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NATIONAL AGRICULTURAL INNOVATION PROJECT

PROJECT IMPLEMENTATION PLAN

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LIST OF ABBREVIATIONS AND ACRONYMS

AgGDP	Agricultural Gross Domestic Product
APEDA	Agricultural Processing and Export Development Authority
ATIC	Agricultural Technology and Information Center
ATMA	Agricultural Technology Management Agency
BSR	Basic and Strategic Research in Frontier Areas of Agricultural Sciences
CA	Chartered Accountant
CAC	Consortium Advisory Committee
CAS	Country Assistance Strategy
CGIAR	Consultative Group on International Agricultural Research
CGS	Competitive Grant Scheme
CIC	Consortium Implementing Committee
CL	Consortium Leader (Institution)
CMU	Consortium Monitoring Unit
CN	Concept Note
CoPIs	Consortium Co Principal Investigators
CP	Consortium Partner (Institution)
CPI	Consortium Principal Investigator
CQS	Consultant's Qualification Selection
CSIR	Council for Scientific and Industrial Research
C&AG	Comptroller and Auditor General
DARE	Department of Agricultural Research and Education
DDG	Deputy Director General
DEA	Department of Economic Affairs
DF	Director Finance
DG	Director General
DGS&D	Director General of Supplies and Disposal
DNF	Digital Network for Farmers
EA	Environmental Assessment
EFC	Expenditure Finance Committee
EMF	Environmental Management Framework
ERR	Economic Rate of Return
ESMF	Environmental and Social Management Framework
FAO	Food and Agriculture Organization
FICCI	Federation of Indian Chambers of Commerce and Industry
FMR	Financial Management and Reporting
FP	Full Proposal
FY	Fiscal Year
GCF	Gross Capital Formation
GDP	Gross Domestic Product
GFR	General Financial Rules of GOI
GIS	Geographic Information System
GOI	Government of India
HFNS	Household Food and Nutrition Security
HRD	Human Resource Development
IA	Impact Assessment
IARC	International Agricultural Research Center

IBRD	International Bank for Reconstruction and Development
ICAR	Indian Council of Agricultural Research
ICB	International Competitive Bidding
ICT	Information and Communication Technology
IDA	International Development Association
IDE	International Development Enterprises
IEC	Information and Education Campaign
IIM	Indian Institute of Management
ILI	Integrated Livelihood Index
IP	Intellectual Property
IPM	Integrated Pest Management
IPNM	Integrated Pest and Nutrient Management
IPR	Intellectual Property Rights
IRR	Internal Rate of Return
ISNAR	International Service for National Agricultural Research System
ISD	Information System Development
ISP	Internet Service Provider
KM	Knowledge Management
KVK	Krishi Vigyan Kendra (approximately Farm Science Center)
L&CB	Learning and Capacity Building
MDGs	Millennium Development Goals
MIS	Management Information System
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MOU	Memorandum of Understanding
MTR	Mid-term Review
M&E	Monitoring and Evaluation
NAARM	National Academy for Agricultural Research Management
NAIP	National Agricultural Innovation Project
NAIS	National Agricultural Innovation System
NARS	National Agricultural Research System
NATP	National Agricultural Technology Project
NC	National Coordinator
NCAP	National Center for Agricultural Economics and Policy Research
NCB	National Competitive Bidding
ND	National Director
NGO	Non-Governmental Organization
NPA	National Policy on Agriculture
NRC	National Research Center
NSC	National Steering Committee
O&M	Organization and Management
O&MAG	Organization and Management Advisory Group
O&MPC	Organization and Management Program Committee
PAD	Project Appraisal Document
PCS	Production to Consumption Systems
PD	Project Directorate
PDO	Project Development Objectives
PGAV	Policy & Gender Analysis and Visioning
PIP	Project Implementation Plan
PIU	Project Implementation Unit
PMC	Project Management Committee

PM&E	Priority Setting, Monitoring and Evaluation
PMS	Project Management System
PMTS	Project Monitoring and Tracking System
PO	Procurement Officer
POs	People's Organizations
PPP	Public-Private Partnership
PY	Project Year
QCBS	Quality and Cost Based selection
QTL	Quantitative Trait Locus
RBI	Reserve Bank of India
RFP	Request for Proposal
RPC	Research Program Committee
RWC	Rice-Wheat Consortium
R&D	Research and Development
R&E	Research and Education
SAE	Social Assessment Enquiry
SAT	Semi Arid Tropics
SAU	State Agricultural University
SIL	Specific Investment Loan
SOE	Statement of Expenditure
SRLS	Sustainable Rural Livelihood Security
STEM	Indian Society for Technology Management
TAG	Technical Advisory Group
TFP	Total Factor Productivity
ToR	Terms of Reference
USDA	United States Department of Agriculture
VC	Vice Chancellor
WB	World Bank
WTO	World Trade Organization
ZCU	Zonal Coordination Unit

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Supported by wide-ranging reforms, particularly beginning 1991, India experienced a rapid growth over the past decade (averaging about 6% per year between 1992-93 and 2003-04). In parallel with this fast growth, it has made impressive progress towards reducing poverty, an important element of the millennium development goals of the country. Continued progress has also been made on many social indicators, specifically literacy, which rose from 52% in 1991 to 65% in 2001¹. However, the weakening agricultural performance since the mid-1990s is a national concern. The marked slow-down in agricultural growth rates in the traditional “green revolution states” and the bread basket of the country, namely, Punjab, Haryana and Uttar Pradesh (“green revolution fatigue”) has been a major setback². As these states account for 74% of the production of wheat and 26% of rice, the lower growth rates are raising food-security concerns. At the same time, in the states of Bihar, Orissa, Assam and MP, in which rural poverty rates and dependence on agriculture are the highest, agriculture, has shown only a limited and slow improvement.

The challenge of sustaining growth over the long-term has been highlighted by several recent studies that have found the total factor productivity (TFP) in agriculture declining between the 1980s and 1990s. It is reported that while TFP³ grew by 2% per year between 1981 and 1990, the growth rate became negative during 1990–96 in the Indo-Gangetic Plains, comprising the states of Punjab, Haryana, Uttar Pradesh, Bihar and West Bengal.⁴ The studies have attributed the deceleration in TFP growth rate to the slow-down in productivity gains from the earlier adoption of high-yielding varieties, decline in public investments in the

agricultural sector, and increasing degradation of natural resources.

The ‘green revolution’ in wheat and rice, the ‘white revolution’ in milk, the ‘yellow revolution’ in oilseeds and the ‘blue revolution’ in fisheries have all augmented the food basket of the country. But many technological challenges remain to be solved. First, despite the shrinking share (23%) of the agricultural sector in the economy, a majority of the labour force (nearly 60%) continues to depend on agriculture. About 75% of India’s poor people with low purchasing power live in the rural areas and nearly 60% of the cultivated area is under the rainfed farming. Hence, the National Agricultural Policy and the Tenth Five-Year Plan have placed high priority on raising agricultural productivity as a means to achieving rapid agricultural growth and reducing rural poverty. Secondly, stagnating/ decelerating productivity growth and declining total factor productivity in agriculture have cast doubts on the resilience of the sector in meeting the challenges of a market-driven and competitive regime. Related to the issue of stagnating productivity is the obvious limited connection between input-use and productivity growth performance. Thirdly, the current unsustainable land and water-use practices will lead to lowering of agricultural productivity in the future. Fourthly, ensuring an economically and ecologically sound access to food for every Indian, while conserving and improving the natural resources and traditional knowledge, in a more competitive regime, is yet another big challenge.

To address these challenges and to generate additional income and employment for the poor, the role of agricultural research and development (R&D) is critical. Given the limited scope in area expansion, increase in productivity, profitability and competitiveness will be

1 National Statistical Survey, Office of the Registrar General, India.

2 The inter-state comparisons are largely based on the old National Accounts (1980-81 base), which show a much slower overall growth of agricultural GDP than the new National Accounts (1993-94 base). See World Bank (2000) footnote 9 for detailed discussion.

3 TFP measures the amount of increase in total output that is not accounted for by increases in total inputs.

4 The Indo-Gangetic Plain is one of the most fertile regions in India.

the main parameter of agricultural growth in future. This should be triggered by advances and innovations in, and applications of science in agriculture. In other words, Indian agriculture will have to be shifted from input-based to knowledge-based growth. In this paradigm shift, the dissemination of knowledge plays a critical role. The R&D assumes more importance because it is a cost-effective method for promoting growth with sustainability while attaining competitiveness. For making agricultural R&D achieve these goals, firstly the efficiency of R&D system has to be enhanced and the enabling environment has to be created for science to excel. Secondly, innovative ways of conducting research have to be developed such as pursuing a 'production to consumption systems' (PCS) approach which comprises the entire set of actors, materials, activities, services, and institutions involved in the growing, harvesting and handling of particular commodity, transforming it into a usable and/or high-value product, and marketing the final product. Some studies have drawn attention towards the growing regional imbalances in India. In a welfare state like India, such a trend cannot be allowed to continue and therefore special R&D efforts to target the disadvantaged areas should receive priority attention. For example, in the vast dryland areas where the possibility of large-scale irrigation infrastructure development is very limited, productivity can only be enhanced through innovative and appropriate technological advancements/ interventions, complemented with institutional and policy support. Participation and empowerment of the stakeholders are the basic necessities for ensuring this success. Harnessing innovations in frontier sciences in selected priority areas to break the yield and quality barriers for satisfying the present and future national needs and attaining global competitiveness with larger spin-off benefits to India, has to be given focused attention. Therefore, support to both basic and strategic research is also critical.

The recently concluded National Agricultural Technology Project (NATP) led by the ICAR, was aimed to implement the shared understanding of the Government of India and the World Bank on technology-led-poor growth, and it facilitated the public sector reform process for accelerating the flow of agricultural technologies. A key lesson from the NATP is that deliberate investments in partnership building and shared governance are required to speed up technology adaptation and dissemination. The project though undertook a large number of activities, most of them successfully too; a

clear picture emerged in the extension component where the project activities were guided by a well-defined conceptual model for collaborative agricultural extension. The challenges, opportunities and lessons learnt in the NATP have provided a useful framework to move forward in the development process.

To fulfil the GoI's objectives as expressed in India's National Policy on Agriculture (NPA), the ICAR has initiated National Agricultural Innovation Project (NAIP), which accords high priority to generation and transfer of agricultural technologies, and suggests innovations in the technology system. The NPA seeks to actualize the vast untapped growth potential of Indian agriculture to generate income and employment opportunities for the rural communities. It recognizes the role of private sector in agricultural research, human resource development, post-harvest management and value-addition. The 10th Five-Year Plan envisages a growth rate of 4% per annum in the agriculture sector. Achieving such a high growth rate requires investments in research and extension as well as interventions that can improve the policy and institutional environment within which agricultural producers, traders and processors operate.

1.2 POLICIES AND INSTITUTIONAL FRAMEWORK

Since the agricultural scenario in India has changed, the policies also need a change. The changes in policy should reflect continued priority to food and nutritional security, increased market orientation, focused attention on disadvantaged regions, breaking of yield and quality barriers by strengthening basic and strategic research, and providing an enhanced role to the private sector, NGOs, etc.

Today, the agricultural development is increasingly becoming market rather than production-driven. With the falling staple-food prices and rising urban-incomes, the pay-off has slowly improved to strategies that enhance agricultural diversification and increase the value-added production of agriculture. Secondly, it is being realized increasingly that the generation, diffusion and application of new knowledge often takes place more efficiently through the private sector⁵. A significant part of the technology package that farmer's use has also been designed by and being supplied through the private businesses (e.g., fertilizers, machinery, pesticides, seeds, etc.). With increasing commercialization, the role of the private sector as technology supplier is growing. Thirdly, the ICT revolution (particularly the internet)

⁵ The private sector encompasses all non-governmental agencies such as the corporate sector, voluntary organizations, self-help groups, partnership firms, individuals and community-based organizations, etc.

has empowered the farmers to take advantage of the knowledge generated in other places or sources. How to capitalize on the existing knowledge has become a question, which is as important as how to generate and diffuse new knowledge. This is where the concept of a national agricultural innovation system (NAIS) becomes important. The NAIS is made up of institutions, enterprises and individuals that demand and supply knowledge and technologies, manage farmers, and evolves rules and mechanisms by which these different stakeholders can interact. In this concept, the focus is not limited to the science suppliers but is on the total actors that are involved in the innovation process. The role of the private sector as well as of the Intellectual Property Rights (IPRs) in the process of innovation has been recognized more explicitly, end-market demands have been made more integrated, and the conditions that need to be fulfilled for innovations to become successful have been spelt out clearly. Following the experiences from the industrial applications, the effectiveness of NAIS depends on three main elements:

- An institutional environment that is conducive to the flow of knowledge, collaboration, experimentation, and implementation of innovations.
- A well-articulated demand for new knowledge, technology, institutions and policy innovations. Producers, traders and others must be able to express their demand and must have capacity to adapt and adopt new knowledge and technology.
- The effective supply of new knowledge and technology should not only be from the public research system, but also from other sources, such as indigenous knowledge, private sector research and even transfers from abroad.

The institutional framework for the NAIP therefore needs to be designed to match the policy changes and the elements of the NAIS articulated above.

1.3 OBJECTIVES OF THE NAIP

Agricultural innovations and diffusion of new technologies are the important factors in the country's quest for food, nutrition, environmental security and enhancement of income and employment. Agricultural research in India has generated outstanding productivity increases in the past and shall continue to play an important role in supporting rural livelihoods and accelerating rural growth. However, rising population and per capita income are pushing up the food-demand, which needs to be met through enhanced productivity

per unit area, input, time and energy. At the same time, the issues of decreasing factor productivity and resource-use efficiency have also emerged. Furthermore, many promising research findings have not reached the farmers, due to either inadequacies in research designs or research results, deficiencies of delivery systems or lack of economic incentives. This is particularly visible in the complex environments and less-favored areas. In order to address the problems of poverty and hunger, it is critical to redirect and augment resources devoted to agricultural research to the farming and livelihood systems of the poor rural communities. Further, to utilize the technological breakthroughs that are already available for commercial use, the agricultural research priorities and strategies will have to be revisited and new system-wide approaches need to be developed and adopted.

The NAIP will address the above issues through a coordinated effort on changing the content and process. Policy and technology options will be screened or tested by the end-user for applicability as well as for economic, social and environmental sustainability. In the applied and adaptive research projects, the end-user of innovations will be involved from the start of programmes and projects and will remain partner till their completion. Both indigenous knowledge and frontier technologies will be used to generate the targeted products.

The overall objective of the NAIP is to facilitate an accelerated and sustainable transformation of the Indian agriculture so that it can support poverty alleviation and income generation through collaborative development and application of agricultural innovations by the public organizations in partnership with farmers' groups, the private sector and other stakeholders. The specific objectives envisaged are:

- (a) To build the critical capacity of the ICAR as a catalyzing agent for management of change in the Indian NARS (Component 1).
- (b) To promote 'production to consumption systems research' in priority areas/ themes to enhance productivity, nutrition, profitability, income and employment (Component 2).
- (c) To improve livelihood security of rural people living in the selected disadvantaged regions through technology-led innovation systems, encompassing the wider process of social and economic change covering all stakeholders (Component 3).
- (d) To build capacity to undertake basic and strategic research in frontier areas of agricultural sciences to meet challenges in technology development in the immediate and predictable future (Component 4).

The NAIP is planned for 6 years to allow time for piloting, learning and scaling-up, wherever possible.

1.4 INSTITUTIONAL DEVELOPMENT PRIORITIES OF THE NAIP

The NAIP is aware of the growing importance of access to information in the global competitive economy. Competitiveness and access to information are of sufficient relevance to poor-population groups to save them from further marginalization. The quantum of new information and the rapid rate at which the existing knowledge is becoming obsolete may pose a threat to the traditional and indigenous knowledge of our country. The NAIP plans to support efforts to protect the useful traditional knowledge. Thus, the NAIP shall strive for a better balance between utilization of the existing/ indigenous knowledge, creation of new knowledge and protection of useful traditional knowledge through documentation, validation, dissemination and utilization.

India's agricultural sector is composed of a large number of small individual entrepreneurs. Farmers are becoming increasingly dependent on other entrepreneurs for services, inputs, implements, marketing and processing. The capacity of these large numbers of entities to adjust to the rapid changes in the institutional, economic and political environments, and inter-collaborations is highly crucial for the success of agricultural development. Capacity building and strengthening of partnerships will be major elements in all the Components of the NAIP. Capacity building applies to individual farmers, farmers' groups/ organizations, and agrarian institutions and businesses, which support them. Partnerships refer to collaborations among public sector institutions, farmers' organizations, self-help groups, NGOs and the private sector. The NAIP is well aware that women farmers, whose number and contributions are significant in the Indian agriculture, have to be increasingly involved in the development process. Participatory mode of technology development, learning and action taking shall be the essential ingredients for capacity building and project management in the NAIP.

With the increasing importance of marketing in the Indian agriculture, enhancing the business skills of agricultural research institutions assumes high significance. There is a need to develop business development units/ groups as models in potential institutions for business planning, and market development for commercialization of agro-technologies.

1.5 NAIP R&D PRIORITIES

The R&D priorities of the NAIP are in agreement with the broad objectives of the project and have been designed to match the national and sectoral thrusts also. However, the NAIP will encourage creative local-level needs with need identification on the basis of systematic need assessments within the broad priorities outlined for the NAIP. In fact, the sub-projects supported by the NAIP may integrate the various priority areas in a systems mode to meet the local-level requirements.

The NAIP therefore, will not predefine the specific research projects that it wishes to pursue under the Components 2, 3 and 4, but will allow the agenda to evolve from the bottom through a competitive process that will guide the resource allocation criteria. The thrust areas mentioned below are merely indicative of what the NAIP sub-projects may address. These areas are the national and sectoral-level thrusts, as reflected in the National Agricultural Policy and the Tenth Five-Year Plan of India (2002-07), including its Mid-Term Appraisal Report, recommendations of the National Commission of Farmers and several consultations held with a wide array of stakeholders. Some guiding examples on potential sub-projects under Components 2 and 4 have been provided in subsequent chapters.

1.5.1. Agricultural Diversification

For making the Indian agriculture profitable, sustainable and competitive, agricultural diversification will have to be promoted intensively. Attention towards precision farming, small-farm mechanization, resource-conservation technologies, use of sprinkler and drip-irrigation systems, fertigation, protective cultivation of flowers and vegetables, and adoption of high-value and low-volume crops is expected to be economically rewarding. This warrants a multi-faceted approach with greater appreciation for various site-specific needs and compulsions of the farming systems, agro-climatic conditions, endowments of land and water resources, rural infrastructure, and the market demand both within and outside the country. Facilitating services and support systems, covering, credit, extension, marketing, prices, etc. are critical for successful diversification.

With emphasis on much-needed diversification in agriculture, the availability of quality seeds, particularly in the case of oilseeds, pulses, horticultural crops and fisheries, becomes a crucial component of agriculture-led growth and development. This would require efficient field operations/ hatchery management, facilitating and improving processing, post-harvesting management, marketing, quality assurance and strengthening of

infrastructure for rapid multiplication of disease-free planting material.

On-farm experimentation would be accorded high priority for testing and disseminating technologies suitable for increasing food, feed, fodder and fuel (rural energy) security, and improving the livelihoods of resource-poor farmers. Needless to mention that empowering of the small and marginal farmers and rural women through participatory approach is critical to provide them adequate strength to face natural calamities and farming failures.

1.5.2. Livestock and Fisheries Production

The livestock and fisheries sectors are emerging as important “sunrise sectors” in the country. Since livestock in India is largely owned by small and marginal farmers and landless people in rural areas, especially in the dryland areas, the sector’s rapid growth provides benefits to the poorer households. Further, the contribution of women in these sectors is substantial. Focused attention on genetic upgradation, nutrition, management, disease surveillance and control, production of feeds, diagnostic kits and vaccines, post-harvest handling and processing and marketing of livestock and aquaculture produce, by-produce and wastes will certainly be rewarding. Studies on monitoring and control of trans-boundary livestock diseases have important implications for human health, international trade and compliance with hygiene and sanitary requirements of the importing country.

1.5.3. Genetic Resources and Bio-prospecting

A sustained growth in agricultural productivity depends on regular improvements in germplasm (plants and animals, including fish and microbes) and nutritional value of staple foods, besides management of diseases and pests of crops and livestock. The traits required include improved yield potential, increasing yield stability through resistance to biotic and abiotic stresses, and enhancing adaptation to high stress conditions like drought, waterlogging and salinity. Genetic resources (plant, animal and microbial) constitute one of the most important and invaluable natural resources and their proper documentation and effective utilization is an important endeavour. The importance of undertaking such an activity with the help of local communities, NGOs, etc. cannot be overemphasized. Identification of resistant genes in wild relatives, molecular marker mapping and marker-assisted transfer to the elite germplasm may be pursued. Bio-prospecting will have to lay the foundation for effective mining and targeting the transfer of genes for specific traits. The vast microbial gene pool has to be explored and utilized for crop and

animal improvement. Such efforts are not only capital- and knowledge-intensive, but also warrant strong public-public and public-private partnerships. Interactions between research institutions and the industry need to be strengthened for realizing the full potential of frontier sciences.

1.5.4. Natural Resource Management

Enhancing the farmer’s capacity to use and conserve natural resources (agro-biodiversity, land and water management) and indigenous knowledge in an efficient and sustainable manner is an important issue in the Indian agriculture. This includes enhancement of crop and livestock, including fishery productivity in the intensified and more sustainable farming systems. Farmers’ participation is decisive for this approach.

In view of the increasing water scarcity and the growing competition for water-use in agriculture, household and industry, efficient and sustainable management of water resources, with focus on watersheds and local-level community management is another important topic. Through its Consortia approach, the NAIP will aim to combine short- and possibly long-term economic benefits (farmers’ interests) with long-term environmental concerns (public interest) and favourable institutional development.

Soil health has been affected adversely owing to depletion of organic carbon, imbalanced use of nutrients, micronutrient deficiency, etc. The proper understanding of this issue and addressing it through appropriate interventions by following the IPNM approach with appropriate policies assumes significance.

Precision agriculture may be explored to tackle the inadequate replenishment of nutrients to the soil in highly intensive cropping systems like rice-wheat, which have led to reduction in total factor productivity, water-use efficiency, nutrient-use efficiency, and the overall input-use efficiency.

Global warming is becoming an important issue for sustainable agriculture. Understanding its effects and developing adaptation and mitigation strategies should receive attention. Component 4 of the NAIP addresses this issue.

There is an increasing awareness about the quality of food as well as the extent to which the environment is affected by the excessive and indiscriminate application of chemicals on crops. Therefore, organic farming is attracting greater attention worldwide. The factors for successful adoption of organic agriculture in selected areas having competitive advantage may be identified

and technologies that support modern organic farming may be generated/ strengthened. This research will not only contribute to enhanced nutritional and environmental security but also improve export prospects of agri-products.

1.5.5. Integrated Pest Management

Pesticides are often not accessible to small-scale farmers and skill and knowledge in the sound use of pesticides is lacking. Pesticide-misuse is therefore a significant health and economic hazard to producers, consumers and the environment. The evolution of new races, pathotypes, strains and biotypes of the pathogens and insect-pests is a continuous process. In this context, to manage such biotic stresses, efficient and effective integrated approaches are required. Consortia within the NAIP may take up elaboration and validation of IPM policies and practices for the minimal ecologically-tolerable and economically-sustainable use of pesticides.

1.5.6. Value-addition and Post-harvest Processing

An area of immense importance to enhance the global competitiveness of the Indian agriculture is value-addition to and post-harvest processing of agri-produce. At present, only 7% of the output of the agricultural sector is provided value-addition and 2% of the volume of perishables is processed. In view of the small and scattered farm holdings and a majority of farmers being resource-poor, strengthening of co-operatives, self-help groups, and contract farming assumes significance. The need for reduction in post-harvest losses is highly essential. This also concerns processing technologies to follow the changing consumption patterns. The post-harvest losses adversely affect the food-security and the market-presence of small-scale farmers by disrupting supply or reducing the quality of products. Establishing local storage and small-scale processing capacity has an impact on agricultural development similar to that of construction of other rural infrastructure. In Component 2, the NAIP will address the complete PCS, improving knowledge on post-harvest losses and management of most critical elements in the system, including quality assurance mechanisms to meet domestic needs and international trade requirements. In fact, the scope extends to issues related to the food chain of human beings and animals. In view of the complexity of changes in post-harvest and processing practices, attention may be given to the introduction and development of storage capacity, cold chain and processing technologies for small farmers.

1.5.7. Research on Policy Analysis and Market Intelligence

In the scenario of significant importance of markets in agriculture and the integration of markets within the country and with world markets, it has become clear that research to develop appropriate policies to suit these fast-changing global and national imperatives is highly essential.

1.6. THE NAIP COMPONENTS

As mentioned earlier, the NAIP has proposed four Components: (1) ICAR as the Catalyzing Agent for Management of Change in the Indian NARS, (2) Research on Production to Consumption Systems (PCS), (3) Research on Sustainable Rural Livelihood Security (SRLS), and (4) Basic and Strategic Research in the Frontier Areas of Agricultural Sciences (BSR). These Components are briefly described below.

1.6.1. Component 1: ICAR as the Catalyzing Agent for the Management of Change in the Indian NARS

In the emerging Indian agricultural research system, the limited ability of stakeholders for interaction and transaction has been identified as the key constraint in generation and dissemination of knowledge. This has made the NAIP to introduce "consortium" approach (i.e. public/ private partnership of service providers that collaboratively addresses production-systems constraints) as the principal modality for project implementation in its Components 2, 3, and 4. In support to these three Components, Component 1 will comprise role-strengthening of ICAR and the SAUs as catalyzing agents for the system by strengthening their information, communication and dissemination capacities, business planning and development, skill development in generation and dissemination of knowledge, and capacity building models, policy analysis, long- and short-terms visioning, market intelligence analysis, and capacity development to remodel financial and procurement systems as per the requirements of smooth functioning of organization.

1.6.2. Component 2, 3 and 4

Research Consortia: Component 2, 3 and 4 are planned to be organized using a consortium concept. This concept is highly useful in facilitating flow of knowledge, collaborations, experimentation and implementation as well as articulating demands for knowledge and technology. The world-over, collaborative research networks and consortia have been found more

effective than simple information-exchange networks. The consortia to be supported by the NAIP will have to play a key role in utilization of scarce resources in the national agricultural research more efficiently, as well as in enhancing synergies among research and development actors. The NAIP will enhance the potential of Consortium, manage the limitations of partnerships, contribute towards better utilization of limited resources, and enhance synergies among participating institutions.

By making competitive grants available for large projects (Rs 12 crores to Rs 45 crores for each Consortium), the NAIP plans to provide incentives for building partnerships for carrying research and sharing knowledge and information⁶. Another reason for selecting the competitive mode is that it allows successful and innovative models to arise from the bottom, rather than imposing a design from the top. The Consortium mode will be utilized to find solution to the development challenges that the Indian agricultural research system faces today.

(a) Component 2: Research on Production to Consumption Systems

A 'Research to Production to Consumption Systems' (PCS) comprises the entire set of actors, materials, activities, services, and institutions involved in cultivation and harvesting of a specific food commodity, transforming it into a high-value product and marketing the final product. The system will include all the technologies from cultivation to processing, as well as the social, institutional and economic environments in which these processes operate. The definition and conceptual details of PCS are given in Appendix 1.

The emphasis on PCS is a reflection of the fact that agricultural growth in India is increasingly becoming market-driven and that the challenge to raise income and welfare of the agricultural community has to be met in the market context. The PCS implies a higher priority, among others, to post-harvest processing, quality management and hygiene and safety issues. The importance of marketing implies a shift towards products with large market and high-income growth potential.

(b) Component 3: Research on Sustainable Rural Livelihood Security

The emphasis in Component 3 on rural livelihood improvement reflects that several million people in the country remained largely by-passed from the impact of green revolution and modern agricultural practices. A

large proportion of these people and of the rural poor live in the less-favoured, marginal or more complex environments. A long-term social, political and environmental stability requires that due attention should be given to these areas. The relevance of less-endowed areas to the decentralized development, resource conservation, and water harnessing and bio-diversity management is being increasingly recognized.

In Component 3, emphasis will be on improving the sustainability of the farming systems and natural resource management in the less-favourable environments. Higher attention will be given to rain-fed, hilly and mountainous, coastal and island eco-regions.

(c) Component 4: Basic and Strategic Research in Frontier Areas of Agricultural Sciences

To sustain innovation for the accelerated development, investments must be made in basic and strategic research in the frontier areas of agricultural sciences. It will help in generating new knowledge that will be later turned into the next generation of innovations. Studies have shown that the capacity of the Indian agricultural research system to produce high quality science was more in the past than at present. For a large country like India, it is important to be at, and contribute to the scientific frontiers. Component 4 therefore, addresses the widening knowledge gap that might appear in the absence of high quality basic and strategic research.

1.7. GUIDE TO THE PIP

The PIP has been organized in 9 chapters. Chapter 1 introduces the basic objectives and modalities of the NAIP. Chapter 2 on governance, management, implementation and co-ordination outlines the way in which the NAIP is being organized and will operate. Support to the ICAR in strengthening its capacity to catalyze the NARS has been dealt in Chapter 3. This chapter outlines the organization and modalities of operation of Component 1 in details. Chapter 4 on "calls for proposals" and public awareness activities outlines the procedures that the NAIP will put in place to announce and generate awareness for the Competitive Grant System (CGS). Chapter 5 on operation of the NAIP Components 2, 3 and 4 provides the detailed procedures for the execution of the CGS, the sponsored schemes and the establishment and operation of Consortia under these Components. Chapter 6 provides guidelines

⁶ The competitive grants programme (CGP) model already existed in the ICAR in the form of AP Cess Fund projects and more recently under the NATP. The CGP of the NATP really provided the rationale and experience for this important feature of the NAIP.

and criteria for facilitating the selection of Consortia under the CGS. Chapter 7 describes the mechanisms for planning, monitoring and evaluation (M&E) in the NAIP. Chapter 8 describes arrangements for financial management at the level of PIU as well as Consortia.

The last chapter (Chapter 9) describes the procurement system to be followed under the NAIP. Annexures provide additional details supporting the information given in different chapters.

□

CHAPTER 2

GOVERNANCE, MANAGEMENT, IMPLEMENTATION AND COORDINATION OF THE NAIP

The NAIP will be implemented in a decentralized manner and the effective implementation of competitively financed activities will be through consortia of service providers from both the public and private sectors, and will require well-developed accountability systems. Once the agreement has been signed, the parties involved will ensure its faithful implementation in the letter and spirit of the contract unless proven otherwise through retroactive accountability.

A successful implementation of the NAIP will require frequent and intensive interactions with a broad array of the NARS clients and stakeholders, including those from the farm and the private sector. The structure and bodies that will be set up for facilitating and ensuring smooth and effective implementation of the project has been discussed below in brief. The openness, transparency, rapid communication and feedback being of crucial importance to achieve the project's multi-faceted objectives, internet-based linkages between all project entities and stakeholders will be established from the NAIP start-up.

As per the policies laid down by the National Steering Committee (NSC), research grants under the NAIP are to be managed by the Project Management Committee (PMC) assisted by the O&M Programme Committee (O&MPC) and the Research Programme Committee (RPC). An overview of the NAIP governance arrangements has been provided in Figure 1.

2.1. NATIONAL STEERING COMMITTEE (NSC)

The NSC will be established by the ICAR to serve as the national apex body for management of all aspects of the NAIP. The NSC will be the custodian of the NAIP, it will lay down overall policies and will provide guidance to ensure the timely achievement of the main goals of the project. The NSC will be supported by the Project Implementation Unit (PIU). The Director General, ICAR, who is also the Secretary DARE, will chair the NSC and the National Director (NAIP) will be its

Member-Secretary. The Committee will meet twice a year in a retreat mode to monitor the progress of the Project and to provide guidance to the PMC on issues of interest for the development and dissemination of technologies. The composition, periodicity and terms of reference (ToR) of the NSC are given in detail in Appendix 2.

2.2. PROJECT MANAGEMENT COMMITTEE (PMC)

The PMC will have direct executive responsibilities for sanctioning/ endorsing⁷ the proposed NAIP-financed sub-projects and for the overall management of the NAIP, involving overseeing of the effective and efficient implementation of the entire project, resource management and use, and for M&E of all the NAIP-supported activities. The PMC will also serve as the link with the subject matter-related Divisions of ICAR for technical liaison, as well as for resolving management problems (if any). This Committee will be chaired by the DG ICAR, and the National Director (NAIP) will be its Member-Secretary. The PMC will meet as and when required. The composition, periodicity and ToR of the PMC are given in Appendix 2.

2.3. ORGANIZATION & MANAGEMENT PROGRAMME COMMITTEE (O&MPC)

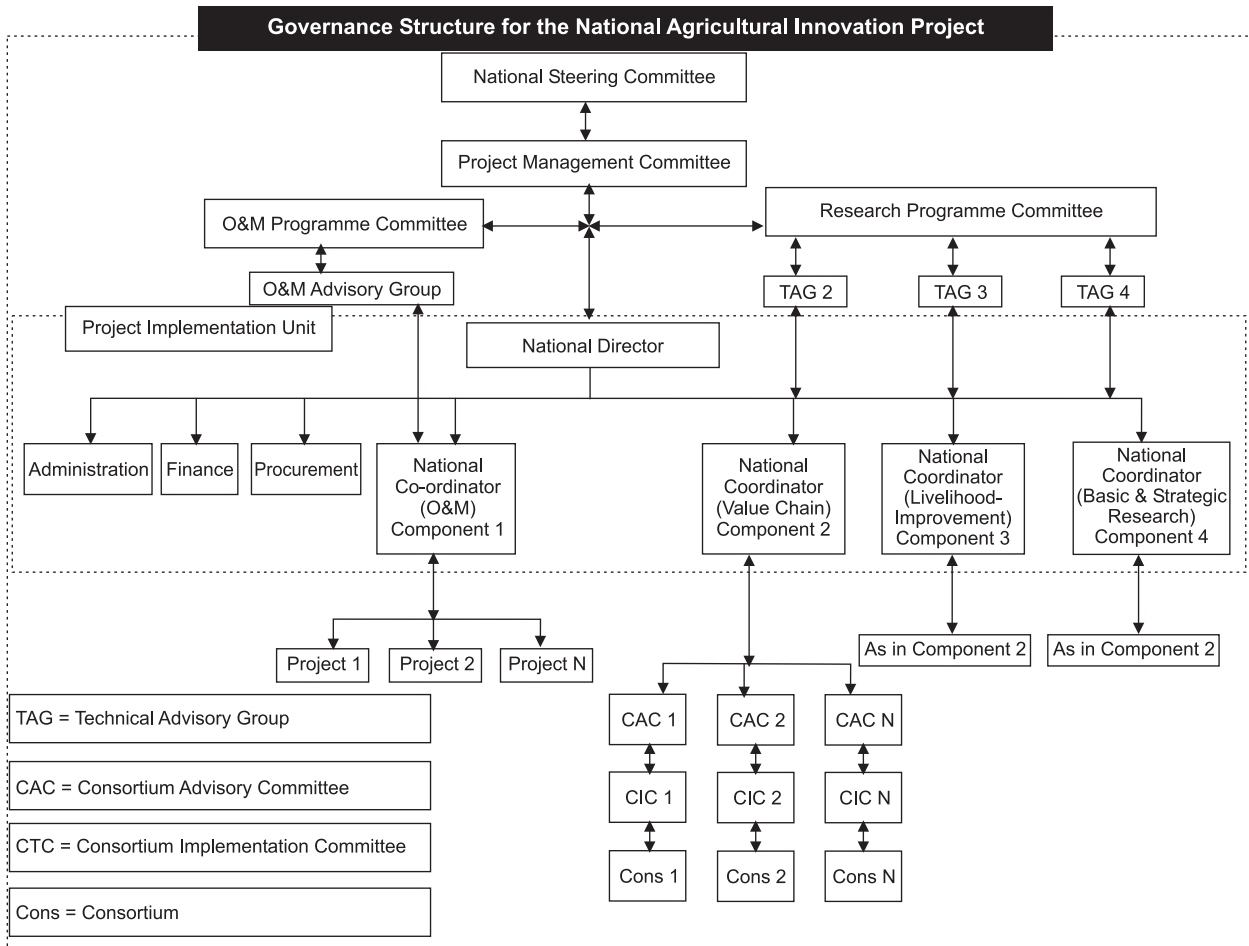
The O&MPC will be composed of persons with demonstrated knowledge and experience in managing R&D institutions/ systems and with awareness about the emerging needs of the R&D systems. The Committee will be responsible for awarding sub-projects proposed under the NAIP Component 1 and will also provide guidance in the effective and efficient implementation of these sub-projects through inputs at critical/ evaluation stages such as the Annual NAIP Workshops and at sub-project's "Mid-term reviews" (MTRs). The members for the O&MPC will be proposed by the PIU and approved by the PMC. It will be an advisory committee of about six senior subject specialists and its main

⁷ Except for sub-projects which because of their lower financial ceiling are delegated to RPC/ O&MPC.

responsibilities will be sanctioning⁸/ recommending the major NAIP Component 1 sub-projects and activities; overseeing and monitoring their progress at the time of annual and mid-term reviews; and recommending corrective actions on the basis of the O&MAG reports. The O&MPC will also provide inputs for the Annual NAIP Workshop (see below). A distinguished R&D manager of national stature will chair the Committee; Secretary, ICAR and FA (DARE) will be the *ex-officio* members; and the NC for the NAIP Component 1 will be the *ex-officio* Member-Secretary. One-third of the non-official members will be replaced in a staggered manner after the MTR of the Project for continuity. The composition, frequency of meetings and ToR of the O&MPC are given in detail in Appendix 2.

2.4. RESEARCH PROGRAMME COMMITTEE (RPC)

The RPC will be a high statured committee with the responsibility of approving⁸ the research Consortia proposed for financing through the NAIP (Components 2, 3 and 4), recommending the broad R&D priorities to be financed under the NAIP, approving the identified institutions for the sponsored Consortia, approving the significant changes in Consortium activities during the implementation period, especially at the time of MTRs, and advising the PIU and the PMC on the need for modification or cancellation of a sub-project or any of its activities, if necessary. The RPC will be composed of about 13 members with the senior-most of the three NCs for the Components 2, 3 or 4 being the *ex-officio*



⁸ The O&MPC and the RPC will be empowered to sanction sub-project proposals up to Rs 10 crores each. However, such sanctioned proposals will be put before PMC for information. A sub-project proposal with budget exceeding this limit would be submitted to PMC along with the recommendations of RPC and O&MPC for approval.

Member-Secretary. The ND (NAIP), 4 DDGs (ICAR) (on rotational basis) and the Director (Finance), PIU will be the other *ex-officio* members. The stature of the RPC will be such that its decisions will command wide and full respect. The RPC will meet quarterly to review and take decisions on the selection of Consortia. Once all the Consortia are in operation, the RPC will meet as frequently as necessary for monitoring the progress of Consortia and other related activities such as granting of additional funds or approving of major modifications for the ongoing activities. The Chairperson of RPC will be selected on the basis of his/her eminence in the field of agriculture and allied sciences and will be consulted by the DG, ICAR, on the composition of the RPC.

One-third of the non-official members will be replaced in a staggered manner after the MTR of the Project for continuity. The composition, frequency of meetings and ToR of the RPC are given in Appendix 2.

2.4.1. Powers of the RPC

With a view to decentralizing the decision-making process under the NAIP, the RPC will have the following powers; the PMC may decide to add to or modify these powers as and when required.

- The RPC will sanction sub-project proposals up to Rs 10 crores each. However, such sanctioned proposals will be put before the PMC for information. A proposal with a budget exceeding the limit of Rs 10 crores would be submitted to the PMC along with the recommendations of the RPC for approval.
- The respective TAGs will screen and provide recommendations on each project proposal for research under the different Components before they are placed for the consideration of RPC/PMC.
- The PIU-NAIP will release the funds after a project proposal is approved (hereinafter the proposal will be called a “sub-project”) and the Consortium Principal Investigator (CPI) will organize the Launch Workshop in order to sensitize all the partners about the procedural details for implementing the sub-project and the expected outcome(s).

The RPC may Exercise its Powers Subject to the Following Conditions:

- That the necessary funds to meet the planned expenditures are available in the NAIP budget and the activities are approved in the EFC Memo,

- That there is no duplication/overlapping of requirements indicated in the Tenth Plan and subsequent Plan proposals or any other source of funding of individuals/ institutes/ projects to that proposed for the NAIP funding; and that the norms prescribed/ instructions issued by the GoI/ ICAR from time to time are followed,
- That the procurement of all goods, services, contracts, civil works, etc. is made as per World Bank’s guidelines (adopted by the NAIP),
- That the proposals do not contain creation of posts and purchase of new vehicles, and
- All personnel for research assistance are co-terminus with the sub-project and the PIU-NAIP and ICAR will not have any liability whatsoever.

2.5. ORGANIZATION & MANAGEMENT ADVISORY GROUP (O&MAG)

The O&MAG will be a multi-disciplinary group of experts in various fields relevant to the subject matters of Component 1. The O&MAG will screen, evaluate and give its recommendations on the sub-projects and activities proposed under the NAIP Component 1 before their submission for final consideration by the O&MPC. The O&MAG may recommend requesting experts for an in-depth review and assessment of the proposed activities under Component 1.

The O&MAG will be responsible for ensuring appropriate reviewing and assessment of activities and sub-programmes proposed under the NAIP Component 1. Extending advice on human resource development and training needs of the entire NARS, selection of trainees and approval of the related training activities will be an integral part of the O&MAG’s activities. The O&MAG will meet quarterly or as per the need to provide recommendations on the selection of sub-projects and activities, to monitor progress, to take decision on financial and management issues, and to review the completion reports of the sub-projects. The O&MAG will have about five members; its chairperson and members will be selected by the PMC (in consultation with Chairperson O&MPC) on the basis of his/ her eminence and national stature in agricultural research management and agricultural R&D issues. The O&MAG membership will comprise expertise in organizational development, public-private partnerships, information management, human resource management, M&E, communications technology, intellectual property rights, quality assurance, technology dissemination, environment and gender issues.

The O&MAG membership (except *ex-officio*) will be for at least three years with some staggering of appointments starting from the end of the first three years to allow continuity. The NC for the NAIP Component 1 will be the *ex-officio* Member-Secretary of the O&MAG and will be responsible for organizing expert reviews and other required inputs. The O&MAG will report to the O&MPC and the PMC through the PIU. The composition, frequency of meetings and ToR of the O&MAG are given in details in Appendix 2.

2.6. TECHNICAL ADVISORY GROUPS (TAGs)

There will be three technical advisory groups (TAGs)-TAG 2, TAG 3 and TAG 4 corresponding to research Components 2, 3 and 4 of the NAIP. The TAGs will be responsible for facilitating, synthesizing and recommending/advising “peer reviews” involving scientific and technical assessment for final consideration by the RPC of sub-project proposals under their respective Components. The TAG members will participate in the Annual NAIP Workshop; they will also assist in monitoring the progress and quality of sub-project implementation, especially during MTRs and in case substantial modifications (or cancellation) are required. The TAGs will call on the panel of referees (approved by the RPC) as needed to examine and assess the sub-project proposals to be supported under Components 2, 3 and 4.

The TAGs will have the major responsibility of ensuring transparency and fairness in the process of peer reviewing of Concept Notes (CNs) and Full Proposals (FPs). The TAGs, together with the CACs, will be responsible for NAIP’s quality assurance through scientific and technical evaluation of sub-project proposals under the NAIP Components 2, 3 and 4, on the basis of the agreed guidelines. The TAGs will monitor the implementation of sanctioned sub-projects at key times such as MTRs and completion of sub-projects to assess their progress and performance. Each TAG will also take account of the broad priorities to be financed under a particular NAIP Component and will assist in the identification of competent institutions for the “sponsored” projects (that will be contracted directly and without competition). The TAGs will review all sub-project mid-term status reports, and assess the completion reports, including recommending the mainstreaming of strategies and outcomes of the successful sub-projects.

Each TAG will comprise an inter-institutional multi-disciplinary (part-time) group of about five scientists and development specialists with skills and experience

in biophysical sciences, economics and other social sciences (from both the public and private sectors). The NCs for the NAIP Components 2, 3 and 4 will be the *ex-officio* Member-Secretaries for the respective TAGs. The membership of TAG will be for three years with staggering of new appointments to allow continuity. In case a TAG does not have adequate capacity for the subject-matter areas of a proposed sub-project, the PIU (NC) will on the request of the concerned TAG, make arrangements for contracting additional peer reviewers. HRD and organizing trainings (as per need of individual sub-projects), proposing names of trainees or approving names of trainees and approving training activities will be the integral parts of the review and decision process of the specific sub-project proposals submitted to TAGs for evaluation; it will also include support to strengthening of international linkages to improve the quality of human resources. The RPC will select the TAG chairpersons and members on the basis of their eminence and national stature in agricultural research and agricultural R&D issues. The TAGs will meet at least quarterly. It is expected that the TAG members will liberally use electronic media for communication. The TAGs, through the respective NCs, will report to the RPC and the PIU. The composition, periodicity and ToR of the TAGs are given in detail in Appendix 2.

2.7. CONSORTIUM ADVISORY COMMITTEES (CACs)

The RPC will, on the basis of recommendations of the Consortium Implementation Committee (CIC), constitute a CAC for each Consortium alongwith providing approval for implementation of a sub-project. The CAC will be responsible for monitoring the effectiveness in implementation and adherence to the agreed objectives, evaluating outcomes and impact, approving or recommending to the RPC re-allocations of funds between sub-project activities (subject to the financial rules and procedures of the NAIP) and mid-course corrections of the sub-project with information to the RPC, and facilitating the dissemination and up-scaling of replicable results. During sub-project preparation and before finalizing the CN, the collaborating institutions will identify important stakeholders and client organizations, and will have consultations with them. Finalization of the FP will involve organization of a workshop of stakeholders. The participation of the prospective CAC members in the Stakeholders’ Workshop should be ensured by the CIC.

The CAC will have membership of about 11 (in case of Component 4, it may have only about 6 members),

which will include representatives of major stakeholders involved with and/or affected by the activities under the sub-project, including the private sector. The CAC will comprise at least two scientists and the NC of the concerned NAIP Component will be the *ex-officio* member. However, the actual size and composition of each CAC will depend on the number of institutions and stakeholders that are substantially involved in the implementation of a sub-project. The CAC will select its own chairperson and meet half-yearly or more frequently, if required. The CAC will be formalized through RPC endorsement on the recommendations of the CIC when the RPC approves the FP. The CPI will function as the *ex-officio* Member-Secretary of the respective CAC. The CAC may at any time call on contributions and/ or inputs by any staff member of any of the institutions and organizations collaborating in the concerned Consortium and/ or on consultants. The CAC will meet at least twice a year. The composition, frequency of meeting and the ToR of the CAC are given in detail in Appendix 2.

2.8. CONSORTIUM IMPLEMENTATION COMMITTEES (CICs)

Each Consortium will have a Consortium Implementation Committee (CIC). The number of members of the CIC will depend on the size and complexity of the Consortium, and the CIC will be chaired by the Head of the Consortium's Lead Institution (CL); and the Consortium Principal Investigator (CPI) and Cooperating Principal Investigators (CoPIs) of all the partner institutions collaborating in the Consortium will be members. The CIC membership will also include senior administrative and finance staff of the CL. The membership of the CIC and its responsibilities will be approved by the RPC at the time of approval of the CN. The responsibility of the CIC will include ensuring smooth and efficient implementation of the sub-project, monitoring and overseeing the execution of the concerned sub-project and reporting to the CAC and PIU, according to the schedules set out in the NAIP Project Implementation Plan (PIP). Responsibility for M&E will be assigned to a Unit at the CL (either the existing one like the PME cells established under the NATP, or will be established with the NAIP support). On the Consortium activities, this Unit will report directly to the CAC. The Unit's work plan will be cleared by the NC who is responsible for the NAIP M&E at the national level, after endorsement by the CAC. The M&E activities and timely reporting of progress (or establishment of such capacity early on/ during implementation) will be important

screening criteria in evaluating Consortia proposals for the NAIP financing by the TAGs and RPC.

The CIC will also make recommendations to the CAC, with a copy to the PIU, on implementation and policy issues related to the sub-project. It will recommend, if necessary, reallocation of funds within the approved limits, set strategies for implementation and communication, etc. The composition, frequency of meeting and ToR of the CIC are given in Appendix 2.

2.9. PROJECT IMPLEMENTATION UNIT (PIU)

The Project Implementation Unit (PIU), headed by the 'National Director' (ND) will be responsible for the coordination and facilitation of implementation of the entire NAIP under the direction and supervision of the PMC. The PIU will include 4 National Coordinators (NCs), one each for Component 1 activities, research on production to consumption systems R&D (Component 2), research on sustainable rural livelihood security (Component 3), and basic and strategic research projects (Component 4). The PIU will also comprise expertise in Administration, Finance, Procurement, M&E, Management Information Systems (MIS), Learning and Capacity Building (L&CB) and Social/ Environmental aspects (Figure 1).

The PIU will, with inputs from the implementing agencies, O&MPC, RPC, O&MAG and TAGs, consolidate the NAIP annual budgets and work plans for different Components for approval by the PMC. However, to provide a decentralized and efficient mechanism for implementation of specific components, sub-components and sub-projects implemented by Consortia, the CLs and CICs will be suitably empowered. The responsibilities of the PIU will include:

- Providing logistic support for the NSC, PMC, O&MPC, RPC, O&MAG and TAGs, and preparing their respective meeting schedules and agendas (in consultation with the Chairs of respective Committees).
- Reviewing the relevant reports and other materials, and drafting recommendations, and minutes of meetings, and contracting and administering special studies, reviews, etc. as advised by the NSC, PMC, O&MPC and RPC.
- Technical, financial, procurement and administrative management of the NAIP, including issuing "Calls for Proposals" with the powers as may be delegated by the PMC.
- Overseeing the implementation of the NAIP sub-projects and activities as approved by the PMC, O&MAG and RPC.

- Preparing, collating and keeping track of implementation of all training activities.
- Organizing the Annual NAIP Workshop.
- Requesting withdrawals from the NAIP Special Accounts and releasing funds for authorized expenditures under the PIU.
- Submitting to the World Bank, the NSC and the PMC, annual progress reports and audit reports within three and six months of the close of each fiscal year, respectively.
- Liaising with the World Bank regarding operation and management of the NAIP as and when required for the execution of the NAIP-supported activities, and organizing the World Bank review missions.
- Preparing all reports, doing documentation work and disseminating/ providing information on the PIU, including on the progress of sub-project and impact evaluation for the O&MAG, the RPC and the World Bank missions, respectively, and preparing any other report required by various authorities.

The PIU, with the approval of the PMC, may arrange for expert advice from consultants in any subject-matter area related to the PIU implementation.

2.9.1. National Director (ND)

The PIU will be headed by a ND of the status of a DDG in ICAR. The ND, under the direction of the PMC, will coordinate and facilitate implementation of the entire NAIP. He/ she will be responsible for and empowered to direct all the activities of the PIU as summarized above. As indicated, the ND will be the *ex-officio* Member-Secretary for the NSC and the PMC.

2.9.2. National Coordinators

There will be one NC for each NAIP Component; the responsibilities of NCs will be:

- (a) To process and keep track of all proposals and activities under the O&M and Consortium research grant components that are submitted for funding under the PIU. This will include arranging for evaluation of sub-project proposal and strengthening of the quality of proposed sub-projects and their implementation with the help of the O&MAG and TAGs in accordance with the NAIP guidelines, and monitoring the output, outcome and impact indicators. They will also facilitate the training, if required, for sub-project preparation and implementation.
- (b) To facilitate and participate in the identification,

selection and reviewing of a sub-project and in the M&E systems set up under the NAIP to ensure efficient and high quality preparation of sub-projects and effective implementation of activities for making system-wide impact. This will include serving as *ex-officio* Member-Secretary of the O&MAG and the respective TAGs and organization of the NAIP Annual Workshop, ensuring wide participation of the stakeholders and beneficiaries.

- (c) To facilitate releasing of funds to various Consortia and entities for executing sub-projects and activities.
- (d) To facilitate and overseeing the hiring and execution of consultancies and special studies.
- (e) To assist in the execution and implementation of activities of the PIU, as directed by the ND.
- (f) To collate and synthesize reports pertaining to the respective areas of responsibility and executing such administrative and financial responsibilities and powers as delegated by the PMC and the ND.

The NC of Component 1 will in addition be responsible for: (i) NAIP-related M&E and the Project Management Tracking System (PMTS); and, (ii) NAIP's special effort in L&CB. In M&E of a sub-project, he/ she will be assisted by an expert/ consultant (firm) who would provide support in information systems development, networking and software development services. The M&E consultant's first charge will be the designing of a PMTS for the NAIP implementation, a sub-system within the overall MIS of the NAIP/ ICAR. When these systems become effective, the M&E expert/ consultant (firm) will take on a wide range of M&E and information systems-related responsibilities. The M&E expert/ consultant (firm) will also provide assistance to the NSC, PMC, ND and NCs in all their information needs. The M&E expert/ consultant (firm) will be the major source of timely and relevant information on the NAIP for the ICAR and the broader stakeholders in the project and will serve as a link for all concerned. The M&E expert/ consultant (firm) will also provide appropriate support for the MIS and information/ communication needs. The M&E expert/ consultant (firm) will assist NC1 for coordinating Consortia-level M&E functions.

2.9.3. Director Finance (DF)

The DF will be responsible for the overall financial management of the NAIP, including the estimation of fund requirements for different purposes, timely

disbursement of funds, maintenance of proper accounting and audit, establishment of separate bank accounts, and ensuring timely receipt of bank reconciliation statements by/ from each implementing agency. The ToRs of Director Finance are as follows:

- Maintenance of accounts, estimation of fund requirements under various heads of expenditure,
- Disbursement of funds,
- Statement of Expenditures (SoEs),
- Accounts audited & auditor's report,
- Monitoring of funds for their proper utilization and submitting the records periodically for each fiscal year,
- Overseeing the submission of annual work programme and budget by the CLs, providing details of research, training, procurements, and civil works,
- Checking of procurement methods and allocation of resources to various Components of research system,
- Establishment of separate bank accounts for each implementing agency, periodic bank reconciliation statements and financial control.
- Organizing training for the Finance & Administrative Officers/ Officials both in the field of FMS (Financial Management Software System) as well as MDP (Management Development Program) for capacity building.

2.9.4. Procurement Officer (PO)

The PO will be the nodal point for all procurement-related matters in the NAIP and will function as the main resource person to guide and advise the implementing agencies on procurement procedures as per the World Bank guidelines.

2.9.5. Environment and Social Assessment

The overall responsibility of environment and social assessment will be with NC 3; he/ she may obtain need-based assistance of an expert in Environmental and Social Assessment (by hiring a consultant, if necessary) who will oversee environmental compliances and be responsible for environmental and social analysis and if needed, designing of mitigating actions. This will be done in close interaction with CPIs and within the NAIP Environmental and Social Management Framework (Appendix 3).

2.9.6. A Sub-unit for Learning & Capacity Building Activities (Training Cell)

A sub-unit for L&CB activities under the O&M Component of the NAIP will be created in the PIU-NAIP for an effective and efficient implementation of activities to be conducted under the NAIP. It will be under the administrative control of NC (Component 1). The guidelines for training under the NAIP are given in Appendix 4. □

CHAPTER 3

ICAR AS THE CATALYZING AGENT FOR MANAGEMENT OF CHANGE IN THE INDIAN NARS (COMPONENT 1)

3.1. BACKGROUND

The contributions of the Indian NARS led by the ICAR in transforming Indian agriculture are well recognized. However, in recent years, there has been a growing concern about the decelerated trends in agricultural growth, which has decelerated sharply from 3.2% between 1980-81 and 1995-96 to a trend average of 1.9%, subsequently. This deceleration reflects a broad based decrease in the productivity growth. It is essential to reverse this trend, which calls for actions more than simply continuing with “business as usual”. The need for change has also arisen on account of persisting poverty, growing unemployment, increasing degradation of natural resources, rising costs, falling profitability, high volatility in prices, growing dependence on markets, unfavourable trade regimes, besides re-emergence of climate risks due to global climate change. A widespread diet revolution is taking place, encouraging diversification towards high-value food commodities, post-harvest processing and value-addition to agri-products.

Numerous opportunities are being unfolded by the fast developments in scientific fields like biotechnology, nano-technology, space technology, information and communications technology, etc. Developed countries are seizing upon these opportunities by introducing appropriate institutional and policy reforms. Policy reforms are also being implemented by them to meet the needs of domestic market, WTO and other international agencies. However, globalization has provided increased opportunities to the developing countries for competing in the international agriculture trade. In India, there is a rush towards the rural markets by the corporate sector. The number of agricultural research providers with organizations and entities outside the NARS is also increasing. To address these challenges, cater to changes and avail opportunities; the ICAR in the recent past has taken several initiatives in the areas of O&M reforms, technology generation and technology dissemination. Through the recently concluded National Agricultural Technology Project (NATP), significant achievements were made in improving the system

efficiency, providing more than 300 appropriate technologies to fill in the technology vacuum and developing a successful model for technology dissemination. However, a need has been visualized to extend, expand, innovate and institutionalize these efforts more vigorously through further strengthening of the NARS.

3.2. RATIONALE

The persistence of widespread poverty, food insecurity and malnutrition, particularly at the household level and increasing poverty in the rural areas are some of the situations which will not be acceptable to any society. The agricultural development strategy, including the R&D system in India needs to be re-examined comprehensively and novel action plans have to be developed and adopted. Innovations to manage changes in the NARS have to be developed at accelerated rates to attain the broad objectives of higher and sustainable agricultural development, matching to the needs and aspirations of our people. In this context of change, the new system has to be dynamic, motivated, creative, vibrating and flexible but accountable and driven by a learning organization. It is necessary to design programmes, relevant to achieving increased crop productivity, global competitiveness in cost and quality, poverty alleviation, and nutritional, livelihood and income security. It is important to work with participatory mode of development, management and execution both within and outside the organization involving the whole range of stakeholders. The system’s capacity for information and knowledge management, communication and visibility has to be robust, vast and innovative through the “Partners in Progress” mode. The agricultural R&D system should integrate farmers, agricultural researchers, educators, extension officers, traders and consumers to harness knowledge and information from various sources. The key features for such a system include pluralism, partnerships, decentralization, accountability, priority-setting, aligning R&D to market trends, sustainable financing, etc.

To strengthen these abilities/ features in the system, the new National Agricultural Innovation Project (NAIP) has been planned by ICAR with four Components. Component 1 will create appropriate policy and institutional environment, incentives, skills and work culture to optimize benefits from the projects under Components 2, 3 and 4 as well as from the NARS. Support for the NARS will be in terms of (a) information, communication and dissemination systems, (b) competitive business policy and technology commercialization models, (c) advanced learning and state-of-the art capacity building initiatives, (d) value-added market intelligence services, (e) good M&E and strengthened impact evaluation systems, (f) project-friendly financial management and procurement systems, and (g) well-defined roles for and interfaces between the state and central R&D systems. The Component 1 has to create an environment that will be conducive to the flow of knowledge, collaborations, experimentations and implementation of innovations. The emphasis in this Component will be on the SAUs, which comprise a majority of the scientists.

3.3. OBJECTIVES

The overall objective of the Component 1 is to build critical capacity for providing support to other Components of the NAIP, in particular and to strengthen the NARS, in general. The specific objectives are:

- (i) To strengthen the information, communication and dissemination systems for a wider dialogue and interaction within the system and among the stakeholders.
- (ii) To enhance public awareness, governance, knowledge-sharing and hi-tech adoption.
- (iii) To formulate business policy, plan and develop models for technology commercialization and establish technology incubators.
- (iv) To assess the current L&CB initiatives and suggest changes in HRD and learning models like e-learning, distance learning, new experimental farms/ clinics, course curricula for the future needs, etc.
- (v) To assess human resource requirements for agriculture and the training needs (both domestic and foreign) by the sectors/ themes with details of why, where, which areas, durations, etc.
- (vi) To develop agricultural and research policy and gender analysis capacity, visioning skills with capability to use market intelligence for agri-business planning and forecasting of technology needs.

- (vii) To evaluate the current M&E and impact assessment mechanisms and systems and suggest improvements therein.
- (viii) To assess the roles and interface of state and central governance systems in agricultural research and suggest appropriate modalities for interfacing and policy measures to foster an effective research system in the NARS.
- (ix) To remodel the financial and procurement systems as a part of the total MIS for image building of the ICAR as a dynamic and performing organization.

3.4. FIELDS OF THRUST/ SUB-COMPONENTS

The fields of thrust (described in succeeding paragraphs) have been identified based on the lessons learnt from the NATP, suggestions received during the stakeholders' meetings, discussions during the meetings of specially-constituted working groups of eminent experts and stakeholders, and perceptions for the success of Components 2, 3 and 4. The thrust areas have been duly endorsed by the senior research managers and officials of the ICAR and the SAU system.

3.4.1. Information, Communication and Dissemination System (ICDS)

(a) Information and Communication Technology (ICT): Under the NATP, the ICAR has created about 5000 Internet connected nodes in about 300 institutions/ centres, including the ICAR Institutes, National Research Centres (NRCs), Project Directorates (PDs), Regional Research Stations, State Agricultural Universities (SAUs), Zonal Research Stations and Colleges of SAUs with connectivity ranging from 128 kbp to 2 Mbp. Keeping these nodes fully functional requires lot of efforts. Further, the fast advances that are taking place in this area need to be utilized. Keeping these in view, the broad objectives of ICT are: (i) to update and modernize the network in view of new developments and an increased users base, and (ii) to develop content, capacity and expertise to make effective use of this large ICT network in agricultural research, education and technology dissemination.

Under the NAIP, emphasis would be on (i) strengthening of the ICAR-Net, (ii) creation of digitized content and knowledge management, (iii) strengthening of 42 libraries of the SAUs and the ICAR institutes into fully electronic libraries connected over the ICAR Net, (iv) formation of an "ICAR e-journals Consortium" for centralized subscription of e-resources and information sharing in the agricultural domain at the national level

on the pattern of the “UGC Consortium” of 100 plus universities under UGC, or the “CSIR Consortium” of 40 R&D labs, or the “INDEST Consortium” of 140 engineering institutions through MHRD or the “IIM Consortium” of management institutions, (v) strengthening of the MIS of NARS, and (vi) strengthening of the communication and public awareness capacity of the ICAR/ NARS.

The ADG (ARIS) will be the Nodal Officer for ICT-related activities. He/ she will be supported by a core team consisting of M&E and MIS specialists/ consultants. The Education Division of ICAR, ERNET, NIC, selected SAUs, IASRI, NAARM, DIPA and ICAR (Hq) will be the partners. Keeping these in perspective, the Information, Communication and Dissemination System of the NARS will be developed through the following activities:

(b) Strengthening the Existing ICAR-Net: In order to deploy the e-Content, e-Knowledgebase, e-Governance (MIS), e-Services, etc., it is essential to have a strong electronic network, which is functional, secured and accessible to the legitimate stakeholders. The ‘ICAR-Net’ created under the NATP is functional, accessible and upgradeable but needs to be further strengthened and enhanced in capacity (where required) with deployment of a strong security system. In addition, continuous efforts are essential for human capacity development to make effective use of this system, with proper maintenance. The success and utility of the new ‘ICAR-Net’, which is still at the initial stage, will depend on the central unified support by the ERNET, including bandwidth capacity support and need-based enhancement. In other words, the success of the communication strategy will, to a large extent, depend on the strength of the ICAR-Net. Hence, it is necessary that during the NAIP implementation, the bandwidth charges and enhancement charges be provided, on a selective basis. Under this head, the sub-activities include:

- *Security solution deployment:* A secured Intranet width deployment of security solutions, Anti-viruses, Spam control, etc. Appropriate server configuration and management strategies, like a unified mail server to prevent Spam and viruses,
- *Updation of basic minimum hardware/software requirements:* Meeting these requirements for the PIU and ARIS Unit at the ICAR headquarters, for serving as the central implementation and monitoring point for the NAIP,

- *Bandwidth support:* Providing bandwidth support and need-based enhancement during the NAIP. To strengthen and economize the bandwidth support to ICAR-NET, establishing an exclusive ‘ICAR Hub’ and exploring the possibility of a free Transponder from ISRO, exclusively for the agriculture sector,
- *Human resource development:* HRD and capacity building in the area of network administration, maintenance and use.

(c) Knowledge Management and Dissemination:

To build the ICAR capability for transforming the Indian NARS into a knowledge-empowered system, the NARS would develop a modern ICT-based Knowledge Management and Dissemination System. The NAIP will develop a model for such a system involving a limited number of partners for knowledge acquiring, storage, value-addition and dissemination through the Knowledge Management and Dissemination Project. The major sub-activities include,

- *Content Development:*
 - Formulation of a content development strategy for the ICAR and SAUs,
 - Sensitization and capacity building for content development,
 - Model content development including Databases, Data Warehouses, Expert Systems, Application Software, Intranet and Work Flow applications,
 - Training Modules, Extension Modules, Web-based Services, Knowledge Management, etc.,
 - Content development in the major agricultural subjects domain for the system as a whole and for the Consortia within different Components (Components 2, 3 and 4), and
 - The NAIP will play a pro-active role to sensitize the development of such sub-projects by forming Consortia of stakeholders in different domains of knowledge.
- *Knowledge Management:*
 - Formation of a Consortium of the Extension Division of the ICAR, DIPA, Indian Institute of Mass Communication, NAARM, IASRI, NGOs, stakeholders in the private sector and the selected SAUs,
 - Development of a model system of knowledge management integrating ATICs, KVKs, ATMAs, private sector initiatives (such as e-choupal, etc.) and village knowledge centres,
 - Capacity building for managing and using the system

- Development of a Centralized Data Centre and National Portal (Fig. 2) which consists of:
 - A Centralized Secured Data Centre and a National Agriculture Portal to maintain the knowledge-base of digitized contents at the ICAR headquarters.
 - Access control through a National Agriculture Portal for secured data and providing access to all the authorized centres/ users over the Internet.

(d) e-Learning and Capacity Building: The e-Learning techniques provide a fast and low-cost method to increase outreach to the vast community of learners consisting of about 60 thousand students of agricultural colleges, trainees, extension workers, farmers and other stakeholders spread geographically throughout the

country. The e-Learning systems are of two types: (i) Asynchronous e-Learning, and (ii) Synchronous e-Learning (virtual learning). The major sub-activities under this head include:

- *Learning Management Systems (Asynchronous e-Learning):*
 - Setting up Learning Management Systems (LMS) at NAARM, IASRI, 4 Universities of the ICAR and a few selected SAUs to facilitate access to students in the university campuses and colleges,
 - Development of necessary infrastructure, hardware and software,
 - Content development for e-Learning, and
 - Capacity building for content development.

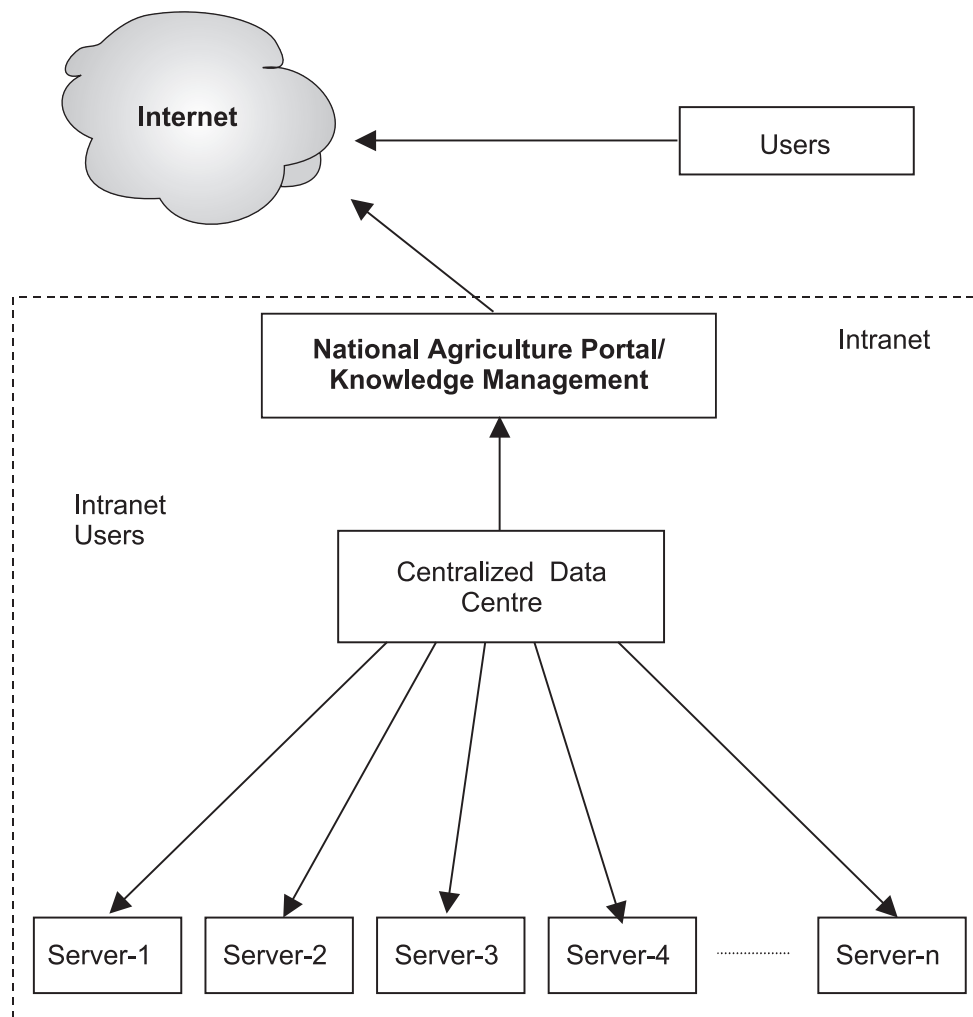


Fig. 2. Development of a Centralized Data Centre and National Agriculture Portal

- *Virtual Class Room Systems (Synchronous e-Learning):*
 - Setting up Virtual Class Room Systems at NAARM, CAU and three selected SAUs, and
 - Capacity building for system technicians, teachers and students to operate and use the system.
- *Strengthening of 42 Agricultural Libraries:*
 - Formation of a Consortium for centralized e-journals subscription,
 - Development of linkages with other such Consortia established by organizations like the UGC, AICTE, CSIR, IIMs, etc.,
 - Further development of e-library management systems in the selected SAUs,
 - Digitization of old research publications and Ph.D. theses in the area of agriculture,
 - Creating an Open Access to publications in the selected ICAR and SAU libraries,
 - Development of formal linkages between the NARS libraries and international libraries, and library organizations, and
 - Capacity building for e-library development and use.
- *Management Information System (e-Governance):*
 - Building a Management Information System for the NAIP, incorporating suitable M&E systems having the following components:
 - Project proposal processing, tracking and M&E system,
 - Agricultural Research Information System,
 - A financial and procurement management system for the NAIP as well as the ICAR,
 - An electronic document filing system, and
 - Other systems according to the requirements of the NAIP,
 - Adaptation of the MIS developed for the NAIP for the governance of NARS:
 - Adaptation of the MIS by the ICAR Institutes, Bureaux, NRCs, PDs, and selected SAUs
 - Video-conferencing and IP-telephony for selected locations in the NARS.

(e) Communication and Public Awareness (CPA):

The project will provide the required value-added information support for the accelerated and sustainable transformation of the Indian agriculture through print and electronic modes. The objective is to provide viable media communication system models in the NARS through the NAIP and communication links among public research organizations, farmers' groups, Panchayati Raj Institutions, private sector and other stakeholders,

to achieve poverty alleviation, food security and income generation for the farmers. The Media and Information Unit of the ICAR will be the lead centre; the partners will be DIPA, Publicity and Public Relations Unit of ICAR, Division of Extension, ICAR, 10-15 SAUs and Indian Institute of Mass Communication (IIMC). The sub-activities will include:

- *Developing a Media Framework and Plan for the ICAR, the NAIP and the Consortia:* Rapid changes have been observed in the media in terms of technology, content and even the concepts in recent years. Twenty-four hour channels are redefining what was traditionally presented as 'news'. The concern of ICAR is to find what role media can play in informing people about the fast developments that are taking place in the field of agriculture and how to increase visibility about the accelerated progress in the Indian agriculture, since agriculture directly affects a majority of the people in this country. In general, the priorities and attention of media have been low for several positive agricultural developments, in general, and agricultural R&D in particular. The journalists on the agriculture beat are not usually conversant with the subject terminology and scientific details. Thus, there is a dearth of human resources with appropriate skills in this critical area. On the other hand, there are no institutional frameworks, processes and systems that could ensure a smooth flow of information from the organization and its various projects to the media. If these concerns are addressed, the media could become a forceful agent for the successful implementation of schemes and could generate all-round support for the organization. The sub-project will develop a framework and a plan consisting of information sources (organization and structure), information processing, media centre and sub-centres, and mass communication training.
- *Digitization of ICAR Periodicals:* The dissemination of scientific information in agriculture is one of the main objectives of the Directorate of Information and Publications of Agriculture (DIPA) of ICAR. DIPA brings out 2 research journals, viz. *The Indian Journal of Agricultural Sciences* and *The Indian Journal of Animal Sciences*, and semi-technical magazines/newsletters, viz. *Indian Farming*, *Indian Horticulture*, *the ICAR Reporter*, *ICAR News*, *ARIS News*, in English and *Kheti*, *Phal-Phool*, *Krishi Chayanika*, in Hindi. Besides, two abstracting periodicals, viz. *the Indian Animal Science Abstracts* and *Indian Agricultural Science Abstracts*, are also

brought out by DIPA. These periodicals continue to grow in popularity as well as quality by presenting accurate, authentic and useful topical information on agriculture. In addition, there are some 'A' category societies also which are supported by the ICAR; the journals brought out by these societies will also be digitized and put on the website. The DIPA needs to provide e-version of its periodicals as e-publishing has a deeper and wider impact. The facility of open archiving will be developed to have even a greater impact. 'On-line' journals will provide global visibility to the Indian agricultural research.

A DIPA website will be developed with features such as:

- The online service will provide 'contents' pages of the journals, title of articles, authors' name, place of work, key words and an abstract/summary of the article/short communication will be available free of cost, and the full text of the article /short communication will be available on payment,
 - The 'contents' page of the semi-technical journals/ magazines will be displayed on the website, and the full text of the article will be available on payment,
 - The full text of the *ICAR Reporter/ ICAR News / ARIS News* will be accessible free of charge to the users, and
 - A query box will be installed and the queries will be answered through *e-varta* by technical experts from the NARS.
- **Business Strategy: The business strategy will include:**
 - Development of ICAR-private sector partnership for digitization and remunerative marketing,
 - Assessment of the information requirement of the farmers/ entrepreneurs/ traders/ exporters through market research/ surveys to bring out tailor-made information products,
 - Getting feedback on DIPA publications through a survey and their re-orientation to meet the market/ research demand,
 - Organization of exhibitions (in regional languages) exposing the art of improved technology in different parts of the country, and
 - Utilization of media cells created in the project as resource centres for other Components of the NAIP projects, including e-Learning and mass communication centres.
- **Human Resource Development:** Trainings will be organized on the development of different information products related to agriculture through NAARM. Workshops will be conducted at the selected SAUs on subjects like: Science writing, Radio talks, TV script writing, Extension mechanisms, women self-help groups, publication and information personnel of the ICAR, SAUs and KVKs, and journalists will be given exposure of the NARS through conducting tours to the ICAR institutes/ universities. Visits will be arranged for the personnel of publication and information unit to provide exposure of the cutting edge technologies and communication technologies in agriculture to the national and international agricultural organizations.
 - **Communication and Knowledge Dissemination:** To enhance a dialogue and interaction with the public and the farming community, the steps to be considered are:
 - Inclusion of separate section of eight pages specially designed and enriched with useful tips, for the general public and farming community in all the five semi-technical ICAR journals, viz. *Kheti* (Hindi monthly), *Phal-Phool* (Hindi quarterly), *Krishi Chayanika* (Hindi quarterly), *Indian Farming* (English monthly), and *Indian Horticulture* (English quarterly),
 - Besides providing information on income-generating technologies, a dialogue will be initiated with readers through these pages wherein the experts in the field will answer the queries of readers. The new columns that would be added in semi-technical ICAR journals include:
 - *Institutions at your service:* Timely information about the contributions of the ICAR institutes regarding development of technologies/value-added products. Information on trainings being imparted by these institutes will also be provided,
 - *Technology ready for adoption:* A list of technologies ready for adoption will be published regularly with details about contact address for detailed information,
 - Special Columns like 'Expert Speaks', 'Success Stories' and Conservation of Natural Resources (with information on traditional and modern techniques) will be introduced,
 - Starting the NAIP News,

- *Agri-pop series* (technical bulletins) will be published keeping in view the latest requirements of the farmers, NGOs, policymakers, etc. based on the surveys conducted by the DIPA. The series will highlight information on commodity/resource availability, packages of practices for production and protection of the commodity, value-addition, marketing, loan facilities, export avenues, development of infrastructure for training and contacts, and success stories. The target audience groups for this series are farmers and young entrepreneurs in agri-business,
 - Starting a new feature service on the latest developments in agriculture at the regional level to cater to the needs of rural farmers through local newspapers,
 - Use of audio-visual media: (a) Short films (10-minute duration) on agricultural technologies available for commercial exploitation, (b) agri-spots on TV; and (c) phone-in programme on radio,
 - Publication of reports of different committees constituted by the ICAR and other agricultural research organizations to guide the policy-makers in the field of agricultural research,
 - Development and dissemination of technology contents in different web-enabled forms
 - To enhance a dialogue and interaction with key functionaries of the ICAR system. The in-house journal, *ICAR Reporter*, will be revamped with expert inputs as per the requirements of the NAIP. It would be developed by the e-ICAR reporter as an interactive platform for the ICAR scientists, administrative personnel and the farm community.
- transfer and enterprise development”. The sub-activities will focus on the elements like,
- (i) Development of business policy and plan for commercialization of agricultural technologies,
 - (ii) Evolving methodologies to prioritize research that could provide economic gains through commercialization,
 - (iii) Building strong research partnerships with industry in and outside India,
 - (iv) Creating entrepreneurial abilities,
 - (v) Taking technology to the resource-constrained farmers through effective communication and outreach methods,
 - (vi) Technology transfer to small and medium enterprises through cluster development to ensure technology-led regional development and gender equity,
 - (vii) Technology transfer to large commercial enterprises through structured licensing and sponsored research programs to ensure technology-led venture creation,
 - (viii) Encouraging researchers, commercial partners and technology disseminators through appropriate revenue-sharing and reward mechanisms,
 - (ix) Promoting international collaborative initiatives that will leverage the strength of the NARS and private enterprise resources for accomplishment of common economic development goals,
 - (x) Augmenting capital investment and infrastructure through public-private partnerships (PPPs) for sustainable enterprise development and economic growth, and
 - (xi) Undertaking communication and outreach efforts at international, national, regional and local levels through technology meetings, PPS networks, community networks, cluster networks, workshops and conferences, annual technology events, regional technology events and enterprise interaction to disseminate new technologies and realize economic gains from such technologies.
- (a) Steps:** The steps involved include:

3.4.2. Business Planning and Development (BPD)

The main idea of this concept is to encourage, nurture and support technologists and scientists with initiative and potential to turn their innovative research ideas into sound commercial ventures. For this, the NAIP plans to develop partnerships between ICAR and entrepreneurs and start-up companies for new technologies. The goal of this Component is: “To accomplish science and technology-led, sustainable socio-economic gains by applying inventions emerging from the NARS through technology validation, technology

- A central ‘Technology Management Cell’ will be created to steer intellectual property protection, technology profiling, technology transfer and enterprise development initiatives,
- Unit level sub-centres will be created to have regional focus on technology management and enterprise creation efforts,
- Establishment of PPPs will be encouraged in technology validation and enterprise creation through technology incubators to develop common laboratory facilities and research infrastructure for product validation and up-scaling,

- Comprehensive capacity building will be undertaken for enhancing knowledge in areas relating to intellectual property protection, technology validation, enterprise creation and enterprise management,
 - A comprehensive institutional policy will be evolved for protection of intellectual assets, technology transfer, sharing of technology transfer fees and royalties and avoidance/solving of conflict of interests,
 - About 100 inter-disciplinary professionals will be trained in the area of technology management and enterprise creation to spearhead the change process and provide leadership for technology management and enterprise creation units at the apex and unit levels,
 - Four regional cells will be identified as major hubs for instituting technology management and enterprise creation initiatives across the country and linking up each of the cells regionally to active institutions and communities so as to ensure a wide-spread of knowledge activities and accomplishments in the area of technology management and enterprise creation, and
 - The industry, non-governmental organizations and policy planners will be sensitized to undertake outreach efforts for building a strong confidence in and respectability for research outcomes from the NARS.
- (b) Structure:** The structure includes:
- The technology management and enterprise creation initiative will be governed by an apex cell that will provide leadership for the national level activities within the NARS,
 - The apex cell will be adequately empowered to carry out validation, valuation, protection and management of intellectual assets. It will be headed by a senior person of high standing in the agricultural research community with adequate expertise in IPRs, and
 - There will be initially 4 regional cells within the NARS, spread across the country. These cells will be headed by competent technology management professionals well-trained in the area of IP review, IP registration, technology evaluation, licensing processes, royalty audits, communication and outreach efforts, dispute resolution and enterprise incubation.
- (c) Sub-Activities:** The specific sub-activities identified include:
- *Formulation of Policy, Planning and Guidelines:*
 - Assessment of current policy, mechanisms, models, potential and needed changes for commercialization of technologies, and
 - Linkage development: Content access, creation of information networks for technology dissemination, creating a central pool of technology profiles, documentation, development of institutional manuals, guidelines and policy documents.
 - *Developing Institutional Framework for Technology Management*
 - Establishment of an Apex Technology Management and Enterprise Development Cell (at the ICAR) and creation of regional cells,
 - Creation of incubators for appropriate process development and technology validation,
 - Organizing business promotion meetings nationally, regionally and locally during the project period,
 - Maintaining constant dialogues with stakeholders/partners including private entrepreneurs on commercialization/transferring of technologies with proper strategies and getting feedback for further refinement, and
 - Providing external consultancy services.
 - *HRD on Legal, IPR and Management Issues:* It would involve addressing issues like marketing, acumen development, assessing the economic value of technology, managing the unit and developing technology foresighting, promoting technologies for out-licensing/in-licensing of biological material to claim property rights, etc. Specifically, this sub-activity would comprise:
 - Training of about 100 professional scientists, experts, senior managers, and lawyers [at institutions like Society for Technology Management (STEM) having affiliation to IFFTO, IIM, etc.],
 - Selection of about
 - 20-25 technology managers for internships of 4-5 months duration with leading organizations like USDA, Cornell, Wisconsin, Purdue, Wageningen universities, Amsterdam or Australia, etc., and
 - Deputing a few
 - senior technology and policy managers for short orientations/ study visits/ exposures for 8-10 days at a time.

3.4.3. Learning and Capacity Building (L&CB) Programme

To achieve its challenging objectives, one of the

key programmes proposed in the NAIP is L&CB in the NARS for all participants in the technology generation, assessment and refinement system. It will encourage use and/or creation of appropriate learning strategies, approaches and processes to support long-term institutional learning and capacity building. L&CB activities will be concentrated across all the four Components and in most of the sub-components. The NARS, particularly the SAUs, has major risks concerning resources, work culture, administrative rules, incentives and skills. The surest way to minimize these risks is through training and other sub-projects of Component 1.

The PIU would be responsible for the administrative control, processing and overall supervision. The NAARM, in close collaboration with the Education Division of ICAR, SAUs and other learning institutions, will take the responsibility of designing, overseeing and monitoring the L&CB methods, approaches and processes within the ICAR and the NAIP-supported Consortia to achieve the major objectives under Component 1 of the NAIP, namely,

- (i) To assess the current L&CB initiatives and suggest changes in HRD and learning models like e-Learning, distance learning, new experimental farms/clinics, course curricula for the future needs, etc.
- (ii) To carry out an appropriately designed assessment study of HRD needs (domestic and international) for the ICAR and SAUs personnel under the NAIP by sectors and themes.
- (iii) To build partnership among the stakeholders in a Consortia mode through suitable capacity building and policy interventions.
- (iv) To develop proposal writing skills keeping in view the NAIP objectives, so as to strengthen capacity of various stakeholders to attract funding.
- (v) To identify core faculty/ scientists from the major institutions providing HRD in basic and applied sciences, PME and policy support to the NAIP through appropriately designed capacity building activities.
- (vi) To train various stakeholders associated with this activity in the use of ICTs.
- (vii) To build capacity in market and information technology and agri-based decision-support systems in active association with various commodity boards.
- (viii) To sensitize the researchers, research managers and senior administrative personnel towards intellectual property management. It would also help in developing strong partnerships with the private sector and commercialization activities.

Regulatory instruments regarding environmental issues including bio-safety aspects will also be reflected in the L&CB activities.

- (ix) To build capacity of leadership in attaining results and professionalism among scientists and academicians at all levels to work in coordination in attaining organizational goals.
- (x) To enhance the understanding, appreciation and ability of the technical and para-scientific staff to support agricultural R&D activities.

3.4.4. Policy & Gender Analysis and Visioning (PGAV) Programme

The long-term policy measures for sustainable food-security and income enhancement assume critical importance and are a challenge to the policy-makers. The following major activities have been identified and will be taken up by NCAP/ NRC on Women/ NAARM in collaboration with relevant partners:

- a) Framework study and strategy planning in relation to policy, gender analysis and market intelligence systems.
- b) Visioning and impact assessment.
- c) Technology forecasting.
- d) Role of the national and state systems.

(a) *Framework Study and Strategy Planning in Relation to Policy, Gender Analysis and Market Intelligence Systems:* The decade of the 1990s was full of serious challenges to the Indian agriculture. The output growth rate for the first time during the previous five decades had started showing deceleration and in several states had turned even negative. The growth rate in food grains production was falling short of the population growth rate, challenging the country's food-security. The earlier growth options of area expansion were no more available. Institutional reforms and technological breakthroughs, which had triggered agricultural transformation in the past, now need renewed attention. While the problems of agriculture need to be addressed primarily at the state level, the role of central government is no less important. The Centre is particularly responsible for providing policy directions and resources for agricultural growth and development. In many cases, the states do not accord priority to the agriculture it deserves. Diversion of funds to other areas besides poor monitoring and implementation of development schemes, have led to poor growth rates in agriculture in the states.

The problem has two dimensions. One, what should be the role of the Centre and the states in different agricultural spheres like R&D, infrastructure, PPPs,

taxation, prices, etc. And two, how performance of the agriculture sector in various states is affected by different policy and non-policy variables. What are the linkages between the agricultural and non-agricultural sectors? Why is employment not growing at the required pace? What is the trade-off between subsidies and investments? What are the potentialities of contract farming in different states? And, how to reverse degradation of natural resources and ensure their sustainable use?

There are two more important aspects related to the state-level agricultural performance: First is how much agricultural growth can be achieved by raising productivity of different crops. It requires yield gap analyses for all important crops in different regions and in each state. This basic information is not documented at one place for recent years. The second aspect is about rural distress; why is rural distress on increase in those states where commercialization has grown? These are some of the issues where the NCAP can play a lead role.

The rural women contribute over 69% to the farming operations in India. Therefore, the project interventions should contribute to the analysis of gender issues and suggest ways to increase women's participation in decision-making. The specific activities may include development of a credible information-base on the status of rural women's contributions, gender-based impact assessment activities, capacity building of Consortia partners for conducting gender analysis and identifying opportunities for intervention in promoting women groups.

(b) Visioning and Impact Assessment: The main focus of this sub-programme will be on visioning and research planning in the context of globalization, and impact assessment of the ICAR schemes and the NAIP. The specific sub-activities will be:

- Strengthening capacity for developing a shared vision for agricultural sciences of all the stakeholders.
- Enhancing the ability to plan and implement research and education programmes to realize the target goals.
- Capacity building for agricultural research, extension, monitoring and evaluation and impact assessment, guiding particularly the PIU-NAIP and CMUs in impact assessment
- Assessing impact of the ICAR/SAU schemes and frontline technologies under the NAIP.
- Providing policy and institutional support to accelerate the impact of agricultural technologies.

(c) Technology Forecasting: Developments in scientific fields like space, telecommunications, computer

science, molecular biology, etc. have profound applications in agricultural sciences and technologies. There is a need for assessing their impacts on the agricultural R&D system and the flow of technologies. Also, one should be able to articulate technological needs of agriculture in a bottom-up manner and contemplate how developments in science can help address these needs. The specific sub-activities under this will be: (i) Assessment of technologies in the pipeline in India and in developed countries in relation to what is needed in the next few years, (ii) Implications of developments in other fields of science for agricultural R&D, (iii) Forecasting technological needs for sustainable agriculture, and (iv) Assessment of physical and human capital requirements to meet the projected technological needs.

(d) Role of the National and State Systems: Both the ICAR and the state research systems have undergone significant changes during the past few decades. The ICAR system has strengthened over time in terms of institutions, human resources and funding. The state systems though have grown in terms of number of institutions and activities, have withered in several respects like human resources, skills, physical facilities, financial resources, etc. The State Extension Systems continue to be weak, both financially and technically. The State Research System suffers from the lack of funds, institutional inbreedings and rigidities. As a consequence, the roles of the central and state systems have been mixed-up, resulting in overlapping and inefficiency in agricultural research. This needs to be addressed urgently. There may be a need to maintain a decentralized research system supported by a strong central research organization with clearly defined roles. The central organization has a strategic role in guiding the NARS. There is a need to develop model roles for both the systems and modalities for their interface. Specific sub-activities to be undertaken under this program are:

- To suggest appropriate roles for the central, state and private institutions in the agricultural R&D and modalities for their interface.
- To sensitize the stakeholders about the model roles of the central and state systems, and evolve policy measures needed to strengthen their respective roles and foster the interface.

3.4.5. Remodelling Financial and Procurement Systems (RFPS)

The concentrated efforts under the NATP have induced significant changes in the attitude and outlook

of financial managers and administrators, who have come to realize the important role they play in facilitating agricultural research through their effective delivery systems. In the era of privatization, liberalization, competition and globalization, modifications in the financial, banking and trade sectors have been initiated by the Government of India also and the entire philosophy is slowly changing to one of partnerships in development and growth, trust and mutual respect, delegation and accountability, transparency of operations and responsibility sharing.

The NAIP is a project which for its success depends on the unstinted and wholehearted support and understanding of all the stakeholders, including the government agencies—central and state, NGOs, private institutions in research, farmers, field workers, etc. While the rapid changes in the communication and information technology, media and the contribution made by computer/information/knowledge management professionals have provided a sound infrastructure to plan for the success of the NAIP, it is equally important that the administrative and financial machinery is adequately geared up to effectively and efficiently enhance the delivery systems with the right perspective.

The MOF has also contributed towards creating an appropriate environment by establishing revised GFRs, which to some extent have reduced the rigidity in the procedures followed earlier. It should also be borne in mind that the ICAR is a society, an autonomous body though funded by the government. It is not essential that it should follow strictly all the financial and administrative procedures generally followed by a Govt. Department/ Ministry. It is the time that ICAR reviews its administrative and financial procedures on a top priority keeping in view the changing scenario in India and abroad, particularly in communication and information technology. ICAR needs to address these issues by framing its own administrative and financial manuals, keeping in view the fundamental principles of ensuring the utilization of public money for public good following the “value for money approach”. With the adoption of “Right to Information Bill” by the government, the ICAR should introduce a flexible, responsive, computer-networked on-line administrative and financial management system with emphasis on transparency. If the innovated system is implemented within the next 6-9 months, if necessary by constituting a High Level Task Force with both AS and FA, the AS/DARE and the ICAR and a few representatives of the institutes and SAUs, the implementation of the NAIP activities will become fast and Consortia-friendly. It

will substantially enhance and smoothen the entire delivery system of the NARS and will be helpful in presenting the developments in the agriculture sector more clearly.

An important segment of capital expenditure is procurement, the effective, efficient and timely availability of materials. Some changes have been made in procedures after the study report of NIFM was implemented in July 2004. As a follow-up implementation of this report and recommended procurement procedures, feedback would be obtained. In the context of the modified GFRs and the ICAR's own assessment of financial (powers) at different levels, an improved and computer-based tendering and procurement system would be implemented side by side within next 9-10 months. It is desirable that the procurement procedures are different for high-value items and low-value or routine items. Also, the procurement procedures for emergencies should be outlined for the smooth functioning of the NAIP.

Yet another area of administrative modernization, which should be addressed with priority, is of delegation of powers at different levels; it needs a basic change in approach. The Task Force looking into the power delegation issue may consider introducing a revised procedure for delegation of powers in which authorities and responsibility levels of different activities should be identified and to improve the delivery system, the powers should be delegated to a person who is fully competent to handle the responsibilities. This coupled with the transparent and on-line computer-based administrative and financial management system approach introduced in the ICAR-SAUs/ NARS, the environment will completely revamp the agricultural O&M scenario.

The Working Group for Component 1 has suggested the following specific activities (preferably with the Financial Advisor, DARE as the PI) besides the routine sub-activities of the PIU-NAIP:

- (a) Framing financial and procurement rules and delegation of powers (including for services, consultancies, etc.).
- (b) Program/Project-based budgeting.
- (c) HRD: Organizing training for a large number of administrative and financial personnel of the NARS for their effective support in research organizations.
- (d) Developing a new web-based financial management system and MIS for the NAIP and the ICAR. In Phase I, a financial management system will be developed for the NAIP and the ICAR, and in Phase II, the MIS will be developed covering human resource management, M&E, material management and knowledge management.

3.4.6. Project Implementation Unit (PIU)

The PIU, headed by the ‘National Director’ (ND) will have the responsibilities of administration, coordination and facilitation of implementation of the NAIP. The PIU includes 4 National Coordinators (NCs), one each for activities of Component 1, Production to Consumption R&D Chains (Component 2), Livelihood Systems R&D (Component 3), and Basic and Strategic Research Projects (Component 4). The PIU will also comprise expertise in areas of Administration, Finance, Procurement, M&E, MIS, L&CB and Social/ Environmental issues.

3.5. PROCESSING & FUNDING OF SUB-PROJECTS UNDER COMPONENT 1

All sub-projects in Component 1 will be sponsored. The activities in Component 1 will be oriented towards capacity building in the NARS so as to respond to the

fast changing requirements of research, technology development and dissemination in a scenario of globalized agriculture. The sub-projects and the broad activities under them have been identified and endorsed by the World Bank as well as the ICAR. These will have to be executed by the experienced and result-oriented teams belonging to and familiar with the system in Consortia mode. The ICAR (Hq), its institutes and the SAUs (emphasis on SAUs) will be the primary targets.

The O&MPC will discuss and fine-tune the activities under the sub-projects, and will guide Consortia Leaders and Consortia Partners. The Consortia Leaders will be requested to develop detailed project proposals which will be examined by the PIU and reviewed by experts and thereafter by the O&MAG. The O&MPC will finally approve/ recommend the sub-projects for funding support and implementation.

□

CHAPTER 4

PUBLIC AWARENESS ACTIVITIES OF NAIP

4.1. THE CAMPAIGN

Dissemination campaigns are critical for the success of the project's launch and its continuity. The campaign will comprise organization of sensitization workshops and media-released announcements, printed advertisements, TV and radio ads, transit posters, brochures, and pamphlets. Ads will have to be prepared in both English and Hindi. An interactive user-friendly website of the entire process is the key to a wider and effective outreach, timely information release and continuous communication with the potential stakeholders, the selected consortia, and the general public. The PIU will engage specific expertise for designing these campaigns and the related public awareness strategy.

The ICAR/ PIU will carry out dissemination campaigns twice during the first project year and may be once during the second year, to invite Concept Notes (CNs) for research proposals. The campaign will comprise announcements inviting proposals under the specific publicized guidelines. Three results dissemination campaigns will be organized coinciding with two MTRs and the final review of the NAIP.

4.2. WEBSITE DEVELOPMENT

A website (<http://www.icar.org.in/naipdir/index.htm>) on the NAIP has been launched and is being updated periodically.

The following information will be made available on the NAIP website (including through other communication outlets):

(a) Introduction

- Overview of the NAIP, its objectives and Components
- Role of the ICAR.
- Governance structure of the NAIP
- Committees & Review Panels, with names of members
- Evaluation process for sub-projects under different NAIP-Components
- Answers to frequently asked questions

(b) Guidelines

The guidelines will cover the following areas:

- Number of the selection rounds, call for proposals
 - Application invitation
 - Research areas to be financed
 - Number of Consortia to be financed during the round
- Objective of the Consortia Programme
- Financial support under the Consortia Programme
- Role of the ICAR reviewing committees, and appraisal panels
- Governance structure of the NAIP
- Eligibility requirements for submission of project proposals
- Contact telephone and fax numbers for additional information

(c) Project Application and Selection Process

- Release of Proposal invitation timetable
- On-line data entry form with immediate confirmation of its receipt
- Information about Concept Note (CN) status
 - Selection criteria for CN stage (outcome, collaboration arrangements)
- Information about Full Proposal (FP) stage
 - Support for development of FP
 - Selection criteria for FP
- Evaluation stage and assessments

(d) Funding Arrangements

- Contracts
- Uses of funds
- Monitoring and evaluation arrangements

(e) Additional Information

- All documents and templates
 - List of applicants with addresses and telephone numbers
 - Announcement of selected Consortia/ sub-
-

- projects
- Evaluation reports of sub-projects
- Newsletters
- Linkages with all media releases
- Link to Helpdesk Facility with a section on frequently asked questions (FAQs)

(f) Services for Selected Consortia

The website (through a password-protected services section) will also provide access to the participating Consortia for retrieving or updating financial and performance data for the Consortia, where financial and audit reports will be posted timely.

4.3. PRESS RELEASES AND ADVERTISEMENTS

At suitable occasions, press releases, printed advertisements, and TV and radio ads will be released to create general awareness among the stakeholders for the NAIP. The advertisements will disseminate the following information in a concise form indicating contact points for additional information:

- Selection rounds
- Objectives of funding
- Total financial support available
- Explanation on the concept of Consortia (several partners)
- Number of Consortia to be financed during a given round
- Priority areas for funding
- Sources of funds
- Eligibility criteria
- Application requirements and timetable
- Sub-project selection criteria
- Information on capacity building venues for training and assistance on proposal formulation and consortia formation
- Contact information and Helpdesk Facility, telephone and fax numbers and address (if physical).

On-line ads will have interactive links to the entire guidelines, information on the application selection process, user manuals, financing arrangements, and frequently asked questions.

4.4. REGIONAL MEETINGS ON AWARENESS GENERATION

Besides organizing five regional awareness generation workshops to facilitate submission of CNs under Components 2, 3 and 4, additional need-based regional meetings on awareness generation will be organized (if needed) for the benefit of stakeholders. These awareness generation meetings will be held under active partnership of stakeholders with emphasis on PPPs.

4.5. HELPDESK AND OTHER ARRANGEMENTS

A Helpdesk will be created at the NAARM with the objective of developing dynamic relationships between the PIU and various stakeholders, streamline and strengthening communications and making the day-to-day working of the Project smooth.

NAARM, Hyderabad, may organize special skill development workshops to initiate actions for the NAIP (preparatory phase), especially relating to:

- How to write convincing and strong proposals as a Consortium to bid for CGS.
- Methodologies to effectively undertake planning, M&E processes.
- Development of experimental methodology for layout of field trials, baseline surveys, field-plot techniques, recording bio-metric observations, impact analysis, etc.
- Preparation of standard experimental/ field/ project notebook.
- Preparation of sub-project report.

A Consultant may be hired by the NAARM to undertake these tasks. A back-up arrangement will also be provided in the PIU-NAIP to clarify the queries raised by stakeholders with regard to the NAIP.

4.6. PUBLIC AWARENESS DURING IMPLEMENTATION

A comprehensive strategy for public awareness has to be planned during the implementation of the NAIP. An Annual NAIP Workshop will be organized by the PIU-NAIP as a part of the overall Public Awareness Strategy. □

CHAPTER 5

OPERATION OF THE NAIP COMPONENT 2, 3 AND 4

5.1. COMPONENT 2: RESEARCH ON PRODUCTION TO CONSUMPTION SYSTEMS (PCS)

5.1.1 Background

Faced with an acute shortage of food around the mid-1960s, India pursued a strategy of intensive agriculture focusing on using high-yielding varieties of seeds, irrigation, fertilizers and plant protection chemicals. This strategy was followed in some selected growth pockets having favourable infrastructure and inputs. The strategy triggered a series of agricultural developments beginning with the Green Revolution and by the early-1990s made the country not only self-sufficient in food grains but also a surplus producer in some years.

Around the 1990s, Indian agriculture also started facing several challenges. First was the realization of a “fatigue” in the Green Revolution belt in the form of stagnation or deceleration in yields of major food grains like rice and wheat. The new economic order comprising the economic reforms of Government of India, the Asian economic crisis, the increasing globalization and the emergence of the WTO regime has shaken the protected/insulated regime of Indian agriculture, exposing it to further vulnerabilities. Falling productivity, rising costs, increases in net farm-business income not matching with the growing inflation, unfulfilled promises projected in WTO opportunities, volatility in prices, etc. have made farming un-remunerative and risky in many areas, causing distress to farmers. The re-emergence of weather-risks in recent years as a result of global warming has added to farmers’ problems and the Government’s concerns. Simultaneously, a significant revolution in diets across the country is encouraging diversification towards high-value commodities (horticulture, livestock, fishery, etc.), and post-harvest processing and value-addition of agri-produce. These developments broadly reflect the growing importance of the market in context of Indian agriculture. To raise income, employment, profitability, global competitiveness and welfare in the

market context, a holistic approach with emphasis on PCSs is required.

5.1.2. Rationale

The importance of marketing in agriculture is being realized increasingly for the past few years. It is being recognized that to achieve success in agri-marketing, the earlier fragmented approach covering research mostly on production aspects will have to be changed to a holistic approach, addressing production to consumption systems with a higher priority among others, to post-harvest processing, quality management, nutrition issues, etc. Such a system will also have backward linkages with the input-supply system and forward linkages with food-chain aspects, covering consumption by human beings as well as animals. Such a systems approach, particularly to cater to small and marginal farmers and contribute to the efficient use of scarce resources, has to harness synergies among R&D actors through a Consortium or collaborative mode. The public sector, largely working alone, has not been able to generate a visible impact on enhancing income, employment, profitability and competitiveness in the agriculture sector dominated by small and marginal/ poor farmers. The involvement of the private sector assures greater efficiency, cost effectivity and timeliness whereas the involvement of the public sector assures relevance and trust. It is now being realized that only collective action of all the stakeholders will have the desired results. Therefore, the Consortium concept is being regarded central to facilitating the flow of knowledge, experimentation and value-addition in the agriculture sector. The value-addition in one or more components of the value chain depends on the client-driven identification of the most critical missing links and bridging them through research-driven interventions. It must be clear that in the value chains, the product is as important as the process. There are clear coordination benefits for many high-value and perishable products as well as for quality control and reliability in material supply. Accordingly, in Component 2, the NAIP will

help enhance the potential value of agri-products, mobilize partnerships, contribute to optimum utilization of the limited resources and enhance synergies among the participating institutions.

5.1.3. Objectives

The objectives of Component 2 will be:

- (i) To promote PCS (“value chains”) in priority areas to enhance agricultural productivity, profitability, income, employment and nutritional security;
- (ii) To contribute to optimum utilization of the limited resources, deriving maximum coordination benefits, and enhancing synergies among participating institutions; and,
- (iii) To build a national system of innovation, integrating the wider processes of social and economic changes involving all the stakeholders.

5.1.4. Thrust Areas (Indicative)

Keeping in view the global prospects of agri-business, suggestions received during stakeholders’ meetings and discussions during the specially constituted expert working groups, the indicative thrust areas have been suggested under different criteria. The ideas may cut across criteria and can be developed as a proposal accordingly.

5.1.5. Number of Consortia to be Funded

About 15 Consortia will be selected from different sub-sectors of Indian agriculture.

5.2. COMPONENT 3: RESEARCH ON SUSTAINABLE RURAL LIVELIHOOD SECURITY (SRLS)

5.2.1. Background

The performance of Indian agriculture in transforming India from a begging bowl status in the mid-1960s to self-sufficiency during 1990s is remarkable. Owing to the re-emergence of climate risks, national food self-sufficiency is not sufficiently stable. Moreover, food self-sufficiency has not been achieved at the household level. Malnutrition in women and children is reported to be high. Farms are shrinking in size and natural resources are depleting and degrading in quality. Trade is being progressively liberalized to meet the WTO obligations. A dietary revolution across the board is encouraging diversification of agriculture towards high-value products. However, diversification is affected by supply-side constraints like infrastructure, credit, extension, markets, etc. Another notable feature of agricultural transformation is the growing regional disparity in development. Disadvantaged regions did

Example of Possible Value Chains

Category 1: Food Security & Income Augmentation

- ❖ Sorghum in the Semi-Arid Tropics
- ❖ Rice in Rainfed & Flood-prone Areas

Category 2: Agro-processing

- ❖ Potato
- ❖ Tomato
- ❖ Dairy Products
- ❖ Citrus Fruits (Orange)

Category 3: Income Augmentation & Employment Generation

- ❖ Milk & Milk Products in Rainfed Areas
- ❖ Peri-urban Dairy
- ❖ Poultry in Southern & Eastern India
- ❖ Small Ruminant Meat in Arid & SAT
- ❖ Marine Fish

Category 4: Export Promotion

- ❖ Organic Rice
- ❖ Fruits, viz. Mango, Grapes, etc.
- ❖ Spices and Value-added Products
- ❖ High-Value Fish (Lobsters, Pomfrets, Tunas, Crabs) and Mariculture
- ❖ Gherkin
- ❖ Flowers
- ❖ Medicinal & Aromatic Plants

Category 5: Resource-use Efficiency (Innovative Environment-friendly PCSs)

- ❖ Bio-pesticides
- ❖ Organic Farming
- ❖ Bio-fuel

not gain much from the development efforts. Hence, a balanced regional development assumes special significance in the planning and development process. Many schemes and programmes have been taken up by

the central and state governments to achieve a balanced regional development but imbalances still persist.

About 80% of the poor in our country live in the rural areas and depend on agriculture for their livelihoods.

Most of them are small farmers and landless people seeking to 'sell' their only resource, 'labour'. Engaging them gainfully in enhancing production, value-addition, employment and income generation, and reducing their migration to cities are of paramount importance. The scope of livelihood security in disadvantaged/ backward areas covering both economic growth and human development has to be comprehensive in terms of establishing and expanding the sources of employment and income within and allied to the agriculture sector, rural non-farm sector, food and nutritional security, better education (literacy), health care, sanitation and other basic amenities, and infrastructural facilities, particularly relating to the main rural occupations, etc. All these aspects need to be duly considered while targeting programmes for a balanced regional development. The identification of target areas may be guided, as in the past, by emphasis on special programmes like chronically drought-prone areas, desert areas, tribal areas, hill areas, chronically flood-affected areas, coastal areas affected by salinity, etc. It is imperative that the programmes on rural development are bottom-up, technology-driven with supportive institutions and policies. The approach should be group-based, eco-friendly and in a ready-to-use package mode. It should be noted that there exist (already) considerable technological capacity, significant opportunities under different schemes of several development departments, and increasing interest, involvement and useful experiences of NGOs, Civil Society organizations, etc. in the rural development activities. There have been some innovative initiatives in rural India by the private sector also. All these have to be synergized to achieve a deeper, wider and faster impact. Such a transformation has to be triggered by the India's vast agricultural research system led by the ICAR in the selected districts or clusters of districts as models for a system-wide application.

5.2.2. Rationale

The livelihood security of about 80% of the poor living in the rural areas has to be improved through the agricultural and allied sector interventions based on farm and non-farm activities and the disadvantaged areas and vulnerable groups should be accorded priority attention. A major impetus for such a transformation has to come through development, dissemination and application of technologies and the pooling of knowledge, competence and resources of all stakeholders (public sector, private sector, NGOs, Civil Society organizations, development departments, etc.) with deliberate and cost-

effective investments in building partnerships, consortia and shared governance in target environments. This NAIP-Component aims to strengthen the knowledge and innovation potential of a consortium of stakeholders in harsh environments that have livelihood improvement potential. One of the criteria for selecting areas for Component 3 should therefore be the 'inherent potential'. The NAIP provides policy support, platform, technical packages and partnerships for exploiting this potential. It should also be noted that livelihoods in low potential areas should focus particular attention to off-farm activities, migrations, etc.

5.2.3. Objectives

- (i) To improve the livelihood security of the rural people living in the selected disadvantaged regions through technology-led innovation systems, encompassing a wider process of social and economic change, and covering all the stakeholders, and
- (ii) To foster partnerships, pool competence and resources from conventional and non-conventional sources and to build social capital for better ownership and a sustainable model for rural development.

5.2.4. Selection of Disadvantaged Areas

The disadvantaged areas may be selected from the list of 150 districts identified by the Planning Commission on the basis of the index of backwardness, namely (i) agricultural productivity per worker, (ii) agricultural wage rate, and (iii) SC/ ST population, under the National Food for Work (NFW) Programme (see Table 1 on next page).

Within these 150 districts, there is a large number of potentially rewarding R&D opportunities for Consortia formation on the livelihood improvement. The Consortia will be formed by using the Integrated Livelihood Index (ILI); (for details on ILI, see Appendix 5).

5.2.5. Number of Consortia to be Funded

About 20 livelihood-oriented R&D Consortia would be financed and not more than half of the available funding would be assigned through invitation or direct sponsorship.

5.3. COMPONENT 4: BASIC AND STRATEGIC RESEARCH IN FRONTIER AREAS OF AGRICULTURAL SCIENCES (BSR)

5.3.1. Background

The Indian NARS has not only to find solutions for the immediate problems of farming but maintain

Table 1. List of 150 Disadvantaged Districts Identified by the Planning Commission, Govt. of India, under National Food for Work Programme

State	Districts
Andhra Pradesh	Adilabad, Mahbubnagar, Rangareddy, Khammam, Warangal, Nalgonda, Anantpur, Cudappah.
Arunachal Pradesh	Upper Subansiri.
Assam	Kokrajhar, North Cachar Hills, Karbi Anglong, Dhemaji, North Lakhmipur.
Bihar	Araria, Vaishali, Gaya, Madhubani, Muzaffarpur, Nawadah, Samastipur, Sheohar, Katihar, Jamui, Lakhisarai, Monghyr, Purnea, Supaul, Darbhanga.
Chhattisgarh	Bastar, Dantewada, Kanker, Korla, Sarguja, Jaspur, Dhamtari, Raigarh, Bilaspur, Rajnandgaon.
Gujarat	Dangs, Dohad, Panch Mahals, Sabarkantha, Narmada, Banaskantha.
Haryana	Satyamev Puram.
Himachal Pradesh	Chamba.
Jammu & Kashmir	Doda, Kupwara.
Jharkhand	Saraikela, Singhbhum West, Godda, Simdega, Gumla, Chatra, Garhwa, Palamau, Latehur, Lohardagga, Dumka, Jamtara, Sehebganj, Pakur.
Karnataka	Chitradurga, Davanagere, Bidar
Kerala	Wayanad
Madhya Pradesh	Jhabua, Mandla, Umaria, Shahdol, Barwani, Kargone, Shivpuri, Sidhi, Tikamgarh, Balaghat, Chattarpur, Betul, Khandwa, Seopur, Dhar.
Maharashtra	Gadchiroli, Gondya, Chandrapur, Dhule, Nandurbar, Hingoli, Nanded, Aurangabad, Ahemdnagar, Yawatmal, Bhandara.
Manipur	Tamenlong.
Meghalaya	South Garo Hills.
Mizoram	Siaha.
Nagaland	Mon.
Orissa	Koraput, Malkangiri, Nabarangpur, Rayagada, Mayurbhanj, Sundergarh, Keonjhar, Phulbani, Boudh, Nuapada, Kalahandi, Sambalpur, Ganjam, Deogarh, Jharsuguda, Sonepur, Bolangir, Dhenkanal.
Punjab	Hoshiarpur.
Rajasthan	Banswara, Dungarpur, Udaipur, Sirohi, Karauli.
Sikkim	North Sikkim.
Tamil Nadu	Tiruvannamalia, South Arcot/Cuddalore, Villupuram, Nagapattinam.
Tripura	Dhalai.
Uttaranchal	Champawat, Tehri Garhwal.
Uttar Pradesh	Sonabhadra, Unnao, Raebareli, Sitapur, Hardoi, Fatehpur, Lalitpur, Lakhmipur Kheri, Banda, Chitrakoot, Mirzapur, Kushinagar, Mahoba, Hamirpur, Barabanki.
West Bengal	Purulia, Malda, West Midnapur, Bankura, West and North Dinajpur, Murshidabad.

also its frontal competence in technology development to meet the continuously emerging problems, both anticipated and unanticipated. With agriculture going global and frontiers of science being ever-expanding, the NARS has to remain competitive, both nationally and globally. This apart, the best of scientific capabilities will be required to solve a number of specific but critical bottleneck technological problems in strategic areas of agriculture, which have been preventing or are likely to prevent the Indian agriculture from competing globally for certain commodities, despite its inherent advantages. Some of these are long outstanding, some have emerged recently and some are discussed widely. Solutions to these problems will require much focused and highly innovative basic and strategic research and its application to agricultural development.

5.3.2. Rationale

To sustain innovation, generate new knowledge and new findings that can later be turned into the next generation innovations, higher investments must be made in basic sciences. The necessity for building capacity and excellence in the Indian agricultural research system which is capable of providing high-quality science in the strategic areas is higher now than ever. For a large country like India, it is important to be at, and contribute to the frontiers of agricultural sciences. Component 4 therefore addresses the looming basic knowledge gaps that might appear in the absence of high-quality basic and strategic research with the following objective:

5.3.3. Objective

To enhance capacity and attain excellence in the

basic and strategic research in the frontier agricultural sciences.

5.3.4. Number of Consortia to be Funded

Around 15 Consortia will be funded under this Component.

5.3.5. Thrust Areas

A Working Group consisting of scientists of international standing have identified the following theme areas of frontier science in which basic and strategic research efforts have to be concentrated to meet the challenges that the Indian agriculture is facing or may face in future.

(a) Genetic Enhancement of Plants

- Gene discovery, genetic enhancement and allele mining in coarse cereals, oilseeds and pulses, mango, cucurbits, and medicinal and aromatic plants
- Targeted integration of genes and organelle transformation
- Proteomics/ transcriptomics for response to biotic and abiotic stresses
- Molecular diagnostics for plant pathogens
- QTL identification, cloning and/ or use in marker-assisted selection
- Farmer-friendly diagnostic tools for testing purity of transgenic

(b) Genetic Enhancement of Animals

- Gene discovery, genetic enhancement and allele mining in farm animals and fishes
- Proteomics/ transcriptomics for response to biotic and abiotic stresses
- QTL identification, cloning and/ or use in marker-assisted selection
- Bio-prospecting the marine biota for novel genes, bioactive molecules and products
- Stem cell research in fishes and animals
- Molecular diagnostics and vaccines for farm animals

(c) Natural Resource Management

- Research into methods to control the availability and release of nutrients and carbon pool conservation & enhancement using strategic combinations of soil and organic & inorganic sources of nutrients
- Research into GIS and low-cost electronic control systems for taking precision agriculture to small farms and multiple-cropping systems in India
- Multiple use of low and degraded quality water

for agriculture & allied activities

- Understanding the effects of climate change on agriculture through an integrated approach to air, water, soil and plants
- Enhancing nutrient-use efficiency in buffaloes and cattle by manipulating rumen microbes and enhancing nutrient qualities of low-value fodders
- Strategic research into overcoming long-standing non-tariff barriers against major Indian agricultural exports, plants, animals and fish products

(d) Other Important Topics

- Novel value-addition, processing and storage methods for agricultural products and byproducts
- Development of state-of-the-art animal disease surveillance and control systems

5.4. ELIGIBILITY OF CGS PROPOSALS

Sub-projects identified for funding under the NAIP will be identified under two distinct categories: the (i) Sponsored, and (ii) Competitive.

5.4.1. Sponsored Category

Under this category, proposals will not be invited but will be sponsored to the identified institutions.

All the sub-projects in Component 1 will be sponsored.

About 50% of the sub-projects under the Component 3 will also be sponsored.

In Component 1, all the activities are to be oriented towards the capacity development of the NARS to enable it to meet the fast changing requirements of research, and technology development and dissemination in a scenario of globalized agriculture. The potential activities and the sub-projects have been identified and these will have to be executed by the experienced and able teams conversant with the system. The ICAR, its institutes, the SAUs (with higher emphasis) and other relevant institutions as partners who have the capacity, will be involved.

The objectives of the sponsored programmes in Component 3 are two-fold. First, the NARS has some identified high priority areas of research for certain locations and known problems, which must be addressed with urgency. Routing these to response through competition may not be able to meet the needed urgency. Therefore, these projects have to be sponsored. Secondly, certain identified backward areas may not be represented in the responses to the calls under the competitive category because of non-realization of the wanted

recognition or non-existence of business interests and/ or non-existence of research capacity in those areas. To fill up critical gaps in such cases, research will have to be supported through sponsored programmes. The sponsored programmes in the first category can be taken up under the leadership of SAUs, firstly because of the location-specific nature of the programmes and secondly, for creating awareness and strengthening capacity in the SAUs for responding to the competitive calls.

The sponsored programmes under Component 3 can also work in a limited competitive mode where, for an identified research area, a certain number of potentially capable institutions may be identified and requested to come forward with proposals and partners. From that point onwards, the rest of the process is the same as for the competitive mode.

The sponsored projects will generate experience and allow learning processes for working in a Consortium mode. The sponsored programmes, except for the selection of problem and partners, will generally follow all the guidelines, rules and procedures of the NAIP. The deviations, if any, will be clearly specified in the sub-project sanction letters. In exceptional cases, the RPC may also invite proposals from identified stakeholders under BSR and PCS, but such exceptions should be fully justified and should be approved by the competent authority.

5.4.2. Competitive Category

Under this category, sub-projects may be in the following Components:

- Production to Consumption Systems (PCS) (Component 2)
- Sustainable Rural Livelihood Security (partly) (SRLS) (Component 3)
- Basic and Strategic Research in Frontier Areas of Agricultural Sciences (BSR) (Component 4)

Objectives of the Competitive Grant Scheme

The Competitive Grant Scheme (CGS) will be one of the tools to ensure accelerated reform and transformation of the agricultural research system under the NAIP; in addition to supporting priority research, the CGS is also designed to build local capacity to compete for other national and international grants, and improve flexibility and efficiency in research financing. Broad areas for the CGS-financed research sub-projects will be identified (some already identified as mentioned earlier) by the ICAR in consultation with the major stakeholders.

The CGS is directed to applied research sub-projects that are of high priority and demand-driven, with clearly defined beneficiaries of the research results. The applied research relates to the generation and/ or identification of new technologies that have potential for short- or medium-term impact on agricultural productivity, profitability and/ or sustainability; it includes the entire production to consumption chain (production, processing, value-addition, marketing, etc.) as well as aspects of policy, extension dissemination and/ or up-scaling. The CGS is open to all qualified research providers in the public and private sectors, as well as to universities, NGOs, private industry, and agricultural producers and agro-processor associations, which are all encouraged to apply for CGS funding.

Some of the important objectives of the CGS are to:

- Respond to the needs of agricultural producers, agro-processors, agro-industry and market operators, as well as to clearly-articulated priority problems in the field.
- Encourage the introduction of modern technologies and knowledge into research where their application will depict clear and significant advantageous results for the clients and beneficiaries.
- Raise the standards and effectiveness of research and extension, through competition and collaboration, and facilitate the accelerated development and improve the dissemination of scientific and technological information.
- Build close relationships among research scientists and clients such as private agricultural producers and agro-processors, resulting into a more efficient and demand-driven system in which research will be based on the felt-needs of potential users.
- Develop cooperation between researchers and potential clients involving a range of participants from research institutions, universities, private industry, agricultural producers and agro-processor associations.
- Support an efficient commercial agriculture, adapted to the needs of agricultural producers and agro-processors.

To address these objectives effectively, the CGS comprises unique features such as:

- Partnerships amongst public institutions, private sector, and donors.
- Transparency in organization and management with predefined criteria for operation.

- Accountability at all levels, with high-quality technical assessment for sub-projects and a sound analysis and approval mechanism.
- Efficiency through the ability to mobilize the entire national research capacity.
- Effectiveness through focusing on high-priority issues, addressed by a cohesive portfolio of sub-projects, using the best available expertise.
- Establishment of sound M&E systems.

5.5. CONSORTIUM, CONSORTIUM LEADERS AND CONSORTIUM PARTNERS– CONCEPT AND ELIGIBILITY CRITERIA

The Components 2, 3 and 4 (mostly if not all) will be implemented under the Consortium approach. Generally, only Consortia are eligible to compete for the NAIP funds, except in Component 4, where individual institutions, networks or Consortia are also eligible.

5.5.1. Consortium

A Consortium is a formal group of partners to carry out the identified task by sharing research agenda and research resources according to an agreed work plan. The success of the Consortium depends on the active involvement of all the major players involved in its field of agri-business and a harmonious coordination among the partners with a high degree of transparency. The Consortium should be need-based and the partners should be identified accordingly to manage the task. The identification of the partners may be done on the basis of target groups, socio-economic background of farmers in the study area and participants in the value chain, available infrastructural facilities and the problems to be tackled. The potential core Consortium activities have been identified as but not limited to the following domains:

- Diagnosis: Determining livelihood and value-addition activities of the target beneficiaries.
- Development of production technologies, e.g. dryland agricultural practices, IPM, IPNM, horticulture, livestock, fisheries technologies, etc. (Components 2 and 3) and the development of scientific methodologies and generation of new knowledge in the frontiers of agricultural sciences (Component 4).
- Technological empowerment of farmers and transfer of proven (appropriate) local agricultural technologies.
- Research on natural resource management: Improving water, land and forest management systems, and generating participatory models

of resource management.

- R&D of agricultural processing, storage and marketing, to generate rural employment.
- Research on nutrition and health to improve welfare and living standards of rural people
- Contributions to the building-up of social capital by organizing farmers to obtain feedback on research programmes as well as to disseminate research findings.
- Pilot-scale commercialization of innovations generated and tested by the Consortium.
- Participation and support to full-scale commercialization and dissemination of innovations.
- A large array of knowledge management activities to share results of the Consortium with the target beneficiaries, scientific community and the public at large.
- Implementing training programmes for Consortium members as well as selected target beneficiaries or their representatives.

5.5.2. Consortium Partners (CP)

The list below is neither an exhaustive nor exclusive or compulsory list of potential Consortium Partners, but it indicates the range of partners that may be engaged in forming a Consortium.

(i) Research Institutes Within and Outside the ICAR System: The role of the R&D institutes will be to identify technologies for value-addition in production or post-harvest activities, conservation and efficient use of natural resources, reduction in the cost of production and enhancement of yields, sustainability, household food-security and profitability. International research institutes and research organizations from other countries (whose offices are located in India and it is intended that the fund received for the research project from the NAIP, if any, will be spent in India) may also participate in the Consortia. All these institutes can become Consortia Leader (CL) and / or Consortia Partners (CP).

(ii) Farmers' Organizations: Farmers will be strongly involved in the governance and orientation of the Consortia. Most production-related and primary agro-processing related research would be done on-farm. Farmer's organizations can also be involved in training and knowledge-sharing activities. The institutions representing important farmers organizations, viz. Panchayati Raj Institutions, National Farmers Forum, IFFCO, etc. are potential partners

(iii) Private Enterprises and Associations & Federations of Private Enterprises: These are expected

to be strongly involved in the governance and orientation of a Consortia and can participate in the development and commercialization of innovations in the fields of input supply and distribution, processing of agricultural commodities and marketing, and possibly contract farming. Private research organizations can also be involved in technology generation/ validation.

(iv) State Development & Extension Departments:

Many line departments are engaged in supporting agriculture directly or indirectly. They can be made members of Consortium on a need basis, principally to develop and support the transfer of technologies and promotion of innovative agricultural developments. They can participate in facilitating on-farm research as well as processing and marketing experiments. Their participation can also contribute to resource augmentation, ownership and sustainability after the sub-project period.

(v) Financial Institutes: The role of the financial institutions is to assess the financial needs and develop efficient lending products for supporting the investments required to implement innovations. Apart from developing financial strategies, these institutes can become partners in developing suitable instruments for providing insurance against crop failures, calamities and personal accidents and health/ care.

(vi) Voluntary Organizations & NGOs: Many voluntary organizations and NGOs are engaged in natural resource management at the grass-root level, principally by motivating farmers, creating awareness, establishing linkages with information centres and marketing outlets, supplying micro-finance, promoting micro-enterprises and establishing linkages with the various government schemes. They may be facilitators for transfer of technology and development of linkages with various members of the Consortia as well as the development departments. Simultaneously, voluntary organizations can also be entrusted with the responsibility of organizing the weaker sections of the society to form self-help groups, federations and various other user groups to make best use of the technologies and resources made available by the Consortium. However, there are a number of NGOs whose credentials are yet to be established. The NAIP will follow the approved criteria for providing funds to NGOs (see Appendix 6 for details).

5.6. ELIGIBILITY CRITERIA FOR CONSORTIUM PRINCIPAL INVESTIGATORS (CPIs) AND CONSORTIUM CO-PRINCIPAL INVESTIGATORS (CoPIs)

Under the NAIP, a blend of top-down and bottom-

up approaches will be used. The Project should be driven bottom-up but facilitated top-down. The civil service societies could be sources of social and logistic pressure. In order to have effective delivery of rural services and development of local institutional arrangements, the District Magistrate, Banks and Insurance Departments may also be made Consortium partners. Staff of the CGIAR Institutes and other ARIs, etc. may become CPI or CoPI, if their organizations have signed an MOU and follow all codal procedures. The CPI & CoPIs should not be transferred during the project period. If there is an exceptional reason, it should be done with the approval of PIU. The sub-project, particularly in Component 3 may enable rural men and women, especially the poor to improve their livelihood security through agricultural and allied sector-based activities, including land and water management. It is to be ensured that the Consortium partners have no earlier encumbrance with the Council in view of earlier projects.

5.6.1. Consortium Principal Investigator (CPI)

The CPI would be the key official at the Consortium level. Subject to conforming to the guidelines, a CPI can be from the public, private, NGO or Civil Society Organizations. He/she would finalize fund requirements for various Consortium partners. The planning, programming and coordination would be done in advance for each partner with feedback to the PIU. He/she will also coordinate periodical progress as half yearly, yearly, mid-term and submit final reports. He/she will also undertake mid-course corrections (if any), re-orientation, or up-gradation of technology in collaboration with sub-project partners. He/ she will be responsible for the supervision of logistic support, local procurements, creation of infrastructure and day-to-day work schedules of the research sub-project. The role of CPI include:

- To oversee implementation of programme components and provide intellectual leadership.
- To manage relationship, conflicts, disputes among the members of the Consortium.
- To report the progress in the sub-project to the PIU.
- To compile with the WB Fiduciary Requirements (Procurement, Financial Management).
- Will be responsible for communication, awareness generation, knowledge management and dissemination.
- To adopt e-reporting.
- To develop and maintain PMS.

5.6.2. Consortium Co-Principal Investigator (CoPI)

The CoPIs refer to those members who are directly involved in the designing and implementation of the shared sub-project. These partners may be researchers, extension workers, staff of government departments, insurance agencies, NGOs, farmers' organizations and others representing industry. These partners will be directly responsible for planning, organizing, and monitoring of the daily activities in the sub-project in close cooperation with and under the guidance of the CPI. The CoPI will establish a dynamic relationship between various stakeholders, viz. Public, Private, NGOs, extension workers, women groups and farmers for successful implementation of the sub-project. He/she may also oversee that linkages are strengthened between:

- Service providers,
- Input providers,
- Information providers,
- Credit providers, and
- Insurance providers

The role of CoPI would include:

- To implement specific programme Components.
- To manage relationship amongst the members of the Consortium.
- To help in conflict resolution.
- To report to the CPI and the PIU (e.g. in financial and technical matters).
- To help in compiling with the World Bank Fiduciary Requirements (Procurement, Financial Management).
- Will be responsible for knowledge management and dissemination in his/ her component.
- To provide intellectual leadership in his/ her component.
- To adopt e-reporting.
- To develop and maintain communication and awareness plan and MIS within his/ her component.

5.6.3. M&E in Consortia

A Consortium Monitoring Unit/ Project M&E Cell (CMU/ PME Cell) will be established in each funded-consortium. It may be a multi-disciplinary unit with a nodal officer (preferably a social scientist). The CMU will report to the CPI and the Consortium Advisory Committee (CAC). The CMU will develop an on-line Project Monitoring & Tracking System (PMTS). For details of the CMU, its responsibilities, etc. see Chapter 7.

5.7. PREPARATION AND SUBMISSION OF CONCEPT NOTES

5.7.1. Staggering of Calls

For calling proposals under different NAIP Components, the PIU will first release a call for Concept Notes (CNs). These calls will be staggered in two tranches, advertised in the leading news papers, scientific journals, electronic media and through circulars in various leading institutes and organizations, viz. public, private, NGOs and financial institutions. Reputed international organizations, industries, cooperatives and extension organizations, which have contributed to research-farmer-extension linkages, may be specially targeted for wide publicity.

The Call will address the identified themes, relevant to the NAIP Components—PCS, SRLS and BSR.

Essential parts of a CN under PCS and SRLS (for format, see Appendix 7) should include the following details (limited to 8 A-4 pages):

- Title (one line)
- Scope and dimensions of the study including the following aspects
 - Economic significance
 - Immediate objectives/developmental objectives
 - Review of work done/ in pipeline and critical gaps
 - Methodology and approach to be followed
 - Expected output (deliverables)/impact/ achievements
- Partners (name, designation, qualifications and contributions/ experience of each member of the Consortium, within the organization as well as expected collaborating organization(s) to be described) with institutional affiliation and envisaged contribution of each member of Consortium for the overall programme.
- Cost estimates

The PCS involves several stages from production to consumption. Thus, producers, processors, transporters, traders, consumers, etc. are to be integrated for accruing benefits at each stage and amongst stages, to add substantial value to the commodity. A benefit-cost analysis of the entire chain would therefore be obvious criteria for selecting a commodity for PCS research.

Note: Proposers should note that acceptance of a CN and an invitation to submit Full Proposal does not guarantee that the proposal will necessarily be accepted for funding.

5.7.2. Format for Submission of Concept Note

After the “Call for CNs”, the prospective CPI will submit one “hard” copy of the CN to the PIU-NAIP and will provide it electronically (via e-mail and/or on a disk) as detailed in the “Call” in the prescribed format for different Components, as given in Appendix 7 for PCS (Component 2), and SRLS (Component 3), and Appendix 8 for BSR (Component 4). For a proper appraisal of the CN, it is necessary that the proposal proforma is neatly typed, is complete in all respects and is submitted to the PIU within the stipulated time. Incomplete CNs or CNs received after the due date will not be entertained. The PIU will acknowledge the receipt of the CN after codification. All CN applications will be treated as confidential.

5.8. PROCESSING & APPROVAL OF CNS

After the preliminary screening, the concerned National Coordinator (NC) will send the CN to three independent reviewers (approved by the RPC). The

peer reviewers will be given a period of one month for submitting their reports. Each CN will be critically examined by three peer reviewers and the Technical Advisory Group (TAG) as per the prescribed criteria⁹ for various Components outlined in Appendices 9, 10 and 11. The proceedings of the TAG meeting on the CN will be presented by the concerned NC in the Research Programme Committee (RPC) meeting where a decision regarding its approval/ modification/ rejection will be taken. One of the modifications may be to suggest other innovative/ novel/ creative ideas and suitable partners on the same theme so that the theme will be addressed in all its essential aspects. This decision will be communicated to the CPI by the PIU-NAIP.

5.9. SPONSORED CONSORTIA UNDER COMPONENT 3

The sub-projects under Component 3 may be solicited from reputed stakeholders in case of no-response or poor quality response. □

⁹ The score cards and other criteria for evaluation of CNs may be further refined after the formation of TAGs, RPC and other empowered Committees.

CHAPTER 6

GUIDELINES FOR DEVELOPMENT, REFINEMENT, SUBMISSION, REVIEWING AND APPROVAL OF SUB-PROJECT PROPOSALS

6.1. PROCEDURE FOR DEVELOPMENT AND REFINEMENT OF FULL SUB-PROJECT PROPOSALS

The PIU-NAIP will facilitate development and refinement of Full Proposals (FPs) (after the respective CN has been approved) through the Help-desk, organizing a stakeholder's workshop, providing database information (if available), etc. to the prospective CPIs. The schematics for approval of research proposals are depicted in Figure 3.

For each successful CN, an Interaction Workshop of stakeholders will be convened by the concerned CPI who will involve all potential partners. Some additional persons who were not previously listed in the CN, but have capabilities to contribute substantially may also be invited. The CPI has to develop a base paper with components and possible partners and their role. Some of the guidelines for organizing the Interaction Workshop are:

- Each CPI will obtain from the participating institutions the names of all Consortium Partners with their brief CVs, and will develop an up-to-date database for each of the sub-programmes along with the names of some experts and invite them to the workshop. One copy of the list of participants and experts should be sent to the PIU. Those CPIs, who do not respond in time can be left out of the first Call, and may be considered for the later Call(s). The expenses relating to TA/ DA of Consortium Partners (including one or two resource persons who will be participating in the Workshop) and the actual logistic expenses may be reimbursed to the CPI (only for those whose CN has been approved).
- The Workshop has to be conducted in a business-like manner with major emphasis on discussions about achieving high quality for all relevant proposals involving each participant. The PIU-NAIP may participate in this Workshop.
- In the Workshop, presentations on the general

concept of the NAIP sub-project, its structure and goals, research programmes identified including value-addition, processing, marketing, funding arrangements, M&E indicators, etc. are mandatory. It will be followed by a presentation on the problems identified in the participants' Consortium system and research programmes allotted to each CPI and CoPI in relation to a Component.

- Each Consortium Partner with a specific programme will first develop its plan of work. The proposals from individual participating institutions should emerge out of an interactive process, and be accepted for consideration only when evidence of such an interaction is presented. The participating institutions should be advised about the Interaction Workshop well in advance. The programmes of individual institutions will be synthesized in the workshop convened by the CPI and a unified proposal will be developed. CPI and CoPIs will develop detailed programmes for each study area according to the project proposal, subsequently for implementation of FP. These are:
- A bench-mark survey covering environmental, production, sustainability, socio-economic, and marketing aspects. Development of M&E indicators should be given due emphasis and involvement of social scientists in the formulation of proposals is crucial.
- In drafting the Final Proposal, the team must make a critical assessment of capabilities of each Consortium Partner; the technical programme proposed and equally important is the realistic requirement of funds and facilities proposed by the individual Consortium Partner before finalizing the details. If any NGO or private organization is proposed to be involved, its strengths and capabilities would need to be critically assessed before involving it as a partner. As far as possible, Zonal Agricultural Research Stations (ZARs), KVKs, ATMs, etc. should

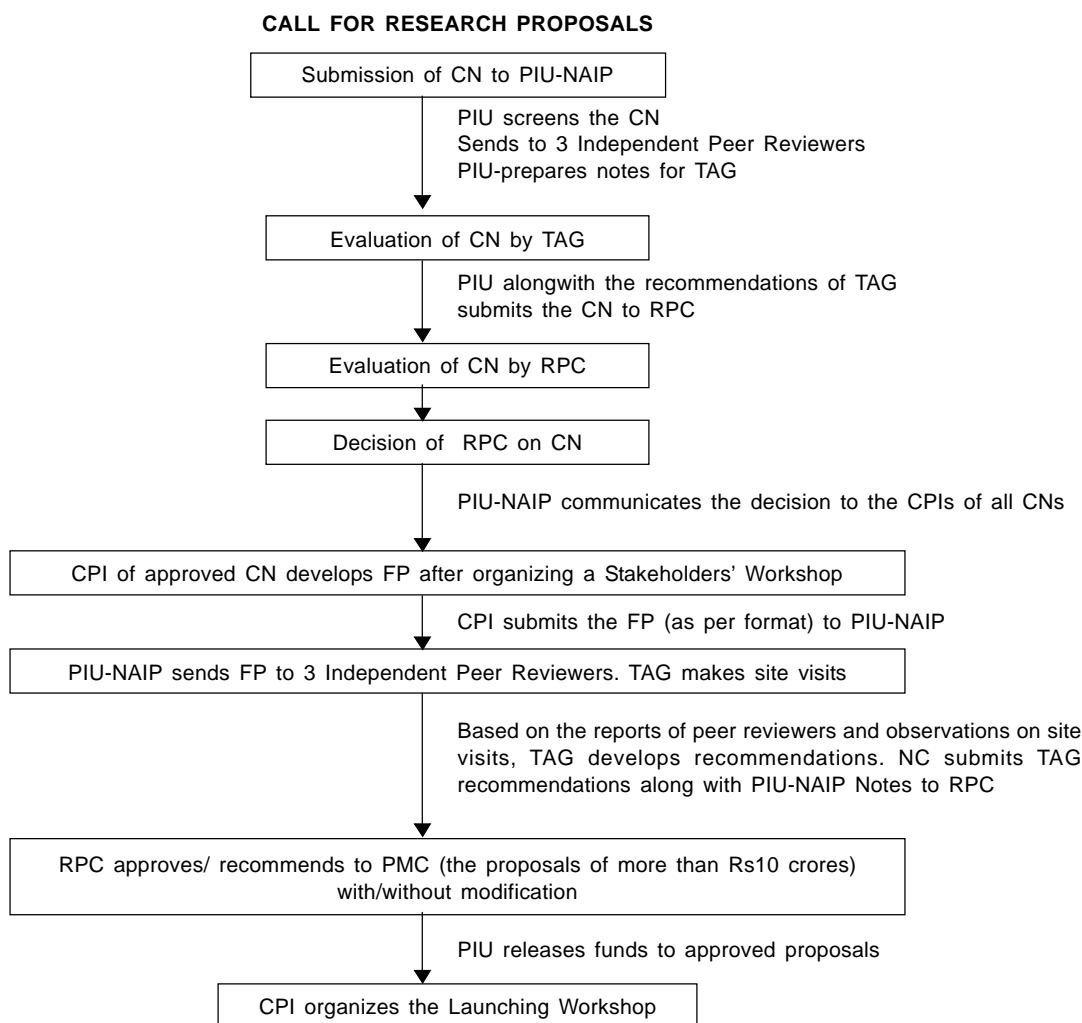


Fig. 3. Schematics for Approval of CGS Research Proposals

be involved in the programmes for development customization of site-specific technologies/interventions

- The Final Proposal should be developed as per the prescribed format, after carefully going through the instructions.
- Training-needs at various levels should be clearly identified and assessed.
- The PIU should be informed well in advance about the programme of the Interaction Workshop to be organized for FP.
- The CVs of CPIs and CoPIs from the partner institutions should be obtained by the CPIs and appended to the Final Proposals to facilitate evaluation of scientific capabilities of each institution and experience of its key staff.

A **Helpdesk**, established at **NAARM, Hyderabad**, would provide assistance to the prospective CPIs to develop their FPs.

6.2. SUBMISSION OF FULL PROPOSAL ALONGWITH PROCEEDINGS OF THE INTERACTION WORKSHOP

The CPI will compile proceedings of the Interaction Workshop that should include a list of participants including experts, and comments, criticisms and suggestions given by various participants on each aspect of the sub-project. The meeting should be chaired by an eminent person who has experience and expertise to guide the meeting. These comments will be considered for modifications, improvement and strengthening of the sub-project by each Consortium Partner. The CPI

will forward one hard copy and one soft copy on CD of the updated Full Proposal along with the proceedings of the Interaction Workshop at the earliest (within 2 weeks after holding the Workshop) to the concerned NC. The Final Proposal shall be submitted through proper channel of the host organization of the CPI. The format of FP is given in Appendix 12. Two prototypes (only samples) on value chains, namely 'biofuels' and 'meat and meat products' are given in Appendices 13 and 14.

6.3. CRITERIA FOR EVALUATION OF FULL RESEARCH PROPOSAL

A set of criteria contributing to the growth, equity, gender, sustainability, involvement of stakeholders, potential multiplier effects, and justification of public expenditure, has been proposed for research on the sub-project FP evaluation. The criteria for evaluating a research sub-project should be based on its strength in respect of the M&E framework, environmental and social framework, impact assessment framework, knowledge management framework, additional resource management, HRD plan, and contribution to social capital build-up. These criteria should be articulated in the research proposals in a manner that is easily comprehended by the peers during the evaluation process of the sub-project. The relative importance of different criteria is not the same for each research sub-project. Some criteria may be applicable only at the national, agro-ecosystem or sub-project level.

6.3.1. Scientific Merit of Full Proposal

While evaluating the merit of the research proposals and determining how they fit into the identified priorities and strategies for the given Consortium/issue of PCS/SRLS, the peer reviewers and TAG must look for the logic, evidence of the proposal's ability to address a high priority problem, innovativeness, critical gaps and the felt-needs as systematically identified through standard surveys for such purposes. They must also examine whether the application of methods is in line with the adopted designs. The following key questions, if appropriately answered, will facilitate the evaluation and assessment of the proposal's usefulness:

(a) General

- Is the overall presentation and logic of the proposal sound; are the objectives and hypotheses appropriate and clear?
- Has a sound justification been given? In particular, does the proposal provide evidence that it is

addressing a high priority problem?

- Is the work innovative as evident from the literature review?
- Are the research methods and experimental treatments appropriate to the problem?
- Is the activity chart appropriate and implementation work plan adequate with suitable milestones to track progress?
- Is there a high risk factor in implementation of the suggested plan/ strategy? If yes, what is the mitigation plan?
- Is there evidence of similar work being carried out elsewhere?
- Is the proposed budget estimate appropriate and in line with the priority/ importance of the subject, technical programme and/ or proposed time frame?

(b) Specific

- Do the researchers have the skills to complete the proposed research satisfactorily?
- Is the research infrastructure adequate for implementation of the proposal at the Consortium Leader and Consortium Partners? Is it essential to provide all the requested equipment? Can the existing facilities be renovated/ strengthened by providing some accessories, etc.?
- Are requested resources, including those for contractual help and training, realistic?
- During the implementation of the programme, if the performance of any Consortium/ Consortium Partner is found to be unsatisfactory, the following measures will be taken:
 - First warning that M&E results show substantial delay in scheduled Consortium progress with an invitation to explain lack of progress to RPC.
 - If this has no results within one month, a second warning that M&E results show substantial delay in scheduled Consortium progress, and an invitation to develop plan to overcome the slow progress.
 - If this has no results within another month, funding to the Consortium will be frozen and the PIU will enter into negotiations with the CAC as to how the Consortium can be restructured.
 - If restructuring is unsuccessful, funding to the Consortium will be stopped and unaccounted resources recovered.

(c) Evidence of New Directions / Innovations

- Does the proposal show evidence of using a multi-disciplinary approach?
- Is there evidence of a systems-approach involving more than one commodity or enterprise? Proposals addressing issues for optimizing of severely constrained processes limiting system production may get added advantage.
- Is there evidence of involvement of potential beneficiaries? Other things remaining the same, the proposal with focus on disadvantaged areas, vulnerable groups and/ or women will be given preference.
- Does the proposal take into consideration the production system perspective? Is the proposal independent of other on-going and newly planned research programmes? What is the suggested linkage and will it be effective?
- What is the Knowledge Management Strategy and Plan? What is the results uptake plan?

6.4. EVALUATION OF FULL PROPOSAL (FP)**6.4.1 Processing of FPs by NCs**

The concerned NC will assign a code number to each FP (same as of the corresponding CN). The NC will make a scrutiny of various elements of the proposal, with particular reference to the technical programme, its relevance to the NAIP, reasonability of demands made and overlaps, if any, based on the criteria for evaluation and will prepare an informative note for the TAG/ RPC meeting (Appendix 15).

The Finance Wing of the PIU-NAIP will examine the proposal from the financial perspective and the Procurement Officer will assess it from the procurement angle (using the information in developing procurement plans of the NAIP).

6.4.2 Evaluation of FP by Referees

The concerned NC will then send the FP to three peer reviewers (one of the reviewer should have also examined the CN). The peer reviewers will critically examine the suitability of the complete proposal covering all the essential and desirable criteria¹⁰ in different modes (to be developed by the TAG and the RPC). The peer reviewers will submit their report within one month from the date of receipt of the FP.

6.4.3. Evaluation of FP by the TAG

The concerned NC will prepare the PIU-Notes (including Referees' reports) and will submit the FP before TAG for consideration. The TAG will refer to the following criteria to judge the merit of the sub-project proposal under different components:

(a) Production to Consumption Systems (PCS): For PCS, at the stage of complete and final sub-project proposal evaluation, due importance will be given to:

- Scientific, technological and economic merits of the proposal.
- The proposal should have backward, horizontal, vertical and/or forward linkages for productivity, profitability and international competitiveness as well as export potential.
- It may also be desirable to consider comprehensiveness, practicality of the target fixed vis-à-vis the bench marks.
- Strength of the lead institutions and the partners in terms of trained human resources, infrastructure and past achievements on similar lines by the institution.
- For NGOs consideration refer to Section 5.5 and consider its contribution in the concerned disciplines.
- Due weightage will be given to the likely impact on sociological, environmental and gender issues. Some of the secondary aspects relate to relevance and reasonability of demand for the equipment items and/or different heads of expenditure.

(b) Sustainable Rural Livelihood Security (SRLS): For the SRLS and vulnerable groups, the research proposal should in addition consider the needs of the poor and deprived segments of society, the potential for improvement of production systems in agriculture and allied activities, thus improving NRM, creating rural employment, enhancing household food, nutrition and social security. Priority will be given to income generating programmes, such as bee keeping, mushroom production, milk production, etc.

Not only the scientific, technological and socio-economic aspect of the proposal but the potential of employment generation, nutritional and income security also deserve high priority. Weightage may be given to

¹⁰ The score cards and other criteria for evaluation of FPs may be further refined after the formation of TAGs, RPC and the other empowered NAIP Committees.

the likely impact on sociological, environmental and gender issues. Some of the secondary aspects may relate to relevance and reasonability of demands for the equipment and other items under different heads of expenditure.

(c) Basic and Strategic Research in Frontier Areas of Agricultural Sciences (BSR): Scientific merit and strength of the participating institutions will be the major criteria for evaluating the FP under BSR.

6.4.4. Site Visit to Consortia Locations for on-the-spot Assessment

In the case of PCS, SRLS and BSR Components, site visits to the selected Consortium locations for on-the-spot assessment of the Consortium Leader (and/ or Consortium Partner) may be required. In such cases, a team comprising the concerned NC along with at least two members of the TAG will make a field visit, before taking the proposal to the RPC/ PMC for approval. The team shall consider the following criteria with respect to the submitted project proposal:

- Strength of an institution.
- Its laboratories.
- Infrastructure facilities.
- Field facilities.
- Scientific manpower.
- Technical manpower.
- Commitment and willingness to work.
- Work culture and environment.
- Long-term objectives.
- Success stories.
- Patents.
- Financial stability.
- Sustainability.
- Stakeholder's contributions.
- For NGOs, refer to Section 5.5.
- Commitment of CPI: The CPI shall not have more than one project as leader and be willing to undertake a base-line survey including social and environmental safeguard analysis (as per the NAIP ESF on the Website).

The Visiting Team should make an objective assessment and provide clear-cut recommendations against each one of the above criteria as to whether the proposal deserves funding or not. In addition to the above-listed considerations for livelihood security, some of the issues relating to equity, i.e. concerning target beneficiaries (tribal and backward), study area (dryland, rainfed, flood-prone, etc.); prevalence of poverty and malnutrition should also be considered.

6.5. FINALIZATION OF EXPECTED MONITORABLE IMPACT INDICATORS OF APPROVED SUB-PROJECTS

The TAG while recommending the proposal to the RPC for approval should finalize the Monitorable Impact Indicators based on the following criteria/questions:

- Have the expected outputs been explicitly described and/or quantified? In case of PCS research proposals, the expected outputs may lead to value-addition and quantification of impact in terms of profitability, income, employment, exports and sustainability, at realistic ultimate full adoption levels.
- To what extent have the concerns of the small and marginal farmers/farm women/ women groups been taken into account, particularly with respect to SLS research?
- What is the justification for public expenditure? Is the proposal backed by an economic analysis?
- Is there a plan for eventual dissemination of research results?
- What is the knowledge management plan?
- What are the other unique features of the proposal that justify the proposed research?

6.6. APPROVAL OF FP BY THE RPC/ PMC

The proposal alongwith the proceedings of the TAG Meeting (and Site Visit Report, if applicable) will be discussed in the RPC to decide on its approval. If the cost of the proposal is more than Rs 10 crores, it will also be discussed in the PMC on the basis of the recommendations of the RPC (Appendix 16).

The following points may be taken into consideration in scheduling the meeting of the RPC:

- Meetings of the RPC would be convened by the respective Member-Secretary in consultation with the Chairperson and the ND, and a notice is to be circulated along with the agenda at least 15 days in advance. The meeting should be convened when there is sufficient agenda/work for it. Committee meetings for consideration of one or two proposals may be convened only under very exceptional circumstances and not as a matter of routine.
- The research proposals would be circulated along with referees' comments and clear-cut PIU notes (to be developed in the format).
- The concerned DDGs and ADGs of the ICAR will be invited to attend the meeting; the PIU-NAIP will send the proposals and comments to them in advance.

- The NC will pilot the discussion of the FP in the meeting of the RPC highlighting the salient features, deficiencies, if any, the queries requiring clarifications from the CPIs, etc.
- The RPC will examine the proposal in all aspects taking into consideration referees' as well as PIU's comments, and give its opinion on technical, management, physical and financial aspects of the proposal.
- The RPC may also interact with CPIs, if needed. However, any proposal recommended for a major revision should be considered by the TAG/ RPC again (without inviting the CPI) for a final decision. Still, in some cases the Chairperson may desire the presence of the CPI for resolving some specific issues and final clearance of the proposal. In such cases, the CPI can be invited for the second time to attend the meeting of the TAG/ RPC. In all such revised proposals, the CPI will without fail provide point-wise responses to the questions raised while forwarding the proposal to the PIU.
- The PIU will provide an objective appraisal on the extent and type of revisions made in its notes for the TAG/ RPC. If the revision is incomplete/inadequate as judged by concerned NC, such proposals will be returned to the CPI. If, however, the CPI has given a detailed justification for not revising the proposal as advised, such proposals will be taken up for discussion by the TAG/ RPC for arriving at a final decision on the basis of agreed priorities and available funds.
- The TAG/ RPC will normally use one of following four options while considering individual proposals; (i) The proposal is approved for funding; (ii) The proposal is approved subject to minor revisions; (iii) The proposal is to be revised in the light of observations made, and should be resubmitted to the TAG/ RPC, and (iv) The proposal is rejected. Rejected proposals may after revision be resubmitted in subsequent calls for proposals. All revisions should be made at the earliest. The minutes of the meeting should bring out details of the observations of the TAG/ RPC on technical, environmental and social safeguards, M&E plan, knowledge management, training/consultancy equipment, research

assistance (RA/ SRF, etc.), changes in institutions, etc., financial and other aspects to work as guidelines for the CPI to revise the proposal, and also for the PIU for drafting the sanction order. The RPC minutes will be circulated to members, DDGs, CPIs, etc. after approval by the respective Chairperson.

6.7. SOLICITATION OF PROPOSALS AS SPONSORED SUB-PROJECTS

The RPC/ PMC/ NSC may solicit a limited number of research proposals in specific areas to fill the critical gaps. The Committee may identify a suitable CPI and collaborators for each such proposal.

6.8. SIGNING OF MOU AND ISSUANCE OF LETTER OF INTENT

The steps involved are:

- Once the minutes of the RPC meeting are officially circulated, a letter of intent will be issued by the PIU. For this, the concerned NC will examine the revised proposal and verify if the revision has been made in full as advised by the RPC. He/ she will record a certificate to that effect on the file, and get a draft sanction letter developed.
- The draft letter of intent would then be scrutinized by the NAIP Finance & Accounts Officer for financial norms, budget provisions, etc. before the same is approved by the ND.
- The letter of intent will convey approval for the total cost of the sub-project for the approved period not exceeding the total NAIP period, and financial sanction for the plan period only. The financial sanction for the period spilling into the next plan period would be issued after the start of that plan period.
- After issue of the letter of intent, the Consortium will sign a contract with the NAIP (ICAR), only after the consortium becomes effective.
- For all the proposals approved by the RPC, an information sheet will be furnished for endorsement/ approval of the PMC by the concerned NC.
- The proposals, which get sanctioned, shall get its sub-project preparation costs reimbursed as per the actual or Rs 5 lakh whichever is less, provided the expenditure is incurred as per the NAIP norms.

6.9. RELEASE OF FUNDS

The PIU-NAIP will release the funds details of which are given in Chapter 8.

6.10. ANNUAL NAIP WORKSHOP

The PIU-NAIP will organize an Annual National Workshop of all the Components under the NAIP at which the salient achievements of the sub-projects will be highlighted before the senior scientists, experts, science managers, administrators, policy planners and all the stakeholders.

6.11. PUBLICATION

The achievements of each research sub-project could be published in scientific journals. Other publications may be related to extension, development, policy briefs, etc. Such publications in reputed and international journals provide important support for a researcher seeking new funding from the NAIP or other agencies. Such publications should be submitted as part of the Annual Report. The following acknowledgment should be included in all publications that will result from the research work in the NAIP-funded sub-projects:

“This research was supported by the National Agricultural Innovation Project (NAIP), Indian Council of Agricultural Research (ICAR) through its Sub-project entitled “_____” Code number “_____.”

A copy of the reprint of such publications should be furnished to the PIU for information and record. Only those publications having proper acknowledgement shall be considered in the Progress Report of a Consortium/ Sub-project.

For each sub-project, there should be a well-written success story, which should be submitted to the NAIP in hard copy along with an electronic version

6.12. PLANNING FOR UPTAKE OF RESULTS

At the time of the second MTR of the NAIP, a National Workshop may be organized to plan for uptake of results contained in various sub-projects of the NAIP and to consider measures to ensure sustainability of sub-projects needing continuation after the completing of the current phase of the NAIP.

6.13. PROPOSALS FOR ADDITIONAL GRANTS AND MODIFICATIONS IN A SUB-PROJECT

Proposals for additional grants and modifications in the technical programme of an approved sub-project can be submitted to the concerned NC, who will seek the necessary approval of the competent authority.

6.14. PROCEDURE FOR GRANTS CANCELLATION

Due to problems beyond redressal, a Consortium may have to be cancelled. In such cases, the approval of the competent authority will be sought according to the provisions of the MOU signed between the NAIP/ ICAR and the Consortium.

6.15. MOU AMONG CONSORTIUM PARTNERS

The Consortium partners and the PIU-NATP have to sign an MOU; the model draft for such MOUs is given in Appendix 17. □

CHAPTER 7

MONITORING & EVALUATION (M&E) OF SUB-PROJECTS

7.1. INTRODUCTION

7.1.1 Overall Coordination of M&E Activities

Project monitoring and evaluation (M&E) of sub-projects will be carried out as three separate but distinct efforts. First, concurrent monitoring will be the responsibility of the National Coordinator (O&M) assisted by a Project M&E Consultant (who will be charged with the responsibilities of day-to-day M&E operations). Second, project monitoring and evaluation cells (PME cells) or CMUs will regularly monitor and report on the sub-project's physical and financial inputs and outputs, at the Consortia level. Third, an independent entity will be charged to carry out comprehensive outcome-focused impact evaluations of the NAIP at three stages: baseline, second MTR, and project completion.

The institutional structure of the M&E process will follow the overall organizational and governance structure of the NAIP. The primary responsibility for M&E will be with the PIU, led by the ND and assisted by the National Coordinators (NCs), and the Finance and Procurement Officers. The PIU will report to the NSC and the PMC on M&E issues and will inform the O&MPC and the RPC. The monitoring effort will lend support to: management in its day-to-day operations; developing a project monitoring and tracking system (PMTS); development of information networks; provide support to the overall NAIP communication dissemination effort; business development and planning; learning and capacity building; and Consortium activities in developing Concept Notes into Full Proposals. The M&E system will identify problem areas at the national and Consortium levels, help management to administer project processes, aid in project designing and implementation, help make mid-course corrections, and help the project achieve its overall development objective.

7.2. INSTITUTIONAL STRUCTURE FOR M&E

7.2.1. At the National Level

The primary responsibility for monitoring, evaluation

and reporting will rest with the National Coordinator (O&M) assisted by the M&E Consultant. The M&E Consultant's first charge will be the designing of a PMTS for the NAIP implementation within the overall management framework for the NAIP. The M&E Consultant will be responsible for assisting the NSC, PMC, PIU and will help coordinate the M&E-related information needs of the four NCs. The additional specific responsibilities of the M&E Consultant include:

- Conducting the benchmark survey for the NAIP as a whole.
- Coordinating with the PIU staff reporting processes.
- Consolidating reports and contributing to the overall NAIP reporting requirements.
- Providing guidance to M&E activities of the Consortia.
- Contributing to the further development of MISs in the NAIP.
- Ensuring gender-oriented monitoring at the national and Consortium levels.

7.2.2 At the Consortium Level

A Consortium Monitoring Unit (CMU) will be established in each NAIP-funded Consortium. The CMU will report directly to the CPI. The work program of the CMU will be developed in consultation with the NC 1 at the PIU and approved and cleared by the Chairperson of the CAC.

The CMU will be responsible for (but not be restricted to):

- Preparing an M&E work plan and budget.
 - Preparing half-yearly and annual reports.
 - Undertaking regular field trips to introduce and document key M&E practices.
 - Preparing and submitting half-yearly and annual monitoring and supervision reports.
 - Planning and developing PME-related training programmes.
 - Designing and conducting M&E exposure sessions.
-

- Assisting the CPI in all matters relating to M&E planning.
- Supporting and assisting in the World Bank and the NAIP supervision visits.

7.3. M&E OF OUTCOMES AND RESULTS

The NAIP will develop a results-based M&E system that will monitor project processes using the following methods and tools:

- A well-defined 'Results Framework' that is derived from clearly identified goals, objectives, outputs and activities with corresponding indicators, means of verification and key assumptions;
- A well-defined M&E strategy regarding information requirements, tools and methodologies for data collection, analysis and reporting;
- A comprehensive M&E plan with clear roles and responsibilities with respect to data gathering and reporting; and
- Internal and external periodic assessments and evaluations, which include base-line studies, beneficiary assessments, mid-term evaluations, ex-post evaluations and impact evaluations.

7.3.1. M&E and Performance Indicators

Monitoring indicators will be consolidated by the PIU and used to update the key performance indicators for the sub-project. These benchmarks would be developed during the base-line study and further refined as necessary by the PIU and CACs during project implementation. Field level implementation would be independently monitored by CMUs, in consultation with the PIU, by (a) intensive regular periodic monitoring, and (b) regular visits to project sites. As a part of the work plan, the CMUs would also be engaged in impact evaluation studies, including beneficiary assessments under the guidance of the NCAP. In the disadvantaged areas, farmers, farmers' organizations and NGOs assisting with implementation of the project would also be involved with M&E activities. The participation of the private sector in Consortium activities would also be monitored by the CMUs.

A well-equipped and suitably trained central unit at the national level will be responsible for guiding the overall M&E efforts within the sub-project and vis-à-vis partners, plus providing timely and relevant information to the NAIP management team, stakeholders and sub-project Consortium Partners. This will require close coordination and communication with those in-

charge of M&E in the Consortia, the NSC and the ND, external consultants and field staff where appropriate, as well as members of external M&E missions.

Each Consortium will be required to establish its own M&E capacity and design its own M&E Plans. The issues that will be addressed by all Consortium M&E groups are: Consortium formation and management; research plan preparation and implementation; knowledge management; capacity building; product development and technology transfer; financial management; procurement; and impact evaluation. In addition, Consortia can add further indicators as required by their own unique nature of work. The CMU will report to the CPI and the CAC.

7.3.2. Institutional Arrangements

The operational responsibility for planning and coordinating M&E activities would rest with the PIU, with one NC responsible for overseeing this activity. The PIU would utilize a computerized project tracking system to monitor progress and to link monitoring activities within the participating entities at the national as well as Consortium levels. At the Consortium level, the PIU would be assisted by the CMUs.

7.3.3. Reporting Arrangements

The PIU would submit to the World Bank: (a) up-to-date physical and financial expenditure data compared to annual and end-of-project targets; (b) updated indicators of project performance compared to annual and end-of-project targets; (c) successes and problems encountered during the reporting period with suggested remedial actions; and (d) social and environmental impacts of the project

Half-yearly assessment of the progress for each Consortium will be undertaken by the CAC. The responsible NC will consolidate the reports from the CACs in the NAIP-Component under his supervision and send them to the concerned TAG, which in turn will submit these to the RPC. A Peer Review Team comprising external experts will subject each sub-project at the Consortium level to an MTR and an evaluation at the end of the sub-project.

The CMUs would submit to the PIU: (i) quarterly financial and procurement reports summarizing concurrent monitoring observations; (ii) six-monthly reports summarizing project M&E for the preceding six months, cross-cutting issues and recommendations, and updated project indicators; and (iii) three comprehensive reports—the base-line survey and two Consortium evaluations (at the project MTR and project completion).

(a) Half-yearly Reports: Half-yearly reports would be prepared by CPIs and submitted to the CAC. Once approved, the CAC would then transmit this report to the PIU and make it available on the NAIP website. Under the guidance of the NC1, the M&E Consultant would prepare a consolidated report to include the four Components. The final compiled version including the financial and audit reports will be made available to the RPC and to the World Bank (Appendix 18).

(b) Annual Reports: Draft annual reports would be prepared by Consortia in the following manner. The CAC would appoint a Project Review Team (PRT) that may include a representative or designate from the PIU. The PRT would then prepare a report and submit it to the Chairman of the CAC. The CAC would then organize an annual workshop to discuss the report to be attended by the PRT, and members of the TAG. Afterwards the CPI will prepare the annual report and submit this through the CAC to the PIU. For each NAIP-Component the responsible NC would then compile an overall annual report. At the same time, the M&E Consultant under the guidance of the NC1 would prepare a report covering all the NAIP operations (Appendix 19).

At the release of the overall annual reports, a two-day annual workshop will be organized. The first day's programme of this workshop will have concurrent component discussions. Participants at this event will include the CAC Chairmen, TAG (for Components 2, 3 and 4) or O&MAG (for Component 1) members, the NCs, and the CPIs. The second day will have two separate sessions: Session 1 will focus on technical issues while Session 2 will deal with administrative issues. The technical sessions will cover M&E operations, work programme issues and reporting effectiveness. Based on these sessions, a comprehensive annual report will be compiled by the ND and submitted to the PMC for review and comments. The report will then be made available on relevant websites (ICAR/ SAU) and submitted to the World Bank. The workshops in the second, fourth and last year of the project will coincide with the first and second mid-term and, end-of-project review missions of the World Bank, respectively.

(c) Mid-term Reports: The mid-term report includes the following (but is not limited to):

- Trends towards socio-economic impact.
- Production aspects.
- Environmental and social aspects.
- Lessons learnt, mid-course corrections and redirection of sub-projects.

(d) Final Report of the Consortium: A completion

report at the end of the sub-project should bring out the results and achievements of the research work and its impact on the science, commerce, society and socio-economic conditions of the farmers. The innovations in technology introduced as a result of implementation of the scheme should be brought out. The impact of HRD in decentralization of research management should also be highlighted. The report should also delineate the trends whether the improvement/ stagnation/ reduction in productivity, profitability, sustainability, environmental benefits and HRD (capacity) varied in relation to benchmark status. The write-up should also highlight important milestones achieved and success stories during the sub-project period and one set of publications should be sent to the PIU. The report should also track the sources whether the findings were used and contributed to better decision-making, saving of the resources, etc. The proforma prescribed for submission of the final report is annexed (Appendix 20). The report must be submitted within two months of the completion of the sub-project. All reports shall be examined for completeness, attachment of relevant documents in support of achievements/ claims and the projected expenditure plan. The CPIs may be asked to provide clarifications/ explanations and make amendments/ modifications. Complete data in electronic form should be passed on to the PIU-NAIP.

For the Component 1, in case of the Business Development Plan sub-project where there will be a Consortium, the same procedure for half-yearly and the annual reports will be followed. For other sub-projects, the O&MAG will take the role of the CACs. The O&M PC will take the role of the RPC.

7.4. IMPLEMENTATION ARRANGEMENTS FOR M&E OF COMPONENTS, 2, 3 AND 4

7.4.1. Output Indicators:

The M&E will focus on the measurement of outputs and outcomes and on the quality of the management processes in the Consortia. Some of the important output categories concern:

- Improved crop varieties/animal breeds/ tree species—Both numbers and adoption rates;
- Improved management practices—Both numbers and adoption rates;
- Publications and reports—Variety and number;
- Training events—Variety and number;
- Dissemination (technology transfer) events—Variety and number;
- Public services—Variety and number;

- Professional recognitions—Variety and number; and
- Product development—Variety and number.

7.4.2. Outcome Indicators

Research impact can only be assessed by establishing a causal relationship between outputs and benefits to the end-users (outcome). These include:

- Area expansion (crops) and/ or increase in number (animals);
- Increase in productivity;
- Reduction in production costs;
- Enhanced profitability to the producers and other participants in the value chain;
- Sustainability of adoption (technology);
- Enhanced gainful employment;
- Income generation/ enhancement;
- Improvement in food consumption; and
- Improvement in access to credit.

7.4.3. Management Process Indicators

Management processes will be monitored through the annual reports of the Consortium. Focus will be on decision-making in the CAC, the extent to which the Consortium retains or strengthens its inclusiveness, the internal procedures for overcoming differences of opinion and conflict management, and the quality and timeliness of financial management and procurement.

Data Collection and System Development Efforts: Consortium Partners would assume the primary responsibility of collecting data to update the input/output indicators. The data would be consolidated and managed by the PIU. The CMUs would assist the PIU to develop a computerized plan for the project. For the concurrent monitoring and impact evaluation studies, the CMUs would be primarily responsible for data collection and collation, using independent surveys, and for report preparation. Preparation of evaluation studies for different NAIP-Components would be an ongoing process culminating in one major interim review of the project (just prior to the second MTR) and a final

project completion review. A base-line survey would be carried out by an M&E Consultant in coordination with the implementing entities. The survey would be completed and a draft report prepared within six months of project effectiveness. Questionnaires and formats for this survey should be prepared within one month of the award of the M&E contract, pre-tested in the field, and cleared by the PIU prior to any actual data collection efforts.

An on-line Project Monitoring & Tracking System (PMTS) will be developed to collect and process M&E-related information. The proposed system will be used to facilitate the capture, storage and retrieval of a clear, quantified and operational base-line data; to track the progress of various sub-projects under Components 2, 3 and 4 on an on-going basis; to monitor the progress of the overall NAIP project; to regularly assess the performance of sub-project staff; and to evaluate the output and outcome at mid-term and prior to completion. The PMTS will be developed in-house and will include modules for outreach and information dissemination, activity profiles, monitoring & evaluation and performance measurement.

A scorecard will be developed for the purpose of comparing the performance of the Consortia on an annual basis. The scorecard results will be made available on the NAIP website.

7.5. M&E PROCESS

Each Consortium will go through roughly three phases: (i) an initial phase of six months for pre-project activities in which the focus will be on needs analysis, orientation and sensitization of stakeholders, and identification of targets and suitable output and outcome indicators; (ii) project implementation *per se*; and (iii) a final phase of six months for post-project activities in which reports containing information on outputs, outcomes, dissemination, and success will be brought out; and in which planning for follow-up activities (continuation/ further expansion/ commercialization) will be finalized.

Table 1: Results Framework

Project Development Objectives	Outcome Indicators	Use of Outcome Information
The specific objective is to accelerate the collaborative development and application of agricultural innovations between public research organizations, farmers, private sector and other stakeholders	<ul style="list-style-type: none"> • The number of partnerships between public research system, private sector and other stakeholders • Increase in agricultural innovations by the end of the sub-project 	<ul style="list-style-type: none"> • PY2: Make adjustments to policy reform agenda • PY3: Address capacity building issues • PY4-5: Determine success of sub-project and make recommendations for future interventions
Component 1: ICAR as the catalyzing agent for management of change in the Indian NARS	<ul style="list-style-type: none"> • A substantial increase in the number of knowledge products and public awareness messages that the system shares with others • Business development units will be established in five ICAR institutes/ State Agricultural Universities (SAUs) • The ICAR system has an enhanced capacity for policy analysis, planning and advice • ICAR has an enhanced financial and procurement management capacity 	<ul style="list-style-type: none"> • PY2: Review decision-making structures while addressing Component strategy • PY 3: Identify newer models that would increase information sharing across the network • PY 4 – 5: Address capacity issues and provide guidance on research strategies, market linkages, etc.
Component 2: Research on production to consumption systems	<ul style="list-style-type: none"> • Number of technologies that have been jointly developed between Consortia partners • Improved quality management mechanisms in the selected production to consumption systems • Number of public-private partnerships developed 	<ul style="list-style-type: none"> • PY1-2: Determine progress by Consortia for improvement in value chains, strategy and interventions • PY3: Determine if collaborations amongst institutions could be increased
Component 3: Research on sustainable rural livelihood security	<ul style="list-style-type: none"> • Number of technologies developed and tested in interaction with target groups • Increased rural employment opportunities • The number of farmers' organizations engaged in defining and implementing collaborative research 	<ul style="list-style-type: none"> • PY1: Determine progress and address issues to overcome the slow progress • Determine if interaction with target groups is effective • PY2: Determine if strategy needs to address inadequacy of supply and services
Component 4: Basic and strategic research in the frontier areas of agricultural sciences	<ul style="list-style-type: none"> • Number of publications of Indian agricultural scientists in high quality journals • Number of patent applications 	<ul style="list-style-type: none"> • PY2: Determine progress to address issues related to scientific publishing • PY2-3: Determine if IP management strategy needs to be re-adjusted

Table 2: Arrangements for Results Monitoring—Outcomes and Outputs, Component 1

Results Indicators	Outcomes	Monitorable Indicators	Baseline ¹¹							Targets ¹²			Data Collection and Reporting		
				PY1	PY2	PY3	PY4	PY5	PY6	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection			
1	2	3	4	5	6	7	8	9	10	11	12	13			
Component 1: ICAR as the catalyzing agent for management of change in the Indian NARS	The ICAR system has enhanced knowledge-sharing and public awareness capacity	Number of mass communication campaigns launched by media type (TV, radio, print, email, web)	0	5	5	5	0	0	2						
		Increase in number of linkages formed with KVKs and Community Information Centres	1000 ¹³	5%	10%	15%	25%	50%							
	The ICAR system has the ability to commercialize its research findings	The number of hits on the ICAR & SAUs websites per month	50,000 ¹⁴	60,000	65,000	70,000	70,000	60,000	55,000						
		Increase in number of responded queries from the public and private organizations and NGOs per month	1000 ¹⁵	25%	50%	75%	75%	75%	75%						
	ICAR has enhanced financial and procurement management capacity	Total number of business development units established	0		2	5	5	5	5						
		Total number of applications for patents and licenses	15 ¹⁶		5	15	20	25	30						

11 Identifying sensible baseline values needs careful analysis of recent relevant data; the numbers included in the PIP are indicative only, pending such analysis.

12 In the spirit of the note below on baseline values, the numbers included in the PIP as targets require careful consideration, as they will be used in monitoring progress. In this sense, they should be “owned” by those whose performance is to be monitored.

13 Assume 1000 established linkages in PY0

14 Assume base of 50000 hits per month on ICAR website

15 Assume 1000 queries for Helpdesk’s first month

16 Assume 15 applications in PY0, number of applications per year

1	2	3	4	5	6	7	8	9	10	11	12	13
		Annual number of people attending visioning and policy analysis events organized through or in association with the NAIP	Baseline to be determined	750	1000	500	300	300	300	Annual (number and flow) Entry, mid-term, final (availability)	Annual: ICAR Central M&E reports; Entry, unit and mid and final: independent Client-stakeholder survey group	
		Number of weeks for the procurement cycle of high thresholds goods	50 weeks	50	45	35	30	30	30			
		Share of ICAR finance managers that uses the new Financial Management Software system	0	0%	70%	100%	100%	100%	100%			

Table 3: Arrangements for Results Monitoring—Outcomes and Outputs, Component 2

Results Indicators	Outcomes	Monitorable Indicators	Baseline ¹¹		Targets ¹²				Data Collection and Reporting			
			PY1	PY2	PY3	PY4	PY5	PY6	Frequency and Reports	Data Instruments Collection	Responsibility for Data Collection	
Component 2: Research on production to consumption systems	Increased availability and use of technologies	Total number of Consortia formed in Component 2	0	4	11	15	15	15	15			
	jointly developed between Consortia partners	Total number of the NAIP production technologies released and adopted ¹⁷	0		0	5	10	25	35			
	Improved quality management in the selected production to consumption systems	Total number of processing technologies released and adopted	0		0	10	15	30	40			
		Total number of new rural industries established ¹⁸	0		0	2	4	10	14			CIC, Central M&E unit
	Increased interaction between public and private sector for agricultural innovation purposes	Total number of product groups for which national or regional quality grades have been agreed on through the NAIP Consortia	0		0	0	5	10	10			
		Total number of private sector organizations participating in Consortia	0		20	30	40	40	40	Annual or Entry, mid-term, final	Grant approval and implementation records (annual); value chain actor surveys (entry, mid, final)	CIC, Central M&E unit and independent M&E support group
	Total number of farmers involved in Consortium activities ¹⁹	0		1500	2250	3000	3000	3000				

¹⁷ Adoption in this table is tentatively defined as 5% or more of the target audience of the respective Consortium

¹⁸ Under the NAIP, new rural industries may be established in the production to consumption chain

¹⁹ The number of formal agreements including MOUs between parties

Table 4: Arrangements for Results Monitoring—Outcomes and Outputs, Component 3

Results Indicators	Outcomes	Monitorable Indicators	Baseline ¹¹		Targets ¹²				Data Collection and Reporting			
			PY1	PY2	PY3	PY4	PY5	PY6	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection	
Component 3: Research on sustainable rural livelihood security	Increased availability and use of improved technologies developed or disseminated by Consortia partners	Total number of Consortia formed in Component 3	0	5	15	20	20	20	20	Annual or Entry, mid-term, final	Livelihood grant approval and implementation records (annual); Household surveys (entry, mid, final)	CIC, Central M&E unit and independent M&E support group
	Increased employment opportunities in project areas	Total number of Consortium-developed technologies made available in disadvantaged areas	0			20	100	200	300			
	Increased participation of farmer groups in defining and implementing collaborative research	Total number of improved technologies adopted in disadvantaged areas ²⁰	0			5	20	60	80			
		Total number of farmers (millions) using the NAIP technologies in the disadvantaged areas	0		0	0.1	0.25	0.5	0.6			
		Increase in agricultural services and processing enterprises in project areas	Baseline to be determined		5%	5%	10%	15%	20%			
		Total increase in agriculture-based employment amongst participating farming households ²¹	0		0	1000	3000	5000	9000			
		Total number of farmers' groups involved in project activities	0		50	100	150	150	150			

²⁰ Adoption in this table is tentatively defined as 5% or more of the target audience of the respective consortium

²¹ In employment years

Table 5. Arrangements for Results Monitoring—Outcomes and Outputs, Component 4

Results Indicators	Outcomes	Monitorable Indicators	Baseline ¹¹		Targets ¹²					Data Collection and Reporting		
				PY1	PY2	PY3	PY4	PY5	PY6	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Component 4: Basic and strategic research in the frontier areas of agricultural sciences	Enhanced capacity for basic and strategic research	Total number of Consortia formed in Component 4	0	3	15	15	15	15	15	Annual or Entry, mid-term, final	Grant approval and implementation records (annual); Research institutional survey/assessment (entry, mid, final)	CIC, Central M&E unit and independent M&E support group
		Number of annual overseas exchange visits/ training programs on basic/strategic research related topics by Indian scientists	0	20	100	100	100	50	50			
		Total number of papers published in high impact international scientific journals ²²	0	0	10	30	40	50	60			
		Total number of patent applications based on the NAIP- funded research	0	0	5	10	15	25	30			

²² Number of papers produced per year by consortia

CHAPTER 8

FINANCIAL MANAGEMENT

8.1. INTRODUCTION

The main challenge in the NAIP is that the sub-projects will be implemented by agencies spread all over India and the number of money-spending units will be large (about 80-85). Therefore, mere collection of financial information from various units, its consolidation and making it available to the management in a timely manner for decision-making will be a challenge, needing certain key tasks:

- (a) Preparation of an accounting manual to bring uniformity in the operational procedures and reporting.
- (b) Development of a web-enabled software to account for receipts and expenditures and generation of financial reports for decision-making.
- (c) Identifying finance personnel at each spending unit (as and when the units are identified) and providing them training on the financial management procedures of the sub-project.

The sub-project will have to adequately account for the resources and expenditures by following the procedures stated in earlier chapters. The financial part of the proposal will be submitted in the format given in Appendix 21.

8.2. IDENTIFICATION AND CLASSIFICATION OF EXPENDITURE

8.2.1. Capital Expenditure Includes Costs of:

- All works including construction of buildings, laboratories, sheds, etc.
- Plant and machinery, including technology
- Land development including nursery, ponds/tanks, etc.
- Goods, equipment and loose tools, furniture and fittings, computer hardware and bulk software, etc.

The Consortium Partners are expected to provide capital expenses and the relevant infrastructures.

8.2.2. Revenue Expenditure Covers Costs of:

- Consultancy, contractual services, human capacity building, workshop/ seminar, etc.
- Salaries of the contractual staff under the sub-project
- Operation and maintenance, including printing, stationery, stores, consumables, telephone bills, local charges, electricity bills, rent & rates, internet, honorarium to resource persons, travel & conveyance costs, farm costs, seeds, fertilizers, chemicals, glasswares, seedlings, feeds, water, fuel, software, etc. and
- Institutional overheads.

8.3. BUDGETING AND FUNDS FLOW SYSTEM

8.3.1. Budgeting

Under the NAIP, the ICAR acquires the funds through DARE under its annual plan budget. These fund flows directly to the PIU.

The Budget for the entire project is approved at the central level before 31st of March every year. Budgeting involves planning for the operations and forecasting the activities and related expenditure to be incurred at a later stage. The budgeting exercise starts with the signing of the MOU/contract and the issue of Sanction Letter. This Letter contains the physical and financial targets over the life of the project. Thus, the details mentioned in the contract/ MOU, Sanction Letter, form the basis for Budgeting and its Control. Further, to distinguish the NAIP budget from the Ministry of Agriculture (MoA) budget, a separate budget head will be assigned for the NAIP. This simplifies the identification of the NAIP budget and helps in monitoring the budget utilization from time to time.

8.3.2. Budget Allocation Process

The budget compiled by the Finance wing of PIU will be submitted to the DARE/ ICAR. On receipt of sanctioned budget, the PIU will re-allocate the annual budget to the agencies based on their budgetary requirements.

While allocating these funds, the PIU will consider:

- Importance of the work being handled by the unit.
- Priority of work based on the NAIP – ICAR/ World Bank guidelines.
- Funding required for completion of the pending work.
- Allocation as per EFC.
- Inter-linkage of expenditure with other Components, which are taken up.
- Other considerations.

8.3.3. Re-allocation of Funds

During the year, Finance and Accounts wing of the PIU will monitor the fund utilization status on a quarterly basis, based on expenditure statements received. On review, if felt that the funds allocated may not be utilized by the agency due to certain reasons, the same can be reallocated to an agency in need. Such re-allocation of funds is possible after following normal government procedures and obtaining the required sanctions from the competent authority.

8.4. RELEASE OF FUNDS

Once the competent authority approves the research sub-project, the process of flow of funds and reporting of expenditure will start. The major Governing Guidelines for the Financial Management will be the following:-

- After signing the MOU/agreement, the first installment of funds for the first financial year of the sub-project will be disbursed in the form of a mobilization advance, which will comprise 50% of the budget provided for revenue expenditure and the full budget of the capital expenditure of the first year.
- Subsequently, the release of funds to the implementing units will be linked both to the progress of technical programmes in terms of deliverables as reported by the CPIs and CoPIs and accepted by NCs and, the progress of expenditure during the previous reporting period. The funds will be released on six-monthly intervals against the sanctioned budget provision of the financial year. The fund for capital expenditures will be disbursed in a single installment at the beginning of each financial year.
- In respect of Components 2, 3 and 4, funds will be released directly to each spending unit of the Consortium by the PIU. However, the CPI will have to approve the release before the

PIU releases the fund. Release of funds to each Consortia Partner will be as per the MOU between the CL and the CP, which will specify the schedule of payments (initial advance and the subsequent installments) and the milestones to be achieved to qualify for each next installment. Unutilized amount will be adjusted while making the next remittance.

- Requisition for the second installment of funds for each year will be submitted immediately after expiry of the first half-year along with the fund utilization statement in the prescribed proforma on-line through an electronically signed mail and as a hard copy too with the recommendation of the CPI. The fund requisition format is given in Appendix 22.
- The funds will be released directly to the implementing units from the PIU under the information to CPI.
- Since, the releases under the sub-project will be on the basis of the sanctioned budget and keeping in view the unspent amounts, no separate financial concurrence is required for release at each stage. However, if any additional fund is to be released, proper approval of the competent authority with the concurrence of finance will be required at the PIU.

8.4.1. Electronic Transfer of Funds

The funds under the NAIP will be transferred electronically. In the NAIP, arrangement is being made with a national Bank having a countrywide network to handle the transfer of funds. To facilitate flow of funds, it is proposed that the PIU and all other spending units to open accounts with the same bank or, for areas where the selected bank does not have any branches, with any other bank, which has a tie-up with the selected bank. The PIU will send an advice to its Banker listing the various spending units and the amounts to be transferred to the account of each unit. The Banker will provide a terminal at the PIU which will give the status of the account of each spending unit on a daily/ weekly basis. Bank statements will be provided by the national Bank to every spending unit for its withdrawals on a monthly basis. Spending units will reconcile their withdrawals with their books and send it to the PIU on a monthly/ quarterly basis.

8.5. ACCOUNTING SYSTEM

For the projects financed by the World Bank, the Project Implementing Agency is supposed to maintain

a Financial Management System, including adequate accounting and financial reporting, to ensure that they can provide to the Bank and the Government accurate and timely information regarding project resources and expenditures. Besides the accounting system evolved to maintain departmental accounts of the project entity as per their Departmental Accounting Procedure, the project entity will need to maintain an independent record of transactions to show the expenditure incurred under the project separately under each category of loan proceeds as laid down under the loan/credit agreement. The accounting record will show separately the value of contract approved under each Component of the category and expenditure incurred periodically under the contract and the claims submitted to Government of India against such expenditure. The project agency at periodical interval will review this accounting record to monitor that the total expenditure incurred does not go beyond the approved contract value. The PIU will take necessary action to revise the contract value for approval much in advance whenever the total expenditure under the contract is likely to exceed in the near future. No claims should be sent to the Government of India over and above the approved contract value. A financial statement of expenditure under each category contract-wise will be prepared annually for the year ending 31st March for onward submission to the World Bank. A similar statement will also accompany the audit report on the project financial account for the year as a whole.

8.5.1. Basis of Accounting System

The Accounting System to be followed by each of the sub-project implementing agencies will be on the basis of the **Accrual Accounting System**, i.e. the double entry system of accounting to have the uniformity in the project accounting and under no situation the **‘Cash Base Accounting System** will be followed.

8.5.2. Accounting Centres

The main accounting centres will be following units:

- a) Project Implementation Unit (PIU)
- b) Consortium Leader
- c) Consortium Partners

The PIU is responsible to release funds to the ICAR Institutes, SAUs and NGOs/ Partners, etc. under the approved sub-projects, activities, etc. These units in turn are required to furnish Annual Accounts, Statement of Expenditure and Audit Utilization Certificates (to be submitted by other than the ICAR Institutes) to the

PIU. Also, the World Bank’s Articles of Agreement require the borrower to ensure that the credit/ loan proceeds are used only for the purpose set out in the loan documents including the Project Appraisal Document and that the goods and services required for the project are procured in accordance with the World Bank’s procurement procedures. Further, the records should be kept sub-project wise, so that various Financial Statements can be sent with respect to amount of funds received for the sub-projects from the respective source, i.e. consolidation shall be done sub-project-wise at various lead institutions/ funding agencies. Each Consortium Partner has to maintain its Cash Book, Cheque Book/ DD Register, Valuables Register, Grant Register, Project-wise Expenditure Control Register, Asset Register, Advance Register, Objection Book, Balance Sheet, etc. as in case of institution funds.

8.5.3. Reporting of Expenditure

It is expected that:

- While incurring expenditure, the implementing agency should keep in mind that funds must be utilized strictly in accordance with the approved allocations for the sub-project as envisaged in the sanction following the WB guidelines/procedures and the terms and conditions of the sub-projects. Any over-utilization or utilization not in accordance with the sanction is not reimbursable.
- For effective execution and monitoring, an online Financial Management System (web-based) will be developed. The expenditures of all the participating units will always be available to the PIU through this accounting software through a central server installed at the PIU.
- For ensuring the uniformity in the Financial Management procedure, it will be mandatory for all the partners to operate and report through the Financial Management System, the requisite training for which will be arranged by the PIU.
- Initially, quarterly reports on fund utilization, i.e. Statement of Expenditure (SoE) will be submitted by the Consortium Partner directly to the PIU/ ICAR, with a copy of the same to the CPI for its endorsement/ authentication. Once the online system is put in use effectively, this arrangement will be reviewed and modified for reporting on a monthly basis, for which the PIU will inform implementing units separately (the format of SoE is given in Appendix 23).

- For reporting purposes, usages of the standards formats prescribed by the WB/ PIU will be mandatory for each implementing agency.
- The SoEs will be consolidated at the PIU. The consolidated SoE for the project as a whole will be submitted to the World Bank for claiming re-imburement. The SoE in respect of the ICAR institutes will also be submitted to the Principal Director of Audit (Scientific Department) for arranging audit of the NAIP.
- The budget utilization will be certified annually by the competent authority, i.e. the head of the organization and the head of the finance of each member institution/ organization of the Consortium.
- The PIU will develop the Financial Management Manual, which will lay down financial and accounting policies and procedures, standard reporting formats, etc. This will have to be followed by all the member institutions, and
- Financial reporting (expenditure statements and bank reconciliation statements) from implementing units to the PIU will be on-line. The FMR formats will be agreed and provided in the Finance Manual. The PIU will furnish consolidated FMRs on a quarterly basis, to the World Bank.

8.5.4. Separate Bank Account

- As per the WB requirement, a separate bank account is to be operated for monetary transactions under the NAIP. Each implementing agency is to open only one bank account for all the NAIP projects, and
- Bank statements will be provided by the national Bank to every spending unit for its withdrawals on a monthly basis. Spending units will reconcile their withdrawals with their books and send it to the PIU on a monthly/ quarterly basis.

8.5.5. Supervision Plan

The sub-project would require intensive supervisions in the initial stages for ensuring successful implementation of the agreed financial management arrangements in the implementing units. The other focus areas during the supervision will be on meeting the training needs of the sub-project's finance personnel.

8.5.6. Financial Control

This includes:

- Inspection at periodic intervals will be carried

out by the PIU to monitor the financial management of the implementing agencies.

- Funds will be utilized for the bonafide/ intended purpose using the prescribed norms and procedures of GoI/ World Bank and will not be diverted to any other schemes/ heads, etc.
- Expenditure must be kept within the approved budgetary allocation. Any expenditure in excess will be liable to be disallowed.
- All basic records such as cashbook, cheque register, counterfoils of cheques, grant register, project-wise and sub-headwise expenditure control register, assets register, etc. will be maintained.
- All advances irrespective of their nature will be adjusted within the prescribed time limit but before the close of the financial year to which they pertain.
- All procurements will be made following World Bank guidelines/ procedures, and
- Revenue/ interest generated if any, during the project period will be refunded to the PIU and will not be utilized for meeting any expenditure.

8.6. DISBURSEMENT OF FUNDS

The total project cost is USD 250 million. Of this, the portion financed by the World Bank is USD 200 million in the form of hard and standard credit. The Bank's assistance received by GoI will be passed on to the ICAR.

The funds for the project will be budgeted for in the ICAR's budget, including counterpart funds, as an identifiable single-head budget item each year.

The Government of India will open a Special Account with RBI to receive the initial deposit and thereafter reimbursements from the World Bank under the project and would make the funds available to the ICAR through DARE, Ministry of Agriculture & Co-operation under the Plan Budget. The ICAR will then pass on funds to the bank account of the NAIP PMU.

Disbursements from the credit would be made in the traditional system of reimbursement with full documentation and against a statement of expenditure (SoE). Consolidated quarterly/ half-yearly claims will be submitted by the PIU to the World Bank for reimbursement. A uniform 80% disbursement rate across the different cost categories and components has been agreed upon. Disbursement will be made as 80% of the allowed statements of expenditures. Funds will be disbursed against SoEs. Expenditure as shown in the SoEs will be certified by the GoI, as the Borrower, as representing the eligible

project expenditure. Supporting documents for SoEs will be available for post-review by the Supervision Missions of the WB and the Auditors. These documents will be retained by the implementing agencies/ ICAR for five years. The formats for the SoE and the AUC have been finalized and have been part of FMS manual.

8.7. AUDIT REQUIREMENTS AND PROCEDURES

The process involves:

- As per fiduciary requirements in the World Bank-funded projects, the executive agency is generally required to submit the Audit Certificates for the entire project within six months of the end of the financial year and this will be applied to the NAIP also. As the NAIP will be implemented in Consortia mode having multiple implementing agencies/ partners, a suitable audit mechanism which may serve the purpose of timely completion/submission of AUC's to the World Bank has been devised. As per this mechanism the PIU will maintain a roster of A category CA Firms empanelled with the C&AG. The accounts of the project will be audited by the C&AG in case of the ICAR and other Government institutes and Private Chartered Accountants from the roster maintained by the PIU in case of other Consortia members. The SAUs will have an option of getting their accounts audited by the local fund auditor who does statutory audit of SAUs or by a Chartered Accountant Firm from the roster maintained by the PIU provided they meet the deadline of submitting the audit report to the PIU. The annual project financial statements, duly audited and a compiled audit report will be submitted to the World Bank within six months of the end of each financial year.
- Terms of reference will be drawn up in consultation with the Bank and agreed with the C&AG and the private firm of Chartered Accountants. The PIU will compile the audit observations with the help of a selected private audit firm hired in the Northern zone and send a single report to the Bank. The annual project financial statement, duly audited, will be submitted to the Bank within six months of the end of each financial year. The following audit reports will be monitored on ARCS:

Audit Report	Implementing Agency
Compilation of Audit Observations	PIU
Special Account	DEA/GOI

- The consolidated Audit Utilization Certificates (AUCs) for the project expenditure as a whole for each financial year has to be submitted to the WB by 30th September of the next financial year. This certificate is to be issued by the concerned statutory auditors.
- The responsibility of getting the accounts audited and submission of the AUCs at the end of each financial year to the PIU as per the dates so fixed by the PIU keeping in view (i) above will lie with the individual implementing agencies under the overall responsibility of the CPI.
- Audit is conducted to see that the individual expenditures included in the SoE are fully supported by documentation retained by the implementing units, the expenditures are properly authorized and eligible under the loan/ credit agreements and the expenditures are properly accounted.
- The observance of the WB procedure will be mandatory so as to ensure that there are no audit disallowances, and
- In case of an audit disallowance, the expenditure so disallowed will be transferred from the NAIP to some other source of funds of the implementing agency and the resultant balance will have to be refunded to the PIU-NAIP immediately after the conduct of audit.

8.7.1. Internal Audit

Considering the large size of the operation and multiplicity of spending units, management oversight will be strengthened by quarterly internal audits. A quarterly internal audit will be conducted by a CA firm or Finance wing of the PIU. The World Bank recommends appointment of a reputed audit firm acceptable to the Bank under agreed TOR. Audit in each quarter will be done on a sample basis (selected sample of spending units and within that selected sample of transactions). The sample for audit in each quarter will be selected in consultation with the PIU based on factors such as amount of expenditure incurred, perceived risks, etc. The internal auditor will assess the operation of the project's financial management system and will review internal control mechanisms. Issues arising in the external and internal audits would need to be promptly addressed and acted upon in a timely manner by the project authorities.

8.7.2. Audit by the World Bank

The World Bank also conducts post-audit of the SoE-based re-imburement on a sample basis. For this

purpose the records/ accounts of the implementing agencies are audited by the firm of Chartered Accountants appointed by the Bank.

8.8. FINANCIAL GOVERNANCE

It is expected that:

- As and when a Consortium is formed, the Consortium Partners will have to get their financial management systems assessed and certified by one of the CA firms from the roster or by the finance wing of the PIU. The CA firm/ Finance wing of the PIU will certify that the financial management systems of the Consortium Partners are compliant with the project requirements.
- Each implementing agency will get the audit carried out as per the schedule and by the agency notified by the PIU. The internal auditor will assess the operation of the project's Financial Management System, including a review of internal control mechanism. This will assist the PIU to identify issues and take corrective actions in a timely manner. The institutions where internal audit would be conducted, will be decided by the PIU based on magnitude of expenditure and risks perceived,
- Any re-appropriation of funds from one head to other will not be normally permissible. However, in exceptional cases, such re-appropriation may be allowed with the approval of the competent authority,
- The mechanism for distribution and accounting of the royalty will be worked out separately,
- In case an implementing agency defaults and withdraws from the Consortium in between, all the funds so received by the Consortia Partners will be required to be refunded to the Council, along with the highest rate of penal interest of the bank prevailing at that time,
- The assets acquired out of the sub-project fund will be the property of the Council,
- All the vouchers/ records/ files relating to the NAIP expenditure will have to be kept in proper condition by the partners up to 5 years after the completion of the project,
- Adequate financial staff is to be provided from the very beginning so as to ensure that the sub-project work does not suffer. As far as possible, the staff deputed for the work relating to maintaining of sub-project accounts should be well-versed with accrual accounting system and preferably acquainted with externally aided projects of the WB or some other agency,
- The staff should not be changed/transferred at

frequent intervals unless and until required to be done on administrative grounds but with information to the PIU, NAIP,

- For assisting in the finance and accounts work of the NAIP, provision shall be made in sub-project proposal for hiring of the skilled staff under contractual services (if required). The hiring of the staff will be through a service contractor who shall be selected by adopting the World Bank guidelines. It will be ensured by the implementing agencies that such hiring will not create any permanent liability on the part of the ICAR. In no case, the ICAR will be responsible for any such liability,
- The first internal audit report should be submitted to the World Bank within the first 6 months of project implementation,
- The PIU and every spending unit should maintain throughout the project period staff in positions agreed for handling finance functions,
- The financial management software should be ready for implementation and staff trained within six months of the project starting incurring expenditure after effectiveness.

8.9. ON-LINE FINANCIAL MANAGEMENT SYSTEM

A Financial Management Software System will be selected, customized and rolled out across the ICAR system. Capacity building activities to prepare finance and administration staff for the new system will be designed and implemented.

A need is felt to have a financial and accounting system which could not only meet the present day accounting requirements but also to help the day-to-day monitoring both in terms of quantitative and qualitative aspects from operational as well as management point of view. Therefore, a web-based Financial Management System having broader coverage of the ICAR/ SAUs/ NGOs/ Private Bodies/ Other Govt. Depts./ Foreign Aided Projects will be developed. For an early implementation of this FMS, an off the self-software will be identified with the help of the project management consultant and will be customized according to the needs of the NAIP/ ICAR. The FMS/ MIS will be developed on a universally tested software platform like SAP/Oracle. This system will be an integration of an accounting system with a procurement management system. The system will enable to retain a full set of accounting data in standard accounting format. The FMS of the NAIP will be at first stage implemented at the PIU and Consortia as a pilot project,

after that it will be expanded to the ICAR Hqrs. and its institutes. The proposal in its second stage envisages the integration with the Pay Role Package, Inventory Management, Research Project Management, Personal Information System, Library Information System, M&E System, Knowledge Management-related modules so that package broadly can be termed as the MIS of the ICAR. A sound and updated information should serve as a base for the effective managerial control and timely decision making. The FMS/ MIS is expected to enable a meaningful extrapolation, forecasting and projections.

The primary objective of the FMS will be to assist in the processing and tracking of investments to projects, capacity building and institutional support. The MIS will be an important tool for management, M&E and reporting. Standard data management procedures and processes will be developed with the assistance of an MIS expert or consultant. The objectives of the FMS/ MIS as a tool will be to:

- Capture the complete project cycle from the beginning, i.e. project/ sub-project submission, approval process, sanction and funding.
- Track the expenditure progress of sub-projects as well as the overall progress of the NAIP.
- Manage finances, budgets and procurement.
- To evaluate the project and the NAIP sub-projects on an ongoing basis as well as at midterm and after completion.
- Provide all necessary reports.

The FMS-MIS implementation plan finally will result in capacity building and enhancement of managerial

skill for finance and other officials. The ultimate aim of the entire effort is to achieve a complete robust solution through this FMS to cater the overall needs of Accounting, Financial and Administration disciplines at least for the next 8-10 years. Finally, it will help in strengthening and remodelling the complete system of the ICAR, and will equip it as a learning organization to meet the challenges of 21st century.

Once the software is developed, it will be mandatory for all the Consortium Partners to adopt the system and report through it for which adequate training will be provided by the PIU. The software will have multiple-user system and will be user-friendly. It will enable us to generate the following release and expenditure reports:-

1. Subject Matter Division-wise
2. Component-wise
3. Expenditure item (Head of Accounts)
4. Sub-head-wise
5. Project-wise
6. Consortium Partner-wise
7. Expenditure category-wise (Recurring/Non-recurring)
8. Reimbursement claims—category-wise
9. Monthly/Annual Accounts
10. Bank Reconciliation
11. Cash Book
12. Ledgers

The operational manual to be developed for FMS-MIS, covering all the formats, etc. will be a part of this manual.

□

CHAPTER 9

PROCUREMENT ARRANGEMENTS

9.1. GENERAL

Sound public procurement is vital for ensuring success of a Project through promoting good governance and better fiscal management with economy and efficiency. Under the World Bank-financed Projects the Procurement procedure of the World Bank is to be followed. It is essential to make the expenditure eligible for reimbursement.

The Articles of the agreement require the World Bank to ensure that the proceeds of Loan/Credit are used for the purposes intended with due attention to economy and efficiency. Accordingly, the Bank has developed Guidelines for procurement of Goods, Works and Consultancy, which represent;

- Accumulated Experience of the Bank/ IDA, and
- Good Public Procurement Practices on a Global Scale.

The World Bank Guidelines explain the various procedures acceptable and these are applicable only to the extent provided in the Legal Agreements for specific projects.

9.1.1. Consideration for Procuring Goods under World Bank Financed Projects

- Need for economy and efficiency in the execution of the project.
- The Bank's interest as a co-operative institution in giving all eligible bidders from the developed and developing countries the same information and equal opportunity to compete.
- The Bank's interest as a development institution in encouraging the development of domestic contracting and manufacturing industries.
- The importance of transparency in the procurement process.

9.1.2. Features of World Bank's Model Procurement Documents

- Sharing of risks between the parties of the contract;

- Incorporation of suitable qualification criteria;
- Incorporation of precise and fair evaluation criteria;
- Incorporation of non-discriminatory/ broad technical specification;
- Ensuring transparency by public bid opening, pre-disclosure of qualification and evaluation criteria, absence of negotiations;
- Award to the lowest evaluated responsive bidder, meeting the specified qualification criteria;
- Award to be published in a web;
- Satisfactory award appeal/ challenge/ debriefing procedures;
- Fair conditions of contract; and
- Incorporation of a suitable dispute resolution mechanism and market-oriented payments terms.

9.1.3. Important Concerns in Procurement of Goods in India

- Delays in finalization of bidding documents;
- Delays in bid evaluation and award of contracts;
- Requests for rejection of bids outside a predetermined margin or bracket of prices and negotiations;
- Delays in signing of contracts after obtaining no objection from Bank;
- Delays in releasing of advances and other payments during execution;
- Inadequate engineering leading to wide variations at the time of implementation and consequent disputes;
- Delays in resolving issues during contract implementation; and
- Weak contract administration.

9.2. METHODS FOR PROCUREMENT OF GOODS UNDER WORLD BANK FINANCED PROJECTS

The following methods of procurement will generally be applicable:

- International Competitive Bidding;
-

- Limited International Bidding;
- National Competitive Bidding;
- Shopping: International/National;
- Direct Contracting; and
- Force Account.

In the subsequent paragraphs a brief note detailing the salient points on methods of procurement are explained.

9.2.1. International Competitive Bidding (ICB)

Afford opportunity to all eligible prospective bidders from all countries to bid.

To be adopted in the following case:

- For packages estimated to cost equivalent of US \$ 1 million and above per contract for Goods and Equipments,
- Irrespective of value, where supplies need import and entail payment in foreign currency; and,
- Generally for all contracts in which foreign firms can be expected to participate.

(a) Requirements

- Publication of General Procurement Notice, followed by specific Invitation for Bid (IFB) in the United Nations Development Business (UNDB) online and through Market publication;
- Transmission of IFB to those who express interest in response to the General Procurement Notice;
- Publication of IFB in national newspapers having wide circulation in all the regions of country;
- Use of the World Bank's standard bidding document;
- Sale of bidding document to start only after publication of IFB in UNDB and national newspapers; and
- Bidding period 45 to 90 days from date of start of sale of bidding documents.

(b) Steps

- Notification/ Advertising;
- (Pre-qualification, if provided in legal agreement);
- Issue of Bidding Documents;
- Submission of Bid;
- Public Opening of Bids;
- Evaluation;
- Selection of lowest evaluated responsive bid based on post-qualification;
- Contract Award;
- Contract Performance;

- Award to be published in UNDB online/ web; and
- Publication of award in Development Business.

9.2.2. Other Methods of Procurement

To be adopted:

- Where ICB would not be most economic and efficient method of procurement and where other methods are deemed more appropriate.
- As provided in the Legal Agreements.

(a) National Competitive Bidding (NCB)

Competitive Bidding advertised nationally for procuring Goods or Works, which by their nature or scope are unlikely to attract foreign competition. Currency specified is Indian Rupees for bidding as well as for payment. However, foreign bidders are not to be precluded from participation, if they wish to bid; but they are also to be paid only in Indian Rupees. Domestic preference will not be applicable.

To be adopted where:

- The contract values are more than the equivalent of US \$ 50,000 for goods/ work per contract
- Works are scattered geographically or spread over time;
- Works are labour intensive;
- The Goods and Works are available at prices below international market; or
- Foreign firms are not likely to be interested.

Also see Appendix-24

(b) Shopping: International / National

Shopping is a procurement method based on comparing price quotations obtained from several foreign or national proven-suppliers, usually at least three, to ensure competitive prices. It is an appropriate method [a] for procuring small amounts of off-the-shelf goods or standard specification commodities for which more competitive methods are not justified on the basis of cost or efficiency; [b] for procurement in emergency projects or for urgent relief-type operations including re-establishment of vital services like utilities, communication, shelter and vital supplies which stem from disaster or conflict. These emergency contracts may involve one or several activities in supply of goods, installation and commissioning and very urgent minor civil works. In case of civil works or supply involving substantial installation, the term "shopping" is not used but referred to commonly as "price comparison". Such individual contracts costing less than the equivalent of US \$ 50,000 for both Goods & Equipment and Works

will be procured through using Shopping Procedure. The threshold for procurement of vehicles would be US \$ 100,000 for adopting Shopping procedure.

The requests for quotations shall indicate the description and quantity of the goods as well as desired delivery time and place.

Under International shopping, quotations should be solicited from at least three suppliers in two different countries.

Quotations could be obtained by telex or facsimile. The evaluation shall follow sound public or private sector practices. The terms of the accepted offers shall be incorporated in a purchase order.

Rate Contracts of the Directorate General of Supplies and Disposals (DGS&D) are acceptable under National shopping (Rate Contracts of State Governments are not acceptable, but they can be considered as one quotation and compared with those obtained from other suppliers).

Goods that otherwise qualify for shopping could be procured directly from UN agencies.

Note: *shopping is intended to be a simple and rapid procurement method; it is one of the least competitive procurement methods and may be abused unless it is carried out in compliance with legal agreements and observing a minimum formality in the process and with appropriate record keeping for verification and audit. Shopping shall be restricted to cases when the justification for it is beyond contention. Shopping should not be used as an expedient to by-pass more competitive methods or fraction large procurement into smaller ones solely to allow the use of Shopping.* When the nature of the specification is complex or type of procurement requires an elaborate, detailed evaluation system (i.e. efficiency delivery times etc.) that needs substantial documentation; a formal bidding process instead of shopping is to be used. Shopping is not appropriate in these cases because it is a method that would not require complex documentations or all the formalities of a bidding process.

(c) Direct Contracting

Direct contracting without competition may be an appropriate method under the following circumstances:

- Extension of existing contracts for Works or Goods awarded with procedures acceptable to the World Bank, justified on economic grounds;
- Standardization of equipment or spare parts to be compatible with existing equipment;
- Proprietary items, books & periodicals, satellite imagery, data, aerial photography, maps and research data, manuals, software, seeds, plants,

fertilizer, etc. less than US\$10,000 equivalent per contract and petty items costing less than US \$ 100 equivalent. Items costing more than the prescribed value proposed under Direct Contracting Procedure would require prior approval of the Bank.

- Need for early delivery to avoid costly delays;
- In exceptional case, such as in response to natural disasters; and
- Award to be published in UNDB online/ web.

(d) Force Account

Force Account is construction by the use of borrower's/ implementing agency's own personnel, materials and equipment (generally limited to 10% of the cost of Civil Works) where:

- Quantities of work involved cannot be defined in advance;
- Works are small and scattered or in remote locations where mobilization costs for contractors would be unreasonably high;
- Work must be carried out without disrupting on-going operations;
- The risk of unavoidable work interruption are better borne by the borrower/ implementing agency than by a contractor; or
- There are emergencies needing prompt attention.

Farm development works estimated to cost less than US\$ 30,000 equivalent per contract are expected to be carried out following Force Account procedure. The works estimated to cost US \$ 10,000 equivalent or more proposed under Force Account procedure would require prior approval from IDA/ Bank.

(e) Prior Review of Contracts by the World Bank

The Procurement Plan shall set forth those contracts which shall be subjected to prior review of the World Bank. The initial threshold as indicated in the PAD are US\$ 1 million and above for Goods and Equipment and US\$200,000 equivalent and above for Works.

9.3. PROCUREMENT OF CONSULTANTS

9.3.1. General Considerations

- The need for high quality services;
- The need for economy and efficiency;
- The need to give qualified consultants from all eligible countries an opportunity to compete in providing the services financed by the Bank;
- The Bank's interest in encouraging the

development and use of national consultants in its developing member countries; and

- The importance on transparency in the selection process.

9.3.2. Steps for Hiring Consultant

- Preparation of the Terms of Reference (ToR);
- Preparation of the cost estimate and the budget;
- Advertising;
- Preparation of the shortlist of consultants;
- Preparation and issue of the Request for Proposals (RFR);
 - Letter of Invitation (LoI);
 - Information to Consultants (ITC); and
 - Proposed Contract;
 - Receipt of Proposals;
 - Evaluation of Technical Proposals: Consideration of quality;
 - Evaluation of Financial Proposals;
 - Final Evaluation of Quality and Cost; and
 - Negotiations and Award of Contract to the Selected Firm.

9.3.3. Preparation of the Terms of Reference of Consultant

It should include the following points:

- A precise statement of objectives;
- An outline of the tasks to be carried out;
- A schedule for completion of tasks;
- The support/inputs provided by the client;
- The final outputs that will be required of the Consultant;
- Composition of Review Committee (not more than three members) to monitor the Consultant's works and procedures;
- Mid-term review and Progress Reports required from Consultant;
- Review of the final draft report;
- List of key positions whose CV (1 to 6, exceptionally 8 and experience would be evaluated).

9.3.4. Cost Estimates or Budget

The cost estimates or budget should be based on the client's assessment of the resources needed to carry out the assignment: staff time, logistical support, and physical inputs (for example, vehicles and laboratory equipment). Costs shall be divided into two broad categories; (a) fee or remuneration, and (b) reimbursable and further divided into foreign and local costs.

9.3.5. Advertising (Seeking Expression of Interest) for Short-listing

The advertisement is mandatory for all consultancies valued at US \$ 200, 000 equivalent and over in the following magazines/ bulletins/ newspaper:

- UNDB;
- National Newspapers;
- International Newspapers; and
- Technical Magazines

9.3.6. Short listing of Consultants

Borrowers are responsible for preparation of the shortlist and shall give first consideration to those firms expressing interest, which possess the relevant qualifications. The shortlists shall comprise six firms with a wide geographic spread, with no more than two firms from any one country and at least one firm from a developing country, unless qualified firms from developing countries are not identifiable.

The shortlist can comprise entirely national consultants if the value of assignment is less than equivalent of US \$ 500, 000. However, if foreign firms have expressed interest, they shall not be excluded from consideration (in these cases payment can be in the Country's Currency).

9.3.7. Other Considerations

Government-owned enterprises in the Borrower's country may participate only if they can establish that they:

- Are legally and financially autonomous, and
- Operate under prevalent commercial law.

No dependent agency of the Borrower or Sub-borrower of the project shall be permitted to submit or participate in a proposal for the provision of consulting services under the project.

9.3.8. Hiring of Government Employees as Consultants

The revised guidelines allow the use of Government officials and civil servants to be hired as Consultants under the conditions of paragraph 1.11(d). Paragraph 1.6.3 of the new RFP has been modified to suit this as under:

"No agency or current employees of the Client shall work as Consultants under their own ministries, departments or agencies. Recruiting former government employees of the Client to work for their former ministries, departments or agencies are acceptable provided no conflict of interest exists. *When the Consultant nominates any government employee as Personnel in their technical*

proposal, such Personnel must have written certification from their government or employer confirming that they are on leave without pay from their official position and allowed to work full-time outside of their previous official position. Such certification shall be provided to the Client by the Consultant as part of his technical proposal. ”

9.4. SELECTION PROCEDURES

The various procedures of selection of a Consultant, depending upon the appropriateness in each case, are described in detail in Consultancy Guidelines, May 2004 (CGL). These are as under:

- Quality and Cost-Based Selection (QCBS): This will be the preferred method.
- Quality-Based Selection (QBS): For small assignments costing US \$ 200,000, equivalent or less, selection based on Consultants qualification may be adopted.
- Single Source: May be adopted in cases where the conditions specified in Para 3.9 and 3.10 of the CGL are satisfied. No Objection Certificate of the World Bank before adopting Single Source Method of selection will be required.
- Selection Under a Fixed Budget.
- Least Cost Selection

9.5. SELECTION OF PARTICULAR TYPE OF CONSULTANTS

- UN Agencies
- Shall not receive any preferential treatment in a competitive selection;
- Privileges to be neutralized to compare with others; and
- Single-source threshold will apply for this as well
 - Procurement and Inspection Agents QCBS is to be used (up to 50% weightage for cost)
 - Auditors
- QCBS or Least Cost is to be used; and
- Cost could be given weightage unto 40-50 points
 - Selection of Individual Consultants

Teams of Personnel are not required

- No additional outside (home office) professional support is required.
- Experience and qualifications of the individual are the paramount requirement (when coordination, administration or collective responsibility becomes difficult because of the

number of individuals, it would be advisable to recruit a firm).

- Advertisement is not mandatory. Implementing agencies are however, free to advertise if they so desire.

9.6. NGOS (NON-GOVERNMENTAL ORGANIZATIONS)

All procedures specified in Consultancy Guidelines will apply;

- No preference;
- No mix-up in short list with others; and
- Criteria to adequately reflect the considerations

The selection of NGOs in the shortlist should generally take into account among others, the following criteria;

- The NGOs should be non-political and should be having a proven track record of satisfied beneficiaries on similar assignments (at least two years of experience in works of this type); (Period could be modified to suit individual cases);
- It should be registered as a society or have other corporate status;
- It should have facilities to maintain separately, records and accounting and auditing of funds allocated for assignment;
- It should consist of adequate number of experienced field staff conversant with the local culture and language, and the socio-economic dimensions of the beneficiary groups;
- The staff of the selected NGOs should have excellent communication skills;
- It should possess internal stability so as to assure long-term support; and
- It should not have been blacklisted by the Central Social & Welfare Board (CSWB) or Council for the Advancement of Peoples Action & Rural Technology (CAPART) or by Central or any State Governments in India.

9.7. EVALUATION OF CONSULTANTS

The evaluation of the technical proposals should be done as per criteria (Appendix 25) specified in the Letter of Invitation. The evaluation report should be compiled in the format specified and forwarded to Bank for review and comment for all prior review cases, firstly before price envelopes are opened publicly and combined evaluation is done (financial cum technical), and secondly after final selection is made following combined evaluation and before the contract is negotiated with selected consultant.

(a) *General qualifications*: General education and training, length of experience, positions held, time with consulting firm as staff, experience in developing countries and so forth;

(b) *Adequacy for the assignment*: Education, training, and experience in the specific sector, field, subject, and so forth, relevant to the particular assignment; and

(c) *Experience in the region*: Knowledge of the local language, culture, administrative system government organization, and so forth.

9.8. NEGOTIATIONS WITH CONSULTANT

Negotiations shall include discussions of the TOR, the methodology, staffing, Borrower's inputs and special conditions of contract.

The selected firm should not be allowed to substitute key staff, unless both parties agree that undue delay in the selection process makes such substitution unavoidable or that such changes are critical to meet the objectives of the assignment.

Financial negotiations shall include clarification of the consultants' tax liability in India (if any), and how this tax liability has been or would be reflected in the contract. (*Consultancy Services tax (in respect of all consultancies) and tax on fees for technical services provided by foreign consultants, payable as per Section 115A (1) (b) of Income Tax Act and duties on imported equipment brought by foreign consultants to India for providing the required services are to be paid/reimbursed by the client separately. (The World Bank does not finance taxes imposed by borrowing country).*)

Where QCBS procedure is followed, in the case of lump sum contract price should not be negotiated; in the case of Time-Based contracts, proposed unit rates for staff months and reimbursable shall be negotiated (since these have already been a factor in selection) unless there are exceptional reasons. Reimbursable are paid on actual upon presentations of receipts and hence not subject to negotiation. If client wants to fix a ceiling he/she should do so by indicating this in the RFP.

9.9. REJECTION OF CONSULTANTS

Cases of rejection of all proposals received need to be referred to the World Bank, through the PIU-NAIP, for no objection and clearance.

9.10. SELECTION AND EMPLOYMENT OF CONSULTANTS

Types of Contracts specified in the Consultant Guidelines are as under:

9.10.1. Lump Sum Contracts

Lump Sum contracts are used for assignments in which the content and the duration of the work are clearly defined. Payment is made upon delivery of outputs. The main advantage of this type of contract is that it is easy to administer.

Examples of Lump Sum contracts includes:

- Feasibility studies.
- Environmental studies.
- Detailed design of a standard structure.

9.10.2. Time-based Contracts

Time-based contracts are used for assignments in which it is difficult to define the scope and the duration of the work to be performed. Payment is based on an hourly, daily or monthly rate, plus reimbursable expenses using expenses or agreed-upon unit prices. This type of contract provides for a maximum total payable amount that includes a contingency for unforeseen work and duration, price adjustments, etc.

Examples of Time-based contracts include:

- Preparation of data.
- Complex studies.
- Supervision of construction.
- Training assignments.
- Advisory services.

9.10.3. Retainer and/or Contingency Fee

Retainer and/or Contingency fee contracts (success-fee) contracts are used to remunerate consultants or banks on performance –for example for privatization of public assets.

Example of success-fee contracts include:

- Privatization (sale of publicity-owned assets);

9.10.4. Percentage Contracts

Percentage contracts relate to the fee paid to the consultant based upon the estimated or actual project construction cost or the cost of the goods to be procured or inspected. The percentage is established based upon the market norm or standard practice in the industry.

Examples of percentage contracts include:

- Architectural services
- Engineering services
- Procurement services
- Inspection agents

9.10.5. Indefinite-delivery Contracts

Indefinite-delivery contracts are used for on-call specialized services. The Borrower and the firm agree upon the unit rates to be paid to the experts and payments

are made on the basis of the time actually used.

Examples of Indefinite-delivery contracts include:

- Advisors for complex projects, e.g., a dam panel
 - Expert adjudicators
 - Technical troubleshooting
- (Use of the World Bank- issued Contract Forms is mandatory)*

9.11. REQUEST FOR PROPOSALS (RFPs)

The RFP shall include:

- A Letter of Invitation (LOI);
- Information to Consultants;
- The TOR; and
- The Proposed Contract

The implementing agencies are required to use the standard RFPs issued by the World Bank and adopted in the NAIP.

9.12. MODEL RFPs

The following types of model RFPs are available with the PIU-NAIP:

- Hiring of Consultancy Services – Request for Proposals – Quality & Cost—based Selection (QCBS) – Time based Payments;
- Hiring of Consultancy Services – Request for Proposals – Quality & Cost—based Selection (QCBS) – Lump Sum Payments;
- Hiring of Consultancy Services – Request for Proposals – Fixed Budget Selection (FBS);
- Hiring of Consultancy Services – Request for Proposals – Least Cost Selection (LCS); and
- Hiring of Consultancy Services – Request for Proposals – Selection Based on Qualification or Single Source Selection (SSS).

9.13. STANDARD FORMS OF CONTRACT

- Small Assignments – Time-based Payments
 - Small Assignments – Lump Sum Payments
- (The above models should only be used for inviting proposals from short-listed firms (including sole source).

9.14. CONDITIONS FOR PRIOR REVIEW BY WORLD BANK

- The Procurement Plan shall set forth those contracts which shall be subjected to prior review of the World Bank. The initial threshold as indicated in the PAD for Contracts for Consultancy Services valued:
 - US \$ 200,000 equivalent and above for

Consultancy Firms;

- US\$ 50,000 equivalent and above for Individual Experts as Consultants.

All Consultant Contracts for assignment of a critical nature regardless of value:

- Contract amendments valued at more than the equivalent of US\$ 100,000 and US\$50,000 for Firms and Individuals, respectively, or those that raise the total contract value above these thresholds;
- Any standard document that the Borrower/ implementing agency intends to develop and use repeatedly;
- First few contracts (say three), irrespective of value in the case of all new projects;
- Procurement Plan for Consultancy (reviewed annually).

Prior review would be at every stage as follows:

- Terms of Reference;
- Short-listing;
- RFP documents containing Letter of Invitation, Information to Consultants and Conditions of Contracts;
- Evaluation report of the technical proposals;
- Report after financial/ combined evaluation (with a copy of the winning proposal for information only);
- Negotiated draft contract: and
- Final Contract (to be accompanied by checklist).*

(*The checklist would be available in the detailed Procurement Manual of the NAIP. It could, however, be obtained from the PIU-NAIP separately.)

9.15. POST-REVIEW BY WORLD BANK

Post-review covers the final contract along with appendices and a copy of evaluation note/award recommendations, which should be submitted along with the Checklist (however, TOR and Consultants contracts for assignments of critical nature will be reviewed in all cases, regardless of value)

9.16. GUIDELINES FOR PROCUREMENT OF COSTLY EQUIPMENTS

For procurement of costly equipments, the following points may be kept in view:

9.16.1 Specifications

The specifications of the required goods/equipment should be clearly stated without any ambiguity so that the prospective bidders can send meaningful bids. In

order to attract sufficient number of bids, the specifications should be broad-based to the extent feasible. A technical committee may be constituted to review and finalize the specifications. Finalization of specifications should also be preferably based on a market survey of available models and their specifications.

9.16.2 Warranty

Warranty and Annual Maintenance Contract (AMC) for the duration of the life of the equipment are desirable but we have to be careful in deciding the period for which they are to be provided. Laboratory equipment may get obsolete with time and there is a need to replace them. Providing a very long warranty with AMC coverage may therefore add to the cost without being fruitfully utilized as the length of commitment does have an effect on price. A Warranty with AMC coverage of around 5 years (2+3 years or 3+2 years, respectively) may be preferred to begin with. The AMC can be extended beyond this period if the equipment remains serviceable and is to be continued. The World Bank suggests that the Warranty period of 24/27 months should be provided only if it is an accepted industry standard for the equipment being procured. Otherwise, this may result in reduced competition and increased cost. The period should therefore be stipulated after ascertaining the normal industry standards. Bank Guarantee (BG) coverage for AMC should invariably be obtained so that the supplier or his agent has continued interest in maintaining the equipment.

9.16.3 Qualification Criteria:

It may be desirable to buy a standard model befitting the laid down specifications rather than equipment tailor-made for the purpose. This is likely to give more trouble-free service as such equipment has stood the test of time. In the qualification criteria, therefore, we may include that the bidder or his principal should have been manufacturing and supplying the particular equipment for say six months or one year prior to bid opening. Qualification criteria like years of experience and extent of sales in the past have a bearing on quality as also on competitiveness. It is better to base them on a market survey. In case an Indian agent is to provide substantial incidental services it may be desirable to prescribe qualification criteria for the agent in addition to the qualification criteria for the manufacturer/ supplier.

9.16.4 Training:

Training for use of critical equipment is necessary and should form part of the incidental services. However,

free training at a manufacturer's end if located in a foreign country will add to the cost and should be asked for only when it is considered essential. Otherwise non-utilization of this provision will only mean payment of a hidden cost, remaining unused. Further the break-up of the cost of training must be obtained at the time of bidding itself. Also, the nature and scope of training should be clearly defined in the bid documents.

9.16.5 On-site Service:

Unless onsite service is provided for both warranty and AMC, there may be problems, wherein the bidder may agree to provide replacement of parts but the work involved with documentation, import, customs clearance, insurance, etc. for replacement of parts may fall on the purchaser.

9.16.6 Consumer Certificates:

Bidders are usually required to furnish certificates from their consignees for satisfactory performance of the equipment supplied. If complete details are not given by the bidder, the purchaser is not able to verify. It is desirable to ask the bidder to provide the names of contact persons and their telephone numbers with a confirmation that the bidder has no objection to the purchaser verifying with the users.

9.16.7 Bid Evaluation Committees:

It is better to constitute standing bid evaluation committees for major points of purchase at the site, to avoid delays in approvals for constituting such committees each time.

9.16.8 Indian Laws:

The Bidding Document should indicate that the relevant contract would be interpreted under Indian Laws.

9.16.9 Successful Bidder:

The name of successful bidders for awarding the contract should be mentioned on the notice board of the Department/ Organization or in the Bulletin or the Website.

9.16.10. Payment Schedule

The payment schedule should be: (i) ten percent as advance, (ii) seventy percent on shipment (in case of imported items), or proof of delivery in case of indigenous supply; and (iii) twenty percent on final acceptance.

□

CHAPTER 10

ECONOMIC AND FINANCIAL ANALYSIS

10.1. CONTEXT

Several studies have documented the high returns in terms of contributions to the Indian agricultural growth with estimated marginal internal rate of return (IRR) of the order of 50%, and considerable reduction in poverty. A summary of such economic rates of return (ERRs) is presented in Table 1.

Table 1: Economic rates of return to research investment in India (percent)

Measure	Aggregate analysis	Analysis for	
		Individual crops	All crops
Mean	75.4	69.9	71.8
Median	58.5	53.0	57.5
Minimum	46.0	6.0	6.0
Maximum	218.2	174.0	218.2
Number of studies	10	18	28

Source: Assembled by Pal and Byerlee (2005)²³.

Public agricultural research investment intensity (now at around 0.5% of AgGDP [World Bank, 2005])²⁴ continues to be low, by any standards, including across developing countries, and analysts have argued that, as due attention is paid to relatively disadvantaged areas as is proposed under Component 3, returns should be even higher than the marginal returns to further investment in more favoured areas.

Improved understanding of the consequences of investment in agricultural research was a focus of NATP, and several cogent innovations in this domain were strengthened and broadly institutionalized since the mid-1990s, particularly through the creation of Planning, Monitoring and Evaluation (PME) cells in many institutes. The methods adopted generally follow international best practices. It is proposed to strengthen these further

in Component 1 of the NAIP with work taking place within all the supported Components.

The logic in the evaluation of the impact of research conducted through Consortia is that there will be benefits along the value chains generated that are additional to those that emerge only in the primary production system, and that there has been insufficient public (and probably private also) investment in these post-production research opportunities. It is thus speculated that the social returns to public investment in the Indian Agricultural Research might be lifted from about 40% IRR to about 60% IRR, and there will be added returns to the private investors too.

Boosting returns to the Indian public agricultural research investment through the NAIP involves several mechanisms in addition to the value-addition aspects just noted. These include those elaborated elsewhere in the PAD, such as coordinating better with enlarged partnerships to put identified new and improved technologies in place, ensuring generated improvements respond to market demands, bringing improved rural resource-using practices to disadvantaged areas, and so on.

The need for case-by-case analyses of prospective Consortia in the context of competitive selections means that, in project-analysis terms, this project can best be considered as a “framework”-type rather than a “blueprint” type project. The analyses will be demanding in several dimensions, from assembly of baseline data on the pre-project situation, to conceptualizing the nature of the innovation processes to be tracked, to market-parameter-intensive empirical estimation of research benefits to be aligned with relevant costs. To bring some of this analysis forward to assist in competitive selection among Consortium proposals, some simplified indicators will need to be formulated. The dimension

23 Pal, S. and Byerlee, D. (2005), “The funding and organization of agricultural R&D in India: Evolution and emerging policy issues”, In P.G. Pardey, J.M. Alston and R.R. Piggott (eds.) (intended for publication in 2006), *Agricultural R&D in the Developing World Too Little, Too late?* Johns Hopkins University Press for IFPRI, Baltimore, in process.

24 World Bank (2005), *India: Re-energizing the Agricultural Sector to Sustain Growth and Reduce Poverty*, Agriculture and Rural Development Unit, South Asia Region, World Bank, and Oxford University Press, New Delhi.

of overall economic importance might be approximated by an index of, say, final value of a chain (PQ) times a measure of research opportunity such as expected proportion of value (k) to be added if research is successful. For innovations consisting primarily of cost-saving changes to production or processing, such added net value will be largely expected cost savings, which would be analogous to the “PQk” index often noted in the literature as an element of benefit measurement. For the more basic and strategic research of Component 4, the “PQk” index will often be hard to establish and consequently, the selection will become more based on the scientific merit of the proposed research.

10.2. ILLUSTRATIVE RESEARCH CONSORTIA

Research action programmes with a business development approach are emerging in response to increasing complexity of the agricultural technology system. Several examples are described in the Project Note. For the purpose of illustration, one is briefly described here. The success stories surrounding the widespread adoption of conservation tillage pursued by ICAR and others through the Rice-Wheat Consortium (RWC) have been widely reported. The impact pathway adopted by the RWC-NARS-supported research emphasized the participatory processes and multi-disciplinary and multi-institutional partnerships involving key stakeholders, including the private sector. This approach enhanced the relevance of research and accelerated the pace of transfer and adoption of new technologies by farmers. To address the sustainability issues, the NARS partners and the CGIAR Centres focused research on resource-conservation technologies. The sustainability-enhancing technologies resulting from this work have included several positive changes but perhaps none more important than the substitution of conventional tillage involving repeated soil cultivation, planking and pulverization of topsoil with zero or minimal tillage for direct drilling of wheat in the rice-wheat system. Participation of small-scale private entrepreneurs helped in development and manufacture of direct-drills suited to the local conditions.

Other changes included innovations in water management through adaptation of laser land-levelling equipment to improve water-use efficiency up to 25%; improved targeting of crop improvement and management research of NARS and IARCs through feedback provided from the systems-based research of RWC to the component commodity research programmes, especially those related to crop improvement, which helped to

shift priorities in rice breeding towards earlier maturing varieties to allow more timely planting of wheat after rice and development of short-season pulses and potatoes; improved nutrient management through matching of site-specific capacities of the soil to supply nutrients to better match the demands of crops in the system.

The shift to no-till systems of wheat planting is a major achievement of RWC-NARS collaboration, especially under the NATP in India. The technique has been rapidly adopted by farmers. During the 2004-05 planting season, it has been estimated that nearly 1 million hectares of wheat was direct drilled in northwest India. Farmers are reporting higher wheat yields (about 5- 15%), under direct drilling due mainly to more timely planting, reduced weed competition and improved fertilizer-efficiency. Other important benefit included a significant reduction in the cost of production (around US\$150/ha in north-west India). The drivers of rapid adoption have included direct benefits observed by farmers due to technological change and improved socio-economic circumstances of farmers, leading to increased mechanization of agriculture. Other facilitating factors include close research-extension-farmer linkages, collaboration with the private sector, and strong support provided by the national partners.

Each of the research Consortia to be implemented in the NAIP will provide not a blueprint for subsequent projects but a heuristic framework that will guide the ICAR in adapting its research programme to the changing contexts and needs. The key will be openness to the unconventional approaches to R&D, responsiveness to possibly yet uncertain market signals, and above all, a flexible approach to considering novel technological advances. Benefits of such a paradigm shift would be manifold as compared to the proposed investments, and as is evidenced by the illustrative experience highlighted above.

10.3. THE APPROACH TOWARDS ASSESSING THE IMPACTS OF THE NAIP AND OTHER ICAR SCHEMES

10.3.1 Objectives

This part outlines a framework to obtain a systematic assessment of the impact of the NAIP and subsequently, other ICAR schemes. Through the efforts within this framework, the ICAR will demonstrate how the research programmes and products of the NAIP and ICAR Schemes are contributing to the national development objectives and are making life better for the common folk. The work should clearly illustrate in a simple,

objective and unbiased manner whether the investments made to support the NAIP and the ICAR schemes have paid the intended rich dividends in terms of strengthening household welfare and nutritional security, conserving natural resources and environment, increasing income and employment for the rural population, particularly of women, alleviating poverty, and providing competitive advantage at the global level. It should also address whether agricultural research is an efficient and sustainable way of achieving the national objectives, and that payoffs from investment in agricultural research are higher than those realized in other development programmes²⁵.

The scope of the proposed effort will include other ICAR schemes as well as the NAIP. The effort will encourage SAUs and provide technical backstopping to assess impact of their programmes.³

Impact assessment under the NAIP will include the following aspects:

- Documentation of important outputs in terms of scientific and technological advancements and comparison with other systems;
- Impact in terms of institutional development and HRD;
- Measures taken to improve the system's efficiency and their impact in enhancing its effectiveness;
- Efficiency, sustainability and equity impacts at the economy, sector and farm level, if possible, over time;
- Demonstration of these impacts with the case studies of major technologies developed by different ICAR schemes pertaining to the post-Green Revolution era; and
- Efficiency and impact of the NAIP, in revitalizing the research system and contributing in transforming Indian agriculture more market-driven.

10.3.2. Organization:

A committee of senior ICAR research managers and research evaluation specialists under the chairmanship of a high-level official will be constituted to steer the impact assessment work. An NCAP team (Technology Policy Group) will coordinate the work and will provide technical backstopping. About 4-5 scientists will devote a part (nearly 25%) of their time to this work.

Cooperating teams: Cooperating teams, one for

each theme, will be constituted to work in close collaboration with the NCAP team. The cooperating team will consist of two economists (full time) and 2-3 agro-biophysical scientists (part time, one-third of their time) who can work from their respective organizations. These teams will have links with the PME cells of ICAR institutes, especially for documenting research outputs. The cooperating teams will be for the following six different areas: crop value chain; horticulture value chain; livestock value chain; fisheries value chain; NRM systems; and social sciences (trade, regulations, extension, etc.).

Consortia and impact assessment: Impact assessment can be contemplated at several stages and levels of the NAIP activities, and will properly develop in scope during the project as experience expands. There should be some ex-ante work done as part of the preparation of each Consortium, (and ideally even some back-of-the-envelope assessment made as part of the preparation on concept notes). This aspect of the expected economic impact can then be one of the criteria used in making choice about which proposals should be accepted and supported. There would thus be (a) a demand for advice on conducting such ex ante impact analyses, which could presumably be provided by NCAP and the PME units, as well as (b) a need for critical scrutiny of such analyses that are made. Engineering such scrutiny will be an ongoing evaluative aspect of Project management, and the PIU must find sources of competent independent professional scrutiny, such as by NCAER/ IFPRI/ ICRISAT, which can, through independent professional review, add to the quality of the analyses, increase credibility of the process, facilitate evaluation of the Project and thereby help to ensure accountability in general.

10.3.3. Training:

A number of training programmes have been organized by the NCAP on agricultural research evaluation and impact assessment. But need is felt of its further strengthening so that there is a more robust set of specialized skills in this area. Depending upon the requirement, a specially designed training programme can be organized through NCAP for the cooperating teams. The hands-on training programme will cater to the needs of the impact case studies and will be organized with support from international experts. □

²⁵ Undertaking impact assessment of SAUs *per se* would be a huge task, beyond the capacity and responsibility of the proposed team

APPENDICES

Appendix – 1

SOME IMPORTANT DEFINITIONS

Agriculture: According to the Model Act for Agricultural Universities in India, as revised in 1994, the definition of agriculture is: “**Agriculture**” includes the basic and applied sciences of: a) Soil and Water Management; b) Crop Improvement and Production; c) Horticulture: Fruits, Vegetables, Floriculture, Spices and Medicinal Plants; d) Veterinary Science and Animal Husbandry, Dairy Science, and Animal Products Technology; e) Fisheries; f) Forestry, Farm Forestry, Forest Management and Silviculture; g) Agricultural Engineering and Technology; h) Post-Harvest Technology including Processing and Marketing; i) Land Use Planning and Management; j) Sericulture including Mulberry Culture; k) Apiculture; l) Home Science; m) Basic Sciences and Humanities in relation to Agriculture; and n) Subjects pertaining to Agricultural Technology and Rural Development.

A farming system is defined as the population of individual farm units that have broadly similar, resource bases, enterprise patterns, household livelihoods and constraints, and for which similar development strategies and interventions would be appropriate. Usually a few types of farming systems are dominant in an agro-climatic zone, examples of farming system include: rainfed farming systems, irrigated farming systems, rice farming, etc. The Farming Systems Approach (FSA) considers biophysical dimensions and socio-economic aspects at the level of the farm where most production and consumption decisions are taking place. Farming system, tend to be influenced by external variables such as policies, institutions, markets, public goods, and information availability.

A Production to Consumption System (PCS) is the entire set of actors, materials, activities, services, and institutions involved in growing and harvesting a particular commodity, transforming it into higher value

product(s) and marketing the final product. The system includes the technologies used to grow and process the material, as well as the social, institutional and economic environment in which these processes operate.

Value Chains are chains that incorporate all activities and services that are undertaken along a commodity system from the primary producer to the final consumer. As products move from one stage to another, additional value is created. A typical chain would include producers, assemblers/ traders, processors, distributors, retailers, and finally consumers. Producers utilize inputs such as seeds, fertilizers, chemicals, and implements to produce raw materials. Traders or assemblers purchase these raw materials in bulk and transfer them to the processors. Processors or manufacturers convert the raw material into products that the consumers want to buy. From there, the goods go to the distributors. Distributors are typically wholesalers who pass the goods on to the retailers and eventually to consumers. Distributors can also have direct linkages with restaurants and hotels to which they sell the products directly.

Conceptually the value chain concept differs from PCS, in the sense that the former carries with it a managerial connotation, relating to a group of economic players coordinating together to minimize the transaction costs and to increase the efficiency in production, processing and marketing of a specific commodity. When two or more of these players are under a single management, the chain becomes “vertically integrated”. Moreover, the value chain concept more explicitly recognizes the marketing and transaction processes, where additional value is being created.

In NAIP, it is expected that the PCS concept will be applied following a coordinated, though not necessarily, integrated value chain approach.

Appendix – 2

MEMBERSHIP AND COMPOSITION OF DIFFERENT COMMITTEES

I NATIONAL STEERING COMMITTEE (15 MEMBERS)

(a) DG, ICAR	Chairperson
(b) Secretary, ICAR	Member
(c) Financial Advisor (DARE)	Member
(d) DDG (1) (on rotating basis)	Member
(e) Chairmen, Consortium Advisory Committee (CAC) (2)	Members
(f) State Agric. Production Commissioner (APC)	Member
(g) Commissioner of GOI (One of the four on the rotating Basis amongst Agric./Animal Husbandry/Hort./Fisheries)	Member
(h) One Vice-Chancellors of SAUs	Member
(i) Chairperson, APEDA	Member
(j) Progressive Farmers (2)	Members
(k) Private Sector (2)	Members
(l) National Director (NAIP)	Member Secretary

Terms of Reference

- To provide overall policy guidance and oversee NAIP,
- To approve annual work plan and budget of NAIP, and to monitor NAIP progress, and
- To advise on conflict resolution and to resolve outstanding issues.

Periodicity of Meeting

Twice a year

Note: All the non-official members will generally serve for three years. In order to ensure continuity, initial staggering of new memberships will be provided for.

II. PROJECT MANAGEMENT COMMITTEE (14 MEMBERS)

(a) DG, ICAR	Chairperson
(b) Secretary, ICAR	Member
(c) Financial Advisor (DARE)	Member
(d) Deputy Directors General, ICAR (4) (on rotation basis)	Members
(e) Commissioner of GOI (One of the four on a rotating	Member

basis amongst Agric./Animal Husbandry/Hort./ Fisheries)

(f) Vice-Chancellors of SAUs (2)	Members
(g) Consortium Advisory Committee Chairman (1) (selected from sub-project under Component 2, 3 and 4)	Member
(h) Progressive Farmer (1)	Member
(i) Private Sector (1)	Member
(j) National Director (NAIP)	Member Secretary

Note: The National Coordinators and other PIU-Staff may be called upon to attend PMC meetings as required.

Terms of Reference

- Will have the main executive responsibility for the overall management of NAIP and for monitoring sub-project implementation by the Consortia that have received grants for implementing NAIP sub-projects according to the agreed contracts.
- Review project progress, approve NAIP's annual work Programme and budget.
- Provide the necessary information and guidance to the ND, PIU and the RPC for the execution of the project.
- Will also (through the PIU) organize an Annual National Workshop on NAIP progress, impact and constraints to which all stakeholders and participants in project implementation will be invited.
- Will help to internalize and, in time, expand coverage of new approaches being introduced under the project to other entities and activities of the ICAR and to some extent the entire NARS.

Periodicity of Meeting

Regularly as and when required.

Note: All the non-official members will generally serve for three years. In order to ensure continuity, initial staggering of new memberships will be provided for.

III. O&M PROGRAMME COMMITTEE (14 MEMBERS)

- | | |
|--|------------------|
| (a) A distinguished R&D Manager | Chairperson |
| (b) Secretary, ICAR | Member |
| (c) AS & FA (DARE) | Member |
| (d) Vice-Chancellor of SAU (1) | Member |
| (e) Director of an ICAR National Institute | Member |
| (f) National Director (NAIP) | Member |
| (g) Representative of Private Sector (1) | Member |
| (h) Specialists* (6) | Members |
| (i) National Coordinator (O&M) | Member-Secretary |

Note: * An Advisory panel of 6 senior specialists with main responsibility for sanctioning/recommending major NAIP Component-1 sub-projects and activities, overseeing and monitoring the progress of these at the time of mid-term reviews and for recommending corrective actions on the basis of O&M AG reports.

Terms of Reference

- To identify and approve O&M sub-projects as per powers delegated by PMC.
- To approve work plans, guide and overview the progress of the sub-projects under O&M Component.

Periodicity of Meeting

Quarterly; initially more frequently.

Note: All the non-official members will generally serve for three years. In order to ensure continuity, staggering of non-official members may be made.

IV. RESEARCH PROGRAMME COMMITTEE (13 MEMBERS)

- | | |
|---|-------------|
| (a) An eminent person in the field of Agriculture and allied sciences | Chairperson |
| (b) Deputy Directors General, ICAR (4) (on rotation basis) | Members |
| (c) Four experts representing major disciplines involved in consortia | Members |
| (d) National Director (NAIP) | Member |
| (e) Agricultural Production Commissioner, DAC, Govt. of India | Member |
| (f) Director (F), PIU-NAIP | Member |
| (g) Senior most National | Member- |

Coordinator for Research Sub-projects Secretary

Terms of Reference

- To review and approve proposals as per powers delegated by PMC.
- To approve work plans, guide and overview the operation of all Research Programmes/ Consortia.

Periodicity of Meeting

The RPC will meet quarterly to review and take decisions on the selection of sub-projects. Once all the sub-projects are in operation, the Committee will meet as frequently as necessary for monitoring the progress of sub-projects and other related activities such as granting additional funds or endorsing major modifications for on going sub-projects.

Note: All the non-official members will generally serve for three years. In order to ensure continuity, initial staggering of new memberships will be provided for.

V. O&M ADVISORY GROUP (5 MEMBERS)

- | | |
|---|------------------|
| (a) One of the Experts on agricultural research management and agricultural R&D Issues selected by O&M PC | Chairperson |
| (b) Three external experts representing the areas of organizational development, public/ private partnerships, information management, human resource management, M&E, communication technology, intellectual property right, quality assurance, technology dissemination, environment and gender | Members |
| (c) National Coordinator (O&M) | Member Secretary |

Note: The group may also invite additional experts for specific issues.

Terms of Reference

- To review the progress of activities of different sub-projects under Component 1.

Periodicity of Meeting

Quarterly

Note: All the non-official members will generally serve for three years. In order to ensure continuity, initial staggering of new memberships will be provided for.

VI. TECHNICAL ADVISORY GROUPS (7 MEMBERS)

(There will be three TAGs, one each for Component 2, 3 and 4)

- | | | |
|-----|--|------------------|
| (a) | An expert in agricultural research and Agricultural R&D issues selected by the RPC | Chairperson |
| (b) | Five scientists and development specialists with skills and experience in bio-physical, economic and social sciences (from both the public & private sector) | Members |
| (c) | Concerned National Coordinator | Member Secretary |

Note: The group may also invite additional experts for specific consortium issues.

Terms of Reference

- Peer review of Concept Note and Full Research Proposal submitted as part of the competition process.
- Together with the RPC will be responsible for NAIP, quality assurance through scientific and technical evaluation of sub-project proposals, and for monitoring, implementation of sanctioned sub-projects.
- To assist in the identification of consortium institutions for sponsored projects and review all sub-projects, mid-term status report and assess the completion reports.
- They will also participate in CAC annual review meetings.

Periodicity of Meeting

Quarterly

Note: All the non-official members will generally serve for three years. In order to ensure continuity, initial staggering of new memberships will be provided for.

VII CONSORTIUM ADVISORY COMMITTEE (11 MEMBERS) FOR COMPONENT 2 & 3

- | | | |
|-----|---------------------------------|-------------|
| (a) | One of the eminent stakeholders | Chairperson |
| (b) | Two eminent scientists in the | Member |

- | | | |
|-----|---|------------------|
| (c) | Stakeholders (5) (Representatives of leading private sector entities including Farmers and Women) | Members |
| (d) | Concerned NC, PIU, NAIP | Member |
| (e) | Head of the Consortium Lead Institution | Member |
| (f) | Consortium Principal Investigator | Member Secretary |

Terms of Reference (TOR)

A CAC will be established for each approved Consortium and will:

- Be responsible for setting priorities and local level oversight.
- Mobilizing the broad community of clients and beneficiaries to contribute to sub-project implementation.
- Monitoring effectiveness of implementation and adherence to the agreed objectives, evaluating outcomes and impact, recommending re-allocations of funding between sub-project activities and if necessary, of sub-project re-orientation.
- Facilitating the dissemination and up-scaling of replicable results.

Periodicity of the Meeting

Twice in a year or more frequently, if required.

Note: All the non-official members will generally serve for three years. In order to ensure continuity, initial staggering of new memberships will be provided for.

VIII CONSORTIUM ADVISORY COMMITTEE (6 MEMBERS) FOR COMPONENT 4

- | | | |
|-----|---|------------------|
| (a) | One of the eminent stakeholders | Chairperson |
| (b) | Two eminent scientists in the theme area of Consortia | Member |
| (c) | Concerned NC, PIU, NAIP | Member |
| (d) | Head of the Consortium Lead Institution | Member |
| (e) | Consortium Principal Investigator | Member Secretary |

Terms of Reference (TOR)

A CAC will be established for each approved Consortium and will:

- Contribute to the dialogue on setting priorities

for the Consortium to address, endorsing the Full Proposal (**see above**).

- Mobilizing the broad community of clients and beneficiaries to contribute to sub-project implementation.
- Monitoring effectiveness of implementation and adherence to the agreed objectives, evaluating outcomes and impact, recommending re-allocations of funding between sub-project activities and if necessary, of sub-project re-orientation.
- Facilitating the dissemination and up-scaling of replicable results.

Periodicity of the Meeting

Twice in a year or more frequently, if required.

IX CONSORTIUM IMPLEMENTATION COMMITTEE

- (a) Head of the Consortium Lead Institution Chairperson
- (b) CoPIs of Consortium Partner Institutions Members

- (c) Senior Administrative Officer of Lead Institute Member
- (d) Senior Finance Officer of the Lead Institute Member
- (e) Consortium Principal Investigator Member Secretary

Note: The number of members of the CIC will depend on the size and complexity of the consortium.

Terms of Reference (TOR)

For each Consortium of NAIP Components 2 and 3, there will be a Consortium Implementation Committee (CIC). The role of the CIC will be:

- To ensure efficient sub-project implementation and to monitor and oversee execution of the concerned sub-project and report to the CAC and PIU.

Periodicity of the Meeting

Twice in a year, more frequently if required.

*Appendix - 3***ENVIRONMENTAL & SOCIAL MANAGEMENT FRAMEWORK**

In the light of the emerging scenario in agriculture, there is a need to develop a broad environmental management framework (EMF) for the three research components of NAIP. The EMF not only focuses on the potential environmental risks but also tries to build on the environmental gains of the earlier project viz., NATP, into the activities that are to be developed under the NAIP. However, such a plan will depend on specific activities, scale of operation (both on-farm and off-farm activities) and types of agro-ecological zones. Sector-specific issues that may have some implications due to project interventions have been worked out. The environmental management framework will be used during project implementation in mitigating anticipated impacts. To facilitate the process, outlines have been developed for assessing possible environmental risks and putting mitigation measures in place. EMF consists of 1) Baseline Environmental Profile, 2) Environmental Impact and Risk Assessment, 3) Mitigation Strategies

and 4) Monitorable Indicators and Institutionalization.

For addressing the environmental issues, each consortium will be required to assess and provide the basic information as per the environmental checklist. During the bidding process, the consortium leader will submit a detailed report on environmental concerns and a plan for management of environmental crises during the operation as a part of the technical report of the consortium. If the consortium lacks technical capacity for undertaking certain interventions for management of environmental concerns, it will be its responsibility to outsource it. There will be a separate note by the project proposal screening committee relating to redressing of environmental concerns in the proposal submitted by the consortium. There will be special clauses in the sanction letter/ MoU regarding follow-up of environmental safeguards for each consortium.

The details are available on the website of NAIP.

Appendix 4

GUIDELINES FOR TRAINING**Training in NAIP**

It is envisaged that the following types of training needs will arise under NAIP:

Training in India

- Short-term (upto one month duration) training under different approved sub-projects,
- Long-term (more than two month duration) training under different approved sub-projects,
- Training of critical mass of scientists in NARS,
- Technological/ entrepreneurial empowerment of farmers/ farmwomen and other stakeholders.

Foreign Training

- Short-term (upto one month duration) training under different approved sub-projects,
- Long-term (more than one month duration) training under different approved sub-projects,
- Training of critical mass of scientists/ officials in NARS,
- Visits of scientists/ officials in NARS.

Short-Term Training of Scientists in India

For conducting these trainings, the Guidelines issued by the Education Division of ICAR for organizing Winter School/ Centre of Advanced Studies (CAS) will be followed. For deputing a scientist under an approved sub-project, concurrence of PIU-NAIP is not required, if the training has already been approved while sanctioning the sub-project.

Long-Term Training of Scientists in India

Under these trainings, the host institutes will provide the bench space to scientists (not below the rank of Assistant Professor) for a period from two month to six month. It is expected that the deputed scientist will work in the laboratory and develop scientific skills. Therefore, no guest faculty would be hired under this type of Programme. For conducting these trainings (if approved under NAIP), PIU will provide the funds @ Rs. 75000/ scientist for chemicals/ software and TA/ DA as per rules of the host institute, to deputed scientists. The host institute will provide accommodation to the deputed scientist in its Guesthouse at the rates applicable

to their employees. For deputing a scientist under approved sub-project, concurrence of PIU-NAIP is not required if the training has already been approved while sanctioning the sub-project.

Training of Critical Mass of Scientists in NARS

NAIP will support need-based training of a critical mass of scientists in NARS.

Technological/ Entrepreneurial Empowerment of Farmers/ Farm Women and Other Stakeholders

NAIP will support need-based training on technological/ entrepreneurial empowerment of farmers/ farmwomen and other stakeholders. The guidelines for such trainings will be developed in due course depending on the type of training and purpose. However, the host institution is expected to provide accommodation to the participants without/ or on a very nominal charge.

Foreign Training**Justification for Foreign Training**

As the foreign training is capital intensive, utmost care must be taken in identifying the training needs in various components/ activities of NAIP. The demand for foreign training could be justified in relation to its importance for the work of the sub-project. Similarly, the needs for procuring the services of foreign consultants should be assessed very judiciously so that the maximum benefits may be derived in terms of scientific achievements. Provision of training other Indian scientists from related fields at the time of visit of consultant should also be made so that the required capacity is developed in NARS.

Foreign Training/ Visits of Scientists/ Officials Under NAIP

It may be noted that no foreign training/ visit/ conference attendance from NAIP funds be undertaken without prior approval from the Competent Authority as there is no provision of post-facto approval. The funds for these purposes will be held by the PIU-NAIP and would be released only after specific approval.

Establishment of a Training Cell in PIU-NAIP: In

order to plan and implement foreign trainings/ visits effectively and efficiently in NAIP, a Training Cell in PIU-NAIP will be established. The Training Cell in PIU will correspond with foreign organizations to secure slots for the prospective trainees/ visitors, giving orientation, and facilitate in completing pre-departure formalities of the deputationists. NC1 will be the In-charge of the Cell and will have required staff.

The Foreign Training/ Visit Plan and Processing of Deputation Cases: The PIU will develop the Training/ Visit Plan of the entire NAIP after carrying out a thorough needs analysis of such training/visits in different components of NAIP along with the funds requirements. The Training/ Visit Plan will be submitted to the President, ICAR after vetting by World Bank, DEA (MoF) and DG, ICAR for en-block approval and further delegation of powers to ND (NAIP) to approve individual training/ visits under NAIP. After getting en-block approval, PIU will correspond with various foreign organizations for securing slots to the individuals approved for training/ visits. The PIU-NAIP will collate the information

from individuals making the case files individually. The Training Cell in PIU-NAIP will seek the concurrence of PIU-Finance regarding availability of funds for individuals before seeking the approval of ND (NAIP). The PIU-NAIP will release the funds to the approved official. The deputationist will submit 5 copies of satisfactory deputation report to PIU-NAIP and will also organize training Programme/seminar (whatever is appropriate) in his/her organization to share foreign scientific experiences/ learning with fellow officials. PIU-NAIP would provide funds to organize such event. Travel and per-diem given to the deputationists will be regulated by GOI norms and conditions (modified from time to time).

Submission of Deputation Report After Return From Foreign Training/ Visit

The deputationist has to submit 5 copies of the report to PIU-NAIP within one month of completion of deputation.

Appendix – 5

INTEGRATED LIVELIHOOD INDEX

The target districts have been identified by developing an Integrated Livelihood Index (ILI) based on six indices (in turn based on 53 parameters). The six component indices are:

- i) Infrastructure Index:** It includes percentage of inhabited villages having different types of communication facilities, percentage of inhabited village having pucca approach roads; percentage villages not linked with roads. Other indices considered were percentage of inhabited villages having post and telegraph offices and telephone connection and per thousand villages having different government development Programmes schemes.
 - ii) Agricultural Status Index:** It included productivity of rice, wheat, pulses, oilseeds, cotton, sugarcane, fruits vegetables per hectare. Other parameters included were productivity of meat, milk and eggs per animal. Cropping, irrigation and fertilizer intensity were also considered
 - iii) Nutritional Status Index:** Those included were consumption of rice, wheat, cereals, pulses, eggs, fish, milk and milk products per capita.
 - iv) Economic Status Index:** The parameters were per capita income and percentage of population below poverty line.
 - v) Health and Sanitation Status Index:** Those considered were per capita expenditure on health, water supply, sanitation and family welfare. Per thousand households having katcha, semi pucca dwelling units and at a distance less than 0.5 kms from hospitals/ health centers were other parameters including percentage of villages having medical institutions.
 - vi) Food Availability Status:** The parameters included were per capita availability of rice, wheat, pulses, oilseeds, sugarcane, fruits, vegetables, meat, milk and eggs.
-

Appendix – 6

CRITERIA FOR FUNDING AN NGO UNDER NAIP: CHECKLIST**Essential Criteria**

	<u>Tick Yes/No</u>
● Registered under the Societies/Trusts registration Act of 1860/1882 or any other statute,	Yes / No
● Engaged in Agricultural/Rural Development work including studies/research,	Yes / No
● Non-profit making, non-political and secular organization,	Yes / No
● Management of organization by selected/nominated/elected non-Officials on the Governing/Executive Committee,	Yes / No
● Have had projects under the Ministry of Agriculture; ICAR; Ministry of Rural Development/CAPART or such other government or well-known non-government organizations,	Yes / No
● Functioning at least for last five years	Yes / No
● Audit Utilization Certificate for Last Three years	Yes / No
● Annual Reports for Last Three Years	Yes / No

Desirable Criteria

	<u>Tick Yes/No</u>
● An all India or State level well known, reputed and transparent organization,	Yes / No
● Have had project(s) under the NATP/ ICAR	Yes / No
● A certificate by the Head of the NGO that there is no violation of Financial and Technical integrity against the NGO under his control in the last five years.	Yes / No

Note: In respect of above, documentary proof to be submitted

Appendix – 7

**GUIDELINES FOR PREPARATION OF RESEARCH PROJECT CONCEPT
NOTE FOR COMPONENT 2 & 3**

Title ——— (one line)

Introduction: (Limit to 1 page & cover the following points)

- The background information on scope & dimension of the proposed research after identifying the gaps.
- State clearly the hypothesis defining the problem and prospects for the proposed research.
- Background information to understand and evaluate the likely output & impact on society.

Rationale (one page)

- Explain how the proposed research relates/has relevance vis-à-vis the strength and weakness of the disadvantaged regions and groups to be addressed
- State the impact of the project on social, economical and technological improvements.

Objectives & Collaboration

- State immediate research findings envisaged
(i) New Methodologies/ Procedures, and
(ii) Final Outcome and Likely Impact
- List what the research would seek in terms of institutional/ consortium collaboration and how they are linked with advanced centers of learning including participation of public sector, private sector, NGOs, farmers or other.

Review of literature (one page)

- Pertinent work done at the center / India/ abroad briefly stating what is known, what is not known and what are the gaps relating to the project hypothesis.
- Major achievements/ technologies/ patents/ success stories emanating from the center

Methodology (one page)

- State:**
- (i) The experimental material
 - (ii) Outline of the technologies involved especially production, processing storage & marketing
 - (iii) Details of experimental design/ statistical methods (if applicable)

- (iv) Existing facilities and manpower

Work Programme: (one page)

- Work plan for each objective
- Activity chart for each sub-projects
- M&E
- Knowledge Management
- Update Plan
- Training Needs assessment
- Benchmark
- Social & Environmental Safeguards & mitigation Strategies
- Concurrence of each Co-PI

Linkage with on-going Development Programme**Expected Economic Impact****Budget**

- Approximate cost in Rs. _____

Manner in which project is developed (half Page)

State that the project was developed on the basis of in-depth consultations with the listed partners & the cooperating centers of the consortia and the relative contribution of the each member of the consortium.

Details of Institution/ Research Center Submitting Research Proposal Concept Note*

1. Date of Establishment of R&D Unit in the Organization:
2. Date of Establishment of the institute:
 1. Mandate of the Institution:
 2. Full Address with Fax/ E-mail:
3. Name and Address of the Head of Institution and members of the consortium:
4. Brief Details of Work Done in the Area of Agriculture Research:
5. List of Scientific/ Technical Manpower Available with Name, Designation and Area of Specialization of all members:
6. List of Research Proposals including Rural Development Presently Handled by Principal

- Investigator; Period, Costs and Source of Funds thereof:
7. Collaborative Programmes with Other Research Centers - Title, Institutions Involved, Project Cost, and Source of Funding:
 - (a) Ongoing
 - (b) Completed
 10. Major Achievements of:
 - Technologies developed
 - Patents
 - Success stories
 - Impact in terms of Rural Development
 8. Management Structure of the Center (R&D only):
 9. Annual Budget for R&D (Separately for Agricultural and Non-agricultural Research):
 10. Justify How the Center as Equipped to Implement the Research Programme under NAIP:
 11. Registration No. etc.:

**This is only for research proposals by private institutions, NGOs, financial institutions, farmer's associations etc.*

National Agricultural Innovation Project Concept Note for Component [2]

(Note: the pages & lines referred to in the following relates to A4 Size, 12-font size in Times New Roman Font of MS WORD. Concept note should be restricted to 6-7 pages only).

(Please fill all values in the blank areas . You can submit you filled form by email at ndnaip@icar.org.in or by post)

Registration No: (to be allotted by the PIU-NAIP)

- 1. Title of the Project**
- 2. Name of the Lead Institution and the parent organization to which it belongs and whether it is a Public/Private/NGO Organization (give registration number & related details if Pvt. Organization & NGO) :**
- 3. Name of the head of the lead Institution**
- 4. Designation of the head of the lead Institution**
- 5. Postal Address of the lead Institution :**
- 6. PIN Code**
- 7. Telephone Number (With STD Code):**
- 8. Fax No.**
- 9. Email Address:**
 - Head of the Lead Institution
 - Contact Person
 - Website
- 10. Mandate of the Institution**
- 11. Total Annual Budget of the Institution (Rs. in lakh)**

& the budget for agriculture/rural development/ agribusiness/agricultural research/related work (Rs. in lakh)
- Name of the Lead Scientist:**
- Designation:**
- Telephone No.:**
- Email-Id:**
- Fax No.:**
- 12. Names, Designations of Cooperating scientists of the lead Institution**
- 13. Name(s) of the Cooperating Institutions and the organizations to which they belong**
- 14. Names, Designations & Area of work of the lead Scientist/personnel (CPI) and**

Cooperating scientists from each cooperating institution

15. Contribution of the lead Institution in the relevant field of research (not more than 10 bullet points including, Patents, technologies developed etc.
16. Contribution of the each cooperating Institution in the field of the Project (not more than 5 bullet for each points)
17. Proposed Duration of the Project
18. Total Fund proposed (Rs. in lakh)
 - A. Revenue Costs (including contractual services, Operating services and Travel cost):
 - B. Consultancy & HRD
 - C. Capital Cost (equipment and absolutely essential civil works)

Technical Abstract of the Proposed Sub-Project: for CN under Component 2

19. Objectives of the sub project(not more than five)
20. How the production-to-consumption system in the project is important for Indian Agriculture with special emphasis on natural resource conservation, post-harvest technology, industry's income and employment generation (not more than 1/2 page, quantitative reasoning will be preferred)
21. Status of research and technology with regard to the links in the production-to-consumption system chain that the proposed Project wants to address and why these links are important.
22. The research and technology gaps that this proposed research Project is going to fill (give not more than 5 bullet points).
23. What will be the approach to fill in the research and technology gaps emphasizing the novelties in the approach and the process it will take to prove the technologies generated and the plan for their uptake (not more than one page).
25. Stakeholder participation plan (1/4 page).

26. Give in a table (not more than one page) the year-wise milestones and deliverables of the project.

S.no	Year(The date of start of the project)	Milestones	Deliverables
1.			
2.			
3.			
4.			
5.			

27. Explain the roles of each consortium partner selected & sharing of benefits and resources. (not more than one page)
28. List major outputs (including processes, products, patents, trademarks, pilot plants, employment and income enhancement of stakeholders etc.) expected to be delivered at the end of the project and their sustainability , the expected economic impact and other social environmental impacts.(not more than one page)
29. Approaches to Intellectual Property (IP) issues to be generated in the project or required for implementing the project should also be stated. (not more than one page)
30. Plan of Commercialization of Technology (Patents, Trade Marks, Pilot Plants, Technological Incubation and Up-scaling of the technology in the Project be given (not more than half a page).
31. Human Capacity Building plan for consortium partners and stakeholders in the Project. (not more than ¼ page).

National Agricultural Innovation Project Concept Note for Component [3]

(Note: the pages & lines referred to in the following relates to A4 Size, 12-font size in Times New Roman Font of MS WORD. Concept note should be restricted to 6-7 pages only).

(Please fill all values in the blank areas . You can submit you filled form by email at ndnaip@icar.org.in or by post)

Registration No: (to be allotted by the PIU-NAIP)

- 1. Title of the Project**
- 2. Name of the Lead Institution and the parent organization to which it belongs and whether it is a Public/Private/NGO Organization (give registration number & related details if Pvt. Organization & NGO) :**
- 3. Name of the head of the lead Institution**
- 4. Designation of the head of the lead Institution**
- 5. Postal Address of the lead Institution :**
- 6. PIN Code**
- 7. Telephone Number (With STD Code):**
- 8. Fax No.**
- 9. Email Address:**
 - Head of the Lead Institution
 - Contact Person
 - Website
- 10. Mandate of the Institution**
- 11. Total Annual Budget of the Institution (Rs. in lakh)**

& the budget for agriculture/rural development/ agribusiness/agricultural research/related work (Rs. in lakh)

Name of the Lead Scientist:
Designation:
Telephone No.:
Email-Id:
Fax No.:
- 12. Names, Designations of Cooperating scientists of the lead Institution**
- 13. Name(s) of the Cooperating Institutions and the organizations to which they belong**
- 14. Names, Designations & Area of work of the lead Scientist/personnel (CPI) and Cooperating scientists from each cooperating institution**

15. Contribution of the lead Institution in the relevant field of research (not more than 10 bullet points including, Patents, technologies developed etc.
16. Contribution of the each cooperating Institution in the field of the Project (not more than 5 bullet for each points)
17. Proposed Duration of the Project
18. Total Fund proposed (Rs. in lakh)
 - A. Revenue Costs (including contractual services, Operating services and Travel cost):
 - B. Consultancy & HRD
 - C. Capital Cost (equipment and absolutely essential civil works)

Technical Abstract of the Proposed Sub-Project: for CN under Component 3

19. Objectives of the project (not more than five)
20. Why the proposed geographical area has been selected, what are the major problems that are amenable to science/ technology solutions in these livelihood systems?
21. What is the status of research and technology development with respect to the above major problems? What are the major science and technology gaps/ problems that this project aims to address ?
22. What will be the approach to fill in the research and technology gaps emphasizing the novelties in approach and the process it will take to prove the technologies generated. Mention the target groups.
23. Explain how linkages with similar developmental and other relevant activities will be established ?
24. Give in a table (not more than one page) the yearwise milestones and deliverables of the project

S.no	Year(The date of start of the project)	Milestones	Deliverables
1.			
2.			
3.			
4.			
5.			

- 25. Explain the criteria for selecting the proposed partners (not more than half a page).**
- 26. Explain the role of each partner in the consortium. Also explain how farmers/ other interested groups will be involved.(half-a-page)**
- 27. List major outputs expected to be delivered at the end of the project including the anticipated improvements in income, employment opportunities, food and nutritional status including environmental security (not more than one page).**
- 28. Give an uptake plan for the technologies/ processes developed for improving and long-term sustainability of the livelihood systems.**
- 29. Human Capacity Building Plan for consortium partners and stakeholders in the project.**

National Agricultural Innovation Project Concept Note for Component [4]

(Note: the pages & lines referred to in the following relates to A4 Size, 12-font size in Times New Roman Font of MS WORD. Concept note should be restricted to 6-7 pages only).

(Please fill all values in the blank areas . You can submit you filled form by email at ndnaip@icar.org.in or by post)

Registration No: (to be allotted by the PIU-NAIP)

- 1. Title of the Project**
- 2. Name of the Lead Institution and the parent organization to which it belongs and whether it is a Public/Private/NGO Organization (give registration number & related details if Pvt. Organization & NGO) :**
- 3. Name of the head of the lead Institution**
- 4. Designation of the head of the lead Institution**
- 5. Postal Address of the lead Institution :**
- 6. PIN Code**
- 7. Telephone Number (With STD Code):**
- 8. Fax No.**
- 9. Email Address:**
Head of the Lead Institution
Contact Person
Website
- 10. Mandate of the Institution**
- 11. Total Annual Budget of the Institution (Rs. in lakh)**

& the budget for agriculture/rural development/ agribusiness/agricultural research/related work (Rs. in lakh)

Name of the Lead Scientist:
Designation:
Telephone No.:
Email-Id:
Fax No.:
- 12. Names, Designations of Cooperating scientists of the lead Institution**
- 13. Name(s) of the Cooperating Institutions and the organizations to which they belong**
- 14. Names, Designations & Area of work of the lead Scientist/personnel (CPI) and Cooperating scientists from each cooperating institution**
- 15. Contribution of the lead Institution in the relevant field of research (not more than 10**

bullet points including, Patents, technologies developed etc.

16. Contribution of the each cooperating Institution in the field of the Project (not more than 5 bullet for each points)

17. Proposed Duration of the Project

18. Total Fund proposed (Rs. in lakh)

A. Revenue Costs (including contractual services, Operating services and Travel cost):

B. Consultancy & HRD

C. Capital Cost (equipment and absolutely essential civil works)

Technical Abstract of the Proposed Sub-Project: for CN under Component 4

19. Thrust Areas (you can mention also if it is not one of the areas listed in the PIP document)

20. Objectives of the Sub-project (not more than five)

21. Why the problem is important for Indian Agriculture (not more than half –a- page, quantified reasoning will be preferred)

22. Status of research on the problem(emphasizing approaches) in the world(not more than half-a-page, please refer to only landmark work done in the last five years)

23. Status of research on the problem in India (emphasizing approaches) in the world(not more than half-a-page, please refer to only landmark work done in the last five years). The number of references for (4) & (5)together should not exceed 15.

24. The research gaps, that this proposed research sub-project is going to fill(please give not more than five bullet points)

25. What will be the approach to fill the research gaps emphasizing the novelties in your approach(not more than one page) and possible alternatives.

26. Give in a table(not more than half –a –page) the year wise milestones of the project.

S.no	Year(The date of start of the project)	Milestones	Deliverables
1.			
2.			
3.			
4.			
5.			

- 27. Please list five major outputs expected to be delivered at the end of the project and how these will help in agricultural technology development in the short and long run(not more than half-a-page)**

- 28. Human Capacity Building Plan for consortium partners and stakeholders in the project.(not more than 1/4 page)**

Evaluation of the Concept Note for Component 2

Title of Concept Note:

Code No.:

Lead Consortium:

Scientific/ Technological and Economic Merit (40% of total score)

Criteria	Score	Weight
Takes appropriate account of existing studies		7
Quality of methodology used		7
Congruence among objectives, activities and outputs		5
Originality and innovation in the scientific approaches and ideas		8
Would improve efficiency of various components of value chain		4
Proposed methodology eco-friendly and socially coherent		3
Economic merit of the proposed value chain		4
Beneficiaries (target groups well defined)		2
TOTAL		40

Quality and Institutional Mix of the Research Team; Stakeholder Participation (25% of total score)

Criteria	Score	Weight
Roles of institutions clear; all participating institutions needed		5
Appropriate personnel available		5
Appropriate research management skills available in the research team		3
Uses an appropriate interdisciplinary approach		3
Builds institutional linkages (new partnerships or different use of existing partnerships)		5
Proactive in encouraging stakeholder participation		4
TOTAL		25

Knowledge Management, Information Sharing & Dissemination Plan (20% of total score)

Criteria	Score	Weight
Approach on IPR issues		5
Repeatability and reliability of the value chain		5
Approach for institutionalization of information sharing		5
Approach for dissemination of technology		5
Total		20

Commercialization & Learning & Capacity Building Plan (15% of total score)

Criteria	Score	Weight
Patents and Trademarks, Pilot plants		2
Technological Incubation and Up-scaling of Technology		5
IRR of the total value chain vis-à-vis traditional system		5
HRD and capacity building of stakeholders		3
Total		15

Registration of NGOs should be at least for five years standing

In order for a CN to qualify for NAIP funding, at least a score of 25 out of 40 under Scientific Merit, 15 out of 25 under Quality & Institutional Mix of Research Teams, 10 out of 20 in Knowledge Management, Information Sharing & Dissemination Plan and 7 out of 15 in Commercialization & Learning & Capacity Building Plan should be attained.

SUGGESTIVE SUB-CRITERIA FOR SCORING CN FOR COMPONENT 2

A. Scientific/ Technological and Economic Merit

Score **Criteria: Takes appropriate account of existing studies** – It may be noted that the proponents were asked to keep this brief. The presentation of bibliographies was not asked for and should not be expected. Instead, look for indications that the proponents have read and assimilated relevant background information. This sub-criterion receives the highest weighting of all. Please evaluate it with special care.

- 0 Complete disregard for previous highly relevant, similar work
- 1 No mention of existing studies related to CN
- 2 Minimal indication of awareness of relevant studies but insufficient
- 3 Some indication of awareness of relevant studies but insufficient
- 4 Sufficient awareness of relevant studies (with or without naming them)
- 5 Clear and relevant indication of existing studies in the small space available
- 6 Sufficiently clear and relevant indication of existing studies in the small space available
- 7 Extraordinarily clear and relevant indication of existing studies in the small space available

Criteria: Quality of methodology used - This sub-criterion also receives a high weighting of all. Please evaluate it with special care. You will especially be evaluating here the “activities and methodology” section of the CN.

- 0 Activities and methodology absent, or so general as to provide no information
- 1 Activities and methodology sketchy to provide little information
- 2 Methodology incomplete and/or of doubtful suitability
- 3 Methodology needs refinement
- 4 Acceptable (probably conventional) methodology, that is appropriate to the outputs
- 5 Innovative, appropriate and effective methodology but may still be refined
- 6 Innovative, complete, appropriate and effective methodology
- 7 Extraordinarily innovative, complete, appropriate and effective methodology

Criteria: Congruence among objectives, activities and outputs

- 0 To be used if any of the 3 (objectives, activities and outputs) are absent
- 1 All 3 (objectives, activities and outputs) are present, but no logical connection among them can be detected
- 2 Patchy connections among the 3 (objectives, activities and outputs)
- 3 Standard, but unimaginative approach to presenting objectives, activities and outputs, with repetition of the same ideas and possibly some minor errors or omissions in the logical connection
- 4 Innovative, complete, appropriate and effective methodology
- 5 Absolutely clear, informative and imaginative connections among the 3 (objectives, activities and outputs).

Criteria: Originality and innovation in the scientific approaches and ideas - This sub-criterion receives the highest weighting of all. Please evaluate it with special care.

- 0 No information on the scientific approaches and ideas behind the proposal
- 1 Outdated approaches and ideas
- 2 No innovation
- 3 Generally conventional approaches and ideas
- 4 Generally conventional approaches and ideas, with one or two innovations
- 5 Generally innovative approaches and ideas
- 6 Quite innovative approaches and ideas
- 7 Highly innovative approaches and ideas
- 8 Extraordinarily innovative approaches and ideas

Criteria: Would improve efficiency of various components of value chain

- 0 Would have no impact at all

- 1 Limited impact in part of project area, probably in more than 6 years
- 2 Moderate impact, achievable in 6 years
- 3 Almost certain impact (external risks already taken into account in project), rapid and very extensive
- 4 Certain impact (external risks already taken into account in project), rapid and very extensive

Criteria: Proposed value chain eco-friendly and socially coherent

- 0 No evidence that proposed value chain is eco-friendly and socially coherent
- 1 Sparse evidence that proposed value chain is eco-friendly and socially coherent
- 2 Sufficient evidence that proposed value chain is eco-friendly and socially coherent
- 3 Proposed value chain is undoubtedly eco-friendly and socially coherent

Criteria: Economic merit of the proposed value chain

- 0 No evidence on economic merit of the proposed value chain
- 1 Little evidence on economic merit of the proposed value chain
- 2 Evidence for moderate economic merit of the proposed value chain
- 3 Evidence for high economic merit of the proposed value chain
- 4 Evidence for extraordinary economic merit of the proposed value chain

Criteria: Beneficiaries (target groups/s well defined)

- 0 Beneficiaries not mentioned
- 1 Adequate description of beneficiaries
- 2 Complete description of all groups of beneficiaries relevant to the project

B. Quality and Institutional Mix of the Research Team; Stakeholder Participation

Criteria: Roles of institutions clear; all participating institutions needed - Here, please evaluate whether the institutions are well chosen and whether their role is clear (i.e. a low score shows they have just been included, without thought, to obey the rules)

- 0 Rules on institutions barely fulfilled
- 1 Rules fulfilled, but no information on roles
- 2 Role not clear with apparent duplications and omissions in the coverage of activities
- 3 Good institutional mix, with roles apparent in the CN
- 4 Superior use and balance of institutions, with roles clearly specified
- 5 Highly effective, balanced, complete and innovative institutional mix, with roles clearly specified for each

Criteria: Appropriate personnel available - This can be evaluated from the CVs. Please remember that only 2 CVs were requested, of 2 pages. There was also the option to list additional personnel, or give brief biographies, as one of the 3 pages maximum of additional attachments allowed. Proponents may also have specified personnel in the activities and methodologies section, which is permissible. Those who abused these limits should not be given an unfair advantage for the extra information they supplied

- 0 No information on experience or activities of personnel
- 1 Personnel apparently not appropriate or qualified for the project proposed
- 2 Some doubts about suitability of personnel for project
- 3 Personnel mentioned are qualified and relevant for the project
- 4 Personnel mentioned are well qualified and relevant for the project
- 5 Exceptionally qualified and relevant personnel ("world-class"). Within the space limits of the document the proponents have shown they have an effective and complete team

Criteria: Appropriate research management skills available in the research team - Unlike the previous criterion, here the question is the likely research management ability (in the institutional context in which they operate) of the project manager, and any other researchers who are indicated in the CN to have a management role

- 0 Managers not named. No other information
- 1 Clearly deficient research management skills
- 2 Suitable, well proven, research management skills
- 3 Highly effective management skills, ideal to this project

Criteria: Uses an appropriate interdisciplinary approach - Have the proponents taken into account, and do they have available, the different disciplines likely to be necessary to conduct the activities and produce the outputs?

- 0 No evidence of an interdisciplinary approach even though it would be needed – all scientists mentioned are from the same discipline
- 1 Some doubts about whether inter-disciplinarity will be achieved
- 2 Suitable attention to inter-disciplinarity
- 3 Highly suitable and innovative attention to inter-disciplinarity

Criteria: Builds institutional linkages (new partnerships or different use of existing partnerships)

- 0 No attention at all to this concern
- 1 Sparse and ineffective linkages
- 2 Some linkages but may not be effective
- 3 Good linkages
- 4 Very good linkages
- 5 Outstanding linkages

Criteria: Proactive in encouraging stakeholder participation - If present, this should be apparent in beneficiaries and impacts, but also in activities and methodology and outputs

- 0 No mention of beneficiaries or other stakeholders
- 1 Stakeholders mentioned but no evidence of strategy to involve them
- 2 Some limited attention to participation
- 3 Proactive in participation – sensible range of stakeholders
- 4 Highly proactive – most stakeholders covered

C. Knowledge Management, Information Sharing and Dissemination Plan

Criteria: Approach on IPR issues (to be taken by the value chain and/or produced by the value chain)

- 0 No mention at all
- 1 Mention of IPR issues, but plans are poorly developed
- 2 Mention of IPR issues, plans are adequately developed
- 3 IPR issues sufficiently covered
- 4 IPR issues extensively covered
- 5 Very effective and innovative coverage IPR issues

Criteria: Repeatability and reliability of the value chain

- 0 No mention at all
- 1 Conditions laid for repeatability and reliability poorly mentioned
- 2 Conditions laid for repeatability and reliability adequately mentioned
- 3 Conditions laid for repeatability and reliability sufficiently mentioned
- 4 Conditions laid for repeatability and reliability well mentioned
- 5 All the conditions laid for repeatability and reliability have been mentioned very well

Criteria: Approach for institutionalization of information sharing

- 0 No mention at all
 - 1 Approaches for institutionalisation of information sharing have been sparsely indicated
 - 2 Approaches for institutionalisation of information sharing have been adequately added
-

-
- 3 Approaches for institutionalisation of information sharing have been well discussed
 - 4 Approaches for institutionalisation of information sharing have been sufficiently well discussed
 - 5 Approaches for institutionalisation of information sharing have been discussed very clearly

Criteria: Approach for dissemination of technology

- 0 No mention at all
 - 1 Approaches for dissemination of technology mentioned, but plans are poorly developed
 - 2 Approaches for dissemination of technology are adequately covered but no innovative idea
 - 3 Approaches for dissemination of technology are adequately covered with one or two innovations
 - 4 Approaches for dissemination of technology are effectively covered with good innovative coverage
 - 5 Very good coverage of approaches for dissemination of technology with sufficient innovative coverage
-

D. Commercialization and Learning & Capacity Building Plan

Criteria: Patents & trademarks, pilot plants

- 0 No attention at all to this concern
- 1 Adequate attention about patents, trademarks and pilot plants
- 2 Very well attention about patents, trademarks and pilot plants

Criteria: Technological incubation and up-scaling of technology

- 0 Not at all covered
- 1 Technological incubation and up-scaling of technology sparsely covered
- 2 Technological incubation and up-scaling of technology adequately covered
- 3 Technological incubation and up-scaling of technology sufficiently covered
- 4 Technological incubation and up-scaling of technology very well covered
- 5 Technological incubation and up-scaling of technology extraordinarily covered

Criteria: Internal rate of return (IRR) of the total value chain vis-à-vis traditional system

- 0 No attention at all to this concern
- 1 Comparison between IRR and traditional system poorly mentioned
- 2 Comparison between IRR and traditional system adequately mentioned
- 3 Comparison between IRR and traditional system sufficiently mentioned
- 4 Comparison between IRR and traditional system well mentioned
- 5 Comparison between IRR and traditional system have been mentioned very well

Criteria: HRD & capacity building of stakeholders

- 0 No mention of HRD & capacity building
 - 1 Mention of HRD & capacity building, but plans are poorly developed
 - 2 HRD & capacity building sufficiently covered
 - 3 Very effective and innovative coverage
-

Evaluation of the Concept Note for Component 3

Title of Concept Note:

Code No.:

Lead Consortium:

Scientific/ Technological and Economic Merit (35% of total score)

Criteria	Score	Weight
Quality of methodology used		10
Congruence among objectives, activities and outputs		5
Originality and innovation in the scientific approaches and ideas		5
Would improve food security for wide range of beneficiaries		3
Would alleviate poverty through sustainable livelihoods for wide range of beneficiaries		3
Would improve health and nutrition for wide range of beneficiaries		2
Would improve environmental security (water quality, water related ecosystem) for wide range of beneficiaries		3
Would improve gender equity; attends gender concerns in the project design		2
Beneficiaries (target groups/s well defined)		2
Total		35

Quality and Institutional Mix of the Research Team; Stakeholder Participation (25% of total score)

Criteria	Score	Weight
Roles of institutions clear; all participating institutions needed		4
Appropriate personnel available		4
Appropriate research management skills available in the research team		3
Uses an appropriate interdisciplinary approach		3
Builds institutional linkages (new partnerships or different use of existing partnerships)		4
Proactive in encouraging stakeholder participation		4
Appropriate plans for dissemination and capacity building		3
Total		25

Linkage with On-going Developmental Programmes (20% of total score)

Criteria	Score	Weight
Linkage with on-going technological dissemination programmes		5
Linkage with on-going livelihood enhancement programmes		5
Linkage with on-going development Programmes		5
Linkage with on-going income augmentation/entrepreneurial programmes		5
Total		20

SWOT Analysis of Target Regions and Group (20% of total score)

Criteria	Score	Weight
Strengths of target regions and groups		5
Weaknesses of target regions and groups		5
Opportunities in target region and groups		5
Threats in target regions and groups		5
Total		20

Registration of NGO should be at least for five years standing

In order for a CN to qualify for NAIP funding, at least a score of 20 out of 35 under Scientific Merit and 15 out of 25 Quality & Institutional Mix of Research Teams should be attained. No minimum limit is prescribed for other sub-criteria viz-; Linkage with on-going Development Programmes and SWOT Analysis of Target Regions and Group.

SUGGESTIVE SUB-CRITERIA FOR SCORING CN FOR COMPONENT 3

A. Scientific/ Technological and Economic Merit

Score **Criteria: Quality of methodology used** - This sub-criterion receives the highest weighting of all. Please evaluate it with special care. You will especially be evaluating here the “activities and methodology” section of the CN.

- 0 Activities and methodology absent, or so general as to provide no information
- 1 Activities and methodology very sketchy to provide vague information
- 2 Activities and methodology sketchy to provide little information
- 3 Methodology incomplete and/or of doubtful suitability
- 4 Methodology incomplete
- 5 Methodology needs refinement
- 6 Acceptable (probably conventional) methodology, that is appropriate to the outputs
- 7 Acceptable (probably conventional) methodology, that is appropriate to the outputs but lacks innovation
- 8 Innovative, appropriate and effective methodology but may still be refined
- 9 Innovative, complete, appropriate and effective methodology
- 10 Extraordinarily innovative, complete, appropriate and effective methodology

Criteria: Congruence among objectives, activities and outputs

- 0 To be used if any of the 3 (objectives, activities and outputs) are absent
- 1 All 3 (objectives, activities and outputs) are present, but no logical connection among them can be detected
- 2 Patchy connections among the 3 (objectives, activities and outputs)
- 3 Standard, but unimaginative approach to presenting objectives, activities and outputs, with repetition of the same ideas and possibly some minor errors or omissions in the logical connection
- 4 Innovative, complete, appropriate and effective methodology
- 5 Absolutely clear, informative and imaginative connections among the 3 (objectives, activities and outputs).

Criteria: Originality and innovation in the scientific approaches and ideas

- 0 No information on the scientific approaches and ideas behind the proposal
- 1 Outdated approaches and ideas
- 2 No innovation
- 3 Generally conventional approaches and ideas, with one or two innovations
- 4 Generally innovative approaches and ideas
- 5 Extraordinarily innovative approaches and ideas

Criteria: Would improve food security for wide range of beneficiaries

- 0 Would have no impact at all
- 1 Limited impact in part of project area, probably in more than 6 years
- 2 Moderate impact, achievable in 6 years
- 3 Almost certain impact (external risks already taken into account in project), rapid and very extensive

Criteria: Would alleviate poverty through sustainable livelihoods for wide range of beneficiaries

- 0 Would have no impact at all
- 1 Limited impact in part of project area, probably in more than 6 years
- 2 Moderate impact in project period, in 6 year timescale
- 3 Almost certain impact (external risks already taken into account in project), rapid and very extensive

Criteria: Would improve health and nutrition for wide range of beneficiaries

- 0 Would have no impact at all
- 1 Moderate impact in project area, in 6 year timescale
- 2 Almost certain impact (external risks already taken into account in project), rapid and very extensive

Criteria: Would improve environmental security (water quality, water related ecosystem) for wide range of beneficiaries

- 0 Would have no impact at all
- 1 Limited impact in part of project area, probably in more than 6 years
- 2 Moderate impact, more rapid or more widespread than (3)
- 3 Almost certain impact (external risks already taken into account in project), rapid and very extensive

Criteria: Would improve gender equity; attends gender concerns in the project design

- 0 Would have no impact at all. No attention to gender
- 1 Moderate impact in project area, in 6-year timescale. Gender taken into account in design
- 2 Almost certain impact (external risks already taken into account in project), rapid and very extensive; gender aspects very well attended in design

Criteria: Beneficiaries (target groups/s well defined)

- 0 Beneficiaries not mentioned
- 1 Adequate description of beneficiaries
- 2 Complete description of all groups of beneficiaries relevant to the project

B. Quality and Institutional Mix of the Research Team; Stakeholder Participation

Criteria: Roles of institutions clear; all participating institutions needed - Here, please evaluate whether the institutions are well chosen and whether their role is clear (i.e. a low score shows they have just been included, without thought, to obey the rules)

- 0 Rules on institutions barely fulfilled
- 1 Rules fulfilled, but no information on roles
- 2 Good institutional mix, with roles apparent in the CN
- 3 Superior use and balance of institutions, with roles clearly specified
- 4 Highly effective, balanced, complete and innovative institutional mix, with roles clearly specified for each

Criteria: Appropriate personnel available - This can be evaluated from the CVs. Please remember that only 2 CVs were requested, of 2 pages. There was also the option to list additional personnel, or give brief biographies, as one of the 3 pages maximum of additional attachments allowed. Proponents may also have specified personnel in the activities and methodologies section, which is permissible. Those who abused these limits should not be given an unfair advantage for the extra information they supplied

- 0 No information on experience or activities of personnel
- 1 Personnel apparently not appropriate or qualified for the project proposed
- 2 Some doubts about suitability of personnel for project
- 3 Personnel mentioned are well qualified and relevant for the project
- 4 Exceptionally qualified and relevant personnel ("world-class"). Within the space limits of the document the proponents have shown they have an effective and complete team

Criteria: Appropriate research management skills available in the research team - Unlike the previous criterion, here the question is the likely research management ability (in the institutional context in which they

operate) of the project manager, and any other researchers who are indicated in the CN to have a management role

- 0 Managers not named. No other information
- 1 Clearly deficient research management skills
- 2 Suitable, well proven, research management skills
- 3 Highly effective management skills, ideal to this project

Criteria: Uses an appropriate interdisciplinary approach - Have the proponents taken into account, and do they have available, the different disciplines likely to be necessary to conduct the activities and produce the outputs?

- 0 No evidence of an interdisciplinary approach even though it would be needed – all scientists mentioned are from the same discipline
- 1 Some doubts about whether inter-disciplinarity will be achieved
- 2 Suitable attention to inter-disciplinarity
- 3 Highly suitable and innovative attention to inter-disciplinarity

Criteria: Builds institutional linkages (new partnerships or different use of existing partnerships)

- 0 No attention at all to this concern
- 1 Sparse and ineffective contribution
- 2 Some contribution; may not be effective
- 3 Good contribution
- 4 Outstanding contribution

Criteria: Proactive in encouraging stakeholder participation - If present, this should be apparent in beneficiaries and impacts, but also in activities and methodology and outputs

- 0 No mention of beneficiaries or other stakeholders
- 1 Stakeholders mentioned but no evidence of strategy to involve them
- 2 Some limited attention to participation
- 3 Proactive in participation – sensible range of stakeholders
- 4 Highly proactive – most stakeholders covered

Criteria: Appropriate plans for dissemination and capacity building - Please refer both to activities and methodology and outputs, as well as to dissemination strategy

- 0 No mention of dissemination and capacity building
- 1 Mention of dissemination and capacity building, but plans are poorly developed
- 2 Dissemination and capacity building sufficiently covered
- 3 Very effective and innovative coverage

C. Linkage with On-going Developmental Programmes

Criteria: Linkage with on-going technological dissemination programmes

- 0 No attention at all to this concern
- 1 Sparse and ineffective linkages
- 2 Some linkages but may not be effective
- 3 Good linkages
- 4 Very good linkages
- 5 Outstanding linkages

Criteria: Linkage with on-going livelihood enhancement programmes

- 0 No attention at all to this concern
- 1 Sparse and ineffective linkages
- 2 Some linkages but may not be effective
- 3 Good linkages
- 4 Very good linkages
- 5 Outstanding linkages

Criteria: Linkage with on-going development programmes

- 0 No attention at all to this concern
- 1 Sparse and ineffective linkages
- 2 Some linkages but may not be effective
- 3 Good linkages
- 4 Very good linkages
- 5 Outstanding linkages

Criteria: Linkage with on-going income augmentation/ entrepreneurial programmes

- 0 No attention at all to this concern
- 1 Sparse and ineffective linkages
- 2 Some linkages but may not be effective
- 3 Good linkages
- 4 Very good linkages
- 5 Outstanding linkages

D. SWOT Analysis of Target Regions and Group**Criteria: Strength of target regions and groups**

- 0 No attention at all to this concern
- 1 Sparse and ineffective analysis
- 2 Incomplete analysis
- 3 Good analysis
- 4 Very good analysis
- 5 Outstanding analysis

Criteria: Weaknesses of target regions and groups

- 0 No attention at all to this concern
- 1 Sparse and ineffective analysis
- 2 Incomplete analysis
- 3 Good analysis
- 4 Very good analysis
- 5 Outstanding analysis

Criteria: Opportunities in target region and groups

- 0 No attention at all to this concern
- 1 Sparse and ineffective analysis
- 2 Incomplete analysis

- 3 Good analysis
- 4 Very good analysis
- 5 Outstanding analysis

Criteria: Threats in target regions and groups

- 0 No attention at all to this concern
 - 1 Sparse and ineffective analysis
 - 2 Incomplete analysis
 - 3 Good analysis
 - 4 Very good analysis
 - 5 Outstanding analysis
-

Evaluation of the Concept note for Component 4

Title of concept Note:

Code No.:

Lead Consortium:

Relevance to an identified area (cross-cutting areas) of frontier science (10% of total score)

Criterion/ sub-criterion	Score	Weight
Whether the research problem falls within the identified theme area as stated in the proposal		3
Whether the research proposal addresses a substantial outstanding problem in the theme area		7
Total		10

Scientific merits of the proposal including novelty of approach compared to the on going national and international efforts (50% of total score)

Criterion/ sub-criterion	Score	Weight
Novelty of approach to solve the problem		15
Soundness of the logic of the approach given the present knowledge available		20
Probability of success of the approach		10
Provisions for alternative approaches have been made of in case of failure of the chosen approach		5
Total		50

Strength of the lead and participating institutions and associated scientists (30% of total score)

Criterion/ sub-criterion	Score	Weight
The reputation of the lead institution in the field of research covered as judged by known publications/ documents/ products		10
The reputation of the associated institutions		5
Contribution of the lead scientist in the field of research concerned		10
Contribution of the associate scientists		5
Total		30

Potential/likely linkages with applied research (10% of total score)

Criterion/ sub-criterion	Score	Weight
Potential/likely linkages with applied research		10
Total		10
Total		100

A minimum of 30 out of 50 for scientific merits of the proposal and 20 out of 30 for strength of lead and participating institutions and associated scientist will be required for qualifying for further consideration. No minimum marks have been set for other main criteria.

SUGGESTED SUB-CRITERIA FOR SCREENING CN FOR COMPONENT 4

A. Relevance to an identified theme areas (cross cutting areas) of National importance in frontier science. (Weight 10)

Score Sub-criterion: Whether the identified problem projects fall within identified theme area (Weight 3)

- 0 Outside any of the theme areas
- 1 Have such relation to any theme area
- 2 Belongs to a specific theme area
- 3 The problems belongs across theme areas

Sub-criterion: The research proposal addresses a substantial outstanding problem of science (Weight 7)

- 0 Does not address any outstanding problem
 - 1 Addresses a routine problem where solution is of trivial importance
 - 2-4 Addresses a problem of importance but the solutions that are known are not highly reliable or effective
 - 5-7 Addresses a problem of which solutions are not known
-

B. Scientific merits of the proposal including novelty of approach compared to the on going national and international efforts (weight 50)

Sub-criterion: Novelty of approach to solve the problem. (Weight 15)

- 0 Repetition of known approaches
- 1-3 Attempts to introduce minor modifications in known approaches
- 4-9 Attempts substantial modifications in known approaches
- 9-15 A completely new approach

Sub-criterion: Soundness of logic of the approach (Weight 20)

- 0 If the approach to the problem has a zero score or the approach has not been or is not logically justified
- 1-6 Weak justification has been given for choosing the approach
- 7-12 The approach is logically justified but some modifications are required
- 12-20 The approach logically justified and minor to no modifications are required

Sub-criterion: Probability of success of the approach (Weight 10)

- 0 If the approach to the problem and/ or success of logic has (have) received 0 score (s). The chances of success, considering the uncertainties involved is almost nil
- 1-3 The uncertainties of variables involved (man made or natural) moderate to low
- 4-6 The uncertainties are mainly man made controllable
- 7-10 The uncertainties are reasonably well to fully controllable

Sub-criterion: Provisions for alternative approach have been made (Weight 5)

- 0 No alternative approach kept
 - 1-2 The alternative approach will need about repetition
 - 3-5 The alternative approach will require little to no repetition
-

C. Strength of the lead and participating institutions and associated scientists (Weight 30)

Score Sub-criterion: Reputation of the lead institution (Weight 10)

- 0 The lead institution has no record of work in the instant or related field of research
 - 1-2 The lead institution has worked in a distantly related field of research
-

- 3-4 The lead institution has worked in a closely related field of research with moderately acclaimed results
- 5-6 The lead institution has worked in a related field of research but with highly acclaimed results
- 7-8 The lead institution has worked in the instant field of research with moderately acclaimed results
- 9-10 The lead institution has worked with results of higher acclaim

Sub-criterion: The reputation of the associated institutions (Weight 5)

- 0 The institutions have no record of work in the instant or related field of research
- 1 The institutions have worked in a distantly related field of research
- 2 The lead institution has no worked in a closely with related field of research
- 3 The lead institution has worked in a related field of research but with highly and acclaim results
- 4 The lead institution has worked in the instant field of research with moderate and acclaim results
- 5 The lead institution has worked with high results and acclaim

Sub-criterion: Contribution of the lead scientist (Weight 10)

- 0 The lead scientist has no publication/patent/product in the instant field of research
- 1-2 The lead scientist has 3 to 4 publications (score depending on the journal impact)
- 3-4 The lead scientist has 5 to 6 publications in the (score depending on the journal impact)
- 5-6 The lead scientist has 7 to 8 publications in the (score depending on the journal impact)
- 7-8 The lead scientist has 9 to 10 publications in the (score depending on the journal impact)
- 9-10 The lead scientist has 11 to 12 publications in the (score depending on the journal impact)

Sub-criterion: Contribution of the associate scientists (Weight 5)

- 0 The associate scientists have no publication/patent/product in the instant field of research
- 1 The associate scientists have 1 publication per scientist in the (score depending on the journal impact)
- 2 The associate scientists (per scientist) has 2 publications in the (score depending on the journal impact)
- 3 The associate scientists (per scientist) have 3 publications in the (score depending on the journal impact)
- 4 The associate scientists (per scientist) have 4 publications in the (score depending on the journal impact)
- 5 The associate scientists (per scientist) have 5 publications in the (score depending on the journal impact)

D. Potential / likely linkages with applied research (Weight 10)

- 0 No use of the results is envisaged in technology development
- 1-3 The results may have uncertain use in the long run
- 4-6 The results have clear long run relevance to filling technology gaps
- 7-10 The results have definite medium run to immediate relevance to fill known important technology gaps

N.B. only journals of NAAS impact factor of 2 and above may be considered. The equivalence of a patent or a product to publications may be much of determined by the peer reviewers depending on the quality of the patent or product.

Appendix – 12

GUIDELINES & FORMAT FOR PREPARATION OF FULL RESEARCH PROPOSAL

Important Note

The Consortium Principal Investigator should ensure that all the suggestions made at the time of approval of the CN have been incorporated in the Full Proposal. A brief compliance note will be preferred.

Introduction (Limit to 3-4 pages covering the following points)

- Background information on need to undertake proposed research after identifying the gaps,
- State clearly the hypothesis or definition of the problem for which research has been designed,
- Give orientation to the research being reported by brief references to previous concepts/ literature and explain how the proposed research builds on earlier work in the country/ region.
- Provide sufficient background information for the readers to understand and evaluate the proposal and likely outputs/ outcome.

Rationale: (Limit to 2-3 pages covering the following points)

- State the scope and nature of the problem that you wish to research,
- Delineate the importance of the problem, in the context of national/address regional priorities and how it solves the constraints.
- What social, economic, environmental or participatory studies/ exercises underpin the assertion that the problem is important?
- Relate how the proposed research relates to NAIP objectives and criteria,
- What underlying causality do you expect during implementation as precaution for PIU
- Indicate if the Programme is specific to different sites, if not then role of cooperating centers for validation purpose may be restricted.

Objectives: (Concise List of key objectives to be achieved)

- i) Intermediate research findings,
- ii) New methodologies/ procedures, and
- iii) Final outcome and likely impact.

List what would the research seek to achieve in terms of institutional objectives of NAIP, e.g. in terms of developing synergies through collaboration, links

with advanced centers of learning/ education, greater participation of private sector, NGOs or farmers etc. Give hypothesis for each of the objectives.

Review of Literature

The review should refer to pertinent work done at the Center/ India/ abroad.

Methodologies

Methodologies may be cited by reference. Use only the names if widely known methodologies techniques are used. Give an outline if the methods are to be modified. Give details of experimental designs/ statistical methods.

Work programme

- Provide detailed work plan for each objective
- Provide an activity chart for each block of six months and fix milestones for each consortium partner/ center/ site.
- Describe follow-up work or research to be done after the proposed work is completed with likely funding needs and sources etc.
- Training needs assessment
- Benchmark Status
- Social & Environmental safeguard & mitigation strategies

Knowledge Management**Indicators**

Each center has to provide a list of process and impact indicators. Process indicators will indicate as to how the activity milestones will be achieved and the steps involved. Impact indicators will assess and evaluate the research findings on the socio-economic conditions of farmers, production/ productivity, cost of production including effect on environmental. The indicators provided by the researchers in the proposal, and those recommended by the reviewers/ TAG and approved by RPC will be used to evaluate the project outputs including its quality. For preparation of the Project Monitoring and Evaluation (PME) indicators please see sample templates and section 8.0.

Expected Outcome/ Impact/ Deliverables

This is very important part of a research project. At the same time it should indicate impact in relation to advances made in science, developing a new technology/ product, economic gain to the farming community, skill/ knowledge empowerment etc. impact may respect of efficiency may also be included. Technology dissemination of expected outcome should be quantified as far as possible.

Impact on science, commerce, society, environment, HRD etc

Training and consultancies,

Adequate justification should be provided for each training or consultancy. Details of each training/ consultancy should include: area of specialization, laboratories in/ from which the training/ consultancy is to be obtained and duration/ time schedule. Preference should be given for the training and consultancy available within the country. As far as possible there should be harmony in the institutions where the training is imparted and the consultancy is obtained. The duration and schedule of foreign consultants should be planned in such a

manner that many Indian researchers may be trained. As far as possible, only one or two labs should be chosen so that professors abroad continue to have interest in the Programme and may keep things ready before receiving the trainees.

Budget

The budget should indicate year-wise and head-wise institutional allocations. The list of equipment should comprise of their make/specifications, costs and procurement plan. Justifications for equipment costing more than Rs. 50000/- should be given. It should be mentioned whether the equipment is to be imported or is available in the country.

Budget statement should clearly indicate the following:

Costs to be met with NAIP funds;

Other costs, indicating sources of funding; if any

How was the project developed?

PIs should certify that he/ she had in-depth consultation with the listed partners and the proposal had been developed with full involvement of the Cooperating Centers/ consortia partners.

PROFORMA FOR FULL RESEARCH PROPOSAL UNDER DIFFERENT COMPONENTS

(Proposals should be typed using MS Word 6.0 or WP 6.0 following this format)

Title of Proposal: __________ **Component Code**¹: _____**Code of Proposal:****Name of Consortium Principal Investigator:** _____**Institution :** _____**Mailing Address :** __________ **PIN Code:** _____**Telephone Number (With STD Code) :** _____ **Fax No.** _____**Email :** _____**Consortium Partners**² : _____

Proposed Date of Start: _____ d _____ m _____ yr.

Planned Duration: Years _____ Months _____

Fund Requirement³

Type of Expenditure	Budget Head	Proposed Budget (Rs. In Lakh)	% of Total
Recurring	National Travel		
	Workshops/ Meetings etc.		
	Contractual Services		
	HRD		
	Foreign Training/ Conference Attendance		
	National Consultancy		
	Foreign Consultancy		
	Operational Expenses		
	Sub-Total		
Non-Recurring	Indigenous Equipment		
	Imported Equipment		
	New Works & Renovation		
	Furniture		
	Books & Journals		
	Sub-Total		
	Grand Total		10

Funds requested From NAIP Rs _____ lakhs**Funds Available from other sources** Rs _____ lakhs**(Plan Schemes/ AP Cess/ Other Sources),****Expected Resource Generation/ Year** Rs _____ lakhs¹ To be filled by PIU-NAIP² Refer to the instructions given in the detailed guidelines.³ The budget estimate is likely to considerably depend on the scientific technological and economical contents of the proposal as well as ecological and social dimensions of the sub-project proposal.

ABSTRACT

*(Abstract should not exceed pages typed in one and a half space in
12-Font Times New Roman font)*

Consortia Partners

S. No.	Consortium Partners	Name of the CoPIs	Designation	Full address with Phone Fax E-mail

1. _____ 2. _____ 3. _____ 4. _____
CPI CoPI CoPI CoPI

(Signatures of Representatives of Consortium Partners)

This application is submitted by Lead Consortium on behalf of all other partners and has been made with the full agreement of the participating institutions after times (No. of interaction). The application is approved by the Head of the Lead Consortium, together with CoPIs of Consortia Partners and their institutions which agree to provide logistic and administrative support as necessary. Participating institutions agree to allow the CPI and CoPIs to devote time and undertake tours etc. as required. CL will be allowed to discharge his/her duties for facilitation functions and undertake monitoring and reporting on this project. Accounts will be maintained and funds disbursed and project implementation supervised in accordance with ICAR/ NAIP guidelines for handling NAIP funds.

Signature of Consortium Principal Investigator

Signature of Head of Lead Consortium

Date

Date

**Note: The no. of consortium partners may vary based on the scope and dimensions of the proposal.*

Details of Lead Consortium Applying for Research Proposal*

1. Date of Establishment of the institution
2. Mandate of the Institution
3. Full Address with Fax/ E-mail
4. Name and Address of the Head of Institution
5. Brief Details of Work Done by the Consortium Leader in the Area of the Proposal
6. List of Scientific Human Resources Available for the Proposal with Name, Designation and Area of Specialization
7. List of Research Projects Presently Handled by Consortium Leader; Period, Costs and Source of Funds Thereof
8. Collaborative Programmes of the Consortium Leader with Other Research Centers - Title, Institutions Involved, Project Cost, and Source of Funding
 - (a) Ongoing
 - (b) Completed
9. Major Achievements/ Technologies emanating from the work of Consortium Leader
10. Management Structure of the Lead Consortium (R&D only)
11. Annual Budget for R&D (Separately for Agricultural and Non-agricultural Research)
12. Justify How the Lead Consortium is Equipped to Implement the Research Programme under NAIP
13. Registration No. etc.

**This is only for research proposals by private institutions, NGOs, financial institutions, farmer's associations etc.*

DETAILED RESEARCH PROPOSAL

(Give detailed description of sub-project under the following heads as per guidelines given earlier)

Introduction:

Rationale:

Objectives:

Review of Literature:

Methodologies

Work Programme:

Monitoring Indicators:

Training Requirement:

Consultancy Requirement:

How the proposal was developed:

Expected Outcome/ Impact/ Deliverables

Budget:

Receipts/ Revenue Anticipated

IPR - Are any Intellectual Property Rights (IPR) Issues expected to come up during the course of this research work? If yes, give a brief description as to how the IPR Issues will be tackled.

Details of Training Requirements¹ in Relation to Training Needs Assessment Undertaken:

S. No.	Name of the Official to be Trained	Details of Training Required			State if deputed for Training on NATP/ ICAR Expense in Last 3 Years. If yes, details, thereof
		Area of Training	Host Organization	Year & Duration	

Consultancy Required

S.No.	Details of Consultancy		
	Name & Address of Identified Consultant	Area of Consultancy	Year & Duration

Give Justification along with the ToRs for each consultancy (on similar pattern as for training. Use separate sheets for each consultancy)

Workshops Proposed

S.No.	Type of Workshop	Number of Participants	Year and Duration of Workshop

¹ Include participation in International Conferences/workshops/seminar and show it - separately. Give justification for each Training, explaining how the proposed training is essential to the project objectives (use separate sheet for each proposed training).

Contractual Services Required

Contractual services	Number Required in Various Years						Justification*
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	
Sr. Research Fellow							
Research Associate							

* Use a separate sheet if required

Operational Expenses

Item	No./Qty	Unit	Year wise Total Cost						Justification
			Cost	2006-07	2007-08	2008-09	2009-10	2010-11	
A.									
Consumables**									
B.									
Others (Specify)									

** List all costly and/or imported chemicals / consumable etc.

List of Equipment's/ Furniture etc.²

Item	No. Required	No. Already Available	Whether Indigenous or Imported	Estimated Cost /unit	Year wise Procurement						Justification
					2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	
EQUIPMENTS											
1.											
2.											
3.											
FURNITURE											
1.											
2.											
3.											
OTHERS											
1. Animals											
2. Books											
3.											

2 Fill separate sheet for each cooperating center in the project and also attach a budgetary summary of the items. Detailed specification should be given for each item. Please ensure that no particular company catalogue is copied. The specification should be broad and yet unique suited for your purpose so that different suppliers can compete. Fill specifications very carefully. If the item is a propriety product, it may be indicated accordingly

Requirement of Civil Works/ Renovation

S.No	Type of work	Location	Estimated Cost of Works/ Renovation	Justification

Anticipated Receipts/Revenue

Sl.No.	Type of Receipt	Volume/Qty (year-wise and Total)	Revenue Expected (Year-wise and Total) (Rs. in lakhs)

Budgetary Estimates**Table 1. Year-Wise And Head-Wise allocations (Total Project Costs)**

Name of Sub-project Proposal _____
 Code No _____
 Component _____
 Consortium _____
 Name of the Participating Consortia _____

Items of expenditure	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total
A. Recurring Contingencies							
(1) TA							
(2) Workshops							
(3) Contractual Services (SRF etc.)							
(4) Operational costs							
Sub –total of A (1-4)							
B. HRD Component							
(5) Training							
(6) Consultancy							
Sub –total of B (5-6)							
C. Non- Recurring:							
(7) Equipment							
(8) Furniture							
(9) Works (new /renovation)							
(10) Others (Animals, Books etc)							
Sub-total of C (7-10)							
D. Institutional Charges*							
Grand Total (A+B+C+D)							
E. Cost-Sharing							
i) NAIP							
ii) Institution/other sources(name)							

IMPORTANT NOTE : Use a separate sheet for each center including Lead Institution. Also provide an Abstract of budgetary summary for the full research proposal. Cost sharing may be in terms of Pay & allowances of regular staff & contributions from other projects or on-going research Programmes at the centers/institutions.

* Institutional charges will be 10 % of the recurring contingencies (A.1-4) for the lead center and 5 % for the collaborating centers.

Table 2. Year-Wise Foreign Exchange requirements

Name of the center _____

(Rs. in lakhs)

Head	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total
A. Equipment							
B. Consultancy							
C. Training/ Workshops							
D. Any Other (Specify)							
Total							

Use a separate sheet for each center including the Lead Institution. Also provide budgetary summary for whole re-search proposal.

CERTIFICATE OF UNDERTAKING

This is to certify that:

1. The internal review processes of the participating institutions have been followed to ensure that the research work proposed for funding under the NAIP does not duplicate work already done or being carried out, and has been fully merged with the institutions' research agenda.
2. The sharing of cost shown between the Institutions/centers own budgetary sources and that proposed under NAIP has been properly verified, and the estimates shown are relevant and realistic.
3. Necessary provision for the programme/project will be made in the institution/ University /State budget in anticipation of the sanction of the project.
4. We undertake to abide by the policies and procedures laid down for NAIP by the ICAR in the implementation of the research programme/project.

Signature of CPI

Signature of Executive Authority of the Lead Center

Center Institution / University
(Name with stamp)

Names

Place:-

Date:-

For proposals involving inter institutional arrangements for implementation, the Lead Center shall assume full responsibility for administering the project and for signing the Certificate of Undertaking. CPI should obtain similar undertakings from CoPIs.

NATIONAL AGRICULTURAL INNOVATION PROJECT

Format For Brief CV of each CPI/ CoPI

Title
 Name
 Designation
 Address
 Tel/Fax No.
 E.mail
 Date of Birth
 Name of Institute / Center where presently working
 Postal Address of the Institution with Tel/ Fax No. and E-mail:

Educational Qualification:

Ph.D - (year, Institution, area of specialization)
 Masters - -do-
 Bachelors - -do-

Professionals experience (only for last 10 years)

Post held	Institution	Period	Remarks

Achievements:-

Give in not more than 15 lines salient achievements in the subject/area of research proposed for NAIP support with list of publications relevant to the programme/subject.

- List research project already involved in
- Percentage time proposed for this project

Date:

(Signature)

**PROTOTYPE ON: DEVELOPMENT OF VALUE CHAIN FOR BIO-FUEL IN INDIA
(SAMPLE CASE)**

1. BACKGROUND AND RATIONAL

India wishes to consider the use of Bio-diesel and ethanol for blending with petro-diesel and petrol. Oil provides energy for 95% of transportation and the demand for transport fuel continues to rise. The extract from third assessment of IPCC to climate change state that global oil demand will rise by 1.68% from 75 MB/day in the year 2002 to 120 MB/day in 2030 i.e. a ten-fold increase (Table1). Energy input in agriculture is also increasing. Part of this energy should come from bio-based fuel, which is short term renewable. All countries including India are grappling with the problem of meeting the ever-increasing demand of fuel within the constraints of international commitments, legal requirements, environmental concerns and limited resources. In this connection fuels of biological origin have drawn a great deal of attention during the last two decades.

Table 1. World Energy Consumption (in MTOE) – 2002

Country	Oil	Gas	Coal	Nuclear	Hydro	Total	Per capita (kg)
USA	883	553	543	198	26	2205	8077
China	200	19	511	4.1	18	753	602
India	95	21	150	3.3	7	276	277
%	34	8	54	1.1	2.5	100	—
Africa	116	47	89	3.9	6	261	416
Japan	259	67	92	82	8	507	3995
World	3462	2064	2130	651	227	8537	1428

Source: BP Statistical review of world energy, 2003

Bio-fuels are renewable liquid fuels coming from biological raw material and have been proven to be good substitutes for oil in the energy sector. As much as bio-fuels viz., bio-diesel and ethanol are gaining world wide acceptance as a solution for problems of environmental degradation, energy security, restricting imports, rural employment and agricultural economy.

Bio-diesel is a substitute and requires very little or no engine modification at up to 20% blend and minor modification for higher percentage of blends. The use of Bio-diesel results in substantial reduction of un-burnt hydrocarbons, carbon monoxide and particulate matters. It has almost no sulphur, no aromatics and has about 10% built in oxygen, which helps it to burn fully. Its higher octane number improves the combustion.

Ethanol is used as a fuel or as an oxygenate to gasoline. Raw material used for producing ethanol varies from sugar, cereals (sweet sorghum), sugar beet, and molasses in India. Brazil uses ethanol as 100% fuel in about 20% of vehicles. Use of 5% ethanol gasoline blend is already approved by Bureau of Indian Standards (BIS) and is in progressive state of implementation in India.

This Programme under the aegis of the NAIP, has been conceived and developed for understanding the present status of major crop species viz., *Jatropha curcas*, *Pongamia pinnata*, *Azadirachta indica* for bio-diesel; Sweet sorghum and Sugar beet for Ethanol production. The technical Programme includes Crop Improvement, Crop Production Management, Processing, trans-esterification to bio-diesel, ethanol production, marketing potential, by-products utilization and technology transfer.

1.1. Rationale of Bio-fuels for Energy Sector

The rationale of taking up a major Programme for the production of bio-fuels for blending with diesel and

gasoline in our country emanates from a variety of factors. First, there is no alternative to the petroleum based fuels i.e. High Speed Diesel (HSD) and ethanol for the energy sector. Secondly, bio-fuels are environmentally superior fuels and the use becomes compelling if the prescribed emission norms are to be achieved. Thirdly there is a need to meet the global environmental concern about the climate change and ensure energy security, reduce imports, generate rural employment and achieve a number of other objectives of the 10th plan.

In recent times, increasing interest have been arising across the nation towards the utility of non-edible oilseeds in particular oil of *Jatropha curcas* as a source of bio-diesel. This is because *Jatropha* oil has the requisite potential of providing a promising and commercially viable alternative to diesel as it has the desirable physico-chemical and performance characteristics comparable to diesel. Sweet sorghum and sugar beet are viable alternatives for production of ethanol in short time.

The requirement of bio-fuels have been worked out for blending ratios of 5, 10 and 20 per cents by the committee on development of Bio-fuels setup by the planning commission (Table – 2).

Table 2. Scenario on requirement of Bio-fuel in India at various blending levels

Year	Diesel Demand (M T)	Bio-diesel Requirement for blending (M T)			Petrol Demand (M T)	Ethanol Requirement for Blending (MT)		
		@ 5%	@ 10%	@ 20%		@ 5%	@ 10%	@ 20%
2001-02	39.81	1.99	3.98	7.96	7.07	0.35	0.7	1.4
2002-03	42.15	2.16	4.32	8.64	7.62	0.38	0.76	1.52
2003-04	44.51	2.28	4.56	9.12	8.2	0.41	0.82	1.64
2004-05	46.97	2.35	4.70	9.40	8.81	0.44	0.88	1.76
2005-06	49.56	2.48	4.96	9.92	9.42	0.47	0.94	1.88
2006-07	52.33	2.62	5.24	10.48	10.07	0.50	1.0	2.0

1.2 PRESENT STATUS

1.2.1 Abroad

Bio-diesel has been accepted as clean alternative fuel by US and its production presently is about 100 million gallons. Due to its favourable properties, Bio-diesel can be used as fuel for diesel engines (as either B5- a blend of 5% Bio-diesel for HSD (High Speed Diesel) or B20 or B100). Brazil uses ethanol as 100% fuel in about 20% of vehicles and 25% blend with gasoline in the rest of the vehicles. USA uses 10% ethanol-gasoline blends whereas a 5% blend is used in Sweden. Australia uses 10% ethanol-gasoline blend.

In Europe, Austria has led the way in standardizing Bio-diesel. Austria has made it mandatory to use Bio-diesel in areas of high risk to the environment, which immediately created a domestic market for production of vegetable oil fuel. A recent proposal to the European council to allow use of Bio-diesel in diesel engines borrows heavily from Austrian standards.

1.2.2 India

Extensive experimentation by Ministry of Non-Conventional Energy Source, Indian Oil Corporation, Mahendra & Mahendra and field trails by SuTRA had demonstrated that *Jatropha* and Karanga oil could be a low-cost, appropriate bio-fuel in the operation of diesel engines. Recently, Indian Railways have successfully tested *Jatropha* oil along with diesel (5%mix). On April 22nd the Mercedes Benz group has tested successfully Benz Car using Bio-diesel. The emission levels are in conformity with Euro II standards.

The current annual import bill of crude oil in terms of foreign exchange around Rs.1,17,032 crores (Table 3).

Table 3. Indian Production and Import of Crude Oils (Million Tons)

Year	Production	Import	Total	Import %	Import bill (Rs. in Crores)
1971	6.8	11.7	18.5	63	107
1981	10.5	16.2	26.7	61	3349
1991	33	20.7	53.7	39	6118
2001	32	57.9	89.9	64	30695
2002	32	73.5	105	70	83,528
2004-05	33.3	95.9	111.7	76	1,17,032

Source: Economic survey, 2002-03; Confederation of Indian Industry 2005 and The Hindu (daily) dated 24.5.2005

1.3 Scientific contribution from previous project

Limited work on bio-diesel from trees especially *Jatropha curcas* and *Pongamia pinnata*, and ethanol production from sweet sorghum and sugar beet were undertaken by state agricultural universities, ICAR and Ministry of Petroleum. However, very recently Tamil Nadu Agricultural University initiated few projects funded by National Oilseeds and Vegetable Oils Development Board, ICAR, State Land Use Board, Venture Capital Funds from TNAU on Crop Improvement of *Jatropha curcas*, *Pongamia pinnata*, *Azadirachta indica*, sweet sorghum and sugar beet. The growing demand for petroleum products needs to be addressed by dynamic initiatives from the corporate bodies especially from Tamil Nadu by providing proper technological input from research organizations. Exhaustive promises were also felt in the areas of bio-diesel production and processing by the private sector and NGOs concerned.

1.4 Economic importance of the project

Indigenous production of Bio-diesel and Ethanol will help to save foreign exchange besides ensuring the rural livelihood and energy security.

The current project proposal has short and long-term goals and the ultimate mission of this NAIP mission Programme for bio-diesel viz., *Jatropha curcas*, *Pongamia pinnata*, and *Azadirachta indica* and for ethanol viz., Sweet sorghum and Sugar beet are:

2. GOALS AND MISSIONS

2.1 Goals

- i) Development of high yielding varieties/hybrids
- ii) Production of quality seeds of bio-fuel crops
- iii) Standardization of crop production technologies of bio-fuel crops
- iv) Standardization of extraction and processing technologies of bio-fuels
- v) Economic analysis of bio-fuel crops and products
- vi) Human Resources Development

2.2 Mission

Identification of alternative sources of renewable bio-fuels.

2.3 Scientific contribution from the project

The project will develop technologies to generate bio-fuels for stakeholders.

2.4 Economic importance from the project

- Save foreign exchange
- Generate employment opportunities in rural areas

- Enhancing farm income
- Effective utilization of wastelands
- Developing improved production technology for bio-fuel crops
- Standardization of processing and production of bio-fuels.

3. DEVELOPMENT OBJECTIVES

- Developing improved production technology for bio-fuel crops
- Standardization of processing and production of bio-fuels

4. PROGRAMME PARTNERS

The following institutes will act as partners in the implementation of the Programme under NAIP:

Lead center:

- Tamil Nadu Agricultural University, Coimbatore

Partners:

ICAR Institutes and SAU's

- Central Arid Zone Research Institute, Jodhpur
- Central Institute of Agricultural Engineering, Bhopal
- Dept. of Environmental Science, IARI, New Delhi
- GBPUA&T (Pantnagar)
- Mahatma Phule Krishi Vidya Peeth, Rahuri,
- PDKV, Akola
- National Centre for Agricultural Economics and Policy Research, New Delhi.
- National Research Centre for Sorghum, Hyderabad
- PAU, Ludhiana
- UAS, Dharwad
- MPUAT, Udaipur

Related Research Institutes

- Forest Research Institute, Dehradun
- Regional Plant Resource Centre, Bhubaneswar
- SPRERI (Gujarat)
- NIMKAR Agriculture Research Institute, Pune
- IIT Madras, Chennai
- Indian Institute of Petroleum, Dehradun
- Indian Oil Corporation Laboratory, Faridabad
- Madras Institute of Development Studies, Chennai
- TN State Pollution Control Board Laboratory, Coimbatore

Partner Industries

- Bannari Amman Group of Company, Coimbatore
- Ester India Ltd, Khatima, Uttaranchal
- Growmore Biotech Ltd, Hosur,
- Mohan Breweries, Chennai
- DRDA, Self Help Groups and NGO's

5. ACTION PLAN

The current project has incorporated various disciplines for the proposed work to be done under each component. The various sub components of the project along with brief description of the technical Programme have been enclosed separately for each sub component. The approximate fund requirement along with tentative time schedule has also been incorporated in the schedule (Annexure- I).

6. CAPACITY BUILDING AND HRD PLAN

The available knowledge in this area is quite limited. Efforts will be made to train the scientist and technicians in various organizations in India and abroad. The possible places of training may be as follows.

- Dr.Prof. Jose Roberto Moreira, Biomass Users Network, Brazil-Germplasm and Ethanol
- Dr. K. T. Shanmugam, University of Florida, USA -Renewable energy
- Instituto Nacional de investigatdesen. Agrario, Cape Verde- Gene bank
- Wartsila, Italy- Power generation
- Prof. Dr. Klaus Becker, Uni. Hohenheim, Germany – Process modification
- Dr. Stefan Peterlowitz, Germany-Engine test
- Dr. Joachim Heller, IPGRI, Italy-Genomics & Crop Production technology
- Mr. Nikolaus Foidi, DINOT, Nicaragua- Esterification Chemistry.
- National Renewable Energy Laboratory, Denver, USA - Ethanol
- Dr.K.D.England, Texas A&M University -Biodiesel
- National Institutes – SAUs and ICAR

7. GOVERNANCE OF THE PROJECT/ CONSORTIUM PLAN

Tamil Nadu Agricultural University, Coimbatore will be the lead center and will remit the funds to the participating agencies based on their needs and performance.

8. IPR MANAGEMENT PLAN

It is expected that the IPR issues on the following counts will be required to be settled.

To be bought from others

- Genes for enhanced oil/ethanol production and resistance to biotic and abiotic stress
- Continuous esterification technologies
- Fuel blending technology
- Bio-fuel engine (designs)
- Patented processes/organisms

To be protected

- Genes of enhanced oil/ethanol production and resistance to biotic and a-biotic stress
- Processes of extraction, esterification and fermentation
- Value addition technologies

The Intellectual Property Rights (IPR) generated through the Programme will be governed by the rules and regulations of IPR cell of the Indian Council of Agricultural Research, New Delhi.

9. BENCH MARKING, MONITORING & EVALUATION PLAN

Present status:

- No organized plantation/cultivation
- No released / standard varieties
- No quality seed production
- No established production technologies
- Lack of well defined bio-fuel processing technologies
- Lack of market information
- Non availability of Human resource Development

Expected outcome:

- Promised varieties/hybrids will be identified/released
 - The quality seed demand will be met
 - Standardization of production technologies
 - Standardized bio-fuel processing technologies
 - Documentation of market information
 - Development of Human resources
-

The competent authority will do Monitoring and evaluation.

10. KNOWLEDGE MANAGEMENT, INFORMATION SHARING & DISSEMINATION PLAN

The skill, expertise and knowledge developed through the current project will be disseminated to the stakeholders through different agencies.

11. FINANCIAL MANAGEMENT AND PROCUREMENT PLAN

A dedicated finance officer under Comptroller will manage the financial progress of the project. A separate account will be established and the expenditure will be carried out as per the rules.

The procurement plan will be finalized at the time of preparation of final documents. However the different type of engines, monitoring devices and vehicles will be required.

It is important that the annual maintenance contract and spares are purchased as the project is technology and testing intensive

12. FUNDING REQUIRED/ BUDGET

Total funds required - 58 crores
Duration of the project - 6 years

Year-wise fund requirement

Year	Amount in Rs. (Crore)
I Year	15
II year	17
III year	12
IV year	7
V year	5
VI year	2
Total	58

Annexure – 1

ACTION PLAN WITH TIME LINE

Title and Brief Description	Collaborating Institutions	Estimated Cost (Rs. Crore)	Duration (Years)
1. Development of high yielding varieties and production of quality seeds			
<ul style="list-style-type: none"> ● Development of high yielding varieties/ hybrids ● Quality seed production ● Standardization of propagation techniques ● Development of protocol for mass multiplication ● Multilocation Trial (MLT) ● Molecular characterization ● Cryopreservation 	<ul style="list-style-type: none"> ● TNAU Coimbatore ● State Agricultural Universities, UAS, Dharwad (Sirsi), MPUAT (Udaipur) ● GBPUA&T (Pantnagar) and RPRC (Regional Plant Resource Centre), Bhubaneswar ● Growmore Biotech Ltd, Hosur ● Bannari Amman Group of Company, Coimbatore 	12	6
2. Standardization of crop production technologies			
<ul style="list-style-type: none"> ● Silvicultural / Agronomic practices ● Standardization of nutrient requirement ● Isolation and development of site specific bio-inoculants ● Assessment of water requirement ● Development of suitable agroforestry/ cropping system ● Integrated Pest and disease management ● Economics of Production and Marketing 	<ul style="list-style-type: none"> ● TNAU Coimbatore ● Central Arid Zone Research Institute, Jodhpur ● GBPUA&T (Pantnagar) ● Mohan Breweries, Chennai ● NRCS Hyderabad ● NIMKAR Agriculture Research Institute, Pune ● MPKVP, Rahuri 	12	6
3. Standardization of extraction, esterification and processing technologies of bio-fuels			
<ul style="list-style-type: none"> ● Standardization of post harvest technology ● Standardization of extraction and Transesterification technology ● Standardization of fuel-ethanol production ● Fermentative bio-hydrogen production ● Value addition to byproducts ● Gasification technology for biomass ● Biomethanation from biomass ● Fermentation and purification of Glycerol ● Increasing the fuel efficiency ● Bio-fuel engine testing ● Reducing the pollution impact 	<ul style="list-style-type: none"> ● TNAU Coimbatore ● Dept. of Environmental Science, IARI, New Delhi ● Indian Oil Corporation Laboratory, Faridabad ● TN State Pollution Control Board Laboratory, Coimbatore ● Indian Institute of Petroleum, Dehradun ● CIAE, Bhopal ● NRCS, Hyderabad ● Ester India Ltd, Khatima, Uttaranchal ● PAU, Ludhiana ● SPRERI (Gujarat) ● IIT Madras, Chennai 	17	6

4. Economic analysis of bio-fuel crops			
● Economics of crop and bio-fuel production	● TNAU Coimbatore	1	6
● Networking of bio-fuel crop growers/stakeholder for market intelligence and information sharing	● Forest Research Institute Dheradun		
	● National Centre for Agricultural Economics and Policy Research, New Delhi.		
	● Madras Institute of Development Studies, Chennai		
	● NRCS, Hyderabad		
5. Human Resources Development			
● Scientists training Programme – International institutes		3	4
● Scientists training Programme – National institutes			
Stakeholders training Programme			
6. Equipment and Monitoring devices			
● TNAU Coimbatore and participating institutes		15	3

The Team at TNAU

- Dean, Forest College & Research Institute, Mettupalayam – Value Chain Leader
- Dr. M. Paramathma, Value Chain Principal Investigator

TREE IMPROVEMENT / BREEDING

TBOs- Principal Investigators

- Dr. M. Paramathma - Tree Breeding
- Dr. K. T. Parthiban - Micro-propagation
- Dr. D. Durga Devi - Physiology
- Dr. P. Srimathi - Seed Technology
- Dr. P. Shanmughasundaram - Molecular Markers

Sweet sorghum

- Dr. K. Ganesamurthy - Breeding

CROP MANAGEMENT

TBOs

- Dr.I. Sekar - Silviculture
- Dr.A.K.Mani - Soil Science
- Dr.S.V.Koteswaran - Water management
- Dr.C.R.Chinnamuthu - Agro forestry
- Dr.M.Ganesh Kumar - Entomology
- Dr.T.Manoharan - Entomology
- Dr.V.Prakasam - Pathology
- Dr.T.Kalaiselvi - Microbiology
- Dr.Varatharaj - Economics

Sweet Sorghum

- Dr.K.Ponnuswamy - Agronomy
- Dr.N.Natarajan - Entomology

- Dr. U. Sivakumar - Fermentation
- Dr. R. Velazhagan - Plant Pathology

Sugar beet

- Dr. A. Balakrishnan - Agronomy
- Dr. T. Manoharan - Entomology

EXTRACTION AND BIO-FUEL PROCESSING

- Dr. G. Chinnanchetty - Bioenergy
- Dr. A. Sampathrajan - Bioenergy
- Dr. P. Venkatachalam - Bioenergy
- Dr. Balasaraswathy - Biochemistry
- Dr. D. Uma - Biochemistry
- Dr. T. Kalaiselvi - Microbiology

DATABASE MANAGEMENT

- Mr. R. Venkatachalam - Data processing

Scientists from collaborating institutions will be identified at the time of final document preparation.

Appendix - 14

PROTOTYPE ON: DEVELOPMENT OF VALUE CHAIN FOR MEAT & MEAT PRODUCTS IN INDIA (SAMPLE CASE)

1.0 BACKGROUND AND RATIONALE

Livestock are being kept for the production of meat, milk and draught power. Some species of livestock are reared for the production of animal fibre. Manure is an important byproduct. Meat has a special place among livestock products because it is harvested as a “terminal produce” even from livestock that are reared for purposes other than meat. In the case of livestock reared for meat production, it is a “principal produce”. Thus, meat is a product of all livestock enterprises. The difference between the two types of meats is in its quality. The terminal produce meat is harvested from aged animals after completion of their productive and reproductive performances. This meat is tougher and it is popularly called as “spent animal meat” in the case of livestock and “culled bird meat”, in the case of poultry. When the meat is obtained as a principal produce, it is harvested from animals specifically reared for meat and slaughtered at specific weight/age. The meat from these animals is tender in quality. The approach for processing of tough and tender meats is quite different. Value addition through processing of meat into meat products increases the returns from animal agriculture to a great extent. Processed meat products provide tasty, convenience and designer foods to the meat consuming population with exceptional level of satiety

This Programme, under the aegis of NAIP, has been conceived and developed for understanding the present status of meat production and processing, augmenting the meat production & processing and improving the markets and marketing potential for meat and meat products in the country.

1.1. Livestock Industry in India

The contribution of animal husbandry and dairying to the total gross domestic product (GDP) was 5.9 percent in 2000-2001. Of the total value of output of Rs. 5,61,717 crores from agriculture and allied sector, the value of output from livestock and fisheries sector accounted for 30.3 percent i.e. Rs. 1,70,205 crores

(Govt. of India, 2002). It is gratifying to note that while the percentage share of agriculture to total GDP is declining over the years, the share of livestock is growing. Livestock sector provides employment to 18 million people (1993-94) and nearly 70 percent of them represent women.

1.1.1 Livestock Population

India is the richest country in the world in livestock wealth, both in numbers and germplasm. Table-1 shows the population of livestock and poultry in the world and India. It can be appreciated that India is the world leader in cattle, buffalo and goat population. It holds 5th rank for sheep and poultry population and it is ranked 17th in pigs. India has a large genetic diversity of livestock containing 26 breeds of cattle, 8 breeds of buffaloes, 40 breeds of sheep, 20 breeds of goats and 7 breeds of camels.

Table 1: Livestock Population – 2002 (in Million Nos.)

Livestock	World	India	India's Share (%)	India's Rank
Cattle	1360.47	219.6	16.1	1
Buffalo	166.42	94.1	56.5	1
Goat	746.51	123.5	16.5	1
Sheep	1057.9	58.2	5.5	5
Pig	939.31	17.5	1.9	17
Poultry	47478	661.5	1.4	5

1.1.2 Meat Production

The present production of beef, buffalo meat, sheep meat, goat meat, pig meat and poultry meat and the demand for these meats by the year 2010 and 2020 are given in Table 2. To meet the future demand, it is very imperative that the meat production Programmes have to be substantially enhanced for all categories of meats, excepting beef. A general statement on future demand for meat can be made as: “a minimum of doubling the meat production level, over a period of 8 years from 2002 to 2010, is required to meet the increase in demand.”

Table 2. Production and future requirements (2010 & 2020) of meat in India ('000 Tonnes)

Livestock	Present Production	Requirements by		Increase (%)	
		2010	2020	2010	2020
Beef	1462	1460	1460	—	—
Buffalo meat	1443	3250	3552	125	211
Sheep meat	232	600	687	159	196
Goat meat	470	850	935	81	99
Pig meat	612	770	840	26	37
Poultry meat	1401	2930	3162	109	126

* FAO 2002

Meat production systems in the country are very primitive. Semi-intensive and intensive systems are not very popular; therefore, the cost of meat production is also comparatively cheaper than the developed countries. Only in poultry, intensive production systems are practiced and, that too, in the advanced poultry production belts of the country. There is need for augmenting the quantity and quality of meat production Programme through scientific methods of organized livestock production by utilizing various locally available feed resources and by imported/improved/improving meat animal germplasm.

1.1.3. Meat Consumption

The increase in per capita income and urbanization are fuelling the demand for meat and meat products. While the population is expected to double in Asia and Africa by the year 2020, the demand for meat and meat products is expected to triple. Per capita meat consumption in India is relatively low at less than 5 Kg/years as compared to other developing countries such as Pakistan (13.7 Kg), China (38.6 Kg) and Brazil (58.6 Kg). Based on the minimum requirement of 20g animal protein per capita per day sourced from milk (10 g), meat (4 g), fish (4 g), and eggs (2 g), the estimated demand for meat is 7.7 million metric tonnes as against the present production of 4.6 million metric tonnes.

1.1.4. Markets and Marketing Channels in Meat Sector

Livestock are transacted in more than 2000 **upcountry livestock markets** of the country. Meat stocks are eventually taken on foot or by truck to the **terminal livestock markets**, located in close proximity to the slaughterhouses. They are sold to meat traders and get slaughtered by them. Raw hides and skins are

the most valuable slaughter byproducts and are marketed at slaughterhouses level to the hides & skins merchants. They preserve these hides and skins by salting and dispose the materials to the tanneries at nearby wholesale hides & skins markets. Meat marketing is done from retail stalls of respective species of meat. Edible oils are also usually marketed in the retail meat stalls. About 1.7% of total meat is processed into meat products and sold through retail network comprising company outlets, supermarkets and high-end grocery shops located in big cities and metropolitan towns.

1.1.5. Slaughter Facilities

Adequate slaughter facilities are not available to produce meat under sanitary conditions. Slaughter takes place both in authorized (2702) and unauthorized places (more than 12000) (so called illegal slaughter) and effective meat inspection has not been feasible. Floor slaughter is practiced for large animals with poor hygiene. Overcrowded slaughter in unaesthetic premises is quite common. Slaughterhouses are regulated by the local bodies, which have been criticized for lack of interest for development. A good number of attempts to (a) relocate the existing slaughterhouses, (b) improve the existing slaughterhouses and (c) establish new abattoirs have met with resistance from the local residents, meat industry personnel and persons staunchly opposing animal slaughter and meat consumption. Increased demand for the meat is being met from the existing slaughterhouses and unauthorized slaughter, compromising hygiene and possible public health risks. At times, the sourcing of meat for export from the existing domestic slaughterhouses further complicates the situation. Hygiene in the retail meat shops is also not effectively regulated.

1.1.6. Meat Export Trade

Export of Indian meat, especially buffalo meat, to Gulf countries has proved to be a thriving business over the last several years. Now, the meat is also exported to Malaysia and Singapore. At present, more than 60 countries are importing meat from India. Many corporate firms have set up modern integrated meat complexes having state-of-the-art facilities for livestock holding, slaughter, carcass deboning, packing, chiller and frozen storages, byproducts processing, effluent treatment etc. Current figures for meat export trade are given in Table 3.

Table 3: Export meat trade data for 2003-04

Commodity	Qty (Metric Tonnes)	Value (Rs. Cr.)
Buffalo Meat	343817	1537
Sheep/Goat Meat	16820	110
Poultry Products	20240	202
Processed Meats	986	8
Animal Casings	733	12
Total	382596	1869

1.1.7 Current Status of Knowledge and Gaps

The Food and Agricultural Organization (FAO) of the United Nation is publishing data for every calendar year on livestock population of the member countries through “**FAO Production Year Books**” and livestock products data through “**FAO Trade Year Books**”. The department of Animal Husbandry and Dairying of the Govt. of India undertakes livestock census biennially and the data is published. Agricultural and Processed Food Products Export Development Authority (APEDA) of the Ministry of Commerce is publishing “**Export Statistics for Agro and Food Products**” for every fiscal year. These are the accredited sources for statistics in livestock and livestock products. Meat industry survey research Programmes are being undertaken by the State Agricultural Universities and the Indian Veterinary Research Institute (IVRI). Very recently the NATP project on “**Assessment of Harvest and Post-Harvest Losses in Meat Commodity**” covering buffalo meat sector, sheep and goat meat sector, pig meat sector, meat consumers sector was completed by IVRI under NATP phase-I Programme. Similar project was undertaken by the Central Avian Research Institute (CARI) in respect of poultry meat and eggs. These research projects amount to just a tip of the iceberg, because comprehensive national level surveys have never been attempted in meat sector. Research on meat products development is being undertaken by select Veterinary Colleges, IVRI, CARI, Central Food Technological Research Institute (CFTRI), Defense Food Research Laboratory (DFRL) and Food Technology Departments of various universities. However, the technology transfer Programme has remained so far ineffective due to lack of Institute-Industry interaction. Nonetheless the processed meat industry is growing faster, especially in poultry meat products sector, by the dynamic initiatives from the corporate bodies. Lot of promise is also being felt in the area of processing of pig meat by private sector and some individual family owned concerns.

A comprehensive and pragmatic meat industry for the whole nation covering all the regions is yet to be

developed and it is a major gap. This lacuna is being adequately addressed to under the NAIP Programme.

2.0 GOALS AND MISSION

The various goals and the ultimate mission of this NAIP Programme are mentioned below.

2.1. GOALS

The **five major goals** of this Programme are as under:

1. Augmenting the country’s meat production.
2. Improving the current status of meat production, handling and marketing.
3. Developing technologies for value addition to meat by processing into meat products.
4. Providing research & development and marketing support to the export meat trade.
5. Launching human resource development Programmes in teaching, research, training and extension activities of meat science and technology

2.2. MISSION

The overall mission of this NAIP Programme is to thoroughly revamp the Indian Meat Industry so as to erase the stigma of poor hygiene and elevate it to the global standards in production, processing and marketing of meat and meat products.

2.3 SCIENTIFIC CONTRIBUTION FROM THE PROJECT

Besides the developmental Programme in terms of improvement in meat production & processing facilities and human resource development, this project is expected to generate highly useful scientific information, many of which will be of first-time reports. Some of such findings will emanate in the area of meat animal production practices, meat animal transport, model abattoirs, model meat processing plants, indigenous meat processing machinery, market support information for meat export etc.

2.4 ECONOMIC IMPORTANCE OF THE PROJECT

The findings of the project will contribute to the economic goal of doubling the meat production by 2010. It will also help in providing clean meat and nutritious, tasty & novel meat products to the meat eating population of the country. It will ensure substantially higher returns in the meat industry, which will have a direct impact on the primary producers of meat animals, who will get better prices for their livestock.

3.0 DEVELOPMENT OBJECTIVE

This Programme under NAIP has been developed with the primary objective of developing the Indian Meat Industry on a fast track and to bring it at par with the standards of developed nations.

4.0 PROGRAMME PARTNERS

The partners for implementation of this Programme are listed below:

1. IVRI, Izatnagar
2. CARI, Izatnagar
3. NRC (Meat), Hyderabad
4. NRC (Pigs)
5. PDP, Hyderabad
6. Veterinary Colleges - Chennai, Mannuthy, Pondicherry, Namakkal, Tirupati, Patna, Jammu, Ludhiana, Kolkata and Hisar.
7. Indian Institute of Packaging, Mumbai
8. National Grassland and Fodder Research Institute, Jhansi
9. Central Leather Research Institute, Chennai
10. CIRG, Makhdoom
11. CSWRI, Avikanagar
12. Corporate Bodies- Hind Agro Industries, Allana Sons and Al-Kabeer
13. IIT (to be identified)
14. NIN, Hyderabad
15. BAIF, Pune
16. NBAGR, Karnal

5.0 ACTION PLAN

The various components of the Programme (i.e.: sub-projects) with a brief description of the work proposed to be done under each component, partners identified for undertaking the components, the approximate fund requirements and the time-target for completion of the components have been detailed in a customised format appended herewith.

6.0 CAPACITY BUILDING AND HRD PLAN

The action plan has provided adequate weightage for capacity building and substantial improvement of HRD in the meat sector.

7.0 GOVERNANCE OF THE PROJECT/ CONSORTIUM PLAN

The project will be governed by the Indian Veterinary Research Institute, Izatnager under the leadership of the Director, IVRI in his capacity as **Mission Director**. He will be assisted by the Head, Livestock Products Technology Division in his capacity as **Programme Director**.

The consortium plan includes all the Programme Partners. The Programme Partners will identify and provide the names of the persons in their organizations, who will act as **CoPIs**. Regular meetings of the members of the consortium will be held to chalk out the method of implementation of the action plan.

8.0 IPR MANAGEMENT PLAN

Intellectual property rights (IPRs), generated through the Programme, will be governed by the rules and regulations of IPR Cell of the ICAR, New Delhi and all the prescribed protocols will be strictly adhered to.

Bench Marking, Monitoring & Evaluation Plan

Since there has been no previous Programme of its kind in the country, no bench marking scale can be used for assessing the progress. However, the Programme will set-up a **Monitoring and Evaluation Cell at NAIP Headquarters** comprising eminent scientists, academicians and bureaucrats who will guide, monitor and evaluate the progress for the betterment of the Programme implementation.

9.0 KNOWLEDGE MANAGEMENT, INFORMATION SHARING AND DISSEMINATION PLAN

Online systems will be established between the Programme partners, IVRI and NAIP Headquarters for knowledge management, information sharing and dissemination of action plan. Such online systems are the main channels of communication among the consortium members and these are expected to significantly contribute in achieving the milestones.

10.0 FINANCIAL MANAGEMENT AND PROCUREMENT PLAN

The finances allocated for this project will be spent following all the finance rules of the partner Institutes/ departments and the laid down rules for funds utilization by NAIP.

11.0 PROGRAMME BUDGET (Rs. Cr.)

Total funds required	: Rs. 65.00
Total duration of project	: 6 Years
Year-wise funds requirement	:
I Year	: Rs. 5.00
II Year	: Rs. 14.00
III Year	: Rs. 14.00
IV Year	: Rs. 11.00
V Year	: Rs. 11.00
VI Year	: Rs. 10.00

Action Plan
Tentative Details of Sub-Projects

Title & Brief Description	Collaborating Institutions	Estimated Cost (Rs. Crores)	Duration (Years)
I. Meat Animal Production Programmes			
1. Identification of meat breeds of livestock in the various agro-climatic regions of the country	<ul style="list-style-type: none"> ● CIRG, Makhdoom ● CSWRI, Avikanagar ● NRC (Pigs) ● CIRB, Hisar 	10	6
2. Salvaging of male buffalo calves for meat production	<ul style="list-style-type: none"> ● PDP- Poultry, Hyderabad 		
3. Development of packages for rearing of meat animals using locally available feed resources	<ul style="list-style-type: none"> ● CARI, Izatnagar ● NBAGR, Karnal ● IVRI, Izatnagar 		
4. Studies on feed supplements and micronutrients of importance to meat animals	<ul style="list-style-type: none"> ● IVRI, Palampur ● NGFRI, Jhansi 		
II. Meat Animal Health Programmes			
1. Development of new generation vaccines and diagnostics using biotechnology tools for improving the health of meat animals and poultry	<ul style="list-style-type: none"> ● IVRI, Izatnagar ● IVRI, Bangalore ● IVRI, Bhopal ● Vety. College, Chennai 	15	6
2. Bio-stimulation for enhanced reproductive performance in meat animals	<ul style="list-style-type: none"> ● BAIF, Pune 		
3. Control of parasitic diseases in meat animals and poultry			
4. Veterinary health coverage package to meat animals and poultry			
III. Meat Technology - Processing, Economics and Marketing			
1. Current Status of marketing of meat & meat animals and methods for their improvement	<ul style="list-style-type: none"> ● IVRI, Izatnagar ● NRC (Meat), Hyderabad 	20	6
2. Current status of slaughter facilities, slaughter practices & meat inspection and methods for their improvement	<ul style="list-style-type: none"> ● CARI, Izatnagar ● Vety. Colleges – Chennai, Tirupati, Mannuthy, Pondicherry, Patna, Kolkata, Ludhiana, Pantnagar, Hisar & Jammu. 		
3. Tenderization of spent animals' meat and culled birds' meat and value addition to these meats			
4. Indigenous meat products			
5. Meat animals transport	<ul style="list-style-type: none"> ● CFTRI, Mysore 		
6. Slaughterhouse designs	<ul style="list-style-type: none"> ● CLRI, Chennai 		
7. Slaughterhouse byproducts utilization	<ul style="list-style-type: none"> ● CIRG, Makhdoom 		
8. Meat plant effluents treatment	<ul style="list-style-type: none"> ● CSWRI, Avikanagar ● Corporate Bodies- Hind Agro, Al-Kabeer and Allanasons 		

IV. Meat Food Safety and Quality Assurance			
1. National Referral Laboratory for meat species identification and estimation of pesticide and antibiotic residues	<ul style="list-style-type: none"> ● IVRI, Izatnagar ● NRC (Meat), Hyderabad 	10	6
2. Nutritional quality evaluation of meat foods	<ul style="list-style-type: none"> ● CARI, Izatnagar 		
3. Packaging of meat and meat products	<ul style="list-style-type: none"> ● IVRI, Bangalore 		
4. HACCP in meat plants	<ul style="list-style-type: none"> ● IVRI, Bhopal 		
5. GMP in meat plants	<ul style="list-style-type: none"> ● Vety. College, Chennai 		
6. Standards for meat, meat products and slaughter byproducts	<ul style="list-style-type: none"> ● NIN, Hyderabad ● IIT (to be identified) 		
V. Human Resource Development Programme			
1. Training Programmes for butchers, artisans, technical and managerial personnel engaged in meat industry	<ul style="list-style-type: none"> ● IVRI, Izatnagar ● NRC (Meat), Hyderabad ● CARI, Izatnagar 	10	6
2. Advanced training of faculty/scientists in various specializations of meat science and technology (within the country/abroad)	<ul style="list-style-type: none"> ● Vety. Colleges Chennai, Tirupati, Mannuthy, Pondicherry, Patna, Kolkata, Ludhiana, Pantnagar, Hisar & Jammu. 		
3. Strengthening infrastructure facilities for teaching/training/technology transfer in meat science and technology			
Total		65	

INFORMATION NOTE FOR RPC MEETING FROM THE NC**INDIAN COUNCIL OF AGRICULTURAL RESEARCH
National Agricultural Innovation Project**

Item No. _____

1. PARTICULARS OF RESEARCH PROPOSAL:

- (i) **Title of the Proposal** :
- (ii) Research Proposal Consortia No. :
- (iii) Component :
- (iv) Problem area :
- (vii) Lead Center :
- (ix) Name of the CPI :
- (x) Consortium Partners
(Give numbers and name) :

2. Highlights of the Research Proposals:

- (i) Objectives
 - a.
 - b.
 - c.
 - (ii) Total cost of the project proposal : Rs. _____ lakhs
 - (iii) Contribution from sources other than NAIP : Rs _____ lakhs
(Specify sources & linkages in Programmes)
-

**Allocation of funds head-wise and center-wise in the revised/ final proposal
(Rs. in lakhs) in Original Proposal**

Items of expenditure	Lead Centre	Centre- 1	Centre -2	Centre-3	Total
A. Recurring Contingencies					
(1) TA					
(2) Workshops					
(3) Contractual Services/ RA/ SRF					
(4) Operational costs					
Sub-Total of A(1-4)					
B. HRD Component					
(5) Training					
(6) Consultancy					
Sub-Total of B(5-6)					
C. Non- Recurring:					
(7) Equipment					
(8) Furniture					
(9) Works (new /renovation)					
(10) Others (Animals, Books etc.)					
Sub-total of C (7-10)					
D. Institutional Charges*					
Grand Total (A+B+C+D)					

*Institutional charges will be 10 % of the recurring contingencies (A.1-4) for the lead center and 5 % for the collaborating centers.

(v) **Foreign exchange component equivalent to Rs. lakhs = Rs _____ = US \$**

- Training abroad :
 Participation in International Conferences :
 Consultancy :

(vi) **Has the proposal been developed in the prescribed format by adopting approved norms:**

3. Observations of the Peers / PIU on the Proposals:

3.1 Comments of the Peers on the proposal: (Pl. See the Referees comments, copies enclosed)

3.2 Comments of the Subject Matter Divisions: (Please see comments enclosed on page _____ of the agenda notes)

Proposal submitted to SMD : (Specify the SMDs) : _____

Submitted on dated : _____

3.3 Comments of the PIU :

3.3.1 Comments on relevance to NAIP :

3.3.2 Comments on format & financial norms etc :

Signature of the NC

Approval Solicited from the RPC on Items of Expenditure

Name of the Sub-project:

A. Lead Consortium and Consortium Partners Proposed & Approved

Consortium Proposed	Consortium Approved
CL	CL
CP1	CP1
CP2	CP2
CP3	CP3
CPn	CPn

B. TA/DA Costs Proposed & Approved

Name of CL	Amount Proposed (Rs in Lakh)	Amount Approved (Rs in Lakh)
CL		
CP1		
CP2		
CPn		

C. Contractual Help Proposed & Approved

Type of Contractual Help	Numbers Proposed				Numbers Approved			
	CL	CP1	CP2	CPn	CL	CP1	CP2	CPn
1. Sr. Research Fellow								
2. Research Associate								
Total								

D. Workshop/ Meetings Proposed & Approved

Workshop	Year	Recommendation of RPC
1. Launching Workshop**		
2. Review Workshop		
3. Review Workshop		
4. Any Other Workshop (Specify)		
Total		

**Venue of Launch Workshop will invariably be the Lead Consortium

E. Training of Scientific Staff & Participation in International Conferences etc. Proposed & Approved

Name and Designation of Person to be Deputed Abroad & His/ Her Affiliation	Area of Training/ Conference	Name of Host Institution/ International Conference	Year	Duration of Training/ Conference	Recommendations of the RPC
Foreign Training of Scientists and Others					
1. Mr./ Ms					
2. Mr/ Ms					
Total					
Participation in International Conferences etc.					
1. Mr/ Ms.					
2. Mr./ Ms					
Total					

F. Consultancy (Both National & International) Proposed & Approved

Name & Address of Consultant	Area of Consultancy	Time & Duration of Consultancy	Any Other Information	Recommendation of RPC

G. Operational Costs Proposed & Approved

Centers	Proposed (Rs. In Lakh)			Approved (Rs. In Lakh)		
	Consumable	Others (Specify)	Total	Consumable	Others (Specify)	Total
CL.						
CP1.						
CP2						
CPn						

H. Equipment Proposed & Approved (Centre-Wise)

Name of items	No. Available Already	No. Required	Indigenous/ Imported	Approximate Cost (Rs.)	Approval of RPC
CL.					
a.					
b.					
CP1					
a.					
b.					
CP2					
a.					
b.					

I. Furniture Proposed & Approved (Center-Wise)**(Rs. In Lakh)**

Item	No. Required	Cost Proposed (Total)	No. Approved	Cost Approved
CL				
a.				
b.				
c.				
CP1				
a.				
b.				
CP2				
a.				
b.				

J. Civil Works (New & Renovation) Proposed & Approved

Name of Works	New/ Renovation	Proposed Cost (Rs. In Lakh)	Approved Cost (Rs. In Lakh)
CL			
a.			
b.			
c.			
CP1			
a.			
b.			
CP2			
a.			
b.			

K. Books & Journals (New & Renovation) Proposed & Approved

Books & Journals	Amount Proposed (Rs. In Lakh)	Amount Approved (Rs. In Lakh)
CL.		
CP1.		
CP2.		
CPn		

Appendix - 16

INFORMATION SHEET FOR PMC**INDIAN COUNCIL OF AGRICULTURAL RESEARCH
National Agricultural Innovation Project**

Item No. _____

1. Particulars of Research Proposal:

- (i) Title of the Proposal :
- (ii) Research Proposal Code No. :
- (iii) Component :
- (iv) Lead Consortium :
- (vi) Name of the CPI :
- (i) Consortium Partners :
(Give Name with Locations)

2. Highlights of the Research Proposal:

- (i) Objectives
 - a.
 - b.
 - c.

3. Sub-project Duration : _____ Yrs. From _____ To _____**4. Budgetary Estimates for Sub-project:**

- (i) Total cost: Rs. _____ lakhs
 - (ii) Contribution from sources other than NAIP: Rs _____ Lakhs
(Specify the source and linkage in the sub-project)
-

(iii) Allocation of funds (Head-wise and Center-wise)**(Rs. in lakhs)**

Items of Expenditure	Original Cost	Revised Costs as Recommended by the RPC				Total
		Lead Consortium	Consortia Partners			
			1	2	N	
A. Recurring Contingencies						
(1) TA						
(2) Workshops						
(3) Contractual Services						
(4) Operational costs						
Sub-total of A(1-4)						
B. HRD Component						
(5) Training						
(6) Consultancy						
Sub -total of B(5-6)						
C. Non- Recurring:						
(7) Equipment						
(8) Furniture						
(9) Works						
(10) (Specify) Other Item						
Sub-total of C (7-10)						
D. Institutional Charges*						
Grand Total (A+B+C+D)						

*Institutional charges will be 10 % of the recurring contingencies (A.1-4) for the Lead Consortium and 5 % for Consortia Partners

(iv). Foreign Exchange Component in the Sub-project

Item of Expenditure	Cost in Rs.	Equivalent Foreign Exchange
Foreign Visit		
Foreign Consultancy		
Equipment		
Any other Item (Specify)		

4.0 Observations & Comments of the NC:**5. Observations / Recommendations of the RPC:****5.2 Action Taken on the Recommendations of RPC In Revising the Proposal:**

Recommendations of the RPC	Comments of the NC on the Action Taken by the CL
1.	
2.	
3.	
4.	

Dated :**Signature of the NC**

Appendix - 17

MOUs FOR NAIP

DRAFT MODEL-1

Rules & Regulations

Preliminary:

- 1) These Rules and Regulations shall be known as the 'National Agricultural Innovation Project Rules and Regulations' and for the sake of brevity and convenience, hereinafter referred to as "Consortia Rules and Regulations".
 - 2) These Rules & Regulations shall come into force with effect from such date as the Indian Council of Agricultural Research {hereinafter referred to as the ICAR} may decide.
 - 3) These Rules & Regulations shall at all times be read subject to the provisions of the other legislations, rules, regulations *etc.* concerned with ICAR.
 - 4) The ICAR shall have powers to frame and amend Rules & Regulations from time to time for efficient functioning and operations of the National Agricultural Innovation Project (NAIP) and to regulate the functioning and activities of the members of the consortium.
- f) *PIU* means the Project Implementation Unit of the NAIP.
 - g) *Government* means the Government of India and the Governments of any State as per the context.
 - h) *CIC* means Consortium Implementation Committee which will consist of the lead partner as the Chair and a representative of each member of the consortium and the CIC shall be responsible for all executive decisions of consortium within the duly approved framework of the sub-project to be executed by the Consortium.
 - i) *CAC* means the Consortium Advisory Committee consisting of the stakeholders for oversight of preparation, monitoring and implementation of approved NAIP Sub-projects.
 - j) *Consortium* means a consortium formed as per a Memorandum of Understanding among the members.
 - k) *Memorandum of Understanding* means the memorandum signed between the members for the proper implementation of the NAIP.

Definition:

- 5) Unless in the context it is explicitly stated otherwise, all words and expressions used herein but not defined herein, shall have the same meanings as specified in the following:
 - a) *ICAR* means the Indian Council of Agricultural Research
 - b) *Rules & Regulations* means these rules and regulations drafted for the proper implementation of the National Agricultural Innovation Project
 - c) *Member* means any person as defined in clauses a and b of rule 9.
 - d) *Lead Partner* means any member in his individual or representative capacity to be appointed by the NAIP/ICAR as defined in clause a & b of rule 9 (c) & (d)
 - e) *NAIP* means the National Agricultural Innovation Project.

Objectives:

- 6)
 - a) To facilitate accelerated and sustainable transformation of Indian agriculture for increased productivity, global competitiveness, poverty alleviation and nutritional and income security through agricultural innovations by the public research organizations in partnership with farmers, the private sector and other stakeholders.
 - b) The objectives of the project undertaken by the Consortium if duly approved shall be the part of the project objective.

Area of Operation:

- (7) The consortium shall undertake activities in any part of India as decided by the competent authority in ICAR / NAIP.

Applicable Law:

(8) The law of Union of India will be the Applicable Law.

Members:

- (9) a) Any public institution, public organization, private sector organization or institution, farmer group, NGO, scientist, researcher, individual and other stake holder may be a member of the Consortium on admission by the lead partner after the approval of the competent bodies / authorities in NAIP/ICAR.
- b) The member institutions/organizations shall be represented in the Consortium by an individual duly designated on that behalf. The consortium shall be acknowledged in advance about any change in the representative capacity through a notice in writing and accepted by the CIC.
- c) Any member in his individual or representative capacity shall be appointed by the ICAR / NAIP, as the Lead Partner who is to act in accordance with the directions of the ICAR/NAIP, which may be given from time to time. The Lead Partner shall be responsible to co-ordinate the activities of the Consortium.
- d) The Lead Partner shall make recommendations for providing the members with necessary finance and also to ensure its proper utilization.

Unauthorized Activities:

(10) The ICAR / NAIP shall not be liable financially or otherwise for any unauthorized activity outside the activities/tasks defined in the Project of its members or any person.

Meeting:

- (11) a) Each CIC shall meet at least once in every three months.
- b) The Lead partner shall chair the meeting of the CIC.
- c) The minutes of the meeting duly signed by the Chairperson shall be prepared and made available to all members and the PIU, NAIP within a week of the Meeting
- d) The CAC shall meet at least twice a year.
- e) A representative of the ICAR may be present at the meetings of the CAC.
- f) The Lead Partner will liaise with the CAC as its Member Secretary.

OUT SOURCING:

- (12) a) A member may outsource a part of the work allotted to them.
- b) The nature and extent of work to be outsourced will be in accordance with the details in the sub-projects as approved by the ICAR / NAIP.
- c) In case any specific task gets identified to be pursued for which core competency does not exist in the Consortium, it may be outsourced with the recommendation of CAC and approval of ICAR / NAIP.

Withdrawal of Membership:

- (13) a) A member may be allowed to withdraw from a Consortium at any time after giving a prior written notice of six months.
- b) The withdrawal shall be effective after the approval of the NAIP/ICAR based on the recommendations of the CAC.
- c) All rights relating to movable, immovable or intellectual property accrued by the out going member in the capacity as a member of a Consortium shall be transferred to the ICAR.
- d) All rights relating to movable, immovable or intellectual property accrued by any member in the capacity as a member of a Consortium shall be transferred to the ICAR at the time of closure of the project.
- e) The difference between the funds received by the outgoing member and the money spent by the outgoing member shall be adjusted reconciled and returned to the NAIP/ICAR as the case may be.

Substitution:

(14) No member shall have the right to substitute himself with any other person, under any circumstances.

Termination of Membership:

- (15) The NAIP/ICAR shall have the right to terminate the membership under the following circumstances:
- a) Persistent non-adherence to agreed programme and activities.
- b) Gross violation of Financial and Procurement Rules.
- c) Inability to work as a member of the consortium.
- d) Gross misconduct of the members to authorities.
- e) Violation of any of the provisions of these Rules and Regulations or any other law.
- The expulsion, on the recommendation of CAC,

shall be effective, upon the approval of the ICAR / NAIP.

Entry of A New Member:

(16) A new member either to replace an existing one or to contribute to a newly identified task may be permitted to join the Consortium if a proposal to this effect in writing is received from the CIC recommended by the CAC and approved by NAIP/ ICAR.

IPR Policy:

- (17) a) The rights on any intellectual property shall be vested in the ICAR, who shall be the absolute and full owner.
- b) The member who has developed these intellectual properties shall be paid a royalty/benefits/returns, as deemed fit by NAIP/ ICAR
- c) The Sharing of income from Intellectual Property Rights (IPR) from the Consortium would be in accordance with the proportion/percentage given below:
- | | |
|-------------------------|-----|
| i) Share of NAIP/ICAR | 60% |
| ii) Share of Consortium | 40% |
- d) Share of major /inventing partner 50%
- e) The other 50% share shall be shared equally among other partners.
- f) The technologies licensed against a fee (premium) which may be in a lump sum or with royalty for a fixed/defined period of time.
- g) The technologies to be licensed on exclusive basis or non-exclusive basis will be decided by the NAIP/ICAR depending upon the welfare gains considerations or public consideration or public welfare embedded in the technology
- h) Whereas a minimum price for the technology is to be evaluated, it may not be rigidly adhered to; and the offers made by different parties shall be given due consideration in consultation with the CAC. The spirit behind this should be to commercialize the technology in the best interest of the investment.
- i) If one of the partners of the Consortium is interested to commercialize the technology, he/she may be given preference over other parties at mutually agreed terms and conditions between interested partner and the NAIP / ICAR.
- j) The ICAR)/NAIP and the Consortium hold the right to use the Technology/Product/Biological Material such as plants, gene constructs and germ-plasm, Organism and non-

biological material such as metals, fabrics and composite materials for non-commercial purposes.

- k) The services of the inventor rendered subsequent to the transfer of technology may entail certain charge/fee etc., distribution of which will be as per the clause stated in para 20(c) above.
- l) It will not be incumbent upon the ICAR to protect every Intellectual Property (IP) generated from the Consortium. On refusal by the ICAR to own the IP, the inventor(s) shall be free to protect it at their own cost.

Funding:

- (18) a) The ICAR would finance investment and operational costs of the Consortium.
- b) The ICAR may finance personnel costs of the Consortium like Research Associates, Research Fellows, Experts, Typist, Computer Operator and other skilled / unskilled workers who are employed/hired on Contractual basis.
- c) The ICAR may release the funds directly to the members in stages on the recommendation by the lead partner and based on the progress against the project objectives, as recommended by a competent authority at the PIU-NAIP.
- d) The Guidelines and Procedures of Procurement of the World Bank as agreed with the ICAR / NAIP shall form part of these rules and regulations.
- e) The implementing partners will operate a separate bank account for monetary transactions under NAIP. The Bank Reconciliation Statement will be sent to PIU –NAIP by the 15th of every following month.
- f) The Guidelines and instructions issued from time to time on Financial Management from the PIU, NAIP shall also form part of these rules and regulations.

Recruitment of Staff and their Service Condition:

- (19) a) The staff for the Project work will be hired on contract following the Guidelines of the Institutions and will be regulated by the terms and conditions laid down in the contract for hiring. His/Her engagement in the Project will be maximum co-terminus with the Project. They would have no claim for regular employment in the ICAR or in the institutions where engaged after the termination of the Project.

Dispute Settlement:

(20)a) Any disputes arising between

- i) Members or,
- ii) Members and lead partner or,
- iii) Members (including lead partner) and ICAR / NAIP.

in connection with the project shall be referred to the CIC in case of (i), to CAC in case of (ii), & to a joint meeting of ICAR / NAIP and the Consortium in case of (iii) where as far as possible the dispute shall be compromised.

- b) The dispute in the event of its continuation shall be referred to a sole arbitrator appointed by consensus by the parties to the dispute. In the event of difference of opinion in appointing a sole arbitrator, the parties to the dispute shall appoint one each arbitrator who shall appoint a third arbitrator. In any case the arbitrators shall be appointed from a panel of arbitrators identified by the CIC and NAIP/ICAR. The decision of the arbitrator(s) shall be final and binding on both the parties.
- c) The location where arbitration shall take place shall be such a place as may be identified by

the NAIP/ICAR from time to time and intimated to the arbitrator and the parties to the dispute accordingly.

- d) Arbitration proceedings shall be conducted in accordance with procedure of the Arbitration & Conciliation Act 1996, of India unless one of the members is a foreign institution where arbitration proceedings shall be conducted in accordance with the rules of procedure for arbitration of the United Nations Commission on International Trade Law (UNCITRAL) as in force on the date of this Contract.
 - e) If for any reason an arbitrator is unable to perform his function, a substitute shall be appointed in the same manner as the original arbitrator.
 - f) The sole arbitrator or the third arbitrator appointed pursuant to paragraphs (b) through (c) of Clause 20 hereof shall be a reputed legal or technical expert with extensive experience in relation to the matter in dispute.
 - g) The English Language shall be the official language for all purposes.
-

DRAFT MODEL - 2**MEMORANDUM OF UNDERSTANDING
AMONG THE MEMBERS**

This Memorandum of Understanding (“MOU”) is made among the Members whose name, name of the authorized representative; signature and office seal are given below. Throughout this MOU, the reference to any word shall mean as defined in the Rule and Regulations of the National Agricultural Innovation Project (NAIP).

- 1) The Parties intend by this MOU to establish a consortium for the implementation of NAIP.
- 2) This MOU will address the basic relationship, roles and responsibilities of the Parties.

Purpose:

- 3) The Parties enter into this MOU for the purpose of forming a Consortium with a collective and individual responsibility for attaining the objective as set out in the sub-project “.....” under the National Agricultural Innovation Project (NAIP)

Roles and Responsibilities of the Parties:

- 4) The Parties agree to undertake the following activities pursuant to this MOU:
 - a) The Parties agree to work together to achieve the objectives of the sub-project under the NAIP.
 - b) The Parties by working together in the Consortium shall contribute to the creation of the Public Good.

Roles and Responsibilities of the Lead Partner:

- (5) The Lead Partner shall be responsible for coordinating and leading the activities of the Consortium. The Lead Partner shall also be responsible for ensuring the proper utilization of funds by members.

Agreements:

- 6) In order to foster the successful completion of the whole or part of the NAIP, the Parties agree to the following terms and conditions:
 - a) Each Party pledges in good faith to go forward with this MOU and to further the goals and purposes of this MOU, subject to the terms and conditions of this MOU. The Parties shall attempt to resolve disputes through good faith discussions.
 - b) The parties agree that they will select one from among themselves as the lead partner

who shall be responsible for co-coordinating and leading the activities of the Consortium. The Lead Partner shall also be responsible for ensuring the proper utilisation of fund by the members.

- c) The parties understand that in the event of mis-utilization or non-utilization of funds they shall be liable as per all the civil and criminal laws of India.
- d) Any Party may withdraw at any time from this MOU by following the procedures as set out in the Rule and Regulations of the NAIP. The MOU and the Consortium created thereby shall be continuing even if one or more than one partner withdraws.
- e) The parties agree that any disputes that may arise among the members or with NAIP/ICAR shall be resolved as given in the Rule and Regulations of the NAIP.
- f) The Parties understand that their participation in this MOU does not constitute an endorsement, express or implied of any policy advocated by them.
- g) The Parties agree that ICAR shall maintain full right, title and interest in any intellectual property right under NAIP.
- h) The Parties agree that the work under the NAIP shall be carried out in as efficient a manner as possible. To that end, the Parties intend to designate individuals as authorized representatives between the Parties. The Parties intend that, to the maximum extent possible and unless otherwise approved by the other Party, all significant communications between the Parties shall be made through the authorized representatives.
- i) The parties agree that the Rule and Regulations of the NAIP and the Contract entered between the members and the ICAR shall form part of this memorandum of Understanding.
- j) The parties shall be individually and collectively responsible for the effective management of fund and implementation of the programme in accordance with the program guidelines and with ethical and legal standards.
- k) The parties shall be individually responsible for managing and supervising the programme and its activities, utilization of fund, personnel deployed and the schedule of implementation.

Unless extended by a written agreement executed by the Parties with the written consent of the NAIP/ICAR, this MOU shall terminate after the completion of the work assigned to the Consortium.

The Parties, on this day of, 200..., hereby agree to the foregoing MOU, which shall be effective immediately upon full execution by the signatories listed below.

DRAFT MODEL -3**CONTRACT BETWEEN THE INDIAN COUNCIL OF AGRICULTURAL RESEARCH/NATIONAL AGRICULTURAL INNOVATION-PROJECT (NAIP) AND**

.....

This Contract made on this.....day of.....200.... between:

The Indian Council for Agricultural Research (hereinafter referred to as ICAR) of the FIRST PART;
AND

..... a having its Registered office at
....., which expression shall include its successors hereof of the SECOND PART;

WITNESSETH:**WHEREAS**

On the basis of the Rules and Regulations framed for the proper implementation of the National Agricultural Innovation Project (NAIP), the Memorandum of Understanding entered by among members AND other laws prevailing in INDIA; on the terms and conditions herein set forth.

NOW, THEREFORE, in consideration of the premises and covenants and conditions herein contained, IT IS HEREBY AGREED between the Parties as follows:

- 1) THAT the parties agree to work in coordinated manner and cooperate with each other and with others for the implementation of the National Agricultural Innovation Project (NAIP) and to achieve the objectives of the National Agricultural Innovation Project (NAIP).
- 2) THAT the NAIP/ICAR of the first part shall finance the investment and operational costs and some of the identified personnel costs of the member of second part to the extent provided for in the agreed programme/ Consortium/research sub-project.
- 3) THAT the member of the second part shall implement the project as per the guidelines and covenants prescribed by the NAIP/ICAR from time to time.
- 4) THAT the member of the second part shall appoint staff within one month from the date of final approval of the project.
- 5) THAT the member of the second part shall provide land, laboratory, equipments, physical facilities and other facilities required for the project.
- 6) THAT the member of the second part shall provide services of competent scientific, technical, administrative and ancillary staff as well as skilled and semi skilled labour required for the project.
- 7) THAT the member of the second part shall not transfer / shift the staff deployed for the project without the concurrence of the NAIP/ICAR.
- 8) THAT the member of the second part shall use the staff exclusively for the implementation of the National Agricultural Innovation Project (NAIP) project.
- 9) THAT the member of the second part shall use the funds provided under the project exclusively for the project work.
- 10) THAT the member of the second part shall maintain and render records and accounts adequate to reflect the

operations, resources and expenditure in respect of the project in accordance with sound accounting practices to the ICAR.

- 11) THAT the member of the second part shall keep the project funds in a separate bank account with separate cash book to be operated as per the existing instructions of the NAIP/ICAR/Govt. of India.
 - 12) THAT the member of the second part shall send audited statements of expenditure as per the prescribed schedule.
 - 13) That the NAIP/ICAR shall not be responsible for absorption of any staff deployed for the Project work after completion/termination of the Project/Scheme.
 - 14) That the implementing agency shall permit the above staff, depending upon the requirement, to attend trainings, impart trainings, attend the review meetings and workshops and present their reports/data etc. for discussion and review.
 - 15) That the member of the second part will allow monitoring of the progress of the programme and activities by NAIP/ICAR/the World Bank, and provide all assistance including all information required and access to the Project sites.
 - 16) That the member of the second party will comply with the Financial Reporting and its management in accordance with the Guidelines/instructions of the Financial Management System as agreed between by the NAIP / ICAR / Govt. of India and the World Bank.
 - 17) That the member of the Second party will follow the Guidelines and Procedure of Procurement of the National Agricultural Innovation Project (NAIP) as agreed between the NAIP/ICAR/Govt. of India and the World Bank.
 - 18) THAT the parties agree that in case of any dispute it shall solved as per the Rule and Regulations of the National Agricultural Innovation Project (NAIP).
 - 19) THAT the Rights to any Intellectual Property developed at any time, as a part of the activities of the National Agricultural Innovation Project (NAIP) shall be vested in the ICAR. The ICAR shall be the absolute owner of these rights.
 - 20) The National Agricultural Innovation Project (NAIP)/Indian Council of Agricultural Research (ICAR) can enter into a Material Transfer Agreement for purpose of evaluation/multiplication and uses in research to further technological developments.
 - 21) Material developed/ procured/ arranged in the Consortium shall be transferred only through an approved Material Transfer Agreement (MTA) by the National Agricultural Innovation Project (NAIP)/Indian Council of Agricultural Research (ICAR) to an interested party with the stipulation that the material will neither be used for commercial purpose nor will it be used for profit making whatsoever.
 - 22) It will be incumbent upon the Consortium to forward a copy of the signed Material Transfer Agreement (MTA) on account of obtaining material from the third party to the National Agricultural Innovation Project (NAIP) /Indian Council of Agricultural Research (ICAR).
 - 23) THAT the member of second part agrees to enter into a Memorandum of Understanding with other members, ICAR *etc.* to form a Consortium and members to the Consortium as a whole and individually shall work according to the directions of the NAIP/ICAR. They SHALL NOT under any circumstances decide its activities, programmes, *etc.* without the consent in written from the authorized officer/s of the NAIP/ICAR.
 - 24) That the approved Project Proposal of the Consortium/Research sub-project shall form part of the contract. The Cost Table of the approved proposal shall form the appendix to this contract.
 - 25) THE Rules and Regulations and the Memorandum of Understanding entered by the members to form Consortium shall form part of this contract.
-

In witness whereof, the Parties through its authorized officers has set its hand and stamp on this day of 200..... at

The seal of was hereto duly affixed by this day of 200..... in accordance with its bye-laws and this guarantee were duly signed by and as required by the said bye-laws.

.....
AUTHORISED OFFICERS

.....
AUTHORISED OFFICERS

Witness:

- 1)
- 2)

APPENDICES

APPENDIX A – Objective(s) and Deliverables in the Project

APPENDIX B –Cost Table

Appendix – 18

PROFORMA FOR SUBMISSION OF CONSOLIDATED HALF-YEARLY PROGRESS REPORT OF THE SUB-PROJECT

Particulars of the Sub-project

- | | |
|--|---|
| (i) Title | : |
| (ii) Code No. | : |
| (iii) Component | : |
| (iv) Lead Consortium | : |
| (vi) Name of the CPI | : |
| (vii) Consortium Partners | : |
| (Give Name with Locations) | |
| (viii) Date of Start of the Sub-project | : |
| (ix) Date of Completion of the Sub-project | : |
| (x) Period covered in the Report | : |

NOTE: The CPI will send the consolidated report to PIU-NAIP after compiling the progress reports received from all the consortia partners. The report should also list the constraints (if any) being faced by consortia partners so that remedial measures may be taken.

Scientific Summary

Briefly review the research progress against the performance indicators finalized for the sub-project. Highlight the constraints, which may have affected the progress.

Administrative/ Management Issues

Briefly discuss project administrative/ management issues that have arisen including timely availability of funding, other budgetary issues, staffing changes, timetable changes, or research site changes. Changes in the budget (10% or more) should be justified. If the project schedule has changed, include revised schedule with brief rationale and indicate if any reallocation between budget headings is requested.

Inter-disciplinary Team Work

The CPI should indicate in this section how the inter-disciplinary team of scientists has contributed to resolving the overall system problems specific to different centers in the consortium. The teamwork should clearly reflect the output of the sub-project in inter-disciplinary mode. Constraint if any, in the work of the team should be clearly identified in the report and the action taken by the Site Committee to resolve any problems facing the team may also be indicated.

Collaboration and Publications

Briefly described collaborative activities, post-graduate student activities indicating who was involved, and when and where activities occurred. Describe collaborative activities anticipated in the next quarter. Provide citations for project publications that have appeared since the last report.

PIU Actions Requested

Indicate what actions are solicited from PIU-NAIP for enhancing the productivity of the sub-project.

Signature of CPI

Appendix - 19**PROFORMA FOR SUBMISSION OF CONSOLIDATED YEARLY PROGRESS REPORT OF THE SUB-PROJECT****Particulars of the Sub-project**

- | | |
|--|---|
| (i) Title | : |
| (ii) Code No | : |
| (iii) Component | : |
| (iv) Lead Consortium | : |
| (vi) Name of the CPI | : |
| (vii) Consortium Partners | : |
| (Give Name with Locations) | |
| (viii) Date of Start of the Sub-project | : |
| (ix) Date of Completion of the Sub-project | : |
| (x) Period covered in the Report | : |

NOTE: *The CPI will send the consolidated report to PIU-NAIP after compiling the progress reports received from all the consortium partners. The report should also list the constraints (if any) being faced by consortium partners so that remedial measures may be taken.*

Table of Contents

The Executive Summary should be typed double-spaced on a separate page; no longer than one page. Describe purpose of the sub-project. Briefly describe the findings over the previous year, and explain how these findings contribute to the achievement of the Consortium objectives. Clearly describe the nature of collaboration and training activities during the year (if any).

The Executive Summary is extremely important. It is the section of the report which contributes to the PIU and policy makers use it to assess the impact of research projects. Write the Executive Summary so that the content is clear and concise.

Research Objectives

Provide a brief statement of project objectives. Do not include unnecessary background, history, or literature review.

Research Achievements

Focus on the extent to which progress has been made in achieving the project's objectives since the time of the last Annual Report. Use Performance Indicators to compare and monitor progress against original plans. If results have been published, provide reprints as attachments. Describe any products or procedures that have been patented. Indicate shortfalls along with reasons and suggestions if any.

Inter-disciplinary Teamwork

The CPI should indicate in this section how the inter-disciplinary team of scientists has contributed to resolving the Consortium system problems specific to different centers / agro-ecological zones. The teamwork should clearly reflect the output of the project in inter-disciplinary mode. Constraint if any, in the work of the team should be clearly identified in the report and the action taken by the CAC/ CIC to resolve the problem facing the team may also be indicated.

Project Impact

Are results from the project being used by the stakeholders? If so, how? If not, what are the anticipated uses? If not and/or there are changes, describe revision.

Administrative/Management Issues

Describe any project administrative/management issues that have arisen since the last progress report.

Physical and Financial Progress

Provide details as to all budgetary contributions to the project. Compare with the original plan and highlight any significant issues. Provide a detailed budget using the following format for the coming 12 months or remaining duration of the project). Refer quantifiable deliverables and outcome indicators for component 2 & 3 relating to scientific/technical socio economical environmental, financial etc.

a) Physical

Activity	Targets for the Period under Report	Achievements Made	Reasons for Shortfalls (if any)
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b) Financial**(Rs. in lakhs)**

Head	Funds Budgeted	Fund Received from PIU	Funds utilized	Reasons for Shortfalls (if any)
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Collaboration and Publications

Briefly describe collaborative activities, indicating who was involved, and when and where activities occurred. Describe anticipated activities in the next quarter and list project publications that have appeared since the last report.

PIU Actions Requested

Indicate what actions are solicited from PIU-NAIP for enhancing the productivity of the sub-project.

Signature of CPI

Appendix - 20**PROFORMA FOR SUBMISSION OF COMPLETION REPORT OF THE SUB-PROJECT****Particulars of the Sub-project**

- (i) Title :
- (ii) Code No. :
- (iii) Component :
- (iv) Lead Consortium :
- (vi) Name of the CPI :
- (vii) Consortium Partners :
(Give Name with Locations)
- (viii) Date of Start of the Sub-project
- (ix) Date of Completion of the Sub-project
- (x) Period covered in the Report

NOTES:

- 1) The CPI will send the consolidated report to PIU-NAIP after compiling the progress reports received from all the consortium partners. The report should also list the constraints (if any) being faced by consortia partners so that remedial measures may be taken.
- 2) The final Report should not be a repetition of Annual Reports. The purpose of the final report is to link all findings from the sub-project so that the overall achievements should be discussed in terms of scientific accomplishments, contributions to scientific, human capital development, the relevance of findings to development, and how the information technology is to be disseminated.

The Completion Report should include the following:

Executive Summary

The Executive Summary should be typed double-spaced on a separate page. Use the same guidelines as for Annual Report, but review and summarize the entire Project. The Executive Summary should clearly place project accomplishments in the overall context of agricultural development.

Research Objectives and Rationale

Describe why the project was conducted. What problem was addressed and why the problem is important to development. Briefly describe how the objective fits into on-going research by other scientists and reference pertinent literature. Describe the innovative aspects of the project. Briefly explain how other institutions supported the project.

Methods and Results

Summarize how data were collected. Present data through use of tables, charts, photographs (black and white, glossy). When appropriate, data should be statistically analyzed. This section should be presented as if for publication in a journal with critical discussion of the results. Explain the variation in light of the scientific, technological trends, socio-economic and agro-ecological conditions.

The CL should indicate in this section how the inter-disciplinary team of scientists and Consortium Partners has contributed to resolving the Consortium problems specific to different centers. The teamwork should clearly reflect the output of the sub-project in inter-disciplinary mode. Constraint if any, in the work of the team should be clearly identified in the report and the action taken by the CAC/ CIC to resolve the problems facing the team may also be indicated.

Project Activities/ Outputs

List the important outputs and impact of the project. Provide a list of publications not previously submitted, patents (pending), and meetings attended or held. Also indicate shortfalls in relation to original proposal.

Uptake Plan

Will project lead to future work? Describe the scope and dimension especially productivity, profitability, sustainability and livelihood security.

Publications

The National Agricultural Innovation Project (NAIP) encourages scientists and technologies to publish their results in scientific journals. Publications in peer-reviewed international journals provide important support for researchers seeking new funding from the NAIP and other agencies. Such publications should be submitted as part of the Annual Report and/or Final Report.

Financial Allocations

This section should include a status of the total Project-wise allocations, reimbursement claims filed in Form IC and Statement I and II for which detailed guidelines are given in Section 5.14.1 on disbursement of funds.

Signature of CPI

Appendix – 21

PROFORMA FOR FUND REQUIREMENT**Name of the Consortium:****Location****Name of the Partners Institutions:****Name of the Sub-project:****Proposed Duration of the Sub-project:** _____ years _____ months**Proposed Date of Commencement:****Proposed Date of Completion of the Sub-project:**

Head of Expenditure	Year					
	1 st	2 nd	3 rd	4 th	5 th	6 th
[A] Capital Expenditure						
1) Works						
2) Land Development Costs Including Nursery, Ponds/ Tanks Etc.						
3) Plant And Machinery, Including Technology Costs						
4) Goods, Equipment Etc.						
5) Loose Tools						
6) Furniture & Fixtures						
7) Vehicle						
8) Library Books/Journals/ Databases						
9) Computer Hardware & Bulk Software						
10) Livestock						
Sub Total (A)						
[B] Revenue Expenditure						
11) Salaries (If Any Under O&M)						
12) Consultancy, Contractual Services (Both Research And Financial/Administrative)						
13) Workshop/ Seminar, Etc.						
14) Human Capacity Building (Training, Visits/Participation In Seminars, Symposia Including Travel Cost, Registration And Other Incidental						

Charges As Agreed Upon) i) India ii) Abroad						
15) Travel Expenses i) India ii) Abroad						
16) Hiring of vehicles						
17) Repair And Maintenance Cost i) Works ii) Equipments						
18) Other Operating And Maintenance Costs						
Sub Total (B)						
[C] Institutional Overheads 10% Of The Revenue Expenditure For Lead Centre And 5% For Other Partners Total [A+B+C]						

Appendix – 22

FUNDS REQUISITION FORMAT

Name of the Consortium:
 Name of the Sub-project:
 Financial Year:
 Installment No. : I/II

Name of the Institute/ Partner:
 Location:

1) Approved Annual Budget Amount	
a) Capital Expenditures (Head-wise)	Rs.
b) Revenue Expenditures (Head-wise)	Rs.
2) First Installment of The Revenue Expenditures Received	Rs.
3) First Annual Installment Amount Utilized	Rs.
4) Amount of First Annual Installment Unspent If Any*	Rs.
5) Approved Amount Of 2 nd Annual Installment	Rs.
6) Less First Annual Unspent Amount If Any (Point 4)	Rs.
7) Add Extra Amount** (Over And Above Budgeted Amount) If Any That Is Needed	Rs.
8) Amount To Be Paid Under 2 nd Annual Installment	Rs.
9) Amount To Be Paid Under Capital Expenditure Head	Rs.
10) Total Expenditure (Item 8) + Capital Expenditure (Item 9)	Rs.

Date:

(Name and seal of Authorized signatory)

Place:

* Proper reasons/justification for unspent amount will be given here below

** Approval of the competent authority to be attached

For the use of Consortium Leader

Recommended for release for	Rs.
a) Capital expenditures (Head-wise)	Rs.
b) Revenue expenditures (Head-wise)	Rs.

(Signature of the CPI)

For use of PIU/NAIP

Date of receipt of the requisition:	
Amount requisitioned (Head-wise)	Rs.
Amount disbursed (Head-wise)	Rs.
Difference between amount requisitioned and disbursed if any	Rs.
Reasons for difference:	
Date of amount disbursed:	

(Signature of the concerned NC)

Summary of NAIP Cash Book from _____ to _____

Name of the Institute/ Organization

S. No.	Component	Opening balance as on	Funds received from PIU during	Total Col (3+4)	Expenditure incurred as Implementing Center out of the amount shown in col. 5	Amount Refunded during	Closing Balance as on Col. (5) – (6+7)
1	2	3	4	5	6	7	8

A. Project Funds

1.	Total of Component 1						
2.	Total of Component 1						
3.	Total of Component 1						
4.	Total of Component 1						
	Sub-Total (A)						

B. Other Items							
5.	Interest earned on Short Term Deposit						
6.	Misc. receipts of the project, if any						
7.	Others						
	Sub-Total (B)						
	GRAND TOTAL						

Closing balance as on _____ as per NAIP Cash Book Rs. _____ (Rupees _____ only)

Head of the Institution

Finance & Accounts Officer

Appendix-24**AGREED PROCEDURES FOR NATIONAL COMPETITIVE BIDDING [NCB]**

- i) Only the model bidding documents for NCB agreed with the GOI Task Force [and as amended for time to time], shall be used for bidding;
- ii) Invitations to bid shall be advertised in at least one widely circulated national daily newspaper, at least 30 days prior to the deadline for the submission of bids;
- iii) No special preference will be accorded to any bidder either for price or for other terms and conditions when competing with foreign bidders, state-owned enterprises, small-scale enterprises or enterprises from any given State;
- iv) Except with the prior concurrence of the Bank, there shall be no negotiation of price with the bidders, even with the lowest evaluated bidder;
- v) Extension of bid validity shall not be allowed without the prior concurrence of the Bank (i) for the first request for extension if it is longer than eight weeks; and (ii) for all subsequent requests for extension irrespective of the period (such concurrence will be considered by Bank only in cases of Force Majeure and circumstances beyond the control of the Purchaser / Employer);
- vi) Re-bidding shall not be carried out without the prior concurrence of the Bank. The system of rejecting bids outside a pre-determined margin or "bracket" of prices shall not be used in the project;
- vii) Rate contracts entered into by Directorate General of Supplies & Disposals, will not be acceptable as a substitute for NCB procedures. Such contracts will be acceptable however for any procurement under National Shopping procedures;
- viii) Two or three envelop system will not be used.

Important Points To Be Noted in the World Bank-Financed Contract

1. Principal criteria followed in the World Bank procurement procedures are transparency, economy and efficiency, opportunity to all eligible bidders from all countries, and encouraging development of domestic contracting and manufacturing industries.
 2. Bank approved model bidding documents for procurement of Works and Equipment (ICB/NCB) should be used fixing appropriate qualification & evaluation criteria and ensuring filling of all blanks.
 3. Detailed design and engineering, including soil investigation, acquisition of land for works and preparation of technical specification for equipment, to be completed before invitations of bids.
 4. Bank will normally not finance additional floors in existing buildings. However as an exception, where the initial design of a building contemplated additional floors, which were not built due to budgetary constraints and the ITL is fully satisfied of the design, then only the World Bank will agree for financing those additional floors under the credit/loan.
 5. Schedule of rates (based on which estimates are prepared) should be updated regularly taking into account realistic data based on the construction methodology to be used, current market prices for materials and labour, and reasonable contractor's profit.
 6. Bill of Quantities should have a separate schedule for those general items, which are not covered in analysis of rates adopted for estimation.
-

7. (a) *Bid Security:*

A fixed amount usually 2 to 5% for Goods and 1 to 3% for works [For small value purchases and in some specific cases, where bid security is considered not essential, for example in vehicles it could be dispensed with] *[a system of self declaration by bidders under which a winning bidder who does not sign the contract becomes ineligible for bidding for a specified period is provided in the new Guidelines as acceptable alternative].*

(b) <i>Performance Security:</i>	Goods Works
5% of contract price	5 to 10% of contract price

(c) <i>Retention Money:</i>	Goods Works
5% of contract price	NIL
(50% to be retained till completion of the whole of the works and 50% to be retained till the end of defects liability period)	

(Bank guarantees submitted by bidders/contractors/suppliers should be unconditional and be in the specified formats. Bid and performance securities of Joint Ventures should be in the name of all partners in the Joint Ventures submitting the bid).

8. Samples

Bidding documents should generally avoid submission of samples along with bids by bidders as this requirement discourages competition and increases the bid prices. Alternatively bidders should be requested to confirm that their product meets with the required specifications and in support attach appropriate test certificates from recognized testing laboratories.

9. No filtration in the sale of bidding document. It should be sold and made available by mail as well, to all whosoever pays the required fee and requests for it.

10. Where Bidders are not pre-qualified, minimum post-qualification criteria should be clearly specified in the bidding document and enforced.

11. Contractors should be made responsible to provide all materials including Cement and Steel etc.

12. Minimum bidding period for NCB- 30 days and ICB- 45 days (from the date of Publication of IFB in press /UNDB or the date the documents are made ready for sale, whichever is later).

13. Bidding documents should be made available for sale till a day prior to the last date of receipt of bids. The time for the public bid opening should be the same for the deadline for receipt of bids or promptly thereafter (to allow only sufficient time to take the bids to the place announced for public bid opening).
Bidders could submit their bids either by post or in person on any day during the bidding period. Bids should be received only at one place and should be kept in safe custody till the stipulated time of opening.

14. Publicity of Bid Notices

ICB	NCB
UNDB online and dgMarket publication	—
Copies to bidders who have expressed interest in response to the General Procurement Notice	Copies to bidders who have expressed interest
Publicity in the national press having a wide circulation in all regions of the country	Publicity in the national press having a wide circulation in the country
For large, specialized or important contracts, publicity in well known technical magazines, newspapers and trade publications of wide international circulation	—

15. No preference to any bidders or class of bidders, either for price or for other items and conditions.
 16. Two or three envelope system is un-acceptable.
 17. All bids received should be opened and read out at the time of bid opening, which should be immediately after the deadline for submission of bids. No bids should be rejected at bid opening except for late bids, which should be returned unopened to the Bidder. Minutes of Bid opening must be prepared and one copy forwarded to the World Bank through the Project Implementation Unit, National Agricultural Innovation Project (NAIP) for information.
 18. No negotiations.
 19. Evaluation of bids should be made strictly in terms of the provisions and criteria disclosed in the bidding document. Evaluation report should be drafted on the suggested format (available in the detailed Guidelines on Procurement under the National Agricultural Innovation Project (NAIP). A copy may also be obtained from PIU, NAIP).
 20. Single bids should also be considered for award if it is determined that publicity was adequate, bid specifications/ conditions were not restrictive or unclear and bid prices are considered reasonable.
 21. Award should be in favour of the lowest evaluated responsive bidder, who is determined to be qualified to perform the contract satisfactorily.
 22. Evaluation and award decision of bids including the World Bank review should be completed within the initial period of bid validity. An extension of bid validity, if justified by exceptional circumstances shall be requested in writing from all bidders (of valid bids only) **before the expiration date**. The extension shall be for the minimum period required to complete evaluation, obtaining necessary approvals and award of contract. In the case of fixed price contracts the bid validity period may be extended a second time only if the bidding documents or the request for extension shall provide for appropriate adjustment of the bid price to reflect changes in the cost of inputs for the contract over the period of extension. Such an increase in the bid price shall not be taken into account in the bid evaluation. In the case of prior review contracts, the Bank's prior approval will be required for (1) a first extension of the validity period if the period of extension exceeds 4 weeks; and any subsequent extension of the bid validity period.
If there is an undue delay in awarding the contract. The Bank may consider declaring the same as mis-procurement.
 23. For works valued Rupees ten million and above the construction method(s)/Program and quality control details submitted by the bidders in response to Clause 4.3 (k) of ITB (W2) should be examined for acceptability before finalizing the award recommendations; this should be attached to the contract agreement for facilitating monitoring during implementation.
 24. The system of rejecting bids outside a predetermined margin or bracket of prices will not be used. Rejection of all bids, irrespective of value, should be referred to the World Bank through PIU, NAIP for review and issue of no objection [Rejection is permitted only if the lowest bid is much higher than available budget resources.] Format for seeking no objection of Bank provided separately.
 25. Rejection of bids due to submission of collusive (unreasonably high) prices will attract provisions of Para 1.15 of Procurement Guidelines. In such cases bidders must be requested to furnish breakdown of unit rates in terms of clause 25.1 of ITB (NCB works) providing justification for higher bid prices. If this justification, after review, is determined rational, the contract should be awarded to the lowest evaluated responsive bidder. If not, these bidders must be declared as ineligible in the rebid for that contract as specified in clause 4.8 of ITB (NCB works).
 26. In the case of civil works splitting in award of contracts shall not be carried out. When two or more bidders quote the same lowest price, an investigation should be made to determine any evidence of collusion, following which:
-

- i) if collusion is determined, the parties involved should be disqualified and the award should then be made to the next lowest evaluated and qualified bidder; and
 - ii) if no evidence of collusion can be confirmed, then fresh bids should be invited after receiving the concurrence of the World Bank through PIU-NAIP.
27. Under ICB/NCB bids should not be invited on the basis of bidders quoting a percentage premium or discount over the estimated cost of the Employer.
 28. During execution of contracts, all material modification or waiver of the terms and conditions of contract or material extension of stipulated time or change order which would increase the contract cost by over 15% should be reported to the World Bank.
 29. Repeat order system is not permissible.
 30. In all contracts for works (civil as well as supply/erection), the adjudicator/technical expert or Dispute Review Board should be in position constituted immediately on signing of the Contract Agreement.
 31. Results of award should be published in Development Business and Gateway for ICB/LIB and Direct Contracting.
 32. Review of Contracts by the World Bank

Prior Review:

It consists of review of:

- Invitation for bid;
- Bidding documents;
- Minutes of the pre-bid conference;
- Bid evaluation report (suggested format included in the detailed Guidelines); and
- Final contract(s) with checklists (format of checklist included in the detailed Guidelines)
- Procurement plan

Thresholds proposed in the PAD of NAIP are as under:

1. For Works – US \$ 200,000 and above.
2. For Goods and Equipment - US \$ 1 million and above in each case
3. For procurement of Goods & Equipment through Direct Contracting US \$ 50,000 and above in each case.

Post Review:

Review of final concluded Contract(s) with checklist and supporting documents for all other cases.

Note: Actual Threshold Limits will be as indicated in the Legal Agreement of the National Agricultural Innovation Project (NAIP).

Appendix – 25

CRITERIA FOR EVALUATION OF CONSULTANTS

Evaluation Factors		Score
<ul style="list-style-type: none"> Quality (Each should have a sub criteria not exceeding three) 	<ul style="list-style-type: none"> Experience 	0 to 5
	<ul style="list-style-type: none"> Methodology 	20 to 25
	<ul style="list-style-type: none"> Key Personnel 	55 to 60
	<ul style="list-style-type: none"> Transfer of Knowledge 	5
	<ul style="list-style-type: none"> Nationals in Key staff 	10
<ul style="list-style-type: none"> Price (Cost) 	<ul style="list-style-type: none"> Exclusive of Taxes 	
<ul style="list-style-type: none"> Combined 	<ul style="list-style-type: none"> Quality 	75-80
	<ul style="list-style-type: none"> Cost 	25-20

National Agricultural Innovation Project (NAIP)

Governance Accountability and Action Plan (GAAP)

11.1 Objective

The project realizes that the one tool which can make a marked influence on good governance is free and wider access to information by all the concerned and this can also ensure that the principles governing implementation are not subverted at any level by any individual. Accordingly, the project intends to adopt Suo-moto disclosure of information as its guiding principle in its endeavor to ensure transparency. In addition to this, the project, in line with the requirements of the RTI Act shall provide on-demand information as prescribed by law. Experience shows that success of a project is very closely associated with an efficient and responsive Grievance Redressal Mechanism which is based on a responsive administration. The project intends to implement a robust and responsive grievance handling mechanism at various levels by putting in place specific persons who shall be entrusted the responsibility for the same, with provisions of online tracking and monitoring of the deliverance on this score. The entire objective of the GAAP is to put in place systems which are transparent in functioning, information that is accessible by all and above all a governance mechanism which delivers as per the designed principles of the Project.

11.2 Project design principles

- NAIP will fund a much smaller number of much bigger sub-projects
- NAIP provides opportunities for public and private partners to work together and will invest in facilitation and match making activities.
- IPR, contractual arrangements and benefit sharing will be addressed in the working modalities of the consortia in Component 2, 3 and 4 and in the business development units of component 1.
- Linking direct disbursement with the establishment of a computerized on-line financial management system at the PIU that is accessible to all consortium leaders and partners.
- Procurement in the NAP-funded consortia will be largely based on principles of decentralization.
- In NAIP, consortia will be designed with stakeholder participation from the first moment onwards, and in the consortium selection process the quality of stakeholder engagement will be an important criterion.
- NAIP invests in demand driven research (components 2 and 3) as well as in strengthening the basic research capacity (component 4).
- NAIP will develop a results-based M&E system
- NAP is envisaged as an integral part of the agricultural R&D system of the country. It will not build a parallel system but rely on the existing institutions and organizations in and around the sector.

11.3 Risk Assessment and Mitigation Plan

As implementation of any activity has a certain element of risks involved in it, the project has identified some of the major risk elements which can have an adverse bearing on the success of the project. The list below is not necessarily a comprehensive one and it is very likely that some more may be encountered during the project implementation stage. The project realizes that Financial and Procurement Mismanagement and Actions of any level of implementing partners which subverts the principles of implementation as designed in the PIP, are the key elements which can have an adverse bearing on the motivational level of the stakeholders and thereby on participation which has a direct bearing on the success of the project. Accordingly, the project has come up with a Risk Assessment and Mitigation Plan as per the table below:

Procurement Risks and Mitigation Plan

Sl. No.	Procurement Risks identified	Standard Operation Procedure (SOP) mandatory for the project	New Initiative which the project has designed	Responsibility
PIU, NAIP Level				
1.	Selection of project Concept Note (CN) beyond due date/time lower than the prescribed limit and not priority area	Selection within due date, prescribed limit of Rs. 5 crore and above and on the prioritized areas indicated in the PIP/advertisements	All these are part of advertisement notices	PIU, NAIP
2.	Subjective selection of CNs and full project proposals	Objective criteria, sub-criteria developed and stated in the PIP which is on NAIP website	The criteria with score card is in the PIP. Helpdesk is located at NAARM helps in match making and partnership building and working	PIU, NAIP
3.	Skewed partnership	Partnership based on the gaps identified	Gap analysis of the problem and identification of right partners	PIU, NAIP
4.	Clear-cut M&E framework missing	M&E framework at different levels defined	Project monitoring, and Tracking System (PMTS) developed, M&E Manual put on website	PIU, NAIP
5.	No E&S safeguards	E&S safeguards framework defined	Template available on website and followed	PIU, NAIP
6.	Improper CAC	Formed as per the prescribed guidelines	Well represented by stakeholders	PIU, NAIP/ consortia
Consortia Level				
7.	Financial certification missing	3 years AUC balance sheet agreement to follow accrual	Empanelled Auditors region-	PIU, NAIP/ Consortia

		accounting system, separate bank account/ledger account	wise identified	
8.	Launch workshop, CIC, CAC meetings not held properly	Clear-cut guide for launch workshop guidelines, composition approved during project sanction itself and monitoring	Budget provided, frequent mails and reminders	PIU, NAIP/ Consortia
9.	Hurdles for smooth functioning of consortia on account of lack of delegated powers	Delegation of power to CL, CPI, Co-PI, CIC and CAC	PMC has delegated powers for smooth functioning of consortia	PIU, NAIP/ Consortia
10.	No monitoring mechanisms	National Co-ordinator , M&E consultant, workshops, sample visits	PMTS developed, M&E Manual on website	PIU, NAIP and M&E Consultant
11.	No or late submission of progress reports, SOEs, AUCs etc	Format developed, circulated, emphasized during training programmes, workshops, audit to verify the documents to support SOE and their eligibility. Follow-up action on audit observations. Internal auditor is being appointed to strengthen quarterly internal audit	Empanelled CA firms, PMTS within 6 month of the financial year, internal auditor firm being appointed	PIU, NAIP/ Consortia
12.	Maintenance of contract register	All procurement documents/ register will be maintained at PIU and consortia in a prescribed format	Format developed	PIU, NAIP and Consortia
13.	Separate NAIP project Account/Ledger	Practice to ensure utilization of allocated funds to the project activities etc.	Financial Management Manual	PIU, NAIP and Consortia
14.	Following Accrual Accounting System	Part of MoU	Financial Management Manual	PIU, NAIP and Consortia
15.	Following World Bank Procurement rules on contracts and consultancies	Procurement Manual, training, web chats etc.	Procurement Manual	PIU, NAIP and Consortia

Based on the Risk Assessment, the project realizes the importance of dissemination of information to reduce the risks as outlined above. Accordingly, the project has come up with a disclosure strategy which shall ensure that every information, decision and process is left on public domain.

11.4 Right to Information Act

The project not only aims to meet the statutory requirements as stipulated under the RTI Act but is designed on the principle that there should be an open access to all information. The project realizes that withholding of any information is generally governed by the intention of hiding information which in turn indicates that there has been some wrong committed somewhere. It is

therefore imperative that all information is provided through websites and other means of mass communication so that the elements trying to subvert the principles would be on Guard.

The project has come up with a informative website where suo-moto disclosure of all project related information, events, activities, acts and rules governing the project, component/subcomponent wise. Besides the website, the project will use other means of mass communication for dissemination of information.

For smooth implementation of RTI Act requirements, one senior officer of the rank of the **Under Secretary** in PIU, NAIP is declared as the PIO who will be responsible to provide on-demand information under the RTI. Similarly, each consortium will be having a designated senior officer as PIO under RTI. These officers shall ensure meeting all the statutory requirements of the Act.

11.5 Suo-Moto Disclosure

The suo-moto disclosure policy of the project envisages that all information will be made available to all the concerned. To deliver this policy, the project has come up with a project web site having all information relating to the project design, the implementation plan, procurement plan, M&E Manual, Financial Management Manual, E&S framework etc. The strategy would be to provide every detail information like rationale, Objectives Components, Governance mechanisms, details of the officials implementing the project at various levels, their roles and responsibilities, powers and functions, the procedures as per the PIP, Financial Management, procurement procedures etc.

11.6 Grievance Handling Mechanism

The project understands the need for having an efficient and responsive grievance handling mechanism which delivers results and ensures corrective actions within a specific time frame, if the project has to get the willing cooperation of all the concerned. Accordingly the project has designed a grievance handling system which will not only ensure enquiring into the grievance/complain within the specified time frame but also the remedial/ corrective actions that need to be taken within a specified time frame and communication of results to the complainant.

It has been noticed that complaint enquiry/ handling is often assigned to the persons against whom the complaint is made. This violates the principles of natural justice of one being a judge in his own case. There are also numerous instances when the enquiries are influenced by external factors and not based on objective assessment of the situation. In order to ensure that fairness and objectivity is maintained in the complaints against the functionaries at the PIU, NAIP level, it has been decided to follow the ICAR vigilance rules. The ICAR vigilance rules and procedures will be applicable at the ICAR based consortia and the mechanisms that are prescribed by other institutions who are partners in NAIP will follow their prescribed rules.

11.7 Implementation Mechanism

11.7.1 Suo-Moto Disclosure

In order to ensure that the objectives of the Project in providing transparent and responsive Governance are translated into actions, the project shall entrust the responsibility of putting up Suo-moto information on the web site upon the office of the ND, NAIP. The website would be updated generally

once a week. At the consortium level, the CMU or other designated bodies will be responsible for updating of information on the website

11.7.2 Website

The project has a website (<http://www.naip.icar.org.in>) functioning from the inception of the project. Similarly, the consortia will also generally have their own websites.

11.7.3 Right to Information Act:

In accordance with the provisions of RTI Act, the Under Secy, PIU-NAIP shall be responsible for providing information on demand after obtaining the same from the concerned including the consortia if required. Similarly, the designated officers under RTI Act at the Consortia level will provide information under RTI Act.

11.8 Grievance Redressal

Strategy for grievance redressal mechanism is worked out. One of the recent steps taken in this regard is arranging a chat session with the PIs of approved consortia. Several queries were raised which are partly replied and the rest were replied through FAQs. Under right to information act, Mr. Kumar Rajesh, Under Secretary in the PIU-NAIP is designated as the nodal officer whose address along with telephone number and other contact address is given in the NAIP website.

11.9 Monitoring and Evaluation of the Project

The concurrent monitoring of the subprojects under different components will be done by the concerned National Co-ordinator (NC). At the project level National Co-ordinator (Component-1) will be doing concurrent monitoring assisted by a project M&E consultant. At the subproject level, the overall monitoring will be done by Consortium Implementation Committee (CIC) and Consortium Advisory Committee (CAC) assisted by Consortia Monitoring Unit (CMU). An independent entity will carry out comprehensive outcome focused impact evaluation of the NAIP. The M&E consultant who has the responsibility of day to day operations will be providing support in terms of developing M&E manual, baseline survey at the project level, guidelines for conducting baseline surveys at the consortia level, training and guidance in the development of M&E framework for the consortia, development and guiding implementation of Project Monitoring and Tracking System (PMTS), sample visits to consortia for M&E related guidance and providing a feedback to PIU, NAIP, preparation of different reports including the progress reports, impact assessment survey at the end of the project period etc.