

Research Requirements of NABARD on Agriculture and Climate Change for Sound Policy Making¹

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1. Introduction

National Bank for Agriculture and Rural Development (NABARD) was established under an Act of the Indian Parliament, viz. NABARD Act 1981, and came into existence on 12th July 1982. As India's largest development financial institution (DFI) it is accredited with all matters concerning policy, planning and operations in the field of credit for agriculture and other economic activities in the rural areas, and is dedicated to the achievement of sustainable rural prosperity in the country. NABARD had taken over the functions of Agriculture Refinance and Development Corporation (ARDC), a subsidiary of the Reserve Bank of India (RBI), and the Agriculture Credit Department of RBI. Presently, the share capital contribution of Government of India (GoI) to NABARD is 99.6 per cent, while that of RBI is 0.4 per cent.

NABARD's Corporate Mission - "*Promote sustainable and equitable agriculture and rural prosperity through effective credit support, related services, institution development and other innovative initiatives.*" For the past about 35 years, NABARD has been pursuing its Corporate Mission with honesty, integrity and dedication in partnership with its stakeholders and client institutions, viz. GoI, RBI, state governments, banks, rural financial institutions (RFIs), multilateral financial and developmental institutions, developmental agencies in India, non-governmental organisations (NGOs), and research institutions/ universities. Being an apex level institution involved in policy formulation in the area of agriculture and rural development, including climate change issues, NABARD encourages high quality research to facilitate sound policy making.

2. Functions of NABARD

The functions of NABARD can be broadly classified into: credit, developmental, supervisory and other functions.

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2.1 Credit Functions

Access to credit - both short term and long term - from formal sources at affordable rates of interest is essential to improve productivity in agriculture. NABARD, along with GoI and RBI has been consistently making efforts to ensure adequate and timely availability of credit to meet the farming needs of farmers. As a result, there has been an impressive growth in agricultural credit flow from INR 2.29 trillion to INR 8.77 trillion during the last decade, up to 31 March 2016. Further, the ratio of agricultural credit to agricultural GDP in India has increased from 10 per cent in 1999-2000 to around 42 per cent by the end of 2015-16. While there has been an impressive growth in agriculture credit and an equally impressive increase in the share of agriculture credit to agricultural GDP, the average growth of GDP in agriculture and allied sectors at 2.30 per cent (during 2011-12 to 2015-16) has been below the 4 per cent target fixed by the 12th Five Year Plan. An important factor is the declining share of investment credit (or term loan) in total agricultural credit from 35.4 per cent in 2006-07 to 19.6 per cent in 2015-16, thereby restricting the scope for capital formation in agriculture, and consequently adversely impacting agricultural productivity. NABARD would encourage high quality research on this theme, keeping in mind the need for policy interventions to enable bank credit to increase farm productivity and agricultural GDP, especially in the context of GoI's target of achieving doubling of farmers' income by the year 2022.

2.1.1 Rural Credit Planning

NABARD prepares Potential Linked Credit Plans (PLP) for all districts of the country. PLPs map the credit potential available in various sectors of the rural economy, critical infrastructure gaps and linkage support to be provided by governments, NABARD, banks, and other developmental agencies. PLPs aim to build a meaningful link between the development plan at the district level and the process of credit planning for supporting agriculture and rural development. PLPs form the reference document for the preparation of District Credit Plans (DCP), representing a bottom-up approach to credit planning, by the Lead District Office. Based on the PLPs for 660 districts of the country, State Focus Papers (SFP) are prepared by NABARD for every State to present a comprehensive picture of the potential available in various sectors of the rural economy, critical infrastructure gaps to be filled and linkage support to be provided by various government departments. SFPs form the reference document for the preparation of State Credit Plans prepared by the State Level Bankers Committees. PLPs and SFPs can also be used by researchers as useful reference documents in conducting research on various aspects of rural credit.

2.1.2 Refinance

Short-Term Refinance

Modern agriculture involves substantial investment of recurring nature for using high yielding varieties of seeds, fertilizers, pesticides and agricultural implements. In such a situation, arrangements for credit should go much beyond the simple provision of credit and must be linked operationally with productivity and other services. Increase in production and productivity, marketing of produce and raising the level of surplus and savings must, therefore, be the major functions of credit. The benefit of modern technology, the advantages of institutional credit, infrastructural arrangements etc., should accrue to all classes of farmers.

NABARD provides short-term refinance for production, marketing and procurement activities at concessional rate of interest to State Cooperative Banks (StCBs) and Regional Rural Banks (RRBs) by way of sanction of credit limits. Each withdrawal against the sanctioned credit limit is repayable within 12 months. This line of credit assists the rural financial institutions (RFIs) to meet the production and working capital needs of farmers, weavers, artisans, etc., thus augmenting ground level credit flow towards agriculture and allied activities.

With a view to providing relief to farmers distressed from crop damage due to natural calamities, NABARD provides medium-term conversion support to StCBs and RRBs. Under this refinance option, ST-SAO loans are converted to Medium-term Conversion loans.

NABARD also provides long-term (LT) loans to state governments under Section 27 of NABARD Act, 1981 to contribute to the share capital of cooperative credit institutions. This reimbursement-based support is intended to encourage cooperatives to meet larger agricultural credit requirements.

Long-Term Refinance

Capital formation in agriculture is of critical importance for the sustainability of agricultural growth. Therefore, NABARD extends long-term (LT) refinance support for asset creation and

capital formation, which are critical for agricultural growth and rural development through commercial banks, RRBs, StCBs, State Cooperative Agriculture and Rural Development Banks (SCARDBs), Scheduled Primary Urban Cooperative Banks (PUCBs), North East Development Finance Corporation (NEDFC), and Non-Banking Financial Companies (NBFCs). Refinance is available for agriculture and allied activities, as well as off-farm activities with repayment periods ranging from 18 months to 15 years. The purposes for loans extended under LT refinance include farm investments (e.g. minor irrigation, farm mechanization, land development, soil conservation), storage and market yards, allied activities (dairy, sheep/goat rearing, poultry, piggery, plantation/horticulture, forestry, fisheries, sericulture, apiculture), bio-gas and other alternate sources of energy, agro-processing, agro-service centres, micro, small, and medium enterprises, organic farming, non-conventional energy, self-help groups (SHGs), joint liability groups (JLGs), and rural housing.

In order to boost capital formation in agriculture GoI had set up Long Term Rural Credit Fund (LTRCF) with NABARD in 2014–15 to exclusively provide LT refinance support to cooperative banks and RRBs. The corpus of the LTRCF was increased three times to INR 149.97 billion in 2015–16.

Over the past 5 years LT refinance by NABARD recorded a CAGR of 33 per cent. During 2015–16 an amount of INR 480.64 billion was disbursed to banks as refinance. This could have had a positive impact on capital formation in agriculture and rural sector. Therefore, the impact of investment credit refinance by NABARD to banks, on capital formation in agriculture and allied sectors and on agricultural productivity, needs to be studied to gain insights for policy inputs.

2.1.3 Financing Rural Infrastructure

Creation of rural infrastructure is an enabler for the achievement of inclusive and sustainable rural development. In this context, Rural Infrastructure Development Fund (RIDF) has been an important project financing option for state governments for the creation of rural infrastructure, for the last more than two decades. GoI created RIDF in NABARD, with an initial corpus of INR 20 billion in the year 1995–96. Presently, RIDF has a cumulative corpus of INR 2.68 trillion. The fund is made up of contributions by scheduled commercial banks to the extent of their shortfall in agricultural lending in the priority sector target.

RIDF is a major source of funds for state governments for the development of rural infrastructure. It is also one of the cheapest sources of funds, with the interest rate (presently 5.25 per cent) pegged at 1.5 per cent below Bank Rate². The cumulative sanctions under RIDF stood at INR 2.60 trillion as on 31 March 2016, involving 582,185 projects, under the following broad sectors: (i) agriculture (other than irrigation); (ii) irrigation; (iii) rural connectivity (roads and bridges); (iv) social sector (schools, drinking water supply, etc.); (v) power sector; and (vi) Rural godowns/ warehouses and cold storages. Rural connectivity, had the highest share (at 42 per cent) in the cumulative amount sanctioned, followed by agriculture, including irrigation and related sectors at 40 per cent and social sector projects at 15 percent.

Under NABARD Infrastructure Development Assistance (NIDA), NABARD provides loans to state owned institutions/ corporations both on-budget as well as off-budget for creation of rural infrastructure outside the ambit of RIDF borrowing. The assistance under NIDA is available on flexible interest terms with longer repayment period not exceeding 15 years.

The foremost challenge today for GoI, RBI, NABARD and other stakeholders, is policy and strategy formulation to enable the achievement of GoI's target of doubling farmers' income by the year 2022. In this context, a dedicated Long Term Irrigation Fund (LTIF) in NABARD with an initial corpus of INR 200 billion was instituted by GoI in NABARD (another INR 200 billion has been announced in the Union Budget 2017-18), for fast-tracking the implementation of incomplete major and medium irrigation projects under GoI's Pradhan Mantri Krishi Sinchayee Yojana (PMKSY). An estimated 7.60 million hectares of land is to be brought under irrigation through 99 identified projects under this initiative with total estimated project cost of INR 775.95 billion.

2.2 Developmental Functions

2.2.1 Microfinance Initiatives

The journey traversed so far by Self-Help Group-Bank Linkage Programme (SHG-BLP) crossed many milestones—from linking a pilot of 500 SHGs of rural poor more than two decades ago to be the largest microfinance programme in the world, which today touches 101 million families through over 7.9 million groups with thrift and deposits of about INR 136.91 billion, annual loan offtake of INR 372.87 billion and loan outstanding of nearly INR 571.19 billion. The poor in the country have demonstrated that in spite of being poor, they are, perhaps, the most 'bankable'

²The Bank Rate is 6.75 per cent (as on 02 February 2017)

clients and most willing to help each other for a better tomorrow. There have been many success stories of poor SHG members showing exemplary entrepreneurial qualities to come out of the vicious circle of poverty and indebtedness with the help of SHGs. The tremendous impact on the social status of poor rural women becoming bread earners for their households through the instrument of SHGs has been corroborated by many research studies. For mature SHGs which have already accessed credit, NABARD has been supporting need based skill development programmes. NABARD has also launched a pilot project for digitization of SHGs in 24 districts of the country. Already 100,000 SHGs have been brought under the digitization programme. Research could be conducted on various dimensions of the SHG-BLP, viz. livelihoods, empowerment of SHG members, financial inclusion, digitization, development of micro-enterprises, social impact, etc.

2.2.2 Joint Liability Groups

Joint Liability Groups (JLGs) are positioned as a strategic intervention for purveying credit to small farmers, marginal farmers, tenant farmers, small artisans, etc. thereby reducing their dependence on informal sources for credit needs. JLGs are meant for augmenting flow of credit to tenant/ landless farmers, extending collateral free loans to them and building mutual trust and confidence between banks and JLG members. The cumulative number of JLGs promoted and financed by banks stood at 1.72 million as at the end of March 2016. Apart from extending 100 per cent refinance support to banks NABARD extends financial support for awareness creation and capacity building of all stakeholders of the programme.

2.2.3 Financial Inclusion

In order to foster a robust financial system, the country cannot afford to keep a large segment of its population outside the ambit of the formal financial system, irrespective of the quantum of their savings and investments. The understanding amongst policy makers has been that access to suitable financial products and services for every citizen is a prerequisite for growth, which is inclusive and hence sustainable. GoI's Pradhan Mantri Jan Dhan Yojana is now the largest financial inclusion initiative in the world.

NABARD has been playing a critical role in promoting financial inclusion by facilitating financial literacy and supporting technological upgradation of cooperative banks and RRBs. It has also commissioned an all-India NABARD Financial Inclusion Survey (NAFIS) through a research institution.

2.2.4 Farm Sector Development and Climate Change Actions

Climate Change Actions

Climate Change has emerged as an important challenge to agriculture and rural livelihood sectors. NABARD as the National Implementing Entity (NIE) under three funding mechanisms, viz. Adaptation Fund (AF) and Green Climate Fund (GCF) of the United Nations Framework Convention for Climate Change (UNFCCC) and Government of India's National Adaptation Fund for Climate Change (NAFCC), has channelized funds for building climate change resilience of rural livelihoods. Six projects amounting to \$9.8 million, have been sanctioned by the AF. Further, twelve projects with a loan amount of INR 2.35 billion were sanctioned by the National Steering Committee on Climate Change (NSCCC) under NAFCC.

Support to Producer Organisations

The fragmented and dispersed nature of farm holdings poses major problems for on-farm productivity and the resultant farm incomes, especially in rain-fed areas. Accordingly, Producer Organisation Development Fund (PODF) was set up in NABARD in 2011–12, to support FPOs, to spearhead promotional, credit-plus activities, and aggregation, processing and marketing activities, and ensuring better income realisation to its members. Major activities of FPOs assisted by NABARD so far, include establishment of bamboo processing units, dairy activities, agro-service centres, agro-tourism centre, green tea manufacturing factory, spices processing unit and bio-processed and commercial production of fish. Further, the Producers' Organisation Development and Upliftment Corpus (PRODUCE) Fund with a corpus of INR2 billion, set up by GoI in NABARD for the promotion of 2,000 farmer producer organisations (FPOs) by March 2016, was a major intervention aimed at facilitating aggregation of input supplies and output marketing, besides village level value addition. A total of 2,173 FPOs were formed under PRODUCE Fund as on 31 March 2016. NABARD has converted one of its subsidiaries 'Agri Development Finance (Tamil Nadu) Limited' into 'NABKISAN Finance Limited' to focus on financing of FPOs.

Watershed Development

NABARD's watershed development programmes envisage community participation in planning, execution and management of watersheds and traverses broadly through Capacity Building Phase (CBP) and Full Implementation Phase (FIP). NABARD anchors four programmes viz., (i) Participatory Watershed Development Programme under the Watershed Development Fund

(WDF); (ii) watershed projects under the Prime Minister's Relief Package for Distressed Districts; (iii) Grants-cum-loans for state-based watershed projects; and, (iv) Indo-German Watershed Development Programme (IGWDP). These four programmes cover an area of around 1.9 million ha. In this context, researchers need to conduct socio-economic and environmental impact evaluation study of watershed development projects supported by NABARD.

Umbrella Programme for Natural Resource Management (UPNRM)

UPNRM was set up by German Development Cooperation and NABARD to facilitate upscaling of best practices and models from both Technical Cooperation and Financial Cooperation projects. It has integrated NABARD's existing and future Indo-German efforts into one streamlined approach of participatory natural resource management related interventions. It aims to boost rural livelihoods by supporting community managed sustainable natural resource management projects. UPNRM involves shifting from project based approach to a programme-based approach, through a flexible programming mechanism on agreed policies and criteria of the strategic partners.

UPNRM has created successful business models such as System of Rice Intensification in Karnataka, System of Sugar Intensification in Karnataka and Maharashtra, Bt. Cotton initiatives with drip irrigation in Maharashtra, Bio Gas in Sindhudurg district of Maharashtra, Eco Tourism at Chamrajnagar, Karnataka, vermicomposting, organic farming, seed production, sustainable agricultural practices, medicinal plants cultivation and its primary processing, soil and water conservation measures in tank based irrigation in dry land areas, aggregation, value addition and marketing support for farmer groups, fruit, vegetable and spices processing, tasar silk and coir value chain, community drinking water facilities, installation of automatic weather stations etc. in various states.

Farmers' Club Programme

Cumulatively 150,000 Farmers' Clubs were opened as on 31 March 2016. Apart from facilitating farmers in accessing credit, extension services, technology and markets, the Farmers' Clubs acts as Self Help Promoting Institutions (SHPIs) and Banking Facilitators/ Banking Correspondents (BFs/BCs). As an Information and Communication Technology (ICT) initiative, 53,955 mobile connections were provided to Farmers' Clubs to avail information on weather advisory, market prices, crop advisory through SMS on mobile phones involving Reuters' Market Light (RML). A

pilot project in collaboration with Agrimet Division, Indian Meteorology Department, Pune was launched in Maharashtra during 2012-13 for dissemination of weather related information to 10 KVKs covering 10 districts in the state so as to enable them to provide crop advisory services to farmers through Farmers' Clubs.

Tribal Development

Tribal Development Fund (TDF) of NABARD, in its 11th year of implementation has enhanced livelihoods for tribal communities, covering tribal livelihoods such as *wadis*(orchards), organic *wadis*, mixed *wadis* (perennials + creeper vegetables + spices), credit support for marketing activities and value chain interventions for processing and marketing.

3. Research Requirements for Agriculture and Climate Change for Sound Policy Making

3.1 Research and Development Fund

Research and Development (R&D) Fund was set up in NABARD as per the provisions of NABARD Act 1981, for the purpose of providing training facilities, dissemination of information and the promotion of research, including the undertaking of studies, research, techno-economic and other surveys in the field of rural banking, agriculture and rural development. NABARD provides grant or loan assistance for these purposes, including fellowships and chairs to eligible institutions. The Fund has a corpus of INR 500 million.

Some of the major assistance provided by NABARD under R&D Fund are as follows:

- (i) Supporting conduct of seminars/ conferences/ symposia/ workshops/ round table discussions, aimed at dissemination of knowledge/ information for its wider use in the field of agriculture and rural development.
- (ii) Supporting training, capacity building of constituents of NABARD.
- (iii) Supporting techno-economic research projects, studies, action research, and surveys in the field of agriculture and rural development.
- (iv) Establishing NABARD Chair Units at agricultural universities/ universities with strong Agricultural Economics discipline/ research institutions/ management schools of repute, in order to encourage applied and empirical research, with focused attention on a particular theme/ area.

- (v) Instituting schemes for providing scholarships to post-graduate/ doctoral students in prominent agricultural universities/ other universities.
- (vi) Supporting authors/ reviewers/ editors to write/ review/ edit Occasional Papers/ Monographs/ Working Papers/ Books/ Policy Briefs/ Research Articles on subjects related to the operations of NABARD.
- (vii) Supporting Student Internship Scheme for post-graduate research students in Agriculture, Agri-Business, Economics and Management from reputed universities/ institutes.

3.1.2 Support for techno-economic research projects, studies, action research, and surveys in the field of agriculture and rural development

Support is provided to universities, research institutions, management schools and other agencies which are engaged in the promotion of agriculture and rural development for conducting action-oriented applied research in the field of agriculture and allied activities, climate change issues, rural development, development banking, rural infrastructure, rural business, risk management, insurance, and other areas considered appropriate by NABARD. Also corporate research units in the field of agri-business and related areas, and also registered action-oriented research institutions, Panchayati Raj Institutions at state/ district levels, NGOs/ MFIs with demonstrated abilities are also eligible on a very selective basis for providing support for research studies/ action research.

The research proposals need to be of an empirical nature having a bearing on problems of rural banking, agriculture and rural development, including climate change issues, MSMEs, rural services, rural infrastructure, etc. The research projects should lead to results which could lead to policy advocacy. Normally, the duration of research should not exceed two years. Proposals are accepted by NABARD on an ongoing basis. Further, NABARD also separately invites through advertisements, research proposals from researchers sponsored by their affiliated institutions, on specific themes with strong policy implications, which are of high priority to GoI, RBI and NABARD.

The following research proposals are not eligible for financial assistance under R&D Fund:

- (i) Proposals involving fundamental research;

- (ii) Studies/ research falling within the normal functioning or jurisdiction of governments, universities or Indian Council of Agricultural Research (ICAR) and for which assistance is normally available from the State or Central Governments or institutions like ICAR;
- (iii) Proposals involving sizable capital investment in land, buildings, machinery, tools, appliances, furniture and fixtures, vehicles, etc.;
- (iv) Research which may result in duplication of efforts;
- (v) Proposals of general nature and themes not falling in the operational areas of NABARD.
- (vi) Proposals submitted by individuals in an individual capacity and not through eligible institutions.

3.1.3 Occasional Papers/ Books/ Monographs

NABARD invites proposals for writing Occasional Papers/ Books/ Monographs from experts through advertisements, or direct contacts, on themes which are of relevance to NABARD. The authors are expected to come out with policy prescriptions for the benefit of society.

3.1.4 Potential Areas of Research for Agriculture and Rural Development

NABARD supports applied research in agriculture and rural development which have policy implications. In the recent past it has supported research studies by selected institutions in the areas of natural resource management, rural infrastructure, agriculture value chain and rural service sector. NABARD is also in the process of commissioning research studies on “Doubling of Farmers’ Income by 2022” in different agro-climatic regions of the country, with a view to strategizing and policy making which could enable the achievement of the mission set by Government of India.

Potential areas of research for agriculture and rural development could include: agriculture credit and capital formation; efficacy of digitization for faster financial inclusion; agriculture value chain and agri-marketing reforms; mitigation of agrarian distress; socio-economic and environmental impact evaluation of rural infrastructure projects; impact of SHG-Bank Linkage Programme on livelihoods and empowerment of women; crop insurance and agriculture risk mitigation; impact evaluation of watershed development projects; impact evaluation of tribal development projects; effectiveness of producer organizations in promoting sustainability and economic viability of small farmer production system; agricultural tenancy reforms, etc.

3.1.5 Potential Areas for Climate Change Research

The following are some of the potential areas/ themes for Climate Change Research, having policy implications, which could be considered by NABARD for assistance under R&D Fund, depending on their suitability:

Climate Finance

- (i) Financial Architecture
- (ii) Innovative Instruments for Climate Finance
- (iii) Reporting Standards for Climate Finance
- (iv) Green Banking: Scope & Policy Requirements
- (v) Feasibility of Debt Instruments for Adaptation Projects
- (vi) State-wise Realistic Assessment of Climate Finance

Economics of Adaptation

- (i) Land use measurement: Soil carbon
- (ii) Carbon Sequestration
- (iii) Solar Energy – Action Research on Sustainable and Competitive Models
- (iv) Impact of Adaptation Projects on Livelihoods
- (v) Assessing Loss and Damage due to Climate Change Impacts
- (vi) Quantification of Benefits from Adaptation Projects

These themes are illustrative in nature, and empirical research on any topic on climate change with strong policy implications could be considered by NABARD for financial support.

3. Conclusion

NABARD encourages high quality research in the area of agriculture and rural development, including climate change issues, with a view to understanding and gaining deep insights into issues related to the rural economy. Such research studies should provide vital inputs for policy formulation by GoI, RBI and NABARD, for the achievement of sustainable and equitable rural prosperity.