers with an outlay of around ₹24,000 crore, the two final instalments will be credited shortly. For horticulture debt redemption ₹384 crore have been credited into 2.23 lakh loan accounts of farmers. A new scheme, Annadatha Sukhibhava scheme to give economic support to farmers) has got an allocation of ₹5,000 crore for 2019-20. Besides it has enhanced input subsidies for paddy, sugarcane, cotton and groundnut crops from ₹10,000 to ₹15,000, for maize from ₹8,333 to ₹12,500, pulses and sunflower crops from ₹6,250 to ₹10,000 to benefit 39.33 lakh farmers. For sustainable enhancement of farm

For sustainable enhancement of farm incomes, Andhra Pradesh has increased micronutrient subsidy to 100 per cent, strengthened extension services...

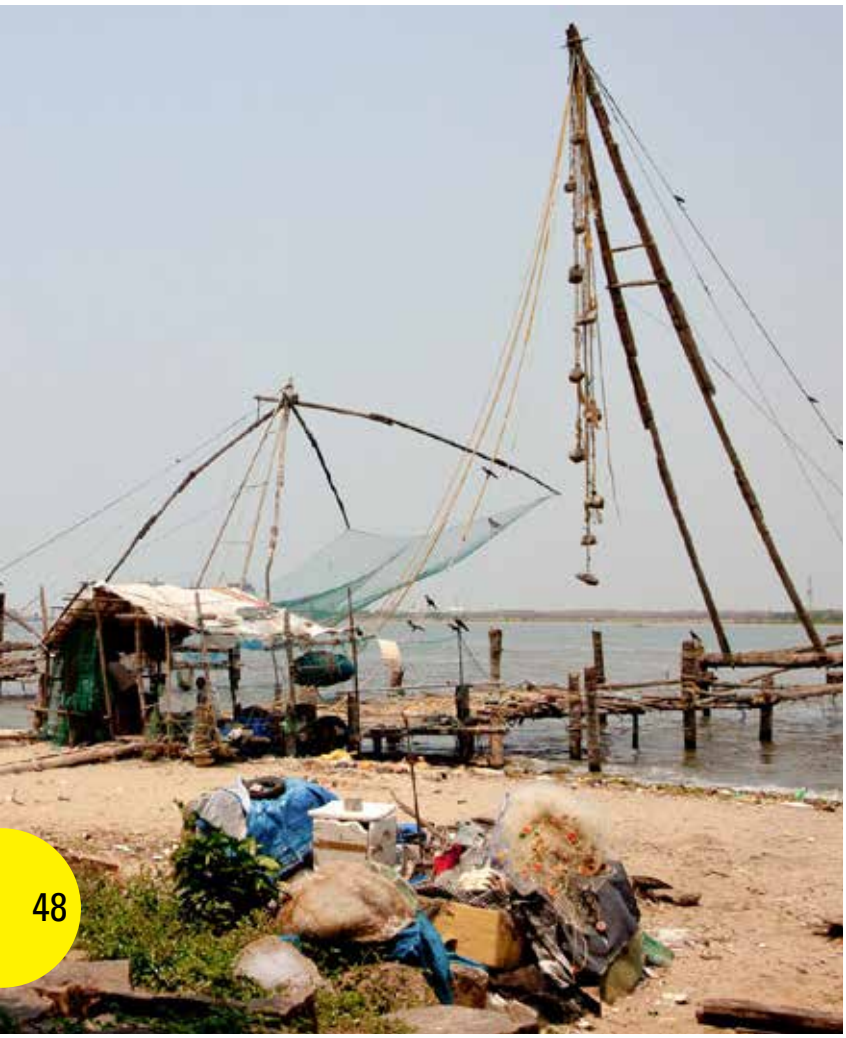
incomes, it has increased micronutrient subsidy to 100 per cent, strengthened extension services through Chandranna Rythu Kshetralu and Polam Pilusthondi programmes and its Zero Budget Natural Farming has won accolades across the globe.

Chhattisgarh

The government has allocated ₹21,597 crore for the agriculture sector with short term loans of ₹4,000 crore for farmers being waived; ₹5,000 bonus on MSP for paddy for the next season; ₹2,995 crore is the irrigation budget with ₹759 crore on large irrigation projects. A Suraji Gaon Yojana based on collection of basic information about villages is another significant feature.

Uttar Pradesh

The state increased outlay for agriculture by 14 per cent in the budget of ₹4.79 lakh crore. The state government also offered ₹600 crore for cow shelters. ₹850 crore has been allocated to connect the villages and settlements through concrete link roads under various schemes and ₹845 crore allocated for 'Mukhya Mantri Kisan Evam Sarvhit Bima Yojna' amongst others.



Himachal Pradesh

The state presented an annual plan of ₹7,100 crore to increase farm productivity, develop rural infrastructure, develop new sources of irrigation, flood control and social services. Besides, there is a ₹150 crore Mukhya Mantri Nutan Polyhouse Yojna, with an enhanced outlay for anti-hail net, irrigation and flood control schemes, Mukhya Mantri Khumb Vikas Yojna, with an enhanced subsidy up to ₹25,000 on indigenous cow breeds and ₹2 per litre increase in milk procurement price. The power tariff is also reduced from 75 paise per unit to 50 paise for irrigation; there is a 50 per cent subsidy for barbed wire and chain link under the Mukhya Mantri Khet Sanrakshan Yojna. A breeding farm for Sahiwal and Red Sindhi cows will be set up a cost of ₹11.21 crore.

Jharkhand farmers will get annual incentive of ₹5,000 per acre land during Kharif season from the next financial year. Around 22.76 lakh small and marginal farmers would be covered under the scheme

Jharkhand

Jharkhand farmers will get annual incentive of ₹5,000 per acre land during Kharif season from the next financial year under a new scheme, Mukhya Mantri Krishi Ashirwad Yojana. Around 22.76 lakh small and marginal farmers, would be covered under the scheme and there will be a spend of ₹2,200 crore "to make farmers financially strong. Overall, the budget allocation for agriculture is up by 24 per cent. Under the Mukhya Mantri Krishi Ashirwad Yojana, farmers will receive ₹5,000 per acre per year, along with a bonus of ₹150 over the minimum support price.

Photos: Pixabay

Karnataka

The government has allocated 25 per cent of the state's budget for the agriculture sector with rollout of the loan waiver scheme getting a ₹12,650 crore. Other schemes include 'Raitha Siri', to encourage millets for which ₹10,000 per hectare is to be paid to farmers to achieve 10,000 hectares in millet plantation. Promotion of paddy cultivation in the coastal and hill regions in the western part of the state gets ₹7,500 per hectare under the scheme called 'Karavali package' and ₹1,583.13 crore will go to animal husbandry, ₹2,685 crore for welfare of milk producers and ₹15,903 crore for irrigation schemes.

West Bengal

Agriculture allocation increased by 120 per cent to ₹6,086 crore; exemption to tea gardens from education and rural employment cess; focus on employment schemes, stressing on cash handout of ₹1 lakh a year to 50,000 unemployed youth; ₹5,000 and ₹2,000 annual grants for farmers with one acre and less than an acre of land respectively. ●

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DISCREPANCY

The 'Har Khet Ko Pani' Conundrum

Shambhu Ghatak

Report by **Shambhu Ghatak**, published in *im4change.org* with minor edits by *Farmers' Forum*

Photo: Dinodia

"Government of India is committed to accord high priority to water conservation and its management. To this effect Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) has been formulated with the vision of extending the coverage of irrigation 'Har Khet ko pani' and improving water use efficiency 'Per drop more crop' in a focused manner with end to end solution on source creation, distribution, management, field application and extension activities…

"PMKSY has been formulated amalgamating ongoing schemes viz. Accelerated Irrigation Benefit Programme (AIBP) of the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR,RD&GR), Integrated Watershed Management Programme (IWMP) of Department of Land Resources (DoLR) and the On Farm Water Management (OFWM) of Department of Agriculture and Cooperation (DAC). PMKSY has been approved for implementation across the country with an outlay of ₹50,000 crore in five years". – https://pmksy.gov.in/

Too many questions have cropped up around the figures put out by the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) a scheme designed to achieve more crop per crop "Per Drop More Crop" implemented by the Ministry of Agriculture & Farmers' Welfare. "Apart from inconsistent data on coverage from different sources, target was not achieved in case of PMKSY –Per Drop More Crop (PDMC)", says an investigative report by Shambhu Ghatak in *im4change.org [http://www.im4change.org/news-alerts/apart-from-inconsistent-data-on-coverage-from-different-sources-target-was-not-achieved-in-case-of-pmksy-per-drop-more-crop-4686582.html]**

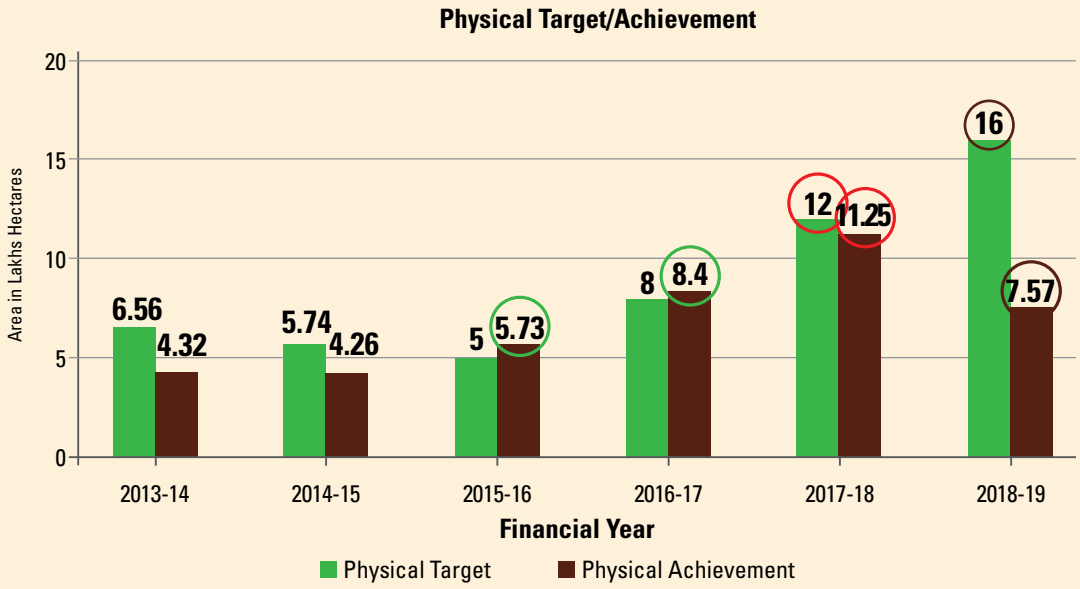
How is it possible that we get different figures on area brought under micro-irrigation pertaining to the Pradhan Mantri Krishi Sinchayee Yojana – Per Drop More Crop, a scheme implemented by the Ministry of Agriculture & Farmers' Welfare? The dashboard *(https://pmksy.gov.in/mis/frmDashboard.aspx)* of the scheme clearly shows that 11.25 lakh hectare was brought under micro-irrigation in the financial year 2017-18 *(Chart-1)*. However, a reply in the Lok Sabha (unstarred Question No. 5 for reply on December 11, 2018) around 10.48 lakh hectare area was covered under micro-irrigation pertaining to the PMKSY-Per Drop More Crop. *(Table-1)* The dashboard gives a higher figure of area brought under micro-irrigation (PMKSY-Per Drop More Crop) compared to what was presented in the Parliament for FY 2017-18. There is, however, no difference in data on area covered under micro-irrigation for the years 2015-16 and 2016-17 when the data sourced from dashboard and the Lok Sabha reply are compared.

Further, the PMKSY-Per Drop More Crop dashboard, shows that in 2017-18, the physical achievement (11.25 lakh hectare) fell short of the physical target (12 lakh hectare) that was set. There is a substantial gap between the physical target (16.0 lakh hectare) and achievement (7.57 lakh hectare) during the ongoing financial year *(im4change.org, as on February 13, 2019)*

A reply by Nitin Gadkari to the Lok Sabha (starred question number 228) dated December 27, 2018 says that although the potential/target coverage during 2015-16 to 2019-20 under the PMKSY-Per Drop More Crop (PDMC) for micro-

* The Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)-Per Drop More Crop (PDMC), is implemented by the Department of Agriculture, Cooperation and Farmers' Welfare of Ministry of Agriculture & Farmers' Welfare. The rest of PMKSY components are implemented by other ministries.

Chart-1: Physical Target versus Achievement – PMKSY-Per Drop More Crop for Micro-Irrigation (in lakh hectares)



Source: Dashboard of PMKSY-Per Drop More Crop (accessed on February 13, 2019), https://pmksy.gov.in/mis/frmDashboard.aspx

Table-1: Year-Wise Area Covered Under Micro-Irrigation Under PMKSY-Per Drop More Crop (in Hectare)

S. No.	State	2015-16	2016-17	2017-18
1	Andhra Pradesh	94,104	1,41,098	1,86,441
2	Bihar	5,155	4,228	3,143
3	Chhattisgarh	8,056	19,227	13,087
4	Goa	92	123	236
5	Gujarat	1,42,681	1,65,948	1,43,134
6	Haryana	3,117	5,701	10,751
7	Himachal Pradesh	3,306	937	1197
8	Jharkhand	4,528	5,810	1,544
9	Jammu & Kashmir	0	0	0
10	Karnataka	64,220	1,39,405	2,36,107
11	Kerala	561	310	358
12	Madhya Pradesh	75,224	54,323	39,761
13	Maharashtra	35,242	1,06,172	1,32,829
14	Odisha	2,907	4,611	3,036
15	Punjab	1,799	1,950	600
16	Rajasthan	56,346	47,650	48,205
17	Tamil Nadu	32,288	44,778	1,05,695
18	Telangana	39,864	61,980	89,474
19	Uttarakhand	721	3,199	2,182
20	Uttar Pradesh	1,598	32,511	28,235
21	West Bengal	0	0	2137
22	Arunachal Pradesh	0	0	0
23	Assam	0	0	782
24	Manipur	0	0	0
25	Meghalaya	0	0	0
26	Mizoram	398	0	0
27	Nagaland	0	0	0
28	Sikkim	773	0	0
29	Tripura	0	0	0
	Grand Total	**5,72,980**	**8,39,961**	**10,48,934**

Source: Lok Sabha Unstarred Question No. 5 for reply on 11th December, 2018

irrigation was 10 million hectares, only 2.46 million hectares was brought under the same between 2015-16 and 2017-18 *(Table-2)*.

The Output-Outcome Framework 2017-18 pertaining to PMKSY-Per Drop More Crop mentions bringing an additional nine lakh hectare area (as opposed to the target of 12 lakh hectare shown by the dashboard *(Chart-1)* under micro-irrigation and 84,000-hectare area under protective irrigation. The Output-Outcome Framework for 2018-19 for PMKSY-Per Drop More Crop talks of bringing 16 lakh hectare additional area under micro-irrigation and 1.2 lakh hectare area under protective irrigation.

An examination of the budgetary allocation for PMKSY-Per Drop More Crop and funds released by the centre raises curious issues too. *Table-3* shows that the allocation on PMKSY-Per Drop More Crop, as a proportion of total budget expenditure has fallen from 0.164 per cent in 2018-19 (BE), to 0.126 per cent in 2019-20 (BE). Also, the allocation on PMKSY-Per Drop More Crop as a proportion of GDP (in current prices) has declined from 0.021 per cent in 2018-19 (BE) to 0.017 per cent in 2019-20 (BE).

Against a budgetary promise of ₹4,000 crore in 2018-19 (BE) for the PMKSY-Per Drop More Crop, the funds released to states/UTs as on December 11, 2018 were ₹1,877.06

Table-2: Details of Targets as Per Approved Scheme and Achievements Under the Various Components of PMKSY

Component	Potential/Target Coverage (2015-16 to 2019-20)	Achievement (2015-16 to 2017-18)
AIBP	7.5 Lakh Ha.	17.39 Lakh Ha.
HKKP-CAD, SMI, RRR of Water Bodies & GW	CAD - 15 Lakh Ha. RRR/SMI/GW - 6 Lakh Ha.	15.09 Lakh Ha. 3.24 Lakh Ha.
PDMC (Micro Irrigation)	10 Million Ha.	2.46 Million Ha.
Water Development	11.5 Lakh Ha.	8.41 Lakh Ha.

Source: Lok Sabha Starred Question no. 228, to be answered on December 27, 2018

Table-3: Budgetary Allocation For PMKSY Per Drop More Crop (in ₹ Crore)

	2017-18 (Actual)	2018-19 (B.E.)	2018-19 (R.E.)	2019-20 (B.E.)
PMKSY - More Drop per Crop (a)	2,819.25	4,000	2,954.69	3,500
PMKSY - More Drop per Crop as % of GDP	0.017	0.021	0.016	0.017
PMKSY - More Drop per Crop as % of Total Budget Expenditure	0.132	0.164	0.120	0.126
GDP at Market Price (current price, 2011-12 series)	1,67,73,145*	1,87,22,302**	1,88,40,731*	2,10,07,439***
Total Budget Expenditure***	21,41,975	24,42,213	24,57,235	27,84,200

Source: (a) Notes on Demands for Grants 2019-20 for the Department of Agriculture, Cooperation and Farmers' Welfare.
**Press Note on First Advance Estimate of National Income 2018-19, released on 7th January, 2019, MoSPI;*
***Budget at a Glance 2018-19; ***Budget at a Glance 2019-20*

Table-4: Fund Released to States/ UTs Under PMKSY-Per Drop More Crop for the Last 3 Years and Current Year (in ₹ Crore)

S. No.	State	2015-16	2016-17	2017-18	2018-19*
1	Andhra Pradesh	206.47	308.69	517.10	260.00
2	Bihar	28.60	21.60	12.50	27.91
3	Chhattisgarh	20.30	44.80	55.00	20.00
4	Goa	0.30	0.80	0.00	0.00
5	Gujarat	213.05	274.00	300.00	172.50
6	Haryana	34.97	27.00	14.01	23.96
7	Himachal Pradesh	7.60	8.50	19.25	18.00
8	Jharkhand	14.97	30.70	25.00	10.00
9	Jammu & Kashmir	4.87	5.40	3.00	7.80
10	Karnataka	213.12	229.00	385.00	143.00
11	Kerala	8.53	0.00	25.00	4.00
12	Madhya Pradesh	161.74	121.10	150.00	100.00
13	Maharashtra	107.26	305.70	362.50	360.00
14	Odisha	28.70	39.70	48.00	42.00
15	Punjab	43.00	1.18	0.00	0.00
16	Rajasthan	142.84	129.00	107.50	144.00
17	Tamil Nadu	129.78	143.50	369.55	177.00
18	Telangana	111.32	189.00	257.00	122.00
19	Uttarakhand	9.60	15.00	27.20	25.80
20	Uttar Pradesh	37.51	41.40	55.00	69.00
21	West Bengal	4.80	19.90	31.00	24.00
22	Arunachal Pradesh	2.60	2.00	8.30	12.50
23	Assam	5.03	11.00	3.00	0.00
24	Manipur	2.76	3.60	7.50	20.00
25	Meghalaya	1.43	0.00	3.30	12.00
26	Mizoram	3.27	8.10	12.30	13.90
27	Nagaland	2.34	4.50	11.80	17.50
28	Sikkim	4.86	5.40	4.00	35.19
29	Tripura	1.55	0.00	0.50	0.00
30	A&N Island	0.20	0.00	0.50	0.00
31	Puducherry	2.03	0.00	0.00	0.00
32	Hqrs	1.35	0.60	1.00	0.00
	Grand Total	**1,556.73**	**1,991.17**	**2819.07**	**1,877.06**

**-Till Date* *Source: Lok Sabha Unstarred Question No. 75 for reply on December 11, 2018*

Photo: Dinodia

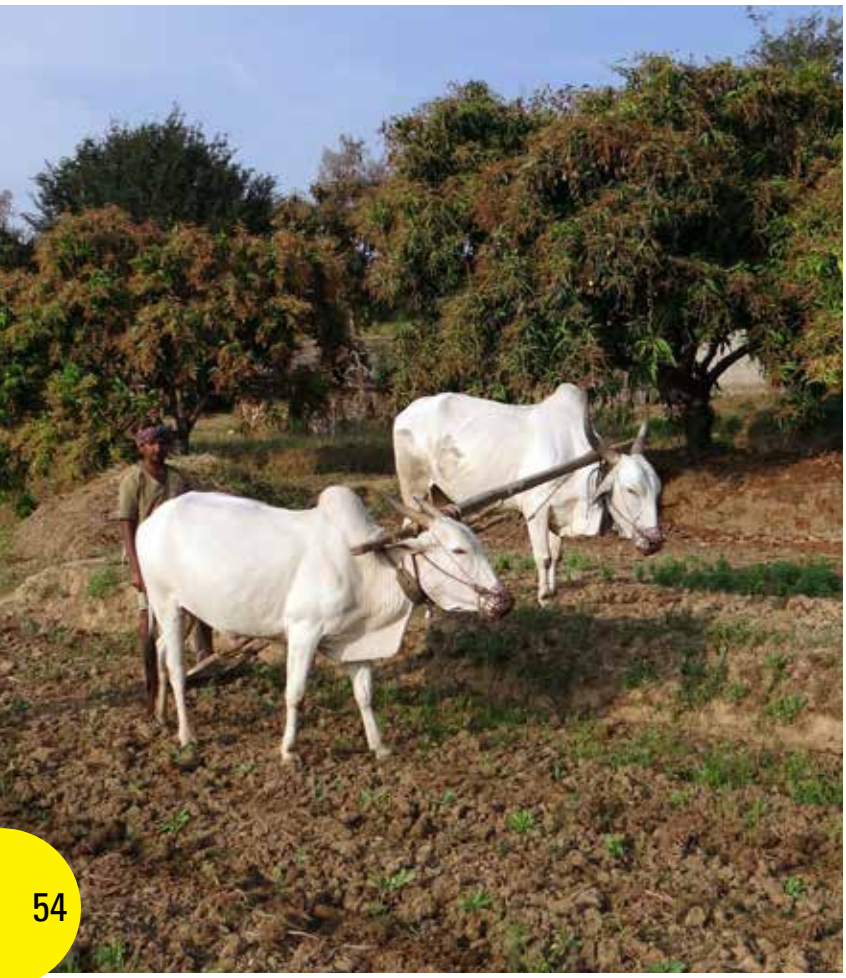


Photo: Pixabay

crore *(Table-4)*. Hence, it is not surprising that the budgetary allocation for the programme under discussion has been cut from ₹4,000 crore in 2018-19 (BE) to ₹3,500 crore in 2019-20 (BE).

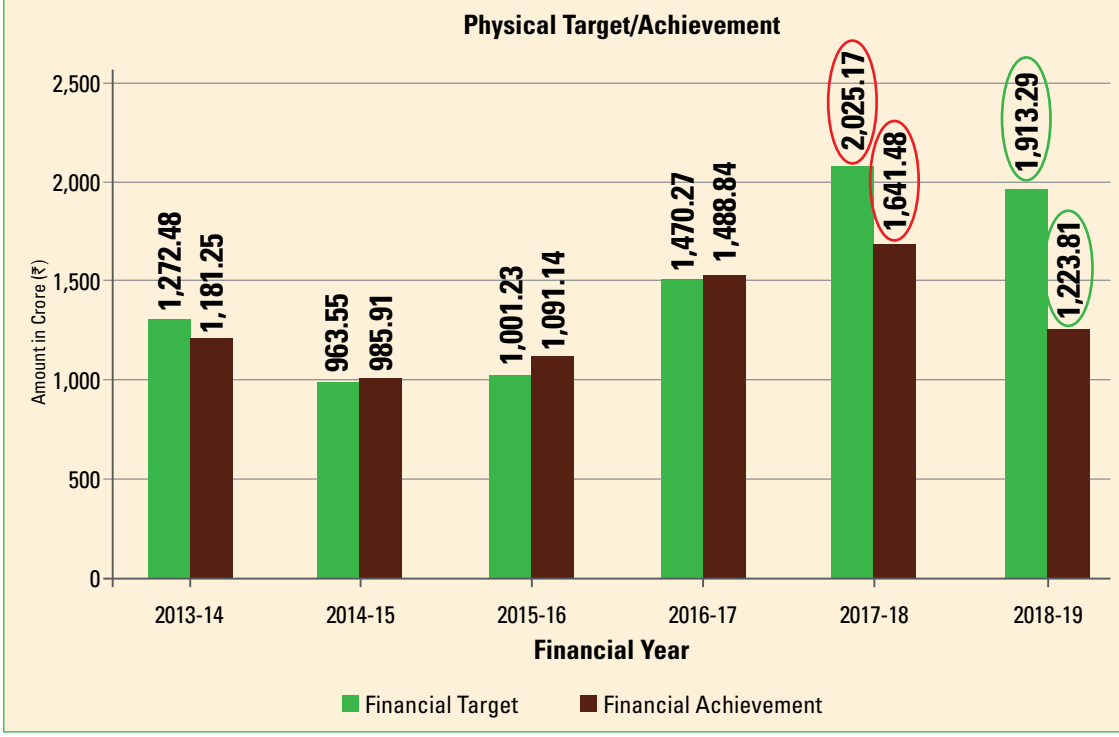
Chart-2, derived from the dashboard of PMKSY-Per Drop More Crop *(viz. https://pmksy.gov.in/mis/frmDashboard.aspx)*, indicates that against a financial target of - ₹2,025.17 crore in 2017-18 for micro-irrigation, the actual expenditure incurred was ₹1,641.48 crore.

There are more such discrepancies. *Chart-2* shows the financial target versus achievement — PMKSY-Per Drop More Crop for micro-irrigation (in ₹ crore).

Similarly, against a financial target of ₹1913.29 crore in 2018-19 for the PMKSY-Per Drop More Crop (micro-irrigation), the actual amount spent was ₹1,223.81 crore (as on February 13, 2019).

The dashboard of PMKSY-Per Drop More Crop shows that although the coverage under drip irrigation exceeded coverage under sprinkler irrigation in 2015-16 (Drip=62.13 per cent; Sprinkler=37.87 per cent) and 2016-17 (Drip=57.98 per cent; Sprinkler=42.02 per cent), in 2017-18 (Drip=48.13 per cent; Sprinkler=51.87 per cent) there was a reversal in that trend. ●

Chart-2: Financial Target versus Achievement – PMKSY-Per Drop More Crop for Micro-Irrigation (in ₹ crore)



Source: Dashboard of PMKSY-Per Drop More Crop (accessed on February 13, 2019), https://pmksy.gov.in/mis/frmDashboard.aspx

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