

## **Agricultural Extension System in Perspective towards Doubling Farmers' Income: an approach for rural development in India**

**Manas Mohan Adhikary<sup>1</sup>, Akash Saha<sup>2</sup> and Mayukh Adhikary<sup>3</sup>**

<sup>1</sup>Professor (Retd), Department of Agricultural Extension & Former Vice-Chancellor  
Bidhan Chandra Krishi Viswavidyalaya, West Bengal, India

<sup>2</sup>Assistant Director of Agriculture, Government of West Bengal, Hili Block,  
Dakshin Dinajpur District, West Bengal, India

<sup>3</sup>Farm Manager, Krishi Vigyan Kendra, OUAT, Sonepur, Odisha, India

*Correspondence:* Manas Mohan Adhikary ([dradhikary@gmail.com](mailto:dradhikary@gmail.com))

### **Abstract**

Rural development is the process of improving the quality of life and economic well-being of people living in rural areas, often relatively isolated and sparsely populated areas. Rural development has traditionally centered on the exploitation of land-intensive natural resources such as agriculture and forestry. Rural development aims at finding ways to improve rural lives with participation of rural people themselves; so as to meet the required needs of rural communities. Doubling of the incomes of farmers in nominal terms has already been happening in recent periods and it is no challenge. Doubling the income in six years, in real terms, however is a formidable challenge and needs large scale revamping, reorientation and innovation in the initiatives. Thus working on the direction to improve the economic condition of farmers Union Ministry of Agriculture and Farmers Welfare has devised a seven point strategy to double farmers income by the year 2022. The first point is to focus on irrigation with adequate resources. Secondly, is to increase production through improved seeds, planting material, organic farming, soil health card and other schemes. The third point focuses on reducing post harvest losses. The fourth agenda is being to promote food processing in agricultural produce. The centre has launched Pradhan Mantri Kisan Sampada Yojana to promote value addition. The fifth point is reforms in agriculture marketing. The sixth strategy deals with risk, security, and assistance, the centre has initiated Pradhan Mantri Fasal Bima Yojna to reduce the possible risk. The last point is being the allied activities. Instead of forcing people in to the profession, it may be worthwhile to create lucrative avenues for those who want to leave agriculture and incentives and skills to those who want to enter/continue.

**Keywords:** Rural development, farmers' income, policy implications, diversified farming

### **Introduction**

Rural development is the process of improving the quality of life and economic well-being of people living in rural areas, often relatively isolated and sparsely populated areas. Rural development has traditionally centered on the exploitation of land-intensive natural resources such as agriculture and forestry. However, changes in global production networks and increased urbanization have changed the character of rural areas. Increasingly tourism, niche manufacturers, and recreation have replaced resource extraction and agriculture as dominant

economic drivers. The need for rural communities to approach development from a wider perspective has created more focus on a broad range of development goals rather than merely creating incentive for agricultural or resource based businesses. Education, entrepreneurship, physical infrastructure, and social infrastructure all play an important role in developing rural regions. Rural development is also characterized by its emphasis on locally produced economic development strategies. In contrast to urban regions, which have many similarities, rural areas

are highly distinctive from one another. For this reason there is a large variety of rural development approaches used globally. Rural development is a comprehensive term. It essentially focuses on action for the development of areas outside the mainstream urban economic system. We should think of what type of rural development is needed because modernization of village leads to urbanization and village environment disappears.

#### **The principles of Rural Development**

The principles of rural development as stated by Moseley (2003) summarized as follow:

1. The **multi-functionality of agriculture**, i.e. its varied role over and above the production

of foodstuffs. This implies the recognition and encouragement of the range of services provided by farmers.

2. A **multispectral and integrated** approach to the rural economy in order to diversify activities creates new sources of income and employment and protects the rural heritage.
3. **Flexible** aids for rural development, based on subsidiary and promoting decentralisation, consultation at regional, local and partnership level.
4. **Transparency** in drawing up and managing programmes, based on simplified and more accessible legislation.

#### **Approach & Aim of Different Rural Development Programmes**

Rural development actions are intended to further the social and economic development of rural communities. Rural development programs have historically been top-down from local or regional authorities, regional development agencies, NGOs, national governments or international development organizations (Rowley,1996). Local populations can also bring about endogenous initiatives for development. The term is not limited to issues of developing countries. In fact many developed countries have very active rural development programs.

Rural development aims at finding ways to improve rural lives with participation of rural people themselves; so as to meet the required needs of rural communities (Ward and Brown, 2009). The outsider may not understand the setting, culture, language and other things prevalent in the local area. As such, rural people themselves have to participate in their sustainable rural development. In developing countries like Nepal, Pakistan, India, Bangladesh, integrated development approaches are being followed up. In this context, many approaches and ideas have been developed and implemented, for instance, bottom-up approach, PRA-Participatory Rural Appraisal, RRA- Rapid Rural Appraisal etc.

#### **Present Scenario of Rural Development & Role of Extension System**

The traditional view of extension in developing countries was very much focussed on increasing production, improving yields, training farmers and transferring technology. It must be noted that agriculture and allied activities remains the main livelihood for more than half of the Indian population. The *Socio-Economic and Caste Census* (SECC) 2011, released in 2015, also indicates that out of 24.39 crore households in the country, 17.91 crore lived in villages and are more or less dependent on agriculture. Further, the Economic Survey of 2015-16 highlights that the share of agriculture in employment was 48.9% of the workforce while its share in gross domestic product (GDP) was 17.4% in 2014-15 at constant (2011-12) prices. Additionally this year's Economic Survey projects the growth rate for the agriculture and allied sector for 2016-17 to be 4.1% on the basis of the first advance estimates of the Central Statistics Office. In this context the entire extension fraternity should focused on time bound goal specific farmers friendly sustainable policy paradigm. Today's understanding of extension goes beyond technology transfer to facilitation, beyond training to learning and includes helping farmers form groups, deal with marketing issues and partner with a broad range of service providers and other agencies. Agriculture extension can thus be defined as the entire set of organisations that support people

engaged in agricultural production and facilitate their efforts to solve problem; link to markets and other players in the agriculture value chain; and obtain information, skills and technologies to improve their livelihoods.

### **Different Efforts, Programme & Projects implemented to gear up the Rural Development Process in India**

*Mahatma Gandhi National Rural Employment Guarantee Act* (MGNREGA) is considered as a "Silver Bullet" for eradicating rural poverty and unemployment, by way of generating demand for productive labour force in villages. It provides an alternative source of livelihood which will have an impact on reducing migration, restricting child labour, alleviating poverty, and making villages self-sustaining through productive assets creation such as road construction, cleaning up of water tanks, soil and water conservation work, etc. For which it has been considered as the largest anti-poverty programme in the world. In this paper, based on the secondary data, an attempt has been made to comprehensively understand the development effort to rebuild the rural life and livelihood on the basis of various secondary data. In India, out of total population of 121 crores, 83.3 crores live in rural areas (Census of India, 2011). Thus, nearly 70 per cent of the India's population lives in rural areas. These rural populations can be characterised by mass poverty, low levels of literacy and income, high level of

unemployment, and poor nutrition and health status. In order to tackle these specific problems, a number of rural development programmes are being implemented to create opportunities for improvement of the quality of life of these rural people. The term "*rural development*" is the overall development of rural areas to improve the quality of life of rural people. And it is a process leading to sustainable improvement in the quality of life of rural people especially the poor (Ramesh, 2012). The rural developmental programmes intend to reduce the poverty and unemployment, to improve the health and educational status and to fulfil the basic needs such as food, shelter and clothing of the rural population. To improve the conditions of rural people, Government of India launched some schemes through the planning commission of India (Chaudhary and Singh, 2017) such as *Mahatma Gandhi National Rural Employment Guarantee Act* (MGNREGA), *Rastriya Sama Vikas Yojana* (RSVY), *Indira Awas Yojana* (IAY), *Sampoorna Grameen Rozgar Yojana* (SGRY), *Integrated Tribal Development Project* (ITDP), *Pradhan Mantri Gram Sadak Yojana* (PMGSY), *Integrated Child Development Services* (ICDS), *Development of Women and Children in Rural Areas* (DW CRA), etc. All these schemes are aimed to reduce the gap between rural and urban people which would help reduce imbalances and speed up the development process.

## **Policy**

The policy component of an agricultural technology system can enable or limit extension in ways beyond the reach of extension managers. The principal areas of influence are price signals to farmers and decisions by government that affect public agricultural development organizations. The four point action plan includes the following measures: (i) remunerative prices for farmers by reforming the existing marketing structure; (ii) raising productivity; (iii) reforming agriculture land policy; and (iv) relief measures. It is important to see how these actions will double the income of the farmers' and to what extent the

government is serious about it. The amounts invested by government and the development community in agricultural development influence the pace and scale of effort. In many instances, spending ceilings for public institutions have been imposed by a structural adjustment programme agreed to by government (Satyasi and Bharati, 2016). Extension planning needs to take these limits into account, especially when dealing with the question of staffing, which has major budget implications.

### **The Concept of Farmer income doubling: A step towards new developmental horizon**

#### **Niti Aayog**

The four point action plan includes the following measures:

- Remunerative prices for farmers by reforming the existing marketing structure;
- Raising productivity;
- Reforming agriculture land policy; and
- Relief measures.

#### **Remunerative Prices**

Under this point, the *Niti Aayog* has suggested reforms in two areas: marketing reforms and *Minimum Support Price* (MSP) reform. However it must be noted here that since agriculture is a state subject, the central government cannot do much here apart from facilitating the reform process. Under marketing reforms, the think-tank has highlighted as to how currently existing agricultural marketing – under the *Agricultural Produce Market Committees* (APMC) acts in various states – has led to policy distortions and fragmentation, largely as a result of a huge number of intermediaries and poor infrastructure. The plan highlights that because of the APMC acts, farmers are required to sell a large number of commodities in *local mandis* where different layers of intermediaries often manipulate the price, thus depriving them of their fair share. Sukhpal Singh and Shruti Bhogal in their analysis in *Economic and Political Weekly*, highlight how farmers have become dependent on commission agents because of the intermediary culture propagated by the present APMC acts. They further, using the data from their field study, highlighted how these intermediaries trap the farmers in a vicious circle of indebtedness. The impact of these intermediaries can be gauged from their study that reveals that almost 38% of Punjab's total agricultural debt was channelled through non-institutional sources, the majority of which is usually financed by intermediaries to the farmers. Not only is the interest rate charged by the intermediaries exorbitantly high (sometimes even 20%) but they also force the farmers to sell his produce to them only. In order to address the shortcomings of the APMC acts, the central government circulated a model Agricultural

Produce Marketing Committees (Development and Regulation) Act of 2003. However, as the Economic Survey of 2013-14 observes that despite this, states have failed to address monopolistic and uncompetitive practices in the inter-state trading of agricultural products. Further, the Committee on Agricultural Reforms (2013) noted that, “By and large, the APMCs have emerged as some sort of Government sponsored monopolies in supply of marketing services/ facilities, with all drawbacks and inefficiency associated with a monopoly”. In this background, it will be interesting to see how new reforms – with regard to empowering farmers to sell their produce to whomever they wish and allowing actors other than APMC *mandis* to buy produce – are embraced by India's states. If one goes by past experience, it is not a rosy picture. For example as of February 2, 2016, only 21 states and union territories have allowed the establishment of private market yards/ private markets managed by a person other than a market committee and this is only one of the numerous proposed reforms. On other reforms the number of states which have reformed the act is much less.

#### **MSP Reform**

The MSP regime in India has been a subject of heated debate in recent years. MSP is not only increasing year by year but since the mid-1990s the rise in the MSP has been sharper than the rise in consumer and wholesale price indices. The major disadvantage of MSP regime is that it totally ignores the demand dimension, thereby resulting in not only an inefficient use of resources but also accumulation of unwarranted stocks of cereals. Since resources for agriculture – water and land – are scarce, it is very important to use the resources efficiently if our aim is to double the income of the farmers. The *Niti Aayog* has aptly highlighted the distortion in cropping patterns caused by MSP regime. Since the MSP regime favours cultivation of wheat, rice and sugarcane, not only has it led to reduction in the area under acreage of other crops like pulses, oil seed and coarse grains but it has also led to, as highlighted above, accumulation of unwarranted stocks of cereals. While the Economic Survey of

2015-16 pitched for replacement of SP/procurement based PDS with DBT and freeing the market control on domestic movement and imports, the *Niti Aayog*, on the other hand, has suggested a system of “price deficiency payments” to cure the distortion caused by the MSP regime. Under this system a subsidy would be provided on targeted produce in case the price falls below MSP-linked threshold. One advantage of this, as highlighted by the action plan, is that it would spread price incentives to producers in all the regions and all the crops considered important for providing price support.

### **Raising Productivity**

As per the Agriculture Census 2010-11, 67.10% of India's total farmers are marginal farmers (below 1 ha) followed by small farmers (1-2 ha) at 17.91%. Since Indian agriculture is dominated by marginal farmers who have small holdings, raising productivity is likely the single most important factor if incomes of this group are to be doubled. But here also there are many challenges. First of all, on the one side resources like water and land are limited and on the other hand land holding is getting fragmented. The problem is further compounded by rising input costs. The *Niti Aayog* has also called for substantive investment in irrigation, seeds & fertilisers and new technology coupled with a shift into high-value commodities such as horticulture, poultry and dairying to double incomes. However, what must be noted here is that public investment required for all this is on the more or less continuous decline. Economist Ashok Gulati attributes the decline in public investment to the expanding subsidies on agriculture. However, this trend has been reversed to some extent since the 9th five year plan. Gross capital formation in the agriculture sector has gone up from 13.9% during the 10th plan to 19% during the 11th plan period. As Gulati and Surbhi Jain note, total public expenditure on agriculture (including public investment and input subsidies) as a ratio of GDP (agri) has almost doubled in the last decade from 8.6% in 1993-94 to 20.6% in 2009-10. This compares well with international trends. But almost 80% is in the form of subsidies and only 20% is investment in agriculture. The three major

input subsidies are our fertiliser subsidy, the irrigation subsidy, the power subsidy. A fourth indirect subsidy is the credit subsidy; an interest subsidy on credit obtained from various financial institutions. A major portion of these subsidies is accounted by India's fertiliser subsidy which has increased by around five times in the last ten years from Rs 12, 595 crore in 2001-02 to Rs 67, 971 crore in 2012-14 at current prices. In 2015-16, the government budget is Rs 73,000 crore (about 0.5% of GDP) on fertiliser subsidy. While the *Niti Aayog* has called for the application of soil cards for customising fertiliser use, the Economic Survey of 2015-16 pitched for reforms to increase domestic availability via less restrictive imports and to provide benefits directly to farmers using ‘JAM’ (Jan Dhan, Aadhaar, mobile). As is clear that subsidies crowd-out public investment in agriculture, this makes a strong case for an expiry date for these subsidies. Though the *Niti Aayog* is curiously silent on this, this reform is highly political sensitive and it needs strong political will to bring in this reform as farmers' lobby will strongly protest any attempt to cut subsidies. Further, massive investment is needed in irrigation if productivity of India's farms are to be increased. But if we look at the budgetary allocation for the same, one is filled with a sense of sheer disappointment. For example, as Gulati and Jain note, at the beginning of the Twelfth Plan, there were 337 major and medium irrigation projects requiring an indicative budget of more than Rs 4,22,012 crore. Against this need, the annual allocation for irrigation was less than Rs. 20,000 crore. The *Niti Aayog* has also mooted the modernisation of farms and adoption of new technologies like adopting GM crops and using new farm equipment. However, this is not as easy as it seems. For example as per Agriculture Machinery and Manufacture Association in India, tractor penetration is 38% for large farmers, 18% for medium farmers and just around 1% for marginal farmers. Since the majority of the farmers in India are marginal, the almost negligible penetration of tractors tells us as to how difficult it is to mechanise these farms. One idea mooted by the Economic Survey of 2015-16 is to develop a rental market for farm equipments. This is a good suggestion but again

the hurdle is how to connect the various stakeholders involved in constructing such a market? The action plan's suggested that India's farmer shift into high value commodities also finds support from a study conducted by S. Chandrasekhar and Nirupam Mehrotra. Using data from NSSO's Situation Assessment Survey of farmers conducted in 2003 and Situation Assessment Survey of Agriculture households 2013, Chandrasekhar and Mehrotra argue that mere focus on cultivation cannot double the income of the farmers by 2022. They make a strong case of policy intervention aimed at increasing net income of farmers from animal farming. Given the political sensitive nature of reforms which will increase the productivity of farms, it is submitted that this poses a very big challenge before the government if it is serious about doubling the farmers' income.

#### **Agriculture Land Policy and Relief to Farmers**

Lastly the *Niti Aayog* has suggested bringing in far-fetched amendments in tenancy and leasing law so that small farmers who wish to lease their land do not face any hurdle. In this regard the think-tank has prepared a model Land Leasing Law. But again, since land is a state subject, response from the states has not been encouraging in this regard. On relief measures, the *Niti Aayog* has suggested many modifications in the existing *Pradhan Mantri Fasal Bima Yojana*. The action plan has suggested that the scheme should have a capped subsidy amount per farm household and any farmer desiring to insure larger sums should pay full premium for the difference. Secondly, the plan has also suggested extending the time period of coverage under the scheme for three to five years so as that coverage extends to both good and bad years. Both suggestions are good suggestions and there does not seem to be any problem to accept the same. Doubling agricultural income by 2022 is a mammoth task. It is also one that is the need of the hour. With majority of the country's population dependant on agricultural activities, no true development can be said to be meaningful unless it incorporates the needs of this sector. Increasing farmer suicide rates and increasingly erratic weather patterns further add to the problem. There are, of course intense

complexities. Nonetheless, the focus of the government on this sector is much needed. The walk to doubling income is a long, tedious one. But at least a step has been taken in that direction. We now need to ensure that the implementation by all stakeholders is uniform, effective and done whole heartedly.

#### **Agriculture Policy**

Our policies were usually farm-centric and not farmer-centric. This is the reason why there is farmer's distress despite the fact our country has achieved commendable position in food production. India is either first or second in the world in terms of overall production of many agricultural commodities, but we still need to make efforts for achieving the coveted position in productivity in these commodities. "We need to think beyond food security and give back to our farmers a sense of income security" Finance minister emphasized in his budget speech. Considering the substantial yield gaps exist in major crops and across all regions, we have to leverage technology, adopt precision farming and ensure that farmers get correct and timely crop advisory and market information. To simplify, every variety of a crop has a genetic yield potential which can be achieved if a proper agronomic package is adopted. There are several ideas being tried to put agricultural extension on digital medium, but a well coordinated approach harmonising the efforts of traditional institutions is the need of the hour. Extension, as a delivery mechanism across agriculture and allied sectors in addition to their conventional knowledge dissemination role, should play facilitation, intermediation and advocacy roles. These include organising user/producer groups, facilitating access to production inputs, linking farmers to markets, engaging in research planning, technology selection, linking various support & service networks, redressal of grievances, enforcement of Farmers' Charters including filing of cases on their behalf in consumer courts, and advocacy of policy implementation issues to support farmers.

#### **Issues that Extension Policy Should Address**

Extension Mission and Goals: Although extension has a generic and universal meaning, its mission

and goals may need to be adjusted according to national objectives and the context and stage of agricultural and rural development in a given country. Should the mission of extension be to promote agricultural development through technology transfer? Should it give higher priority to human resource development in rural areas, or should it promote sustainable agricultural and rural development? The extension mission should

be reflected in the name of the organization, and the preamble for extension policy should be included in the law governing the country's extension system. This mission then should be reflected in a statement of goals and objectives that are agreed upon and assigned to extension in a supporting policy document. This document should be periodically reviewed.

## **Extension Approach and Function**

National extension systems can pursue one of several different extension approaches in implementing extension policy. Most extension systems in developing countries give primary attention to technology transfer, given national agricultural policies that emphasize increasing food production and achieving national food security (Contado, 1997). An example of a technology transfer approach would be the Training and Visit (T&V) Extension System that has been promoted by the World Bank through its lending programme. Although the U.S. extension system has been particularly effective in technology transfer, its main focus has been on increasing the skills and knowledge of rural farm families, who have become very effective consumers of agricultural technology. Therefore, the extension approach pursued by a country should reflect the mission of extension, and it will define the functions, programmes, and tasks that will be carried out by the extension staff.

### **Subject Matter Coverage of Extension**

Broadly speaking, the subject matter of extension is implied in the mission statement and even in the title of the extension service. What differentiates between agricultural and rural extension is the subject matter that the extension service will include in its programmes and the target groups to be served among the rural population. Very narrow subject-matter coverage such as promotion of food and cash crops and animal production may invite a costly proliferation of several specialized and uncoordinated extension initiatives. Broader subject-matter coverage such as promoting the entire farming system, sustain-able agricultural

and rural development leads to a more unified agricultural extension system. Another issue is whether the extension system should include socioeconomic and sustainable development messages.

### **Geographic coverage**

Geographical coverage can be an important policy issue because of both political and cost implications. Most political leaders want their jurisdiction to be covered by an effective extension service; therefore, they must find a way to provide funds for extension programmes. If extension funding is to be provided by different levels of government (cost sharing), then the structure of extension must reflect these different sources of funding. Extension personnel will tend to be more responsible to those levels of government that provide extension funding.

### **Clientele or Target Beneficiaries**

A common criticism of extension services in developing countries is their neglect of the vast number of small-scale farmers in favour of fewer numbers of large farmers, or the very limited attention given to women farmers. This is a policy issue because of its implications for the mission and goals of extension, the priorities for technology generation by research, the cost-effectiveness of extension, and the socio political goals of growth with equity and poverty alleviation.

### **Organisational Issues**

The extension organization embodies different aspects of an extension system, and it provides the management framework for the extension

service. Four different forms of Extension Organisations are discussed:

- *Centralised organisation:* Examples include the Department of Agricultural Extension in Thailand and Bangladesh, the Agricultural Extension Bureau of South Korea, and AGRITEX in Zimbabwe. In this form of organization, the national extension office manages and controls extension programme activities and resources at the regional, district, sub-district, and village level. Clientele participation and feedback in programme planning are generally limited.
- *Decentralised Organisation:* Examples of this form of extension organization are the agricultural extension systems in Brazil, Canada, India, Nigeria, and the Philippines. These systems have almost an invisible national or federal extension office, in that extension programming, management, and the control of activities and resources are vested with state or provincial governments.
- *Cooperative type of Extension organisation and funding:* The distinguishing feature of this form of extension organization is the cooperation or partnership between the national, state or provincial, and local governments in funding, programming, and managing the activities and resources of extension. In the United States, extension is a joint undertaking of the U.S. Department of Agriculture (Federal Extension Service), the state land-grant universities, and the county governments.
- *Pluralistic forms of a National Extension System:* This is an emerging form of extension organization in many countries, but it is not yet reflected in national extension policy. This structure appears to occur in those countries where the need for extension services is widespread and/or where the public agricultural extension organization can no longer satisfy its clientele because of resource and management problems.

### **Extension Staffing Issues**

By the nature of the mission and work that an extension system carries out, its worth to society is largely reflected by the quality and number of the technical and professional staff in the organization. For a national programme of extension, the human resource question that policy makers and extension managers are confronted with is: Given the mission, scope of the work, and available resources, what type of qualifications and how many extension staff should be employed by the extension system?

### **Extension Funding**

The most difficult and challenging policy issue facing extension today is to secure a stable source of funding. With the widespread trend to cut government budgets, including structural adjustment programmes, many policy makers have the impression that public extension is both expensive and a drain on the government's limited resources. At the same time, studies carried out in both developed and developing countries indicate that the returns to extension expenditures are high. Therefore, policy makers should examine this issue carefully in deciding what level of public funding is necessary to support extension in relation to the needs of farmers in the country.

### **Strategies for Doubling Farmer's Income**

Doubling of the incomes of farmers in nominal terms has already been happening in recent periods and it is no challenge. Doubling the income in six years, in real terms, however is a formidable challenge and needs large scale revamping, reorientation and innovation in the initiatives. Thus working on the direction to improve the economic condition of farmers Union Agriculture and Farmers Welfare Minister, Radha Mohan Singh has devised a seven point strategy to double farmers income by the year 2022. The first point is to focus on irrigation with adequate resources. Secondly, increase the production through improved seeds, planting material, organic farming, soil health card and other schemes. The third point focuses on reducing post harvest losses. The fourth agenda is being to promote food processing in agricultural produce.



The centre has launched *Pradhan Mantri Kisan Sampada Yojana* to promote value addition. The fifth point is reforms in agriculture marketing. The sixth strategy deals with risk, security, and

assistance, the centre has initiated *Pradhan Mantri Fasal Bima Yojna* (PMFBY) to reduce the possible risk. The seven and last point is being the allied activities (Dalwai, 2017).

### Conclusions and Policy Implications

However, in practical terms RDPs are drawn up with reference to six more specific priorities, which are further divided into more detailed focus areas. Knowledge transfer & innovation in agriculture, forestry & rural areas

1. Farm viability / competitiveness, sustainable management of forests
2. Food chain organisation, animal welfare, risk management in agriculture
3. Ecosystems related to agriculture and forestry
4. Resource efficiency, low-carbon / climate-resilient economy
5. Social inclusion, poverty reduction, economic development

The strategies should be multipronged and should address enhancing returns and reducing costs and making incomes sustainable keeping in view the depleting natural resource base. Income referred in this role is net of production costs. Once we consider consumption expenditure, farmers have

hardly any surplus left and marginal farmers have serious deficits. Hence, doubling low level incomes would not mean much. Hence, we should frame policies to help improve farm incomes, if not doubling, on a continuing basis. Health care and providing free education to farm families would reduce their vulnerabilities and dependence on high cost borrowings to meet such expenditure. Scaling up programmes like watershed, WDI, UPNRM and consolidation of the gains is important. Farming is a skilled profession and hence, would need skilled and motivated people. Instead of forcing people in to the profession, it may be worthwhile to create lucrative avenues for those who want to leave agriculture and incentives and skills to those who want to enter/continue. Awareness about opportunities available for commercialisation and diversification, better technologies, facilities, markets, insurance, climate change, government policies, etc is very poor among farmers as of now.

### References

- Chaudhary, V. and G. Singh. 2017. Mission 2022: The Challenges of Doubling Indian Farmer Incomes in Five Years, Govt. of India, New Delhi.
- Contado. T.E. 1997. Formulating Extension Policy. In: B.E. Swanson, R. P. Bentz and A. J. Sofranko (Eds.). *Improving Agricultural Extension: a reference manual*. Food and Agriculture Organization of the United Nations, Rome, pp. 107-114.
- Dalwai A. 2017. Way towards doubling farmer's income. *Kurukshetra*. 65 (7): 5-14.
- Moseley, M. J. 2003. *Rural Development: principles and practice*. London: SAGE Publications.
- Ramesh C. 2012. Development Policies in the agricultural market. *Economic and Political Weekly*, 47 (52): 29.
- Rowley, T.D. 1996. *Rural Development Research: a foundation for policy*. Westport, Conn.: Greenwood Press. USA.
- Satyasi, K.J.S. and S. Bharati. 2016. Doubling Farmers' Income: Way Forward. *Rural Pulse*. 14:1-5.
- Ward, N. and D.L. Brown. 2009. Placing the Rural in Regional Development. *Regional Studies*. 43 (10): 1237-1244.