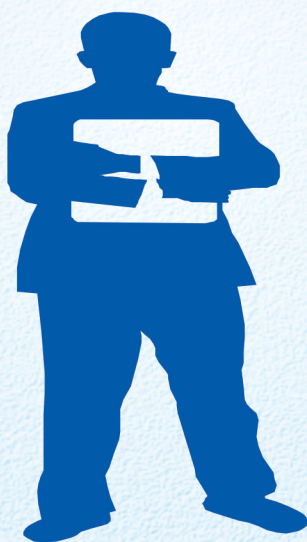


NATIONAL AGRICULTURAL HIGHER EDUCATION PROJECT

[ICAR-WB Project]

Monitoring and Evaluation Manual



PROJECT IMPLEMENTATION UNIT – NAHEP

Indian Council of Agricultural Research

Krishi Anusandhan Bhawan II

Pusa Campus, New Delhi (India)

<https://nahep.icar.gov.in/>

NATIONAL AGRICULTURAL HIGHER EDUCATION PROJECT

[ICAR-WB Project]

Monitoring and Evaluation Manual



PROJECT IMPLEMENTATION UNIT – NAHEP

Indian Council of Agricultural Research

Krishi Anusandhan Bhawan II

Pusa Campus,

New Delhi (India)

<https://nahep.icar.gov.in/>

Printed	August, 2019
Citation	NAHEP. 2019, Monitoring and Evaluation Manual: National Agricultural Higher Education Project, ICAR, New Delhi
Edited and Compiled by	Dr. K P C Rao, M&E Consultant (NAHEP) Dr. Prabhat Kumar, National Coordinator (M&E and Comp 2) Mr. Guna Nand Shukla, M&E Consultant (NAHEP) Mr. Arvind Jha, M&E Consultant (NAHEP) Dr. Suvarna Mahalle, Research Associate (M&E, NAHEP)
Published by:	National Director National Agricultural Higher Education Project Indian Council of Agricultural Research (ICAR) Krishi Anusandhan Bhawan-II, Pusa, New Delhi 110 012
Phone	+91-11-2584 8772
Email	nd.nahep@icar.gov.in
Website	https://nahep.icar.gov.in/
Copyright	Indian Council of Agricultural Research, New Delhi
Disclaimer	The information collated and edited in this volume is mainly based on Project Appraisal Document and Project Implementation Plan of NAHEP.
Production	Dr. V.K. Bharti, Chief Production Officer

Designed & Printed at:

M/s Royal Offset Printers, A-89/1, Naraina Industrial Area, Phase-I, New Delhi-110 028
Mobile: 9811622258

List of Abbreviations

S. N.	Acronym	Full form
1	AEDIS	Agricultural Education Digital Information System
2	AHEPC	Agricultural Higher Education Programme Committee
3	AI	Artificial Intelligence
4	ARS	Agricultural Research Service
5	AUs	Agricultural Universities
6	BCR	Benefit Cost Ratio
7	CAAST	Centres for Advanced Agricultural Sciences and Technology
8	CAGR	Compounded Annual Growth Rate
9	CEP	Continuing Education Programs
10	CI	Code Ignitor
11	DAAD	German Academic Exchange Service
12	DiD	Difference in Difference
13	EAP	Equity Action Plan
14	EFC	Expenditure Finance Committee
15	EMF	Environmental Management Framework
16	ESP	Environmental Sustainability Plan
17	FMS	Financial Management System
18	FY	Financial Year
19	GATE	Graduate Aptitude Test in Engineering
20	GDP	Gross Domestic Product
21	HEIs	Higher Education Institutions
22	IASRI	Indian Agricultural Statistics Research Institute
23	ICAR - SAU	ICAR - State Agricultural Universities
24	ICAR DC	ICAR Data Centre
25	ICTs	Information and Communication Technologies
26	IDP	Institutional Development Plan
27	IEG	Institute of Economic Growth
28	IFAD	International Fund for Agricultural Growth
29	IG	Innovation Grant
30	IIIC	Industry Institute Interaction Cell
31	IR	Intermediate Results
32	ISR	Implementation Status and Results
33	IT	Information Technology

S. N.	Acronym	Full form
34	JRF	Junior Research Fellowship
35	L&CB	Learning and Capacity Building
36	M&E	Monitoring and Evaluation
37	MIS	Management Information System
38	Mn T	Million Tons
39	MOOC	Massive Open Online Courses
40	MoU	Memorandum of Understanding
41	NAARM	National Academy of Agricultural Research Management
42	NAAS	National Academy of Agricultural Sciences
43	NAHEP	National Agricultural Higher Education Project
44	NAIP	National Agricultural Innovation Project
45	NCs	National Coordinators
46	ND	National Director
47	NIAP	National Institute of Agricultural Economics and Policy Research
48	NISAGENET	National Information System on Agricultural Education Network
49	NSC	National Steering Committee
50	PAD	Project Appraisal Document
51	PDO	Project Development Objective
52	PIP	Project Implementation Plan
53	PIU	Project Implementation Plan
54	PMC	Project Management Committee
55	PME	Project Monitoring and Evaluation
56	PMTS	Project Monitoring and Tracking System
57	PwC	PricewaterhouseCoopers
58	SRF	Senior Research Fellowship
59	TFP	Total Factor Productivity
60	TNA	Training Need Assessment
61	ToC	Theory of Change
62	UAT	User Acceptance Testing
63	UNWFP	United Nations World Food Programme
64	USD	US Dollar
65	USDA FAS	United States Department of Agriculture - Foreign Agricultural service
66	VC	Vice Chancellor
67	WB	World Bank

Contents

Chapter – I: Background	1
Chapter – II: Monitoring and Evaluation System	17
Chapter- III: NAHEP M&E system	22
Chapter IV: Baseline data for NAHEP M&E system	66
Chapter V: Project Monitoring and Tracking System	71
Chapter VI: Learning and Knowledge management	79
Chapter VII: M&E action plan	84
References	87
Annexure	89

1. BACKGROUND

1.1 Programme Elucidation

1.1.1. NAHEP: The Strategic Context

India has emerged as one of the World's fastest growing economies with an annual GDP growth rate of around 7.2% during FY 2018, 6.8% during FY 2019 and projected to grow at the rate of 7.8% during FY 2020¹. One of the pillars of a robust economy is Science and Technology, nurtured by knowledge base, education and research. Agriculture is a key sector of Indian economy and its modernization largely hinges upon quality agricultural education and research.

In the Post- Independent India, the first two decades were marked by food deficits and imports, occasionally experiencing famines and hunger deaths. The situation has transformed gradually by the ability of agricultural education and research system which took advantage of dwarf germplasms of Wheat and Rice, made available by the International research organizations. The fertilizer responsive high yielding varieties developed from these superior germplasms helped the country in matching the demand with increased production and achieve self-sufficiency, which is rated as 'Green Revolution' by many analysts. Policy support from Union and State Governments and investments in irrigation, rural power supply and a host of other factors contributed to achieve 'self-sufficiency' and led country to emerge as a net exporter of food grains to some extent.

India's production of food grains has been increasing every year, and currently India is among the top producers of several crops such as Wheat, Rice, Pulses, Sugarcane and Cotton. According to the Ministry of Agriculture, total food grain production in the country in FY17- 18 stood at around 284 million tonnes. By the year 2050, the annual food grain production would need to grow to 333 million tonnes².

Crop production (Mn T)	2011-12	2017-18	CAGR
Rice	105.30	112.91	1%
Wheat	94.88	99.70	1%
Total cereals	242.20	259.59	1%
Total pulses	17.09	25.23	8%
Total foodgrains	259.29	284.83	2%
Oilseeds	29.80	31.31	1%
Sugarcane	361.04	376.91	1%
Horticultural crops	257.3	307.2	4%

Source: Ministry of Agriculture & Farmers' Welfare, 2018

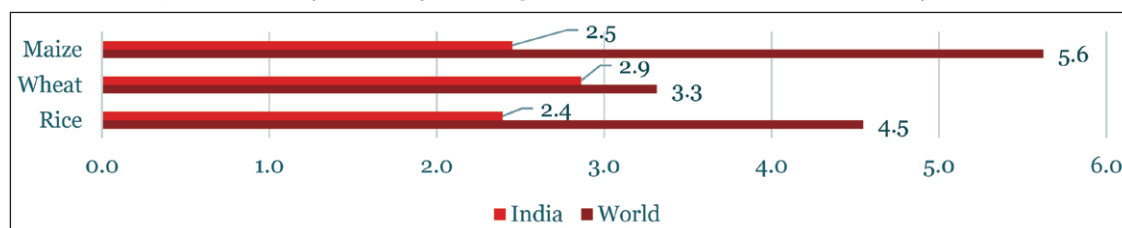
1 Economic Survey, 2018-19, Govt. of India

2 Transforming agriculture through mechanization, FICCI

Since 2011-12, production of pulses have increased exponentially with a CAGR of 8%. Production of horticultural crops is estimated at 307 Mn T, implying a CAGR of 4% between FY 12-18. India ranks 2nd in global production of fruits and vegetables and is a leading exporter of mangoes and bananas. The country also exports grapes in a large quantity across the world.

Despite high levels of production, agricultural yield in India is lower than other large producing countries.

Exhibit: Comparative analysis of major food grains for World Vs India in terms of yield (FY 2016-17)



Crop	Area (in Mn ha)			Production (in Mn T)			Yield (in T/ha)		
	World	India	Cont. (%)	World	India	Cont. (%)	World	India	Ratio (India / World)
Rice	163	44.5	27.3	741	106.5	14.4	4.5	2.4	0.53
Wheat	220	30.4	13.8	729	87	11.9	3.3	2.9	0.88
Maize	185	10.2	5.5	1040	25	2.4	5.6	2.5	0.45
	568	85.1	15.0	2510	218.5	8.7			

Source: USDA FAS and PwC analysis

- Although, India assumes significant importance in terms of acreage of key food grains, but productivity is less. Contribution percentage of key food grains in acreage terms is 15%, but production contribution is only 8.7 %.
- Rice and maize yields in India are only about one-half of world's yield.
- There is a considerable scope for increasing productivity of Indian agriculture through improved production efficiency.

Given the added constraints on land availability for cultivation due to the rising land demand for non-agricultural usages, significant achievement in total factor productivity (TFP) of Indian agriculture is urgently required to meet the country's growing demand for food fueled by economic prosperity and population growth. Along with need for more inclusive productivity growth of agriculture, there are added concerns like degradation of natural resources, water scarcity and climate change. All these issues and concerns, which are global in nature as well, point towards the need for development of knowledge intensive agricultural technologies and adoption of climate smart production practices. In this context, the role of agricultural higher education is paramount to develop and adopt a knowledge intensive agriculture and to enhance the land and labor productivity. Quality agricultural graduates appropriately equipped with new knowledge,

expertise in frontier areas of agricultural science and technologies, desired traits and skills could be instrumental for market driven research and rapid adoption of advanced agricultural practices.

With India's emergence as a major world economy, the quality assurance as well as relevance of agricultural higher education has become even more crucial. In this context, the fact of the matter is that the agricultural higher education institutions in India are lagging far behind in terms of quality and relevance compared to global standards. Analysis of the Deans committees (2008-2015) and the National Core Group reports indicate, "Wide variations exist in quality and performance of Agricultural Universities (AUs) which limits their capacity to produce quality skilled agricultural graduates". In many cases, agricultural universities are poorly equipped to produce quality graduates that can compete in the market, nationally and internationally. According to a World Bank (2014) study³, it is found that though India has doubled its investment in agricultural research and extension from 0.4% of Agriculture GDP in 1981 to 0.96% in 2011, the research quality remained poor due to low institutional capacity of agricultural higher education to adapt and remain relevant. Revitalization and re-awakening of the ICAR-SAUs agricultural education, research and extension system under NAHEP, therefore, can play important role and will have lasting impacts on agricultural growth and development and in rural economic transformation through generation and adoption of relevant technologies and production practices in coming years.

International competition in agricultural higher education is becoming more intense and warrants systemic reforms in the mechanisms of delivery of quality educational services and learning outputs. In this context, notwithstanding the past achievements, it has been strongly felt that the Indian agricultural education system needs to reform itself and become more responsive to markets and cater to local needs. There is an urgent need for improved learning outcomes of the agricultural education system in the country and require enhanced faculty teaching performance and research effectiveness. Accordingly, the reform in Indian Council of Agricultural Research (ICAR) – State Agricultural Universities (SAUs) system is being implemented to provide quality agricultural higher education responsive to market participants and stakeholders, particularly farmers, talented students and agro-industries. The challenges are incorporation of recent developments in frontier sciences, upgradation of research and teaching infrastructure, application of Information Communication Technologies (ICTs) in teaching and educational output delivery, enhanced faculty competency and commitments, fostering partnerships and alliances among Agricultural Universities (AUs) and agro-industries, and making agricultural higher education and profession more attractive to youth.

Moreover, emphasis is being placed upon inclusiveness and equity aspects of the access to agricultural higher education. Indian Council of Agricultural Research (ICAR), with financial assistance from the World Bank, has taken major initiative in this direction by implementing the systemic reforms and through schemes and provisions for investments to address the current and emerging challenges in the higher agricultural education under National Agricultural Higher Education Project (NAHEP).

3 India: Accelerating Agricultural Productivity Growth (<https://openknowledge.worldbank.org/handle/10986/18736>)

1.1.2. The Programme Rationale

Agriculture sector in India significantly contributes to economy in terms of Gross Domestic Product (GDP) and employment of labour force. It accounts for around 17 percent in GDP, 13 percent to exports, and 55 percent to employment⁴. Demand for skilled labor is increasing in private sector in the areas of food processing, food safety, and trade. Moreover, studies have found that there are high rates of returns to investments in agricultural research (Alston and others, 2000; Alston, 2002; Huffman & Evenson, 2006; Evenson, 2001). Hence, increased number of quality agricultural graduates would be required not only in agro-based industries, but also in agricultural education, research and support services. The investments made under the NAHEP project would enhance individual's skills to make them more productive and employable, meeting the shortages of skills in the country. It is also envisaged that the project would make Indian agriculture an attractive proposition and more number of minds and hands would join the sector. Higher workforce participation of agriculture graduates would enhance the lifetime earnings and quality of life, along with multiplier effects, positively contributing to economy and society through savings and investments. Therefore, improving levels of higher agriculture education could be beneficial from both economic and social justice point of view in India.

As mentioned earlier, enhanced quality and relevance of agricultural higher education could play a crucial role in improving the competitiveness and production efficiency of Indian agriculture sector. Building and inculcating the relevant skill sets in agricultural university graduates through enhanced quality higher education has always been a major challenge at global level, including in India. In this context, most of the agriculture-dominated countries are making constant efforts to enhance quality, standards, and earn recognition to their agricultural higher education system. Such examples are China, Japan, Korea, Germany, Taiwan, and Russia along with many others (PIP-NAHEP, ICAR, 2016). It is, therefore, imperative for India as well to prepare the ICAR-SAUS system to face challenges posed by the changing agriculture and economic environment and respond appropriately to take full advantage of advances in frontier sciences and technologies. As, the PAD-NAHEP, World Bank, 2017, clearly states that "The needs of the agricultural sector resonate with other sectors, i.e., highly trained workforce and relevant cutting-edge research. Two World Bank Global Practices – Agriculture and Education – are collaborating on the proposed NAHEP to ensure that the AU reform process benefits from innovations in both sectors across India and internationally. Through strategic priority interventions at the Central and State levels, the proposed NAHEP would have far-reaching and long-term impacts on agricultural higher education in India."

With increasing globalization of higher education services, very realistic concerns have been raised over quality, standards and recognition of agricultural higher education in India. Under NAHEP, the ICAR is in the process of bringing a fundamental change in its approach and control, financial sustainability, accountability, autonomy, transparency, and meritocracy to improve quality and relevance of agricultural education in the country. It is expected that the participating ICAR institutes and AUs will enhance the level of higher education in agriculture in terms of

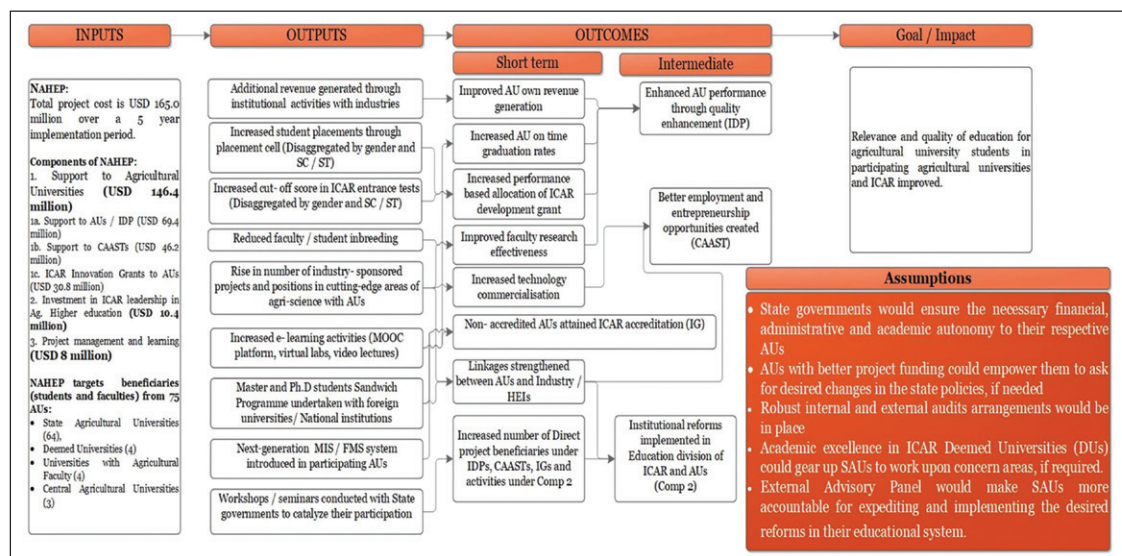
4 Agriculture Statistics, Ministry of Agriculture and Farmers Welfare, GoI 2017

both quality and relevance. NAHEP would strengthen India's presence in the higher agricultural education system with skilled manpower capable of achieving higher productivity with limited resource, generating need based technologies, and improving productivity and efficiency of entire value chain.

1.1.3. The Programme Logic:

NAHEP is designed to strengthen the national agricultural education system in India with overall objective to provide more relevant and high quality education to agricultural university students. This programme will promote efficiency and competitiveness through changes in working mechanism of agricultural universities, raising the teaching and research standards through improved research and teaching infrastructure and enhanced faculty competency and commitments, and making agricultural education more attractive to talented students. There are four key components under NAHEP, namely; Institutional Development Plan (IDP), Centres for Advanced Agricultural Sciences and Technology (CAAST), ICAR to support excellence in agricultural universities (AUs), and ICAR Innovation Grants to AUs. It is envisaged that improved AU performance through quality enhancement, better employment and entrepreneurship opportunities created for agriculture graduates, non-accredited AUs attaining ICAR accreditation, and institutional reforms implemented in education division of ICAR and AUs under these components together shall contribute to the achievement of the overall program objective. The program logic or the theory of change (ToC) of NAHEP can be represented in a visual diagram (elaborated in detail in subsequent sections) given below:

Exhibit: Representation of Theory of Change (ToC) for NAHEP



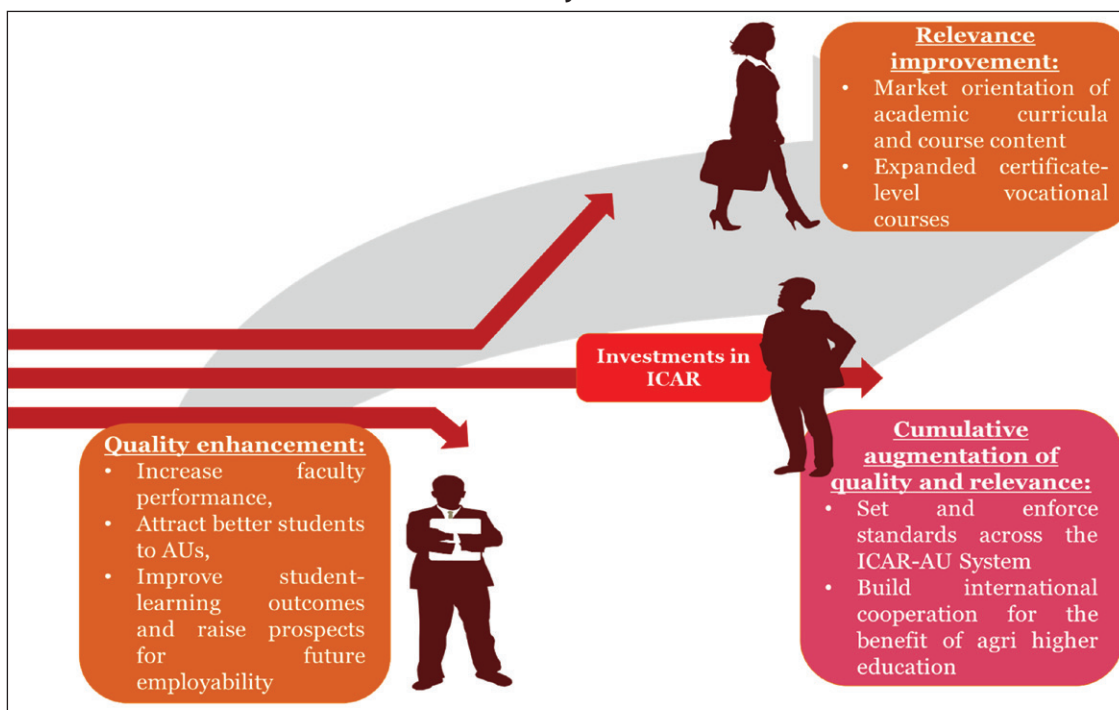
The programme logical flow traverses through Inputs>>Outputs>>Short-term outcomes>>Intermediate outcomes>>Impact, which builds the robust base and framework for monitoring and evaluation of NAHEP.

1.2. Key elements of NAHEP: Objectives, Components and financing

1.2.1. Programme Objectives

The overall objective of the Project is to support Participating Agricultural Universities and ICAR in providing more relevant and higher quality education to Agricultural University students.

Exhibit: Broad objectives of NAHEP



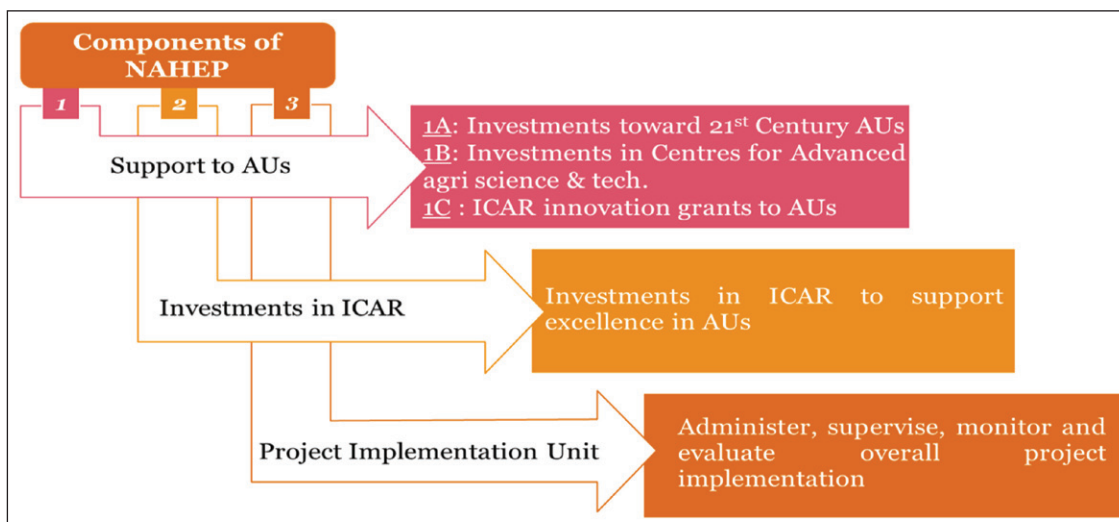
NAHEP addresses quality by supporting interested AUs to propose and implement technically sound and verifiable investments (i.e., IDPs) that increase faculty performance, attract better students to these AUs, improve student-learning outcomes and raise their prospects for future employability, particularly in the private sector.

Relevance would be addressed through: (a) greater alignment of academic curricula and course content with the skills sets being demanded in the agriculture and allied services sector; and (b) expanded certificate-level vocational courses to fill the gap for trained technical personnel, especially in market-led extension.

Finally, both quality and relevance would be augmented through investments in ICAR that improve its ability to set and enforce standards across the ICAR-AU System and build international cooperation to the benefit of agricultural higher education.

1.2.2. Programme Components

The NAHEP comprises of three components (PAD-NAHEP, World Bank, 2017):

Exhibit: Key components and sub components of NAHEP

Component 1a (Institutional Development Plans): Under this component, Institutional Development Plan (IDP) projects have been awarded to select accredited AUs. Selection of AUs under IDP has been made on the basis of performance and competition. Investment under this component would improve learning outcomes and employability of AU students on one hand and teaching and research performance of the faculty on the other. Under the IDP investments, AUs have been given the opportunity to sort out key challenges and respond to them suitably with proposed interventions. The achievements of quality and relevance attributable to these interventions would be measured through identified PDO and Intermediate indicators throughout the project duration.

The IDP financed activities are more oriented towards capacity building and governance reforms leading to the greater autonomy and sustained accreditation of the University. The key provisions for funding under IDP include teaching and research infrastructure development, faculty development and training, networking and industry collaboration, vocational training, students job placement, own revenue generation and support to twinning plan. In addition to these priorities, emphasis is also being placed on effective industry linkages to enhance employability of agriculture graduate as well as to help AUs to generate their own resources. Renewed public-private partnership efforts will strengthen stakeholder role in curriculum design and faculty and student development. This will help the agricultural higher education system in India to produce quality graduates with desired traits, exposure and experience, and skills in innovation, entrepreneurship, and agribusiness to solve current and emerging problems of agriculture.

Component 1b (Investments in Advanced Agricultural Science and Technology): Under this component, select accredited AUs have been awarded projects for the establishment of Centres for Advance Agricultural Science and Technology (CAAST). These Centres would be multidisciplinary and interdisciplinary in nature for teaching, research and extension on critical and emerging

issues of agriculture. Like IDP, the selection process of CAAST projects has been made on the basis of competition and performance. The key provisions for funding under CAAST include research and teaching equipment, faculty and scientist development fellowships, postgraduate student scholarships, and the costs associated with twinning arrangements with similar centers both nationally and internationally.

While IDP focusses on improving standard and quality of agricultural higher education, the investments under CAAST component contribute more towards enhancing the relevance of the teaching and research. The focus of CAAST hinges upon development of multidisciplinary faculty, innovative approaches to teaching and research, technology development and commercialization. The holistic approach to teaching and research for agriculture and rural development would be building capacities in a specialized thematic area and cutting-edge agricultural science and make AUs globally competitive and locally relevant. High emphasis on industry orientation of agricultural science and technology generation system through strengthened association and partnership will be laid under this component. It is envisaged that the support and efforts under CAAST would strengthen agricultural higher education with better employment and entrepreneurship opportunities for agriculture graduates.

Component 1c (ICAR Innovation Grants to AUs): Under this component, projects have been awarded to select participating AUs to attain accreditation. Reform ready AUs mentoring the non-accredited AUs has also been considered in this component.

The Education Division, ICAR uses the voluntary accreditation process as a determinant of AU reform readiness. Accreditation confirms that the given AU:

- (a) has clearly defined and appropriate objectives (i.e., leadership);
- (b) has established an enabling environment that makes achievements of these objectives possible (i.e., governance);
- (c) is substantially accomplishing its objectives (i.e., effectiveness); and
- (d) is organized, staffed and supported to ensure its continuation (i.e., sustainability).

ICAR awards accreditation at three levels – university, college, and program – and bases its decision to accredit a given AU on three sources of evidence: (a) AU self-examination; (b) institutional peer review; and (c) final decision by the ICAR Accreditation Board. NAHEP would support AUs in their efforts to attain accreditation through this subcomponent.

The funding provisions under this subcomponent include technical assistance and consulting services.

Component 2 (Investments in ICAR to support excellence in AUs): The investment under this component intends to strengthen ICAR Leadership in Agricultural Higher Education. This component supports ICAR to carry out institutional reforms within ICAR and enhance effectiveness in coordinating, guiding and managing agricultural higher education in the country. Through appropriate interventions, the ICAR will improve its interactions with AUs and other stakeholders, which will further lead to enhanced quality and relevance of agricultural higher education in the ICAR-SAU system.

The key activities under Component 2 are:

- (a) Assessing options in the administration and award of ICAR's technical and financial assistance to AUs;
- (b) Structuring dialogue with State governments to catalyze their participation in raising the quality and relevance of agricultural higher education;
- (c) Providing assistance to participating AUs for the development of IDPs, CAASTs and Innovation Plans;
- (d) Establishing partnerships with globally recognized agricultural higher education institutions;
- (e) Developing digital information systems for agricultural data collection, analysis and dissemination;
- (f) Improving curricula review processes and methods to consolidate and disseminate global best-practices in agricultural education;
- (g) Improving the all-India entrance examination in agriculture, including an on-line national examination system;
- (h) Adopting next-generation management systems covering information, procurement, contract and financial management areas;
- (i) Coordinating an External Advisory Panel of renowned agricultural education experts;
- (j) Assisting agricultural universities to strengthen their linkages with industry; and
- (k) Promoting the establishment of centers for career development at agricultural universities.

Component 3 (Project Management and Learning):

This component would strengthen ICAR's management capacity for project implementation.

The key activities under this component are:

- The Maintenance of Project Implementation Unit and Monitoring and Evaluation Cell to ensure:
 - ▲ Compliance with the project's procurement, financial management, and reporting requirements;
 - ▲ Carrying out administration, supervision, monitoring and evaluation of project awarded under IDP, CAAST and IG;
- The provision of training to ICAR and participating AUs to achieve and sustain increased quality, relevance, and effectiveness of agricultural higher education.
- The dissemination and communication of project interventions and outcomes.

The activities under this component are crucial for cost effective implementation and achievements of project outcomes efficiently.

1.2.3. Project Cost & financing pattern

The NAHEP is formulated by ICAR in collaboration with World Bank (WB) with the total project cost of USD 165 Million (INR 1100 Cr approximately)⁵, with 50:50 cost sharing basis between the GoI and WB. The details of the project cost are mentioned in the table below.

⁵ 1 USD = INR 64.47 as on June 1, 2017

Table: Project Cost and financing pattern(in USD Million)

NAHEP Cost by Component	Total	% Total	IBRD	Gol
1. Support to agricultural Universities	146.4	89	73.2	73.2
1a. Support to AUs	69.4	42	34.7	34.7
1b. Support to CAASTs	46.2	28	23.1	23.1
1c. ICAR Innovation Grants to AUs	30.8	19	15.4	15.4
2. Investment in ICAR Leadership in Agricultural Higher Education	10.4	6	5.2	5.2
3. Project Management and Learning	8	5	3.9	4.1
Front-end Fee	0.2		0.2	
Total	165	100	82.5	82.5

Since, WB and Gol jointly finance this project, so timely strategic inputs for effective implementation of projects are continuously being provided by both the funding partners.

1.3. NAHEP Implementation: Governance structure and Key Assumptions

NAHEP was approved in October 2017⁶ and subsequently the loan agreement was signed in the same month. As per PAD, the project duration for NAHEP is 5 years. The project commenced operation effectively from November 2017. During inception stage, several key documents were prepared viz. Project Implementation Plan, Expenditure Finance Committee (EFC) document, Procurement Plan and Guidelines, FMS manual and other project relevant documents.

The Education Division of ICAR is implementing NAHEP. The governing structure of NAHEP comprises of National Steering Committee (NSC), Project Management Committee (PMC), Agricultural Higher Education Programme Committee (AHEPC) and Project Implementation Unit (PIU).

National Steering Committee (NSC):

The Steering Committee headed by the Director General, ICAR is the apex body of the NAHEP, providing the strategic and policy guidance to the project.

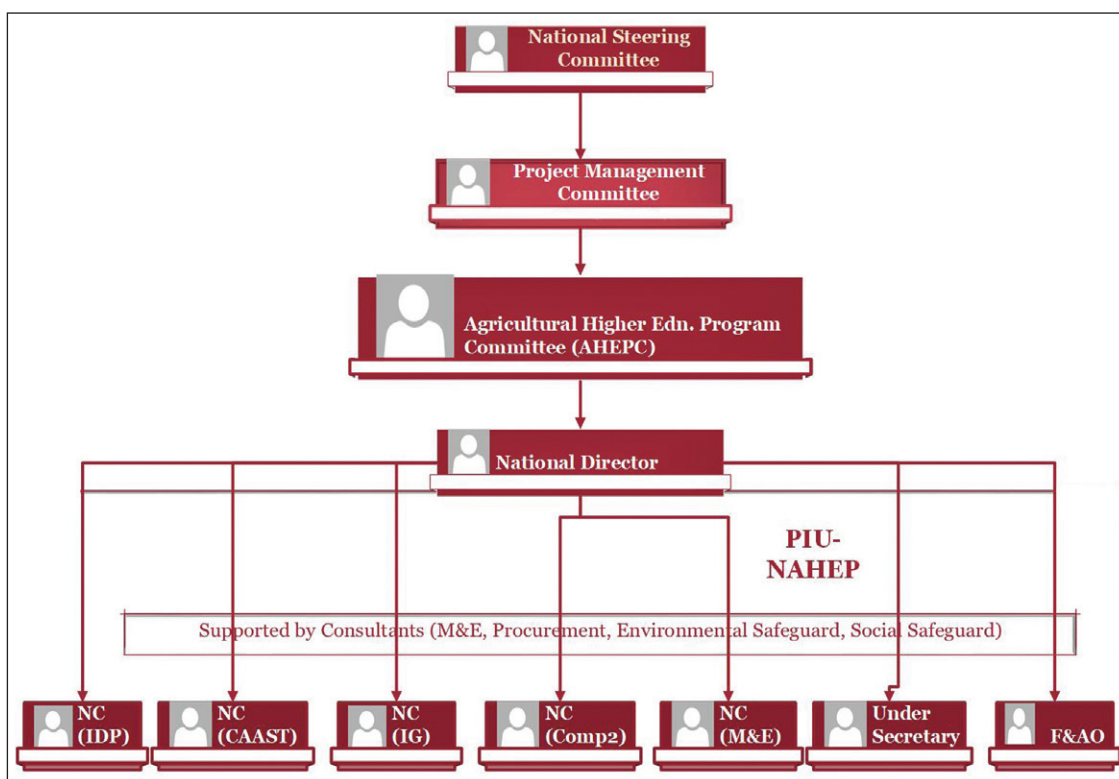
Project Management Committee (PMC):

Director General, ICAR chairs PMC and has direct executive responsibilities for sanctioning/ endorsing the proposed sub-projects and overseeing the effective and efficient implementation of the entire project, resource management and usage, and M&E activities.

Agricultural Higher Education Programme Committee (AHEPC):

The members of the AHEPC are being proposed by the Project Implementation Unit (PIU) and approved by the PMC. This committee is responsible for awarding sub-projects and their effective

⁶ Reference documents and presentations, Education division, ICAR

Fig: Governance structure of NAHEP

Source: Project Implementation Plan

and efficient implementation. Total 27 projects viz. 8 under IDP, 9 under CAAST and 10 under IG have been approved and awarded till March'19.

Project Implementation Unit:

The Project Implementation Unit (PIU) is performing the overall project implementation, coordination and facilitation under the guidance and supervision of Project Management Committee (PMC). The PIU has been established within the Education Division of ICAR and is led by National Director.

Detailed structure, constituent elements and key activities of PIU NAHEP are elaborated herewith.

1.3.1 The Project Implementation Unit

A central Project Implementation Unit (PIU), established at the Education Division of ICAR, is managing the whole activities of the project. This PIU is headed by National Director (ND) and includes four National Coordinators (NCs), one for each Component along with experts in Administration, Finance, Procurement, M&E, Management Information Systems (MIS), Learning

and Capacity Building (L&CB) and Social/ Environmental aspects. The key responsibilities of the PIU are following:

- Provide logistic support for NSC, PMC, and AHEPC;
- Prepare the meeting schedules and agenda;
- Review relevant reports, develop recommendations;
- Administer special studies advised by the NSC,
- Technical, financial, procurement, and administrative management of NAHEP;
- Oversee the implementation of NAHEP activities approved by the PMC,
- Prepare, collate, and track implementation of all training activities, organize annual NAHEP workshop,
- Request withdrawals from the NAHEP special account and release of funds for authorized expenditure under NAHEP,
- Submit six monthly and annual reports,
- Liaise with the World Bank concerning operation and management of NAHEP, and
- Prepare all reports, documentation and information on NAHEP.

Although, PIU is responsible for execution of multiple activities, monitoring and evaluation of the project is one of the key functions. In order to manage day-to-day M&E activities, a monitoring and evaluation unit has been established within PIU.

Central Monitoring and Evaluation (M&E) Cell under PIU NAHEP

A dedicated Monitoring & Evaluation Cell has been created at PIU, NAHEP to regularly monitor and report on the sub-project's physical and financial inputs and outputs under NAHEP at various levels. The M&E cell has been assigned to oversee the progress of approved activities across all agricultural universities.

The M&E cell at PIU comprises of National Coordinator - M&E, M&E consultants (external agency), domain experts and research associates.

The Central M&E cell is also developing the Project Monitoring and Tracking System (PMTS) for M&E-related support to the Project Implementation Unit (PIU). The broad tasks to be carried out by the Central M&E cell comprise of the following:

Broad Tasks of Central M&E cell	Comprising elements
Monitoring related	Preparation of an M&E work plan for NAHEP; Monitor all activities sanctioned under the project across all components and provide inputs for corrections, if any; Develop Project Monitoring and Tracking System (PMTS) and implement it in participating agricultural universities and PIU- NAHEP;

Broad Tasks of Central M&E cell	Comprising elements
Evaluation related	Impact study of various activities, components and the project; Economic and financial analysis of various activities, components and the project;
Training & Capacity building related	Undertaking regular field trips to introduce and document key M&E practices; Liaison with PME (Project Monitoring and Evaluation) Cells and provide PME-related training programmes to the participating AUs; Designing and conducting M&E exposure sessions;
Support to PIU – NAHEP	Ensure timely preparation of half-yearly and annual reports; Assisting the PIU in all matters related to M&E planning;

Central M&E cell is supported by M&E consultant, an external agency (at PIU level) and PME cells (at AU level).

1. The M&E Consultant

PIU NAHEP has contracted an external agency as M&E Consultant to plan and execute day-to-day M&E activities. M&E consultant is responsible for undertaking M&E activities of the NAHEP project leading to an organized and objective implementation of different components and sub-components.

2. PME Cells at AUs:

Considering the NAHEP requirement, it is expected that participating Agricultural Universities (AUs) will be ready with following preparatory exercises to facilitate the day to day M&E activities of NAHEP:

- Readiness with a dedicated PME cell in participating agricultural universities under direct supervision of Vice Chancellor (VC)
- Assign a nodal officer to spearhead the PME cell, to manage day to day M&E activities of assigned project (of respective component) and work in tandem with M&E consultants at PIU- NAHEP

Role of PMEs: The PME Cells will make recommendations to PIU, on implementation and policy issues related to the sub-projects. They will regularly monitor and report on the sub-project's physical and financial inputs and outputs, at the AU level and such a cell will be created at each institution level, as per MoU.

PME cell would comprise of a nodal officer, an M&E expert, an IT expert and other experts. Team size would preferably be 5 – 7. Following are the key expectations from PME cell:

Role wise key expectations / readiness requirements from PME cell:

S. N.	Role	Number of resource	Key expectations
1	Nodal officer	1	<ul style="list-style-type: none"> Strategic direction setting and overall guidance to PME cell Monitoring & Evaluation of project progress Review status and results of individual projects on regular and/or ad-hoc basis Progress of various activities under the programme – physical and financial Identification of problem areas affecting project delivery Project impact Understand the rationale and the link between the various formats in terms of input/output formats and the overall activities/ interventions that are being tracked under M&E of NAHEP through PMTS Ensure regular coordination with PIU for smoother conduction of M&E activities
2	M&E expert	1	<ul style="list-style-type: none"> Preparation of M&E work plan and budget Ensure timely preparation of quarterly, half yearly and annual reports Undertake regular field trips to introduce and document key M&E practices Develop Capacity building / Training formats and organize PME related training programs (including PMTS training) Designing and conducting M&E exposure sessions Assist PwC in all matters related to M&E activities
3	IT expert	1	<ul style="list-style-type: none"> Ensure smooth implementation / Rolling out PMTS in AU (Regular follow-ups and updates in formats for data input & output reporting) Database management and restoration Management of Hardware and Software inventory related to PMTS Ensure timely submission of all monitoring and reporting formats, included in PMTS application Ensure real time report generation through PMTS Timely reporting of PMTS related queries (software, network or programme related requirements) to PIU Project status reporting Ensure quality control and data sanctity
4	Other experts (Documentation expert, Social scientist, impact assessment expert etc.)	2 - 4	<ul style="list-style-type: none"> Handling and managing database Need based support to PIU in developing M&E strategy framework, developing input and output formats, fulfilling data requirements etc. Documentation of best practices in project
	Total	5 - 7	

1.3.2 Project Beneficiaries

The beneficiaries of NAHEP include 75 institutions that form the ICAR-AU System, which encompasses 64 State-level AUs, 4 Deemed Universities, 4 Central Universities with Agricultural Faculty and 3 Central Agricultural Universities.

Direct project beneficiaries of the project are those students and faculties, who directly derive benefits under IDPs, CAASTs, IGs and activities under Comp 2.

The students would benefit through:

- Enhanced quality and relevance of teaching and research from new learning-centered education, which will leverage ICT and external partnerships;
- Effective stakeholder participation in curricula development, pedagogy options and course evaluation; and
- Expanded learning and academic environment that sharpen students skill sets for their improved employability.

The faculties would benefit through:

- Increased collaboration among Indian AUs and with other universities globally to raise research quality and educational quality and relevance;
- Training and capacity building to improve the delivery of education and its learning outcomes.

1.3.3 Key Assumptions of the Programme

Following are the key assumptions of the programme, relevant to programme logic and funding:

- As the agricultural higher education is state's subject, the State Governments would ensure the necessary financial, administrative and academic autonomy to their respective AUs.
- An increased number of ICAR accredited AUs with better project funding could empower them to ask for desired changes in the state policies, if needed
- With driving competitive spirits, academic excellence in ICAR Deemed Universities (DUs) could gear up SAUs to work upon concern areas, if required.
- External Advisory Panel would make SAUs more accountable for expediting and implementing the desired reforms in their educational system.
- ICAR would equip with the necessary institutional capacity to implement reforms, manage and supervise the technical and financial assistance received under NAHEP to participating SAUs.
- Robust internal and external audits arrangements would be in place
- Provisions for trainings in necessary fund management procedures could facilitate better decentralized fund flows and procurements by the participating SAUs

Considering the broad horizon of Monitoring and evaluation component of NAHEP in terms of components and associated activities, project costs and financing patterns, implementation modalities, beneficiaries and other stakeholder involved, weaving around the programme logic, a ready reckoner document in the form of M&E manual is the need of hour and same has been elaborated in the subsequent sections.

1.4. Manual Objectives & Chapter Outline

1.4.1. M&E manual: Need and Objectives

An integrated result based M&E system is required for managing and determining the efficiency and effectiveness of investments in agricultural education, research and extension systems. The key characteristics of the result based M&E system are:

- Enhanced emphasis on project outcomes
- It is based on the Project Development Objectives (PDO) and intermediate outcomes expected from implementing each individual project component, which in turn contributes to the achievement of the PDO.
- Focuses on a learning approach to M&E that uses achievements and problems for better decision-making and accountability.
- Requires creating an M&E system that helps implementation partners and project staffs to learn together in order to improve the project interventions on a sustained basis.

Thus, the overall objective of the M&E manual is to act as a ready reckoner document to facilitate PIU, participating AUs and other relevant stakeholders to understand the M&E activities, outlined procedures and guidelines for an effective M&E system of NAHEP.

1.4.2. Chapter Outline

M&E manual of NAHEP consists of seven chapters and annexure:

Chapter	Contents
I	Entails the background, programme objectives, theory of change, sub-components, programme implementation, financing, and key assumptions.
II	Monitoring and Evaluation system
III	NAHEP M&E system
IV	Baseline data for NAHEP M&E system
V	Project Monitoring and Tracking System
VI	Learning & knowledge management
VII	M&E action plan

Annexure section of manual comprises of Monitoring Protocols, indicative questionnaires for baseline data and other monitoring and reporting formats developed for PMTS.

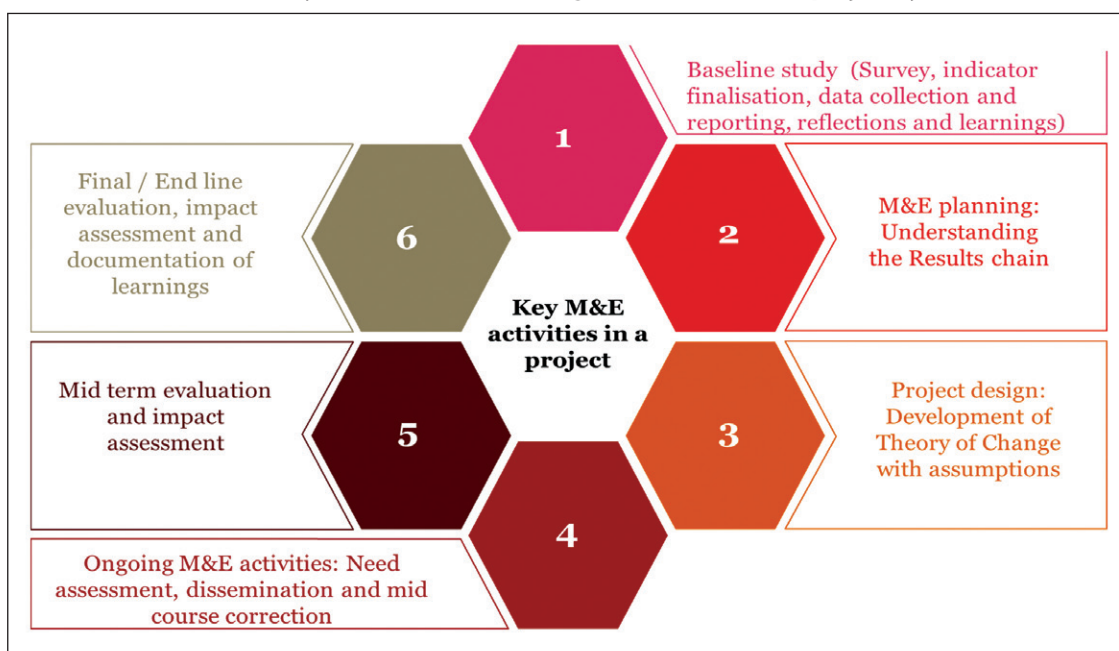
2. MONITORING AND EVALUATION SYSTEM⁷

2.1. M&E Systems & functions

M&E system is a set of organizational, management processes, information systems, and accountability relationships that enable the institutions to discharge their M&E activities effectively and efficiently.

Monitoring and evaluation (M&E) of development activities provides government officials, development managers, and civil society with better means for learning from past experience, improving service delivery, planning and allocating resources, and demonstrating results as part of accountability to key stakeholders. Information produced by M&E systems is normally used to report to different stakeholders (Government, World Bank, civil society, IEG, other donors) on progress and performance of a project, becoming a means to facilitate public awareness and promote transparency and accountability. The key activities of M&E in the project cycle are explained herewith.

Exhibit: Key activities of Monitoring and evaluation in a project cycle



Source: IFAD and PwC analysis

⁷ The chapter draws inferences from Results framework and M&E Guidance Note (WB), 2013; Agriculture and Rural Development Discussion, PAPER No.20, IBRD, World Bank 2005; Managing for Impact in Rural Development – a guide for Project M&E, IFAD, 2005; Monitoring & Evaluation – Some Tools, Methods and Approaches, World Bank, 2004; Monitoring and Evaluation Manual, NAIP, PIU-ICAR, New Delhi, 2007.

A well-functioning M&E system is a critical part of good management and accountability. The key purposes of an M&E system are tabulated below:

Sl.	Key Purposes	Descriptions
1	Supporting operational management	Providing the basic management information needed to direct, coordinate and control the resources required to achieve any given objective
2	Supporting strategic management	Providing the information for and facilitating the processes required to set and adjust goals, objectives and strategies towards improving quality and performance
3	Knowledge generation and sharing	Generating new insights that contribute to the established knowledge base in a given field. This includes documenting lessons learned for sharing and feeding into policy reforms that can further enhance performance
4	Empowerment	Building the capacity, self-reliance and confidence of beneficiaries, implementing staffs and partners to guide, manage and implement development initiatives effectively
5	Accountability, including impact evaluation	Demonstrating to donors, beneficiaries and implementing partners that expenditure, actions and results are as agreed in a given situation.

M&E system consist of three key elements- Monitoring, Evaluation, and Learning as explained below:

- **Monitoring** is a continuous assessment of project implementation in relation to agreed schedules, use of inputs, infrastructure and services provided by project beneficiaries
- **Evaluation** is a periodic assessment of the relevance, performance efficiency and impact (both expected and unexpected) of the project in relation to stated objectives

The monitoring and evaluation play complementary role as mentioned in the table below:

Complementary roles for monitoring & evaluation	
Monitoring	Evaluation
Routine collection of information	Analyzing information
Tracking project implementation progress	Ex-post assessment of effectiveness and impact
Measuring efficiency	Confirming project expectations
	Measuring impacts
It describes "Is the project doing things right"	It describes "Is the project doing the right things"
<i>Source: Alex and Byerlee, Monitoring and Evaluation for AKIS Projects, World Bank.</i>	

- **Learning** is a continuous process. Learning components generate knowledge about the good practices through scrutiny and examination of:
 - The validity of assumed logic through which it is expected that inputs and activities would produce outputs, which will result into outcome and or impacts and ultimately increase income of beneficiaries besides improving environmental and social safeguards.
 - What types of interventions are successful under what conditions?
 - What improvements in project interventions are needed for maximizing the outcomes?

2.2. Implementation Monitoring to Tracking Results

In the World Bank assisted Projects, focus of M&E has shifted from monitoring implementation to tracking results. The key features of result based and implementation based M&E system are indicated below.

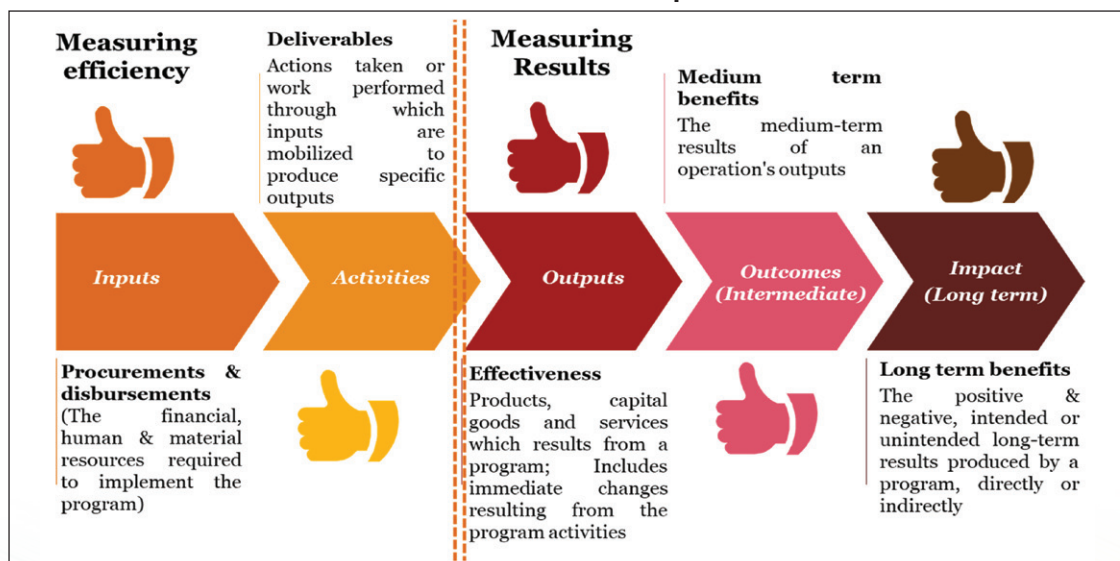
Table: Key Features of Implementation-Focused v/s Result Based Monitoring

Elements of Implementation Monitoring (traditionally used for projects):	Elements of Results Based Monitoring (used for a range of interventions and strategies):
<ul style="list-style-type: none"> • Description of the problems or situation before the intervention; • Benchmarks for activities and immediate outputs; • Data collection on inputs, activities and immediate outputs; • Systematic reporting on provision of inputs; • Systematic reporting on production of outputs; • Directly linked to a discrete intervention (or series of interventions), and • Designed to provide information on administrative, implementation and management issues as opposed to broader development effectiveness issues. 	<ul style="list-style-type: none"> • Baseline data to describe the problem or situation before the intervention; • Indicators for outcomes; • Data collection on outputs and how and whether they contribute towards achievement of outcomes; • Timeliness expressed such as at mid-term and end-term; • More focus on perceptions of change among stakeholders; • Systematic reporting with more qualitative and quantitative information on the progress towards outcomes; • Captures information on success or failure of partnership strategy in achieving desired outcomes

Source: Kusek and Rist. 2004. Monitoring and Evaluation, World Bank.

As mentioned above, results are monitored under the World Bank result framework. These results are quantitatively measured or analytically described changes and are derived using the principles

Exhibit: Cause and effects relationship in a results chain



Source: UNWFP and PwC analysis

of a cause and effects relationships known as results chain. The result hierarchy or causal sequence for a program to achieve the desired objectives begins with inputs and moves through activities and outputs and finally achieves outcomes and impacts.

2.3. Procedure to design a robust M&E system

M&E studies have identified six-step procedure in designing a robust M&E system as given below.

- Establishing the purpose and scope: why do we need M&E and how comprehensive should our M&E system be?
- Identifying performance questions, information needs and indicators: what do we need to know to monitor and evaluate the project in order to manage it well?
- Planning information gathering and organization: how will the required information be gathered and organized?
- Planning critical reflection processes and events: how will we make sense of the information gathered and use it to make improvements?
- Planning for quality communication and reporting: how and to whom do we want to communicate what in terms of our project activities and processes?
- Planning for the necessary conditions and capacities: what is needed to ensure our M&E system actually works?

These steps are elaborated as follows:

Step 1. Identifying Performance Questions

- The first step towards designing an M&E system is to identify performance questions instead of starting with indicators.
- This step will help to focus on actually needed and useful information gathering for better understanding and improving project performance.
- The process of identifying performance questions (indicators and selection methods) is iterative.
- First, the initial choices are made, then its feasibility is assessed, and finally acceptance and rejection decisions are made, and accordingly the options are looked for.

Step 2. Identifying Information Needs & Indicators

- In the second step, the performance questions are used to identify appropriate indicators and needed related information for which the data may be collected.
- Focus on collecting only those variables and aspects, which are necessary to answer performance questions.
- Avoid collecting unnecessary data, information which are difficult to use or unhelpful in guiding the project strategy and operations.

Step 3. Knowing What Baseline Information Needed

- Overloaded information and full use of collected data is a major issue now days faced by many baseline studies.
- Scrutinize the usefulness of the particular information in answering the present questions,
- Use the data if already available instead of collecting that information as baseline data.

Step 4. Selecting Data Collection Method, by Whom and How Often

- We need to choose the method of collecting the data on output information to be used for the selected output indicators.
- We will have choices among data collection methods, which can be more quantitative, more or less participatory, and more or less resource intensive.
- The degree of accuracy and reliability of collected information varies across methodologies of data collection.

Step 5. Identifying Necessary Practical Support for Information Gathering

After selecting the most appropriate data collection methods for acquiring the required information, we need to consider the following:

- Data recording process development
- Development of the process for data filling systems and database for collating and storing information
- Provisions for staff and partners training
- Data checking and validation
- Out sourcing of required M&E research expertise

Step 6. Organizing Analysis, Feedback & Change

- Data analysis is done to provide feedback to decision makers.
- During the data analysis process, efforts are made to utilize all the collected data as much as possible for assessing the project implementation and effectiveness.

2.4. Components of M&E Systems identified for NAHEP

- Baseline study for assessing pre-project condition;
- Progress monitoring, for tracking progress against planned activities using Project Monitoring and Tracking System (PMTS);
- Performance monitoring, for periodic measurement of progress on quantitative and qualitative outputs, (key performance indicators);
- Internal learning, for purposes of internal management review and learning through regular (Quarterly, semiannually, annual) reporting by PIU.
- Monitoring of environmental and social safeguard measures are integral part of M&E framework for assessing any degradation in the Eco- system and equity aspects during Project Implementation.
- Evaluation of project impact at mid –term review and project closing.

3. NAHEP M&E SYSTEM

3.1. M&E for Real Time Feedback & Adaptations

As stated in the earlier chapter, the M&E system and the processes are means towards improving development outcomes and establishing accountability for resources used in the programme. A robust M&E system must ensure that:

- The learning is enhanced through application of the knowledge generated from the M&E data analysis and evidences tied with accountability and decision-making.
- M&E generated knowledge must provide real time feedback to decision makers and contribute to effective programme implementation and design

The purpose of M&E System of NAHEP is to:

- Ensure the effective project operation such that planned activities are being implemented as per schedule and they are congruent with the project development objectives (PDOs);
- Create learning environment and identify any likely shortfall in the expected performance and share the successes;
- Evolve appropriate remedial action(s);
- Facilitate the participating AUs to adopt the remedial actions, if needed;
- Create baseline data on outcomes so that it assists in midterm and final evaluation of the project impact.

M&E activities / tasks will arise at all the three levels of project management under NAHEP:

Strategic Planning Level: This refers to the top management, which manages the external environment of the project and oversees the implementation and achievement of results of the overall project.

Programme Planning Level: In case of NAHEP, it is the PIU and the National Coordinators of components 1a, 1b, 1c, & 2. Their role is to ensure the proper implementation of AUs activities under their respective components.

Operational Planning Level: In case of NAHEP, the participating AUs under components 1a, 1b, & 1c and ICAR institutes, viz; IASRI, NIAP, and NAARM under component 2 are to implement actual plan and activity.

NAHEP is implementing the result based M&E system to monitor the project processes using the following methods and tools:

Exhibit: Levels of project management under NAHEP



Source: Project Implementation Plan, NAHEP

- A well-defined “result framework” that is derived from clearly identified goals, objectives, outputs and activities with the 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 reports to data gathering and reporting; and
- Internal and external periodic assessments, mid-term evaluation, ex-post evaluations and impact evaluation.

3.2. NAHEP M&E System Design

The guiding principles in the design of M&E system for the NAHEP are:

- Collect and analyze the data,
- Generate evidence based knowledge,
- Make efforts and invest time to reflect on results,
- Generate implications and options for policy and practice, and
- Adapt and make appropriate changes in programme design and implementation.

Keeping the above elements in the view and the results framework of M&E mentioned in PAD, M&E system has been designed for the NAHEP. The programme logic (also known as the theory of change, ToC) has been developed and elucidated in chapter 1.

3.2.1. ToC to the Result Framework

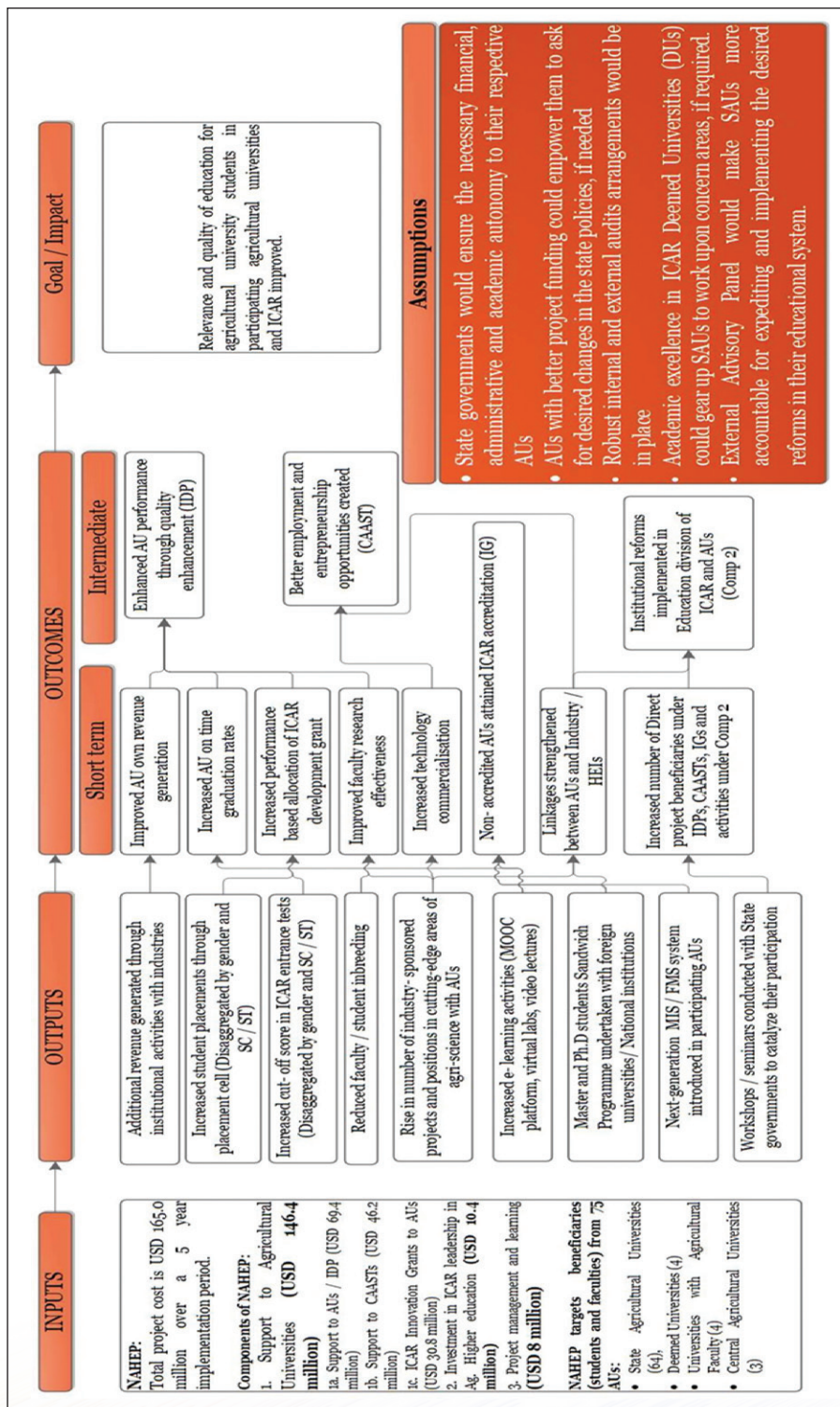
The programme logic (also known as the ToC) provides the systematic steps and logic of how the development objectives of the programme will be achieved (The World Bank 2013). It is a dynamic management tool which:

- Systematically tracks the programme implementation progress,
- Demonstrate the evidences of results at the field level, and
- Assess the needs for appropriate changes in programme design under changed and evolving circumstances.

A well-developed ToC gives good indication of understanding or perception of how the programme or intervention will work and achieve its objectives and impacts on intended beneficiaries. The figure mentioned below indicates how the result chain of an intervention is translated into indicators of measuring inputs, activities, outputs, and the programme outcomes.

The Theory of change depicted above is derived from the results framework. Outputs and outcomes are the target variables to be achieved and monitored under the result framework. NAHEP follows the World Bank results framework where indicators are not only defined and monitored at Project Development Objective (PDO) level but also at intermediate outcome level. This Theory of Change (ToC) has evolved from the results chain and M&E framework with measurable performance indicators identified at outcome (PDO) and output (intermediate results) level for each components of project. Component wise results chain and M&E framework with measurable performance indicators have been elaborated herewith.

Exhibit: Theory of Change for NAHEP



Source: PwC analysis

Results chain for Component 1a i.e. Support to AUs / IDPs has been illustrated as follows:

Goal / Impact / Long Term Objective	Outcome/ Purpose	Objectives/ Outputs	Activities / sub activities
Quality of agricultural education in participating agricultural universities (accredited) and ICAR improved	Enhanced AU performance through quality enhancement	1. Improved academic and research infrastructure to facilitate learning outcomes, employability and entrepreneurship capabilities	<p>1.1 Modernization of classrooms: smart boards, touch screens, visualizer and modern projection facilities, Video Conferencing, e-kiosks, artificial intelligence (AI) course modules</p> <p>1.2 Lab modernization & establishment of facilities for new programmes proposed in IDP</p> <p>1.3 Continuous updating of Learning Resources (books, e-books, CDs and professional software)</p> <p>1.4 Establishment/Upgradation of Central and Departmental Computer Centres (Basic sciences including chemistry, mathematics, physics, zoology, etc., humanities, computer sciences and languages)</p> <p>1.5 Modernization/Improvements of Supporting Departments</p> <p>1.6 Establishment of skill development laboratories</p> <p>1.7 Establishing start up / incubation cell in colleges</p> <p>1.8 Renovation/Construction of auditoria, conference halls, ARIS labs, Acoustic studios</p> <p>1.9 Modernization and strengthening of libraries and increasing access to knowledge resources</p> <p>1.10 Establishment of Experiential Learning Units</p> <p>1.11 Establishment of Industry-Institute-Interaction Cell</p> <p>1.12 Establishment of Placement Cell</p>
			2.1 Alignment of course curricula and pedagogical content to global standards
			2.2 Curricular reforms: Innovations in teaching and student evaluation methodologies, Choice based credit and provision for credit transfer, Design skills (functional & soft), communication skills, entrepreneurial skills, information processing, creative and innovative thinking, leadership skills etc.
			2.3 Providing Teaching and Research Assistantships to increase enrolment in PG programme
			2.4 Internal revenue generation activities: Enhancement of Research & Development and Institutional Consultancy Activities , Revenue generation through conducting self-financing teaching and training programmes, testing services, innovations, patents, commercialization of R&D outputs, sharing of high-tech equipment with Industries, public usage of infrastructure for academic activities, Fostering public-private partnerships in agricultural education

Goal / Impact / Long Term Objective	Outcome/ Purpose	Objectives/ Outputs	Activities / sub activities
		3. Improved overall competency of faculty and students with better industry orientation	<p>2.5 Enhancing Interaction with Industry in following areas: Curriculum design and implementation, assessment and training of students, exposing students to new technologies, providing experts for certain instructional sessions, Providing opportunities for student groups to undertake problem-solving project, Providing exposure to faculty on industrial practices and latest technologies, Collaborating</p> <p>in sandwich programme offerings, Participating in joint R&D activities, Utilizing institutional resources (manpower and physical) for industrial manpower training, Developing Postgraduate Education in areas of current and potential high demand, Conducting short term training programmes in collaboration with institutions, Students' internship to Industry etc.</p>
			<p>3.1 Faculty development activities: Establishing linkages and tie-up with foreign universities, Faculty and student diversity - national and international student and faculty exchange, Regular foreign faculties as adjunct/visiting professors, Executive faculty international programmes for communication skills and leadership, National and international faculty visits to AUs for capacity building, Exploring bi-lateral agreements for linkages with international fellowships for foreign faculty participation in teaching, Harnessing off shore Indians in foreign universities as guest faculty, Faculty / PG students participation in International seminars/conferences/symposia, Leadership building through International exposure and trainings, Adjunct/Visiting Professors, Scientists on sabbatical leave from outside the state/country to participate in teaching and research programmes of SAU, Foreign Training (Overseas Associateships) for faculty up gradation</p>
			<p>3.2 Student development activities: Twinning arrangements, Distinguished international guest lectures, Developing online courses in selected UG/PG programmes , Mentorship programmes, Collaboration with national institutes and foreign universities specializing in the area, Master and Ph.D. students sandwich programme with foreign universities/ national R&Ds institutions , Post-doctoral fellowship in India, Establish linkages with Fulbright, DAAD etc for foreign faculty participation in teaching, Promoting mentor models through alumni linkages, Securing international branding and alignment through leveraging alumni network</p>

Results chain forms the basis to develop the M&E framework and to identify measurable performance indicators specific to component.

M&E framework with measurable performance indicators for Component 1a i.e. Support to AUs / IDPs has been illustrated below:

Component 1a: Institutional Development Plan (IDP)												
Component	Indicators	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
Enhanced AU performance through quality enhancement	PDO IDP 1		77.6%	Planned					Annual (31st May)	PMTS, Education division, IASRI	PIU NAHEP, PMEs	
	% increase in AU on time graduation rate	Increase in the percentage of UG students at participating AUs that graduate on time (defined as three years)		Achieved								
	PDO IDP 2	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in AU on time graduation rate (Female)	Breakdown by gender	77.6%	Planned					Annual (31st May)	PMTS, Education division, IASRI	PIU NAHEP, PMEs	
	PDO IDP 3	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in AU on time graduation rate (Male)	Breakdown by gender	76.3%	Planned					Annual (31st May)	PMTS, Education division, IASRI	PIU NAHEP, PMEs	
	PDO IDP 4	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in cut-off scores for students in ICAR entrance tests	Higher cut-off scores for students in ICAR entrance tests at participating AUs / Percent increase in Cut-off percent (Cut off score / Maximum possible score) in ICAR UG entrance tests	87%	Planned					Annual	PMTS, Education division, IASRI	PIU NAHEP, PMEs	
	PDO IDP 5	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	

Component 1a: Institutional Development Plan (IDP)													
Component	Indicators	Breakdown by gender	87%	Planned	2017-18	2018-19	2019-20	2020-21	2021-22	Annual	PMTS, Education division, IASRI	Data collection and reporting	
OUTCOME				Achieved									
	% increase in cut-off scores for students in ICAR entrance tests (Male)												PIU NAHEP, PMEs
	PDO IDP 6	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in cut-off scores for students in ICAR entrance tests (Female)	Breakdown by gender	87%	Planned						Annual	PMTS, Education division, IASRI	PIU NAHEP, PMEs	
	PDO IDP 7	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in cut-off scores for students in ICAR entrance tests (SC/ST)	Breakdown by SC/ST	79%	Planned						Annual	PMTS, Education division, IASRI	PIU NAHEP, PMEs	
	PDO IDP 8	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in student placement rates	% UG students placed out of total graduating UG class strength	41.9%	Planned						Annual	PMTS, PMEs	PIU NAHEP, PMEs	
	PDO IDP 9	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in student placement rates (Male)	% UG students placed out of total graduating UG class strength (male)	43.5%	Planned						Annual	PMTS, PMEs	PIU NAHEP, PMEs	
	PDO IDP 10	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in student placement rates (Female)	% UG students placed out of total graduating UG class strength (female)	41.8%	Planned						Annual	PMTS, PMEs	PIU NAHEP, PMEs	
	PDO IDP 11	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	

Component 1a: Institutional Development Plan (IDP)													
Component	Indicators					Data collection and reporting							
OUTCOME	% increase in student placement rates (SC/ST)	% UG students placed out of total graduating UG class strength (SC/ST)	50.2%	Planned	Achieved						Annual	PMTS, PMEs	PIU NAHEP, PMEs
	PDO IDP 12	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	% increase in faculty research effectiveness	Faculty research effectiveness, measured by h- index (The h-index of a university is the largest number h such that at least h articles from that university were cited at least h times each)	21.2	Planned							Semiannual (May and November)	Education division, PMEs, Other progress reports	PIU NAHEP
				Achieved									
OUTPUT 1	Intermediate level indicators										Data collection and reporting		
Improved academic and research infrastructure to facilitate learning outcomes, employability and entrepreneurship capabilities	IR IDP 1	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
			4	Planned									
	Number of new facilitative units established to enable academic and research infrastructure (IILC / IILC / Start up cell / incubation cell / placement cell etc.)	Number of new facilitative units established to enable academic and research infrastructure (IILC / IILC / Start up cell / incubation cell / placement cell etc.)		Achieved							Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
	IR IDP 2	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection

Component 1a: Institutional Development Plan (IDP)												
Component	Indicators					Data collection and reporting						
OUTCOME						Planned	2017-18	2018-19	2019-20	2020-21	2021-22	Quarterly
Enhanced system management and effectiveness with emphasis on industry engagements	Number of pilot courses added / upgraded on communication skills, entrepreneurial skills, information processing, creative and innovative thinking, leadership skills, industry oriented courses etc.					Achieved						PIU NAHEP, PMEs
	IR IDP 3					Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports
	Description (indicator definition etc.)											Data collection instruments
	Additional revenue generated through institutional activities with industries					4%						PIU NAHEP, PMEs
	IR IDP 4					Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports
Revenue generated through public usage of infrastructure for academic activities	Description (indicator definition etc.)					7%						Data collection instruments
	Revenue generated through public usage of infrastructure for academic activities					Achieved						PIU NAHEP, PMEs
	IR IDP 5					Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports
	Description (indicator definition etc.)											Data collection instruments
												Responsibility for data collection

Component 1a: Institutional Development Plan (IDP)												
Component	Data collection and reporting											
OUTCOME	Indicators	-23%	Planned						Quarterly	PMTS, PMEs	PIU NAHEP, PMEs	
	MoUs signed with industry for sandwich programs / knowledge exchange programs/ short term training programs etc.		Achieved									
	IR IDP 6	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	Improved AU revenue generation (% change in Internal revenue of AU)	9%	Planned						Semiannual (May and November)	PMTS, PMEs	PIU NAHEP, PMEs	
			Achieved									
OUTPUT 3	IR IDP 7	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
Improved overall competency of faculty and students with better industry orientation	Reduced student inbreeding (% AU students admitted from other states)	19%	Planned						Semiannual (May and November)	PMTS, PMEs	PIU NAHEP, PMEs	
			Achieved									
	IR IDP 8	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	Reduced faculty inbreeding (% faculties with HE degrees from more than one university and more than one state)	45%	Planned						Semiannual (May and November)	PMTS, PMEs	PIU NAHEP, PMEs	
			Achieved									

Component 1a: Institutional Development Plan (IDP)											
Component	OUTCOME	Indicators	Data collection and reporting							Responsibility for data collection	
			Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	
IR IDP 9	% Increase in performance-based allocation of ICAR Development Grant to Aus	Description (indicator definition etc.) Increase in performance-based allocation of ICAR Development Grant to Aus	30%	Planned					Annual	PMTS, PMEs, Education division	PIU NAHEP, PMEs
				Achieved							
IR IDP 10	Increased AU student satisfaction with the quality assurance role of the Education Division/ ICAR	Description (indicator definition etc.) The change in the satisfaction index (as measured and calculated from annual AU student surveys) of AU students at participating AUs regarding the Education Division/ ICAR and its role in quality assurance of agricultural higher education	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
			0%	Planned					Annual	PMTS, PMEs	PIU NAHEP, PMEs
				Achieved							
IR IDP 11	Increased AU faculty satisfaction with the quality assurance role of the Education Division/ ICAR.	Description (indicator definition etc.) The change in the satisfaction index (as measured and calculated from annual AU faculty surveys) of AU faculty at participating AUs regarding the Education Division/ ICAR and its role in quality assurance of agricultural higher education	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
			0%	Planned					Annual	PMTS, PMEs	PIU NAHEP, PMEs
				Achieved							
IR IDP 12		Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection

Component 1a: Institutional Development Plan (IDP)												
Component	Indicators				Data collection and reporting							
OUTCOME					Planned	2017-18	2018-19	2019-20	2020-21	2021-22	Quarterly	PMTS, PMEs
	Number of faculty exchange programmes (both national and international) initiated by AU	Number of faculty exchange programmes (both national and international) initiated by AU			Achieved							PIU NAHEP, PMEs
	IR IDP 13	Description (indicator definition etc.)		Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Responsibility for data collection
	Number of student exchange programmes (both national and international) initiated by AU	Number of student exchange programmes (both national and international) initiated by AU		12	Planned						Quarterly	PIU NAHEP, PMEs
	IR IDP 14	Description (indicator definition etc.)		Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Responsibility for data collection
	Faculty student ratio	Faculty student ratio		0.25	Planned						Annual	PIU NAHEP, PMEs
					Achieved							

Aforementioned M&E framework for IDP encompasses indicators specific to component. Moreover, it captures indicators not only mentioned in PAD, but also additional ones based on component scope and M&E requirements. This framework would form an integral part of Project Monitoring and Tracking System (PMTS) to conduct day to day monitoring and to generate need based reports.

Results chain for Component 1b i.e. Support to CAASTs has been illustrated as follows:

Goal / Impact / Long Term Objective	Outcome/ Purpose	Objectives/Outputs	Activities / sub activities
Relevance of agricultural education in participating agricultural universities (accredited) and ICAR improved	Better employment and entrepreneurship opportunities created with coordinated development of teaching, research and extension on emerging areas of agriculture	1. Organizational excellence of agricultural universities (accredited) improved translating to ready prospects for funding and knowledge exchange	1.1 Develop ways to improve accreditation of PG programmes
			1.2 Focused Investment on infrastructural facility (including field facility) to develop / strengthen state of the art teaching , research and learning environment
			1.3 Develop linkages with national organizations / universities / industries for better research collaboration and coordination
			1.4 Develop linkages with international organizations / universities / industries for better research collaboration and coordination
			1.5 Develop course modules for industry- sponsored projects and positions in cutting-edge areas of agri-science such as high-tech horticulture, food processing and precision farm technology (Development of short courses for skill development)
			1.6 Develop proposals to win competitive grants
			1.7 Initiate Faculty/student exchange programme with national institutions
			1.8 Initiate Faculty/student exchange programme with international institutions
		2. Faculty research effectiveness improved with better industry and market orientation	2.1 Commercialization of developed technologies
			2.2 Transfer of developed technologies to industry / private sector / national / international organizations
			2.3 Research publication with enhanced focus on NAAS rating
			2.4 Research publication with enhanced focus on improving h-index
			2.5 Strategize to enhance focus on IPR /patents
			2.6 Develop strategies to increase / initiate revenue from consultancy services

Goal / Impact / Long Term Objective	Outcome/ Purpose	Objectives/Outputs	Activities / sub activities
		3. Teaching quality, faculty strength and competence enhanced	3.1 Develop strategies to improve selection rate in JRF
			3.2 Develop strategies to improve selection rate in SRF
			3.3 Develop strategies to improve selection rate in ARS (Distinguished lecture series)
			3.4 Identification of key traits to achieve teacher Awards at AU/ ICAR/ National Level
			3.5 Develop strategies for faculty upgradation through international and national training with mentor universities
			3.5 Develop strategies to improve the competency of students to score high percentile in GATE
		4. Student effectiveness improved through increased placements, rewards and recognitions	3.6 Develop strategies to reduce faculty inbreeding and improve diversity
			4.1 Develop strategies to improve placement rate with inclusivity
			4.2 Develop strategies to improve selection rate in National Young Scientist Award
			4.3 Develop strategies to improve selection rate in ICAR's Jawaharlal Nehru thesis Award,
			4.4 Startegize with enhanced focus on extra scholastic activities for all round development of students
			4.5 Develop ways to reduce student inbreeding and improve diversity

Results chain forms the basis to develop the M&E framework and to identify measurable performance indicators specific to component.

M&E framework with measurable performance indicators for Component 1b i.e. Support to CAASTs has been illustrated below:

Component 1b: Centre for Advanced Agricultural Science and Technology (CAAST)												
Component	Indicators	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
OUTCOME 1	PDO CAAST 1											
	% increase in number of technologies commercialised	Measured in % increase	-5%	Planned								
				Achieved					Semi annual	PMTS, PMEs	PIU NAHEP, PMEs	
	PDO CAAST 2											
Better employment and entrepreneurship opportunities created with coordinated development of teaching, research and extension on emerging areas of agriculture		Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
		Faculty research effectiveness, measured by h-index (The h-index of a university is the largest number of articles from that university were cited at least h times each)	21.2	Planned								
	% increase in faculty research effectiveness			Achieved					Semiannual (May and November)	Education division, PMEs, Other progress reports	PIU NAHEP	
OUTPUT 1	Intermediate level indicators											
Improved faculty research effectiveness with better industry and market orientation	IR CAAST 1	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	Number of technologies transferred to industry / private sector / national / international organisations	Measured in number	13	Planned								
				Achieved					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs	

Component 1b: Centre for Advanced Agricultural Science and Technology (CAAST)												
Component	Data collection and reporting											
OUTCOME 1	Indicators	Data collection and reporting										
OUTPUT 2	Intermediate level indicators											
	IR CAAST 2	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
Enhanced teaching quality, faculty strength and competence	% increase in JRF / SRF / ARS	Measured in % increase of number of students selected in JRF / SRF / ARS	13%	Planned					Annual	PMTS, PMEs	PIU NAHEP, PMEs	
				Achieved								
	IR CAAST 3	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in number of students who were admitted in foreign universities	Measured in % increase of number of students admitted in foreign universities	10%	Planned					Annual	PMTS, PMEs	PIU NAHEP, PMEs	
OUTPUT 3	Intermediate level indicators											
	IR CAAST 4	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
Improved student effectiveness through increased placements, rewards and recognitions	% increase in PG student placements	% PG students placed out of total graduating PG class	3%	Planned					Annual	PMTS, PMEs	PIU NAHEP, PMEs	
		strength		Achieved								
Improved student effectiveness through increased placements, rewards and recognitions	IR CAAST 5	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	

Component 1b: Centre for Advanced Agricultural Science and Technology (CAAST)													
Component	OUTCOME 1	Indicators	Data collection and reporting										
			4%	Planned						Annual	PMTs, PMEs	PIU NAHEP, PMEs	
	% increase in PG student placements (male)	% PG students placed out of total graduating PG class strength (male)		Achieved									
	IR CAAST 6	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in PG student placements (female)	% PG students placed out of total graduating PG class strength (female)	-1%	Planned						Annual	PMTs, PMEs	PIU NAHEP, PMEs	
	IR CAAST 7	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in PG student placements (SC/ST)	% PG students placed out of total graduating PG class strength (SC/ST)	5%	Planned						Annual	PMTs, PMEs	PIU NAHEP, PMEs	
	IR CAAST 8	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in students received National Young Scientist Award	Measured in % increase	-33%	Planned						Annual	PMTs, PMEs	PIU NAHEP, PMEs	
	IR CAAST 9	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in students received ICAR's Jawaharlal Nehru thesis Award,	Measured in % increase	44%	Planned						Annual	PMTs, PMEs	PIU NAHEP, PMEs	



Component 1b: Centre for Advanced Agricultural Science and Technology (CAAST)																		
Component	Indicators					Data collection and reporting												
OUTCOME 1	Number of faculty exchange programmes (both national and international) initiated by AU	Number of faculty exchange programmes (both national and international) initiated by AU	9	Planned														
IR CAAST 15			Description (indicator definition etc.)	Baseline (2016-17)	Achieved						2017-18	2018-19	2019-20	2020-21	2021-22	Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
	Number of student exchange programmes (both national and international) initiated by AU	Number of student exchange programmes (both national and international) initiated by AU	12	Planned												Quarterly	PMTS, PMEs	PIU NAHEP, PMEs

Aforementioned M&E framework for CAAST encompasses indicators specific to component. Moreover, it captures indicators not only mentioned in PAD, but also additional ones based on component scope and M&E requirements. This framework would form an integral part of Project Monitoring and Tracking System (PMTS) to conduct day to day monitoring and to generate need based reports.

Results chain for Component 1c i.e. ICAR innovation grants to AUs has been illustrated as follows:

Goal / Impact / Long Term Objective	Outcome/ Purpose	Objectives/Outputs	Activities / sub activities
Quality and relevance of agricultural higher education to AU students improved	Non- accredited AUs attained accreditation	1. Leadership capabilities improved through clearly defined and appropriate objectives	1.1 Devise short and long term institutional goals and objectives which are understood by different constituents of the university 1.2 Identify and implement ways for sound decision making, review and evaluation processes 1.3 Effective usage of Public information system including published materials
		2. Governance capabilities improved through efficient management of human, financial and physical resources	2.1 Devise strategies for effective administration through well-defined policies and procedure 2.2 Finalise acceptable educational credentials for faculty members 2.3 Develop mechanism to create safe and healthy environment for faculty, staff and students. 2.4 Ensure the fulfillment of physical facilities for good teaching and learning
		3. AU effectiveness improved through accomplishing its educational objectives	2.5 Ensure the infrastructure and academic/ financial resource is adequate (Modern class rooms/UG/PG Labs/Audio visual Aids, Placement Cell, Digitization of Library / e-library, Faculty Development/Training, Instructional Farms, Incubation centre) 3.1 Define and execute the educational programs undertaken by AU 3.2 On-going support for staff professional development 3.3 Present evidence of achievement in education, research and extension 3.4 Develop appropriate assessment mechanism for academic achievements
		4. Quality of educational programs is effectively sustained	4.1 Ensure that a structured assessment process is in place and is continuous 4.2 Securing international branding and alignment; promoting mentor models through alumni linkages 4.3 Conducting industry seminars and professional workshops from experts to better prepare students for final placements 4.4 Creating Centres for Career Development

Results chain forms the basis to develop the M&E framework and to identify measurable performance indicators specific to component.

M&E framework with measurable performance indicators for Component 1c i.e. ICAR innovation grants to AUs has been illustrated below:

Component 1c: Innovation Grant												
Component	Indicators	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
OUTCOME 1	PDO IG 1	Number of AUs accredited with revised norms and standards of ICAR	55	Planned	Achieved				Annual	PMTS, PMEs, Education division, IASRI	PIU NAHEP, PMEs	
OUTPUT 1	Intermediate level indicators	IR IG 1	6	Planned	Achieved				Annual	PMTS, PMEs	PIU NAHEP, PMEs	
	IR IG 2	Number of long term institutional objectives finalised by AU	6	Planned	Achieved				Annual	PMTS, PMEs	PIU NAHEP, PMEs	
Leadership capabilities improved through clearly defined and appropriate objectives	IR IG 3	Number of innovation grants given	4	Planned	Achieved				Annual	PMTS, PMEs	PIU NAHEP, PMEs	
	IR IG 4	Number of innovation grants given	4	Planned	Achieved				Annual	PMTS, PMEs	PIU NAHEP, PMEs	

Component 1c: Innovation Grant											
Component	Indicators		Data collection and reporting								
OUTCOME 1	Intermediate level indicators		Data collection and reporting								
OUTPUT 2											
Governance capabilities improved through efficient management of human, financial and physical resources	IR IG 4	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	% increase in number of e-governance activities initiated (MOOC platform, virtual labs, video lectures)	Measured in % increase	-13%	Planned					Quarterly	PMTS, PMEs, IASRI	PIU NAHEP, PMEs
OUTPUT 3	Intermediate level indicators		Data collection and reporting								
AU effectiveness improved through accomplishing its educational objectives	IR IG 5	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Number of national and international training undertaken for faculty upgradation	Measured in number	31	Planned					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
AU effectiveness improved through accomplishing its educational objectives	IR IG 6	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Number of Master and Ph.D students Sandwich Programme undertaken with foreign universities/ National institutions	Measured in number	3	Planned					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs

Component 1c: Innovation Grant											
Component	Indicators			Data collection and reporting							
OUTCOME 1	Intermediate level indicators	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
OUTPUT 4	IR IG 7										
	Number of alumni linkages established to secure international branding	Measured in number	4	Planned					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
Quality of educational programs is effectively sustained	IR IG 8	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Centres for Career Development established	Yes / No (1/0)	0	Planned					Annual	PMTS, PMEs	PIU NAHEP, PMEs
	IR IG 9	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Number of industry seminars and professional workshops from experts to better prepare students for final placements	Measured in number	8	Planned					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs

Aforementioned M&E framework for IG encompasses indicators specific to component. Moreover, it captures indicators not only mentioned in PAD, but also additional ones based on component scope and M&E requirements. This framework would form an integral part of Project Monitoring and Tracking System (PMTS) to conduct day to day monitoring and to generate need based reports.

Results chain for Component 2 i.e. Investment in ICAR leadership in Agriculture higher education has been illustrated as follows:

Goal / Impact / Long Term Objective	Outcome/Purpose	Objectives/Outputs	Activities / subactivities
Quality and relevance of agricultural education in participating agricultural universities and ICAR improved	Institutional reforms implemented in Education division of ICAR and Agricultural universities	1. Education division of ICAR strengthened	1.1 Devise strategies to enhance Institutional Capability for Single Window Delivery System: Promote Institution-Village Linkage Programme
			1.2 Revisit land grant system in the State Agricultural Universities and the ICAR Institutes to improve their efficiency in developing trained human resource
			1.3 Strengthening existing infrastructure and human resource to be globally competitive
			1.4 Orient agricultural education to encourage entrepreneurship
			1.5 Expand and strengthen linkages on long-term partnerships with globally recognised agricultural higher education institutions (HEIs): Study of existing MoUs of ICAR / AUs with foreign universities, develop guidelines for global collaboration among HEIs
			1.6 Build partnerships with countries in tropics and semi-arid tropics and develop trained human resource to meet their requirements
			1.8 Need based support to the existing 3 sub divisions: Education quality and reforms, Human Resource Development and Education planning
		2. Curriculum revised and delivered for ICAR AU system	2.1 Restructuring and adapting curricula to the needs of stakeholders: Study on the students learning approaches for quality outcomes, conduct brainstorming workshops
			2.2 Developing an integrated modular structure of teaching, which: Sub contracts some important basic subjects to the faculties of Basic Sciences; enables the students to choose from a large range of courses according to their interest; and opens some modules to continuing education program (CEP) emphasizing on lifelong learning
			2.3 Supporting global collaborative partnerships for specializations and facilitating the sharing of information (scientific, technical or pedagogic issues) as well as exchange of teachers and students

Goal / Impact / Long Term Objective	Outcome/Purpose	Objectives/Outputs	Activities / subactivities
			2.4 Promoting systems and structures which allow staff flexibility among higher education, research and extension activities
			2.5 Actively promoting participatory teaching methods using case studies, problem solving approaches, group working and interdisciplinary approaches
			2.6 Initiating more relevant and efficient teaching programmes through regular reviews of curricula and systematic feedback from employer/stakeholders and former graduates
			2.7 Adopting a system approach in teaching programmes enabling graduates to comprehend agriculture as a system comprised of technical, economic, social and cultural elements
			2.8 Establishing contractual links between faculties and universities and industry for networking that can link institutions both within and between developed and developing countries
			2.9 Initiating inter-institutional research and extension projects and encouraging participation in advanced international trainings for regular up gradation of skills in teaching fraternity
			2.10 Strengthening e-governance activities in curriculum: Develop and implement online courses (MOOC platform), MOOCs /open learning for farmers , Video lectures & web classes, enabling TED talks by students, Virtual laboratories & classrooms etc.
			3.1 Establishment of the infrastructure for hosting the AEDIS in ICAR data centre (including Bid process management)
			3.2 Establishment of AU regional data centre for load sharing and to act as Disaster recovery centre for ICAR- DC
			3.3 Standardization and implementation of Academic Management System in participating AUs
		3. Usage of Information and communication technology (ICT) improved	3.4 Development of online disease and pest image database on various crops for AI based applications (including web based / mobile app development)

Goal / Impact / Long Term Objective	Outcome/Purpose	Objectives/Outputs	Activities / subactivities
		4. Strengthened overall Human resource (HR) capacity of ICAR AU system	3.5 Develop mechanism for Online examination system for national examinations conducted by education division, ICAR (Finalisation of SRS / FRS and facilitate in bid process management)
			3.6 Introduction of next-generation MIS and FMS system
			3.7 Establishment / strengthening of ICT enabled Centre for Career Development
			4.1 Faculty development through training: (i) 3 to 6 months training in priority theme areas and (ii) life-long learning in the form of refresher courses of shorter duration (20 to 30 days) in educational technology and the subject domain of a teacher's expertise
			4.2 Foreign training (Overseas associateships) for faculty upgradation
			4.3 International faculty visits to AUs for capacity building
			4.4 National faculty visits to AUs for capacity building
			4.5 Master and Ph.D students Sandwich Programme with foreign universities/ National R&Ds institutions
			4.6 Post-doctoral fellowships
			7.1 Framework study and strategy planning in relation to policy, gender analysis and agricultural education systems
	5. Participation of state governments in raising the quality and relevance of agri higher education improved		7.2 Visioning and impact assessment of agricultural higher education programs (Capacity building for agricultural education, monitoring and evaluation and impact assessment, guiding particularly the Education Division and participating AUs in impact assessment, Providing policy and institutional support)
			7.3 Develop policy framework for effective implementation of NAHEP with national and state systems in agricultural education (structuring dialogue with State governments to catalyze their participation in raising the quality and relevance of agricultural higher education)
			7.4 Organizing brainstorming workshops with state govt. and other stakeholders

Results chain forms the basis to develop the M&E framework and to identify measurable performance indicators specific to component.

M&E framework with measurable performance indicators for Component 2 i.e. Investment in ICAR leadership in Agriculture higher education has been illustrated below:

Component OUTCOME	Indicators	Component 2: Investment in ICAR leadership in Agricultural Higher Education						Data collection and reporting			
		Target plan and achievements (relative values)		Frequency and reports		Data collection instruments		Responsibility for data collection		Responsibility for data collection	
Institutional reforms implemented in Education division of ICAR and Agricultural universities	PDO ICAR 1	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	% increase in user base of NISAGENET / Education portal	Measured in percent increase	0%	Planned	Achieved				Annual	PMTS, Education division, IASRI	PIU NAHEP
	PDO ICAR 2	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Number of MOUs signed between industry / HEIs and AUs to strengthen their linkages	Measured in number	6	Planned	Achieved				Semi annual	PMTS, PMEs, Education division, IASRI	PIU NAHEP
	PDO ICAR 3	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
OUTPUT 1	Direct project beneficiaries	Number of students and faculties that directly derive benefits under IDPs, CAASTs, IGs and activities under Comp 2	0	Planned	Achieved				Semi annual	PMTS, Education division, PMEs, IASRI	PIU NAHEP
	PDO ICAR 4	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Female beneficiaries	% of female beneficiaries out of direct project beneficiaries	0%	Planned	Achieved				Semi annual	PMTS, Education division, PMEs, IASRI	PIU NAHEP
OUTPUT 1	Intermediate level indicators	Data collection and reporting									
	IR ICAR 1	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection

Component OUTCOME	Component 2: Investment in ICAR leadership in Agricultural Higher Education									
	Indicators	Target plan and achievements (relative values)					Data collection and reporting			
Education division of ICAR strengthened	Number of IDP/ CAAST /IG proposals assisted by education division	0	Planned					Quarterly	PMTS, PMEs, Education division, IASRI	PIU NAHEP
	IR ICAR 2	Description (indicator definition etc.)	Baseline (2016-17)	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Responsibility for data collection
	AUs that have attained academic autonomy	The number of AUs in the ICAR-AU System that have attained academic autonomy as defined by the ICAR Accreditation Board and published in NISAGENET, expressed as a percentage of all AUs in the ICAR-AU System	25%	Planned						
			Achieved					Annual	Education division	PIU NAHEP
OUTPUT 2	IR ICAR 3	Description (indicator definition etc.)	Baseline (2016-17)	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Responsibility for data collection
	Number of pilot courses added / upgraded on communication skills, entrepreneurial skills, information processing, creative and innovative thinking, leadership skills, industry oriented courses etc.		10	Planned						
		Measured in number	Achieved						Quarterly	PMTS, PMEs, Education division, IASRI
OUTPUT 3	IR ICAR 4	Description (indicator definition etc.)	Baseline (2016-17)	Data collection and reporting					Data collection and reporting	
				2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Responsibility for data collection

Component OUTCOME	Indicators	Component 2: Investment in ICAR leadership in Agricultural Higher Education					Data collection and reporting				
		Target plan and achievements (relative values)									
Usage of Information and communication technology (ICT) improved	% increase in number of e-enabled learning activities initiated (MOOC platform, virtual labs, video lectures)	Measured in % increase	-13%	Planned			Quarterly	PMTS, PMEs, Education division, IASRI	PIU NAHEP		
	IR ICAR 5	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Data collection instruments and reports	Responsibility for data collection	
	Number of Next-generation MIS / FMS system introduced in Aus	Measured in number	0	Planned					Quarterly	PMTS, PMEs, Education division, IASRI	PIU NAHEP
	Intermediate level indicators			Achieved					Data collection and reporting		
Strengthened overall Human resource (HR) capacity of ICAR AU system	IR ICAR 6	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Responsibility for data collection	
	Number of External advisory panel visits to AUs for capacity building	Measured in number	12	Planned					Quarterly	PMTS, PMEs, Education division, IASRI	PIU NAHEP
				Achieved							
									Data collection and reporting		
Participation of state governments in raising the quality and relevance of agri higher education improved	IR ICAR 7	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Responsibility for data collection	
	Number of workshops / seminars conducted with representatives of State governments to catalyze their participation in raising the quality and relevance of agricultural higher education)	Measured in number	17	Planned					Quarterly	PMTS, PMEs, Education division, IASRI	PIU NAHEP
				Achieved							
									Data collection and reporting		

Aforementioned M&E framework for Component 2 encompasses indicators specific to component. Moreover, it captures indicators not only mentioned in PAD, but also additional ones based on component scope and M&E requirements. This framework would form an integral part of Project Monitoring and Tracking System (PMTS) to conduct day to day monitoring and to generate need based reports.

Basis results chain and M&E framework developed for each component and takeaways from Results framework from PAD, an exhaustive M&E framework with measurable performance indicators for overall NAHEP has also been prepared and presented herewith.

OUTCOME	Indicators	Baseline		Target plan and achievements (Absolute values)					Data collection and reporting		
		Baseline (2016-17)		2017- 18	2018- 19*	2019- 20	2020- 21	2021- 22	Frequency and reports	Data collection instruments	Responsibility for data collection
Quality and relevance of agricultural higher education to AU students improved	PDO Indicator 1										
	% increase in AU on time graduation rate	77.6%	Planned	79.2%	80.7%	82.3%	83.8%	85.4%	Annual (31st May)	PMTS, Education division, IASRI	PIU NAHEP, PMEs
	PDO Indicator 2										
	% increase in AU on time graduation rate (Female)	77.6%	Planned	79.2%	80.7%	82.3%	83.8%	85.4%	Annual (31st May)	PMTS, Education division, IASRI	PIU NAHEP, PMEs
	PDO Indicator 3										
	% increase in AU on time graduation rate (Male)	76.3%	Planned	77.8%	79.4%	80.9%	82.4%	83.9%	Annual (31st May)	PMTS, Education division, IASRI	PIU NAHEP, PMEs
	PDO Indicator 4										
	% increase in cut-off scores for students in ICAR entrance tests	87%	Planned	88.7%	90.5%	92.2%	94.0%	95.7%	Annual	PMTS, Education division, IASRI	PIU NAHEP, PMEs

OUTCOME	Indicators	Baseline		Target plan and achievements (Absolute values)					Data collection and reporting		
		Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	PDO Indicator 5		Description (indicator definition etc.)								
	% increase in cut-off scores for students in ICAR entrance tests (Male)	87%	Breakdown by gender	Planned	88.7%	90.5%	92.2%	94.0%	Annual	PMTS, Education division, IASRI	PIU NAHEP, PMEs
				Achieved	84%						
	PDO Indicator 6		Description (indicator definition etc.)								
	% increase in cut-off scores for students in ICAR entrance tests (Female)	87%	Breakdown by gender	Planned	88.7%	90.5%	92.2%	94.0%	Annual	PMTS, Education division, IASRI	PIU NAHEP, PMEs
				Achieved	84%						
	PDO Indicator 7		Description (indicator definition etc.)								
	% increase in cut-off scores for students in ICAR entrance tests (SC/ST)	79%	Breakdown by SC/ST	Planned	80.6%	82.2%	83.7%	85.3%	Annual	PMTS, Education division, IASRI	PIU NAHEP, PMEs
				Achieved	71%						
	PDO Indicator 8		Description (indicator definition etc.)								
	% increase in student placement rates	41.9%	% UG students placed out of total graduating UG class strength	Planned	42.8%	43.7%	44.5%	45.4%	Annual	PMTS, PMEs	PIU NAHEP, PMEs
				Achieved	44%			46.2%			
	PDO Indicator 9		Description (indicator definition etc.)								
	% increase in student placement rates (Male)	43.5%	% UG students placed out of total graduating UG class strength (male)	Planned	44.9%	45.8%	46.6%	47.5%	Annual	PMTS, PMEs	PIU NAHEP, PMEs
								48.4%			

OUTCOME	Indicators		Baseline		Target plan and achievements (Absolute values)					Data collection and reporting			
					Achieved	48%	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments
	PDO Indicator 10	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	% increase in student placement rates (Female)	% UG students placed out of total graduating UG class strength (female)	41.8%	Planned	42.8%	42%	43.7%	44.5%	45.4%	46.2%	Annual	PMTS, PMEs	PIU NAHEP, PMEs
				Achieved									
	PDO Indicator 11	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in student placement rates (SC/ST)	% UG students placed out of total graduating UG class strength (SC/ST)	50.2%	Planned	51.0%	52.0%	53.0%	54.0%	55.0%	Annual	PMTS, PMEs	PIU NAHEP, PMEs	
				Achieved	49%								
	PDO Indicator 12	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	% increase in faculty research effectiveness	Faculty research effectiveness, measured by h-index (The h-index of a university is the largest number h such that at least h articles from that university were cited at least h times each)	21.2	Planned	21.62	22.05	22.47	22.89	23.32	Semi annual (May and November)	Education division, PMEs, Other progress reports	PIU NAHEP	
				Achieved	27.1								
	PDO Indicator 13	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	Direct project beneficiaries	Number of students and faculties that directly derive benefits under IDPs, CAASIs, IGs and activities under Comp 2	0	Planned	18,000	36,000	54,000	72,000	90,000	Semiannual (May and November)	PMTS, Education division, PMEs, IASRI	PIU NAHEP, PMEs	
				Achieved	0								

OUTCOME	Indicators	Baseline					Target plan and achievements (Absolute values)					Data collection and reporting		
		Baseline (2016-17)	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Data collection instruments	Responsibility for data collection		Frequency and reports	Data collection instruments	Responsibility for data collection
	PDO Indicator 14													
	Description (indicator definition etc.)													
	% of female beneficiaries out of direct project beneficiaries	0%	Planned	10%	20%	30%	40%	50%	PMTS, Education division, PMEs, IASRI	PIU NAHEP, PMEs		Semiannual (May and November)	PMTS, PMEs	PIU NAHEP, PMEs
	Achieved													
	IR Indicator 1													
	Description (indicator definition etc.)													
	Reduced student inbreeding at participating AUs, as measured by student diversity (% increase in AU students admitted from other states and countries)	19%	Planned	19.8%	20.5%	21.3%	22.0%	22.8%	Semiannual (May and November)	PIU NAHEP, PMEs				
	Achieved													
	IR Indicator 2													
	Description (indicator definition etc.)													
	Reduced faculty inbreeding at participating AUs, as measured by faculty diversity (% increase in faculty with higher education degrees from more than one university and more than one state)	45%	Planned	46.8%	48.6%	50.4%	52.2%	54.0%	Semiannual (May and November)	PIU NAHEP, PMEs				
	Achieved													
	IR Indicator 3													
	Description (indicator definition etc.)													

OUTCOME	Indicators		Baseline		Target plan and achievements (Absolute values)						Data collection and reporting			
	Improved AU revenue generation (% change in Internal revenue of AU)	Improved internal revenue generation at participating AUs, in terms of sources of funds. Measured by change in % from purely state-level public funds	8.5%	Planned	9.0%	9.9%	10.9%	11.8%	12.8%	Semi annual	PMTS, PMEs	PIU NAHEP, PMEs		
	IR Indicator 4	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports				Data collection instruments	Responsibility for data collection
	Number of industry-sponsored projects and positions in cutting edge areas	Number of industry-sponsored projects and positions in cutting-edge areas at participating Aus	32	Planned	40	50	60	80	100	Semi annual	PMTS, PMEs	PIU NAHEP, PMEs		
				Achieved	28									
	IR Indicator 5	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection			
	% Increase in performance-based allocation of ICAR Development Grant	Increase in performance-based allocation of ICAR Development Grant to Aus	30%	Planned	32%	34%	36%	38%	40%	Annual	PMTS, PMEs, Education division	PIU NAHEP, PMEs		
	IR Indicator 6	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection			
Accredited agricultural universities with revised norms and standards	Accredited agricultural universities with revised norms and standards	55	Planned	59	63	67	71	75	Annual	Education division	PIU NAHEP			
IR Indicator 7	Description (indicator definition etc.)	Baseline (2016-17)	2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection				

OUTCOME	Indicators	Baseline		Target plan and achievements (Absolute values)						Data collection and reporting		
		0%	Planned	3%	6%	9%	12%	15%		Annual	PMTS, PMEs	PIU NAHEP, PMEs
	Increased AU student satisfaction with the quality assurance role of the Education Division/ ICAR			0%								
	IR Indicator 8	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22		Frequency and reports	Data collection instruments	Responsibility for data collection
	Increased AU faculty satisfaction with the quality assurance role of the Education Division/ ICAR	0%	Planned	4%	8%	12%	16%	20%		Annual	PMTS, PMEs	PIU NAHEP, PMEs
	IR Indicator 9	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22		Frequency and reports	Data collection instruments	Responsibility for data collection
	AUs that have attained academic autonomy	25%	Planned	29%	33%	37%	41%	45%		Annual	Education division	PIU NAHEP
			Achieved	25%								

OUTCOME	Indicators	Baseline	Target plan and achievements (Absolute values)					Data collection and reporting		
		Baseline (2016-17)	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Data collection instruments	Responsibility for data collection
Input (Expenditure) monitoring (INR lakhs)	Input indicator 1	Baseline (2016-17)	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Goods and equipments	0	Planned					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
			Achieved							
	Input indicator 2	Baseline (2016-17)	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Civil works	0	Planned					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
			Achieved							
	Input indicator 3	Baseline (2016-17)	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Human capacity building	0	Planned					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
			Achieved							
	Input indicator 4	Baseline (2016-17)	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Consultancy	0	Planned					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
			Achieved							
	Input indicator 5	Baseline (2016-17)	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Recurrent cost	0	Planned					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
			Achieved							

OUTCOME	Indicators		Baseline		Target plan and achievements (Absolute values)					Data collection and reporting			
					Baseline (2016-17)	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Data collection instruments	Responsibility for data collection
Environmen- tal safeguard monitoring	ES indicator 1	Description (indicator definition etc.)	Baseline (2016-17)	0	Planned						Annual	PMTS, PMEs	PIU NAHEP, PMEs
	Number of pilot courses introduced / upgraded with focus on integrated environmental / green themes / concepts in curriculum	Measured in number			Achieved								
	ES indicator 2	Description (indicator definition etc.)	Baseline (2016-17)	0	Planned						Annual	PMTS, PMEs	PIU NAHEP, PMEs
	Number of facilities being sent for training on environmental aspects within or outside the country	Measured in number			Achieved								
	ES indicator 3	Description (indicator definition etc.)	Baseline (2016-17)	0	Planned						Annual	PMTS, PMEs	PIU NAHEP, PMEs
	Number of guest faculties delivering lectures or lessons on environmental aspects	Measured in number			Achieved								
	ES indicator 4	Description (indicator definition etc.)	Baseline (2016-17)			2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	Frequency and reports	Data collection instruments	Responsibility for data collection

OUTCOME	Indicators		Baseline		Target plan and achievements (Absolute values)						Data collection and reporting			
					0						Planned	Annual	PMTS, PMEs	PIU NAHEP, PMEs
	Number of seminars conducted on environmental aspects	Measured in number									Achieved			
	ES indicator 5	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22		Frequency and reports	Data collection instruments	Responsibility for data collection
	Number of research projects taken up with focus on environmental aspects	Measured in number	0								Planned			
						Achieved						Annual	PMTS, PMEs	PIU NAHEP, PMEs
	ES indicator 6	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22		Frequency and reports	Data collection instruments	Responsibility for data collection
	ESP (Environmental Sustainability Plan) prepared and implemented	Measured in response (Yes / No)	0			Planned						Annual	PMTS, PMEs	PIU NAHEP, PMEs
						Achieved								
	ES indicator 7	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22		Frequency and reports	Data collection instruments	Responsibility for data collection
	Number of risk mitigation measures adopted for upgradation of laboratories, as per EA and EMF of NAHEP	Measured in number (refer table 5 of EMF)	0			Planned						Annual	PMTS, PMEs	PIU NAHEP, PMEs
						Achieved								
	ES indicator 8	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22		Frequency and reports	Data collection instruments	Responsibility for data collection

OUTCOME	Indicators		Baseline		Target plan and achievements (Absolute values)						Data collection and reporting			
	Number of risk mitigation measures adopted for Civil works, as per EA and EMF of NAHEP	Measured in number (refer table 4 of EMF)	0	Planned								Annual	PMTS, PMEs	PIU NAHEP, PMEs
				Achieved										
	SS indicator 1	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22		Frequency and reports	Data collection instruments	Responsibility for data collection	
	Number of pilot courses introduced	Measured in number	0	Planned							Annual	PMTS, PMEs	PIU NAHEP, PMEs	
	/ upgraded with focus on social themes / concepts in the curriculum			Achieved										
		SS indicator 2	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22		Frequency and reports	Data collection instruments	Responsibility for data collection
Social safeguard monitoring	Number of faculties being sent for training on social / equity aspects within or outside the country	Measured in number	0	Planned							Annual	PMTS, PMEs	PIU NAHEP, PMEs	
			Achieved											
	SS indicator 3	Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22		Frequency and reports	Data collection instruments	Responsibility for data collection	
	Number of guest faculties delivering lectures or lessons on social / equity aspects	Measured in number	0	Planned							Annual	PMTS, PMEs	PIU NAHEP, PMEs	
				Achieved										

OUTCOME	Indicators		Baseline		Target plan and achievements (Absolute values)					Data collection and reporting			
		Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	SS indicator 4												
	Number of seminars conducted on social / equity themes and concepts	Measured in number	0	Planned									
				Achieved						Annual	PMTS, PMEs	PIU NAHEP, PMEs	
	SS indicator 5												
		Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	Number of research projects taken up with focus on social aspects	Measured in number	0	Planned									
				Achieved						Annual	PMTS, PMEs	PIU NAHEP, PMEs	
	SS indicator 6												
		Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	EAP (Equity Action Plan) prepared and implemented	Measured in response (Yes / No)	0	Planned									
				Achieved						Annual	PMTS, PMEs	PIU NAHEP, PMEs	
	SS indicator 7												
		Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	
	Social Management Plan / Labor Management Plan prepared and adopted	Measured in response (Yes / No)	0	Planned									
				Achieved						Annual	PMTS, PMEs	PIU NAHEP, PMEs	
	SS Indicator 8												
		Description (indicator definition etc.)	Baseline (2016-17)		2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection	

OUTCOME	Indicators		Baseline		Target plan and achievements (Absolute values)						Data collection and reporting		
			0%		Planned	2%	4%	6%	8%	10%	Semi annual (May and November)	PMTS, Education division, PMEs, IASRI	PIU NAHEP, PMEs
	SC / ST beneficiaries	% of SC/ST beneficiaries out of direct project beneficiaries			Achieved	0%							
Activity / Work plan monitoring	Activity indicator 1	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Goods and equipments (Data field with elaboration field)	Equipment plant & machinery, office equipment, lab equipment, furniture & fixtures, computers and peripherals, books and journals	0		Planned						Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
	Activity indicator 2	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Civil works (Data field with elaboration field)	Minor repair and renovation works	0		Planned						Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
	Activity indicator 3	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection
	Human capacity building (Data field with elaboration field)	National level training, International level training, Short visit/seminars, Meetings and workshops	0		Planned						Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
	Activity indicator 4	Description (indicator definition etc.)	Baseline (2016-17)			2017-18	2018-19	2019-20	2020-21	2021-22	Frequency and reports	Data collection instruments	Responsibility for data collection

OUTCOME	Indicators		Baseline		Target plan and achievements (Absolute values)				Data collection and reporting		
	Consultancy (Data field with elaboration field)	National level consultancies	0	Planned					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs
	Activity indicator 5	Description (indicator definition etc.)	Baseline (2016-17)	Achieved	2017-18	2018-19	2019-20	2020-21	Frequency and reports	Data collection instruments	Responsibility for data collection
	Miscellaneous (Data field with elaboration field)	Contractual services, Institutional charges, others	0	Planned					Quarterly	PMTS, PMEs	PIU NAHEP, PMEs

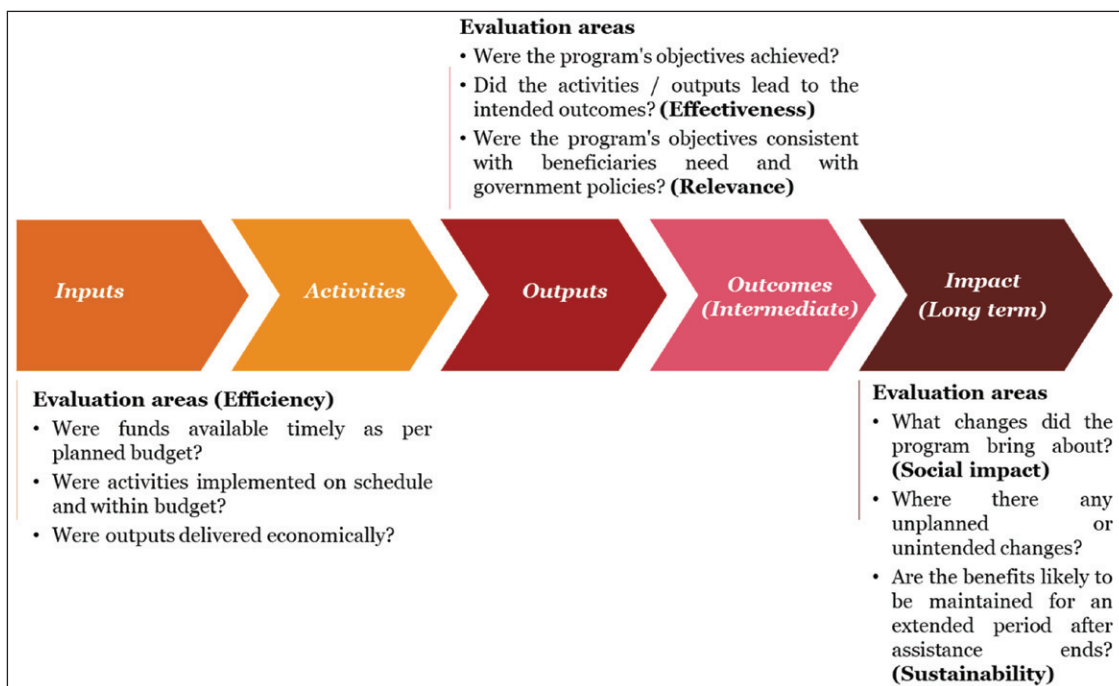
In addition to monitoring of outputs and outcomes at overall project and component level, input resources (activities and expenditures), environment and social impact variables will also be monitored through PMTS. Frequency of input monitoring will be on quarterly basis, whereas monitoring of environmental and social impact variables⁸ will be done yearly basis. M&E frameworks of NAHEP and individual components form the basis for PMTS development. Screens for input entry system, dashboards and type of output reports generated through PMTS have been placed in annexure.

⁸ Captured in Annexure 8.1

3.2. Impact Evaluation

Impact evaluations provide information related to the impact of an intervention or programme on intended or unintended beneficiaries or group of people or on natural environment. The exhibit below gives an indication of important evaluation areas which would be captured during impact assessment study of NAHEP.

Exhibit: Evaluation areas identified for impact assessment study of a project



Source: PwC analysis

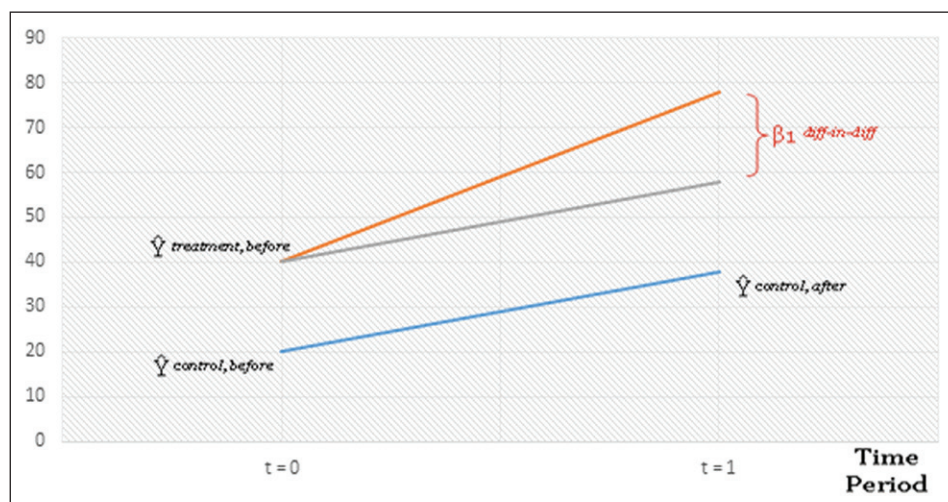
While performance assessment provides feedback and influences immediate changes in the program design, the impact assessment study enables to redirect the program. The impact assessment study could influence future program design and investments. Through performance and impact assessment, ToC can be reviewed while plugging the gaps and unrealistic assumptions are revised, if necessary. Following are the key points to be taken into consideration during impact study of NAHEP:

Economic and financial analysis during impact assessment: This will aid the project to interpret the quantitative and qualitative data in real life perspective taking into account actual ground situations besides validating quality of inputs supplied, quality of physical work undertaken, etc. In this context it is important that a set of parameters are finalized on which economic and financial analysis will be undertaken across various components and interventions of the project. These parameters will be finalized in discussion with PIU and respective PMEs.

Using Difference in difference (DiD) method for comparison and Analysis:

As PIU adopts quasi-experimental design for sampling where baseline and follow-up data from the same treatment and control group is proposed to be collected, PIU will use difference in difference method to compare a treatment and a comparison group (first difference) before and after the intervention (second difference).

The mean difference between the “after” and “before” values of the outcome indicators for each of the treatment and control groups will be calculated followed by the difference between these two mean differences. The second difference (that is, the difference in difference) will denote the estimate of the impact of the program.



$$\beta_1 \text{diff-in-diff} = (\hat{Y}_{\text{treatment, after}} - \hat{Y}_{\text{treatment, before}}) - (\hat{Y}_{\text{control, after}} - \hat{Y}_{\text{control, before}})$$

Assessment of socio- economic and environmental impacts: Evaluation for socio-economic and environmental impacts of the project will be based on monitoring data availability (PIU & PMEs') against social and environmental indicators of PMTS and feasibility of collection during field visits. PIU has also engaged environmental and social experts for NAHEP. These experts will also provide inputs for finalization of key parameters and indicators which are essential for tracking the socio-economic and environmental impacts of the project.

4. BASELINE DATA FOR NAHEP M&E SYSTEM

4.1. Need for baseline data in M&E system

Baseline data are initial information on program participants or other program aspects collected prior to the program intervention. Baseline data are essential to enable stakeholders (e.g. Policymakers, beneficiaries etc.) to monitor and track changes. It may be used later to provide a comparison for assessing program outcomes or impacts. A robust M&E system must have an authentic and reliable baseline data because:

- Set future targets of the project
- Estimate changes as a project proceeds in monitoring
- Compare the initial conditions and changes of project and control groups in an impact evaluation

4.2. Baseline data for NAHEP

The generation of baseline data in an M&E framework is crucial because measuring and comparing the targeted and achieved values in consonance with baseline values directly influence the success of the project. PAD and Implementation Status and Results (ISR) documents of NAHEP mentions the baseline data against PDO and intermediate outcome indicators, but were not adequate enough to develop a robust M&E framework.

For results based M&E system of NAHEP, collection of requisite baseline data from participating AUs was imperative for periodic monitoring, evaluations and impact assessment. Adequate and reliable baseline data was required at both PDO and intermediate outcome level, mentioned in results framework of NAHEP. Moreover, to initiate the Project Monitoring and Tracking System (PMTS) related activities for project, reliable baseline data points for few additional indicators, were also formulated and defined. M&E cell of PIU NAHEP adopted baseline data validation cum gap filling approach and developed a baseline proforma with research questions to capture the necessary baseline data points from **75 Agricultural Universities (AUs)**. This need based baseline research questionnaire was finalized keeping in view the following points:

- Target respondent
- Coverage
- Representative
- Ease of quantification
- Ability to isolate non-project causes of change
- Speed of delivery
- Ability to capture qualitative information
- Others, if any

The baseline proforma captures basic information, organization strength and overall situational mapping of agricultural higher education of Agricultural Universities.

M&E System for NAHEP	
(Baseline status for overall project)	
Basic information (Plz fill the details in appropriate blank)	
Name of the University	
Mailing address	
Email	
Telephone	
Fax	
Name of IDP / CAAST / IG project (Mention name of project with component name) / Non- awardee	

Organisational strength as on 31st March 2018 (Plz fill the details in appropriate blank)			
Particulars	Male (Nos.)	Female (Nos.)	Total (Nos.)
Staff			
Research and teaching staff			
Technical support staff			
Administrative and accounts staff			
Contractual Research staff			
Contractual Administrative / Accounts staff			
Skilled and semi-skilled staff			
Others (Specify)			
Total			
Students			
UG			
PG			
Ph.D.			
Other (Specify)			
Total			

Situational mapping of agricultural higher education of ICAR AU system

(To be filled by respective AU, Plz fill the details in appropriate blank)

S. N.	Particulars	2017-18	2016-17	2015-16
1	Number of new facilitative units established to enable academic and research infrastructure (IIIC- Industry Institution Interaction Cell / Start up cell / incubation cell / experiential learning unit / placement cell etc.)			
2	Number of pilot courses added / upgraded on communication skills, entrepreneurial skills, information processing, creative and innovative thinking, leadership skills, industry oriented courses etc.			
3	Additional revenue generated through institutional activities with industries in INR lakhs			
4	Revenue generated through public usage of infrastructure for academic activities in INR lakhs			
5	Number of MoUs signed with industry for knowledge exchange programs/ internships / short term training programs etc.			
6	% UG students placed out of total graduating UG class strength			
7	% UG students placed out of total graduating UG class strength (male)			
8	% UG students placed out of total graduating UG class strength (female)			
9	% UG students placed out of total graduating UG class strength (SC/ST)			
10	Cut- off percent (Cut off score / Maximum possible score) in ICAR UG entrance tests			
11	Cut- off percent (Cut off score / Maximum possible score) in ICAR UG entrance tests (male)			
12	Cut- off percent (Cut off score / Maximum possible score) in ICAR UG entrance tests (female)			
13	Cut- off percent (Cut off score / Maximum possible score) in ICAR UG entrance tests (SC/ST)			
14	% faculties with HE degrees from more than one university and more than one state			
15	% AU students admitted from other states			
16	Number of overseas training programs / twinning programs organised for faculty and student up gradation			
17	Number of faculty exchange programmes (both national and international) initiated by AU			
18	Number of student exchange programmes (both national and international) initiated by AU			
19	Faculty student ratio			
20	AU student satisfaction index with the quality assurance role of the Education Division/ ICAR, basis annual survey results (>90%= Highly satisfied, 60-90%= Moderately satisfied, <60% = Unsatisfied)			

S. N.	Particulars	2017-18	2016-17	2015-16
21	AU faculty satisfaction index with the quality assurance role of the Education Division/ ICAR, basis annual survey results (>90%= <i>Highly satisfied</i> , 60-90%= <i>Moderately satisfied</i> , <60% = <i>Unsatisfied</i>)			
22	ICAR SAU rank of AU			
23	Contribution of Source of funds for AU in terms of % age (Internal revenue of AU X% + State level public funds including ICAR grants Y %)			
24	% of UG students that graduated on -time			
25	% of UG students that graduated on -time (male)			
26	% of UG students that graduated on -time (female)			
27	Performance based allocation of ICAR development grants to AU			
28	Number of awards received at national level			
29	Number of awards received at international level			
30	Number of technologies transferred to industry / private sector / national / international organisations			
31	Number of students selected in JRF / SRF / ARS			
32	Number of students who were admitted in foreign universities			
33	% PG students placed out of total graduating PG class strength			
34	% PG students placed out of total graduating PG class strength (male)			
35	% PG students placed out of total graduating PG class strength (female)			
36	% PG students placed out of total graduating PG class strength (SC/ST)			
37	Number of students received National Young Scientist Award			
38	Number of students received ICAR's Jawaharlal Nehru thesis Award			
39	Number of students awarded at Agri-unifest			
40	Number of students awarded at Agri uni sports meet			
41	Number of industry- sponsored projects and positions in cutting-edge areas of agri-science			
42	Number of competitive grants from a national/international funding agency			
43	Number of technologies commercialized by AU			
44	Faculty research effectiveness, measured by h- index (The h-index of a university is the largest number h such that at least h articles from that university were cited at least h times each)			
45	Number of short term institutional objectives finalized by AU			
46	Number of long term institutional objectives finalized by AU			
47	Number of innovation grants given			

S. N.	Particulars	2017-18	2016-17	2015-16
48	Number of UG/ PG faculties meeting the minimum educational credential			
49	Number of trainings (national and international) undertaken for faculty upgradation			
50	Number of Master and Ph.D students Sandwich Programme undertaken with foreign universities/ National institutions			
51	Number of alumni linkages to secure international branding			
52	Centre for career development established (Plz fill the response either Yes / No)			
53	Number of industry seminars and professional workshops from experts to better prepare students for final placements			
54	AU attained ICAR accreditation (Plz fill the response either Yes / No)			
55	Number of linkages (MoUs) developed by AU with nationally / globally recognized higher education institutions (HEIs)			
56	Whether AU has attained academic autonomy as defined by ICAR accreditation board and published in NISAGENET (Yes / No)			
57	Number of e- enabled learning activities initiated in AU (MOOC platform, virtual labs, video lectures)			
58	Number of External advisory panel visits to AU for capacity building			
59	Number of workshops / seminars conducted with representatives of State governments to catalyze their participation in raising the quality and relevance of agricultural higher education			

Basis inputs and responses captured against solicited data points from AUs, raw collected data were scrutinized, cleaned, verified, analyzed in excel and then needed baseline data points were finalized. These validated baseline data values form a strong basis for future monitoring, evaluation and impact assessment of NAHEP.

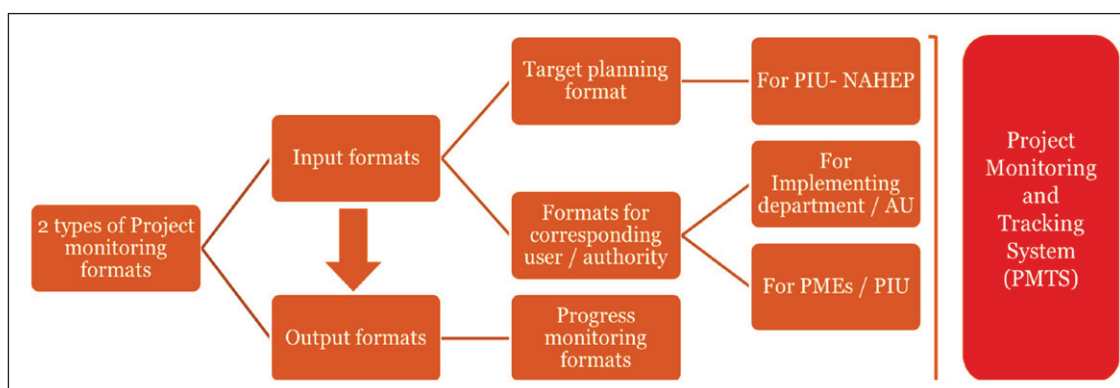
5. PROJECT MONITORING AND TRACKING SYSTEM

5.1. Need and broad functions of PMTS for NAHEP:

PMTS is a web application intended to provide automated solution to users. The system is client / server based in which respondents fill or simply select the suitable options from the drop down boxes. Every respondent has his/ her own user credentials to login into the system to interact with the system. The key functionalities are to store data on server side of all the respondents, online monitoring of inputs / outputs and tracking, feedback to PME cells / PIU NAHEP and to generate the various reports for decision-making levels. **Following are the broad functions identified for PMTS in NAHEP:**

- To facilitate the capture, storage and retrieval of a clear, quantified and operational baseline data
- To track the progress of various subprojects under components 1, 2 and 3 on an ongoing basis in identified Monitoring and reporting formats
- To monitor the progress of overall NAHEP project
- To regularly assess the performance of subproject staff
- To evaluate the output and outcome at mid-term and prior to completion
- Impact assessment

Basis broad functions, type of monitoring and reporting formats were identified and are depicted as below:



*Implementing department: Department in AUs / KVKs

Two types of progress monitoring formats were designed for tracking the project progress, namely, “input formats” and “output formats” and incorporated with the PMTS:

Input formats are the ones through which the concerned project authorities would regularly report information related to progress of project activities undertaken by them while output formats would consolidate information reported through input formats in a summarized manner.

Input formats are further categorized into target planning format for the PIU- NAHEP and the progress reporting formats for corresponding user/ authority.

5.2. Responsibility matrix identified for different stakeholders on PMTS platform

Representatives in PIU NAHEP and PME cells at awarded AUs are considered key stakeholders for PMTS application. Their major responsibilities on PMTS platform have been mentioned below:

Stakeholder	Responsibilities
PIU- NAHEP	<ul style="list-style-type: none"> Oversee the achievement of the programme benefits Financial and physical progress Annual achievement compared to programme target (financial and physical development) Project impact (PIU level) Take informed decisions to maintain progress and achieve program objectives Monitors, tracks and reports key performance metrics, dependencies and resource utilization and allocation Aggregates and reports programme progress, issues and results for impact analysis and decision-making
PME cells and AUs	<ul style="list-style-type: none"> Review status and results of individual projects on regular and/or ad-hoc basis Progress of various activities under the programme – physical and financial Identification of problem areas affecting project delivery Project impact

5.3. Key modules identified for PMTS:

There are 4 key modules identified for PMTS: Server environment setup and Masters Data creation, Input entry system, Output reporting and Dashboard. Description of each module has been tabulated herewith:

Sl. No	Module Name	Description
1	Master data management and System Administration (Server environment setup and Masters data creation)	<ul style="list-style-type: none"> The administrative module facilitates the administrator to carry out administrative level functions e.g. user accounts management, providing access rights to user, security controls of PMTS The provision of configuration of the systems as well as creating the master data for various programme is also provided in this module. Server environment setup include User role setup and user master setup. Masters data creation covers creation of indicator master, target data updation, creation of university master and creation of user master.

Sl. No	Module Name	Description
2	Data Entry (Indicators based input entry system)	<ul style="list-style-type: none"> The data entry screens would be designed keeping in mind the availability of performance data of various projects at different intervals of time (Quarterly / Semi-annually / annually). PMTS will also have provision to set targets in the system. The targets are set for the applicable MIS fields at the beginning of the programme, month, half yearly or yearly.
3	Monitoring and evaluation reporting (Output reporting)	<ul style="list-style-type: none"> Dynamic reporting engine enables comparisons between projects and achievement against set PDO and intermediate indicators⁹. Evaluates the performance of the projects against defined PDO and intermediate indicators.
4	Dashboard	<ul style="list-style-type: none"> Dashboards provide a single view of performance data in graphical form to different level of users starting from PIU NAHEP to AUs.

5.4. Specific features of PMTS

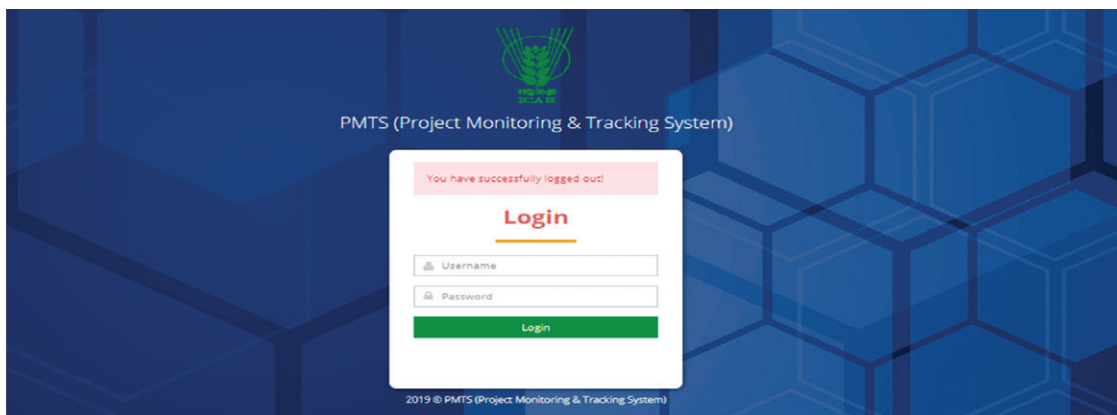
PMTS has been developed keeping in mind easy to use, navigate and operate for all the concerned users. Following are the specific features of PMTS:

- Tracks the progress and implementation of multiple Projects run by NAHEP at awarded Agricultural Universities (AUs)
- PMTS gathers data through input entries based on various types of indicators pertaining to the projects and stores the data to generate reports as per the requirement of the Management
- Focus at the basic data entry level allows to filter out irrelevant data as much as possible
- Need based alerts and reminders against data entries
- Generates report based on the target vs achievement
- Shows the variations from Baseline data to the actual performance
- Showcases up to five years of data at any given point, subject to the data availability
- Provision to take the data backup and access to past data is provided
- Separate Dashboard for different users based on roles & responsibilities
- Graphical representations of data for fast and easy comprehension

5.5. System flow and user management in PMTS

PMTS is a web based application whose database resides on a centralized Server and could be accessed by the authorized users all across India through their specified login id and password assigned to them by the system.

⁹ An illustrative list has been placed in Annexure for reference



Access to the PMTS is based on the defined roles for the user. These users have been categorized majorly into three types as mentioned below:

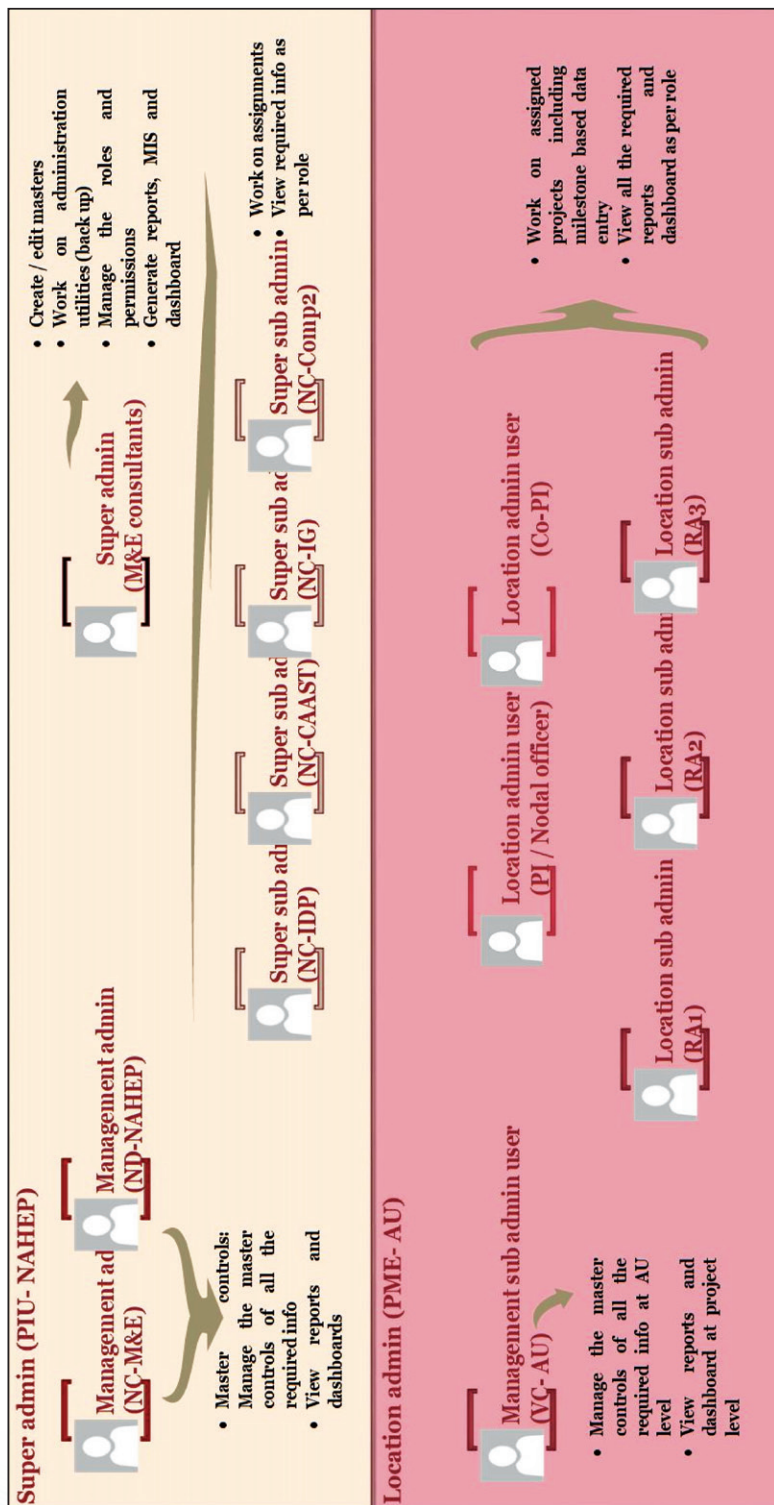
- 1. Super Admin and super sub admin type:** These users will have maximum control of the system to manage and provide support to the users working on the system all across on ongoing basis at lower as well as higher level. Super admin users would be M&E consultants managing the PMTS application. They will be stationed at PIU level and will have access to the server. National Coordinators of different components will act as Super sub admins and will have limited control, specific to their respective components. Super sub admins will have an access to target setting against each indicators and check the progress of work from all across India.
- 2. Management Admin Type:** The users will be National Director (ND), National coordinator- M&E at PIU level and Vice Chancellor (VC) at AU level. These users would be mostly using the PMTS for monitoring & tracking the project activities on the whole as well as at the individual unit level. Management reports would also be generated for this users based on their multiple needs.
- 3. Location Admin type:** These user types will be stationed at Agriculture universities/ institutes. They will have an access to PMTS through their login id and password. General entry level users would be doing the input entry jobs for the indicators assigned to their University based on the project assigned to them.

PMTS has been developed with multiple features, especially for University level users. Key features of PMTS at location admin level are following:

At PI / Nodal officer / PME representative level:

- Timely management of input entries through PMTS
- Assigning Input entry jobs Indicator category wise
- Gets alerts about the Input entry being done by assistants on these aspects: missing entries, overdue and upcoming entries
- Power to edit the entries done by the assistants
- Power to make the entries that missed deadlines

Detailed user management of PMTS has been presented herewith.



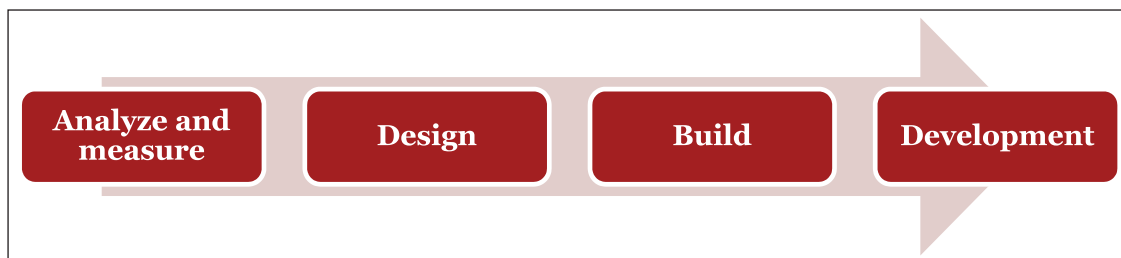
Display screens of input entry system, users' dashboards and output reporting system of PMTS have been presented in Annexure. Moreover, detailed user manual of PMTS would be developed and shared with users.

At Research Associate / PME technical staff level:

- Individual dashboard with alerts & reminders for specific user
- Notification starts about the scheduled input entry 10 days in advance
- Alerts if entry not done 7 days before the last date as per the input entry schedule
- Reminders and alerts could also be sent on the user's mail

5.6. Procedure involved in development of PMTS

PMTS application development has involved 4 key stages and are as follows:



1. **Analyze and measure:** This stage involved detailed as-is study to finalize the key modules of PMTS, development of process flow diagram and identification of system and functional requirement of PMTS.
2. **Design:** In this stage, the application design is developed on the basis of the requirements, scope and use cases. The stage has following steps:
 - Creation of designs for Architecture, Technology, Integration, and Data & Communication flow
 - Creation of detailed technical specifications
 - Creation of User Interface - The Prototype is developed and validated against the requirements
 - Creation of Test Cases to address critical functional and performance requirementsMonitoring and reporting formats of PMTS
3. **Build:** In this stage, the application documents led to the creation of source code. The stage has following steps:
 - Code generation
 - Report generation
 - Code review by peers and against standards
 - Unit testing to address one functional area at a time
 - Integration planning for integration testing
4. **Development:** In this stage the activities ensured that the application is fit for use in the given environment. The stage has following steps:
 - User Acceptance Testing (UAT)

- ▲ Defining rollout plan for deployment
- ▲ Go live

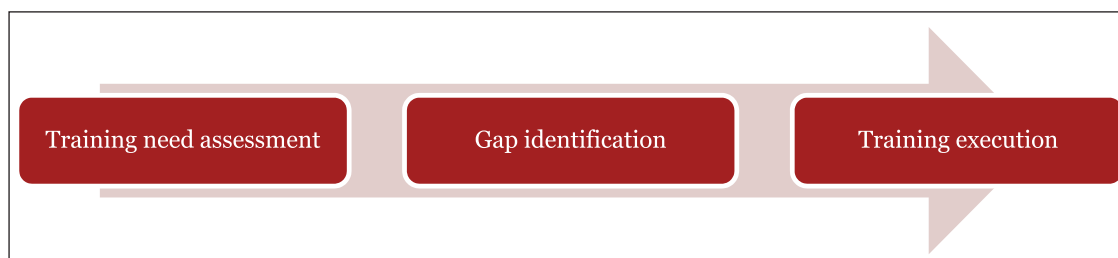
5.7. System specifications of PMTS

PMTS application has been hosted on the Cloud Server of ICAR and can be used by the users via any standard web browsers. Its system environment comprise of Server setup and software specifications and are mentioned below:

Server setup specifications	Software specifications
Operating System: Linux Ubuntu	Platform : Open Source
Processor: Intel Xeon Dual Core Processor	Language : PHP latest version 7
RAM: 8 GB	Framework : CI (code ignitor)
HDD (SSD) : 100 GB	Database : MYSQL
Application : PHP Framework and PHP , MY SQL	

5.8 Capacity building and training of PMTS users

Rolling out a new system for monitoring and evaluation of NAHEP would involve capacity building of concerned stakeholders and AU participants. PIU NAHEP will conduct capacity-building programs for PMEs and PIU members on the PMTS methodology and its effective dissemination. This will be undertaken through executing a complete *“Knowledge Management System”* approach, adopting the logical steps as mentioned in the exhibit.



Training need assessment (TNA) will be done on the basis of questionnaires / test modules / group exercises developed for the purpose of as-is assessment of the AU participants in terms of the project knowledge, M&E framework, indicators, chain of activities, ease in usage of PMTS application etc. TNA would identify the aspects of monitoring in which the member is lagging behind. Gaps in knowhow of participants would be mapped and the requisite trainings would be provided to the members from several stakeholders.

Furthermore, developing databases of AU participants and/or expert consultants/trainers, and means of knowledge sharing will also be developed as an important activity under capacity building exercise. The different topics and types of training event to leverage collective knowledge will be analyzed. It will also be assessed that on which topics participants are to be supported

further. Basis these assumptions, an ‘M&E event calendar’ has been prepared and presented herewith.

Proposed Event	Tentative period	Agenda	Participants
M&E sensitization workshop	T*	To sensitize the PME cells on: <ul style="list-style-type: none"> M&E framework PMTS related activities of NAHEP 	PME representatives of awarded AUs PIU stakeholders
PMTS launch cum Go-live workshop	T + 2	<ul style="list-style-type: none"> Official Go-live of PMTS Live demonstration and training sessions for PMTS users Creation and visualization of PMTS reports 	PME representatives of awarded AUs PIU stakeholders
Visit to select AUs (4 – 8)	T + 4	<ul style="list-style-type: none"> Query resolution Addressing software, network and program related issues Live demonstration and on-job training of PMTS users 	PME Nodal officers / Pls
PMTS dissemination session: North zone	T + 5	<ul style="list-style-type: none"> Updates and improvements in the monitoring frameworks / PMTS 	PME Nodal officers / Pls
PMTS dissemination session: South zone	T + 6	<ul style="list-style-type: none"> Updates and improvements in the monitoring frameworks 	PME Nodal officers / Pls
National workshop on M&E Capacity building and dissemination	T + 8	<ul style="list-style-type: none"> Updates and improvements in the monitoring frameworks 	PME representatives of awarded AUs PIU stakeholders
Need based M&E trainings / workshops	T + 9 onwards	<ul style="list-style-type: none"> Updates and improvements in the monitoring frameworks / PMTS Evaluation and impact assessment Learning and knowledge management 	PME representatives of awarded AUs PIU stakeholders

T* (M&E sensitization workshop month)

Effective dissemination of key aspects of M&E framework, timely monitoring and reporting on PMTS interface and continuous learnings will be major outcomes of M&E trainings and workshops. Mid-course corrections through dialogues among PIU and PME members would be critical in enhancing the features and improvements required in M&E framework and PMTS.

6. LEARNING AND KNOWLEDGE MANAGEMENT

6.1. Project Evaluation to Lessons-Learned based M&E system

Recent M&E systems have moved beyond performance and results to respond to un-planned opportunities for learning in the program implementation and management. Lessons learned and knowledge management have become an integral component of monitoring and evaluation of development projects. The difference between traditional evaluation based M&E system and comprehensive learning based M&E system are following:

Particular	Evaluation based M&E system	Comprehensive learning based M&E system
Purpose	To assess outputs against objectives	To document learnings and know-how gained
User	Administrators, donor, funding agency	Practitioners, people's organizations, project staff, implementers
Focus	Outputs>>Outcomes>>Impacts	Outputs>>Outcomes>>Impacts>>Learnings. Include learning tools, templates, processes, useful linkages
Learning	Vertical feedback: administrators, donors, and funders learn	Vertical and Horizontal feedback. Also includes field practitioners, project staffs in addition to vertical feedback learners.
Dynamics	Donors-driven or top-driven, preserves top-down divide	Empowers practitioners, mutual learning across top-down divide
Relates	Project management	Knowledge management

As indicated in the table above, a comprehensive M&E system satisfies both donors' requirements as well as empower practitioners through facilitating the vertical as well as the horizontal learning. It encompasses inclusiveness, responsiveness, and knowledge diversity in programme implementation, development policy and practices.

6.2. Learning and knowledge management in NAHEP

PIU will facilitate the preparation of the reports encompassing lessons learned and improve NAHEP performance. The Annual Reports and different periodic M&E reports would help to identify the 'good', 'average' and 'Not going good' components.

What is going Good?	Identify ways that have led to the good performance and ways to emulate and replicate the same in other AUs.
What is going average?	Identify the reasons responsible for the average performance and recommend ways for better delivery and escalating them to the upper Box.
What is NOT going good?	Identify the reasons behind the same and propose ways for bettering these indicators, outputs and outcomes.

PIU would also be leveraging the organizational and experience / expertise of members working / worked in various similar assignments for Monitoring, Evaluation and Impact assessment including donor funded projects especially World Bank. Following are the key methodologies that would be adopted by PIU for learning and knowledge management of NAHEP:

- Leveraging relationships to contact key stakeholders and decision makers
- Understanding local context in target geographies
- Identification of key success factors relevant to target geographies
- Providing relevant solutions

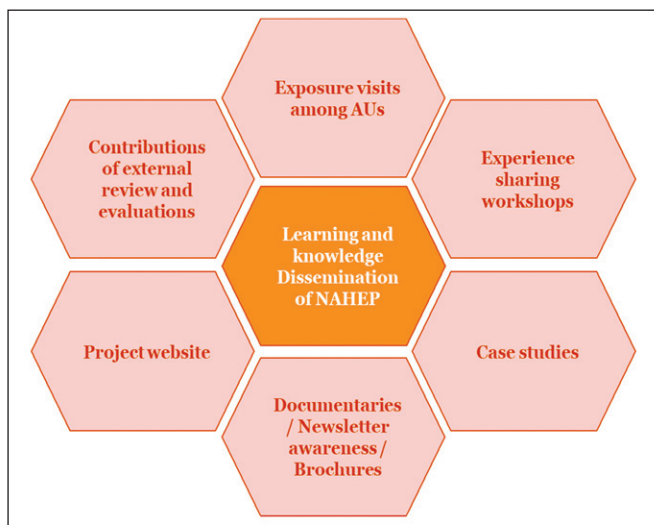
PIU will adopt multiple strategies for effective dissemination of the findings under NAHEP. PIU will undertake dissemination through the following three strategies and a mix of dissemination techniques:

Identify the appropriate audience for the particular research findings.

List the most appropriate methods of dissemination for that type of audience.

Identify the most common barriers and strategies for eliminating them.

Exhibit: Dissemination methodologies of NAHEP learnings



Accordingly, various opportunities for learning sharing and dissemination will be explored under NAHEP. These include:

- Exposure visits among AUs,
- Experience sharing workshops,
- Case studies
- Develop documentaries / newsletter / brochures on the project and beneficiaries,
- Regular updating and content enrichment of Project website
- Contributions of external review and evaluations to learning environment.

1. Exposure Visits among AUs:

PIU NAHEP would organize exposure visits among AUs to learn from the experiences of each other. A lesson-learning event could take several days of intense discussions and needs proper planning and execution. Deliberations during exposure visits could involve following probe areas:

- What do we mean by “lessons learned”?
- Why do we want to identify lessons?

- For whom are these lessons and, accordingly, how are they best shared (written, verbal, video, drama, etc.)?
- Whose lessons are they- primary stakeholders, field workers, and management? Therefore, who should be involved in identifying these lessons?
- What are the lessons- per stakeholder group (source and audience)? Moreover, how do we prioritize them to narrow the discussion around key lessons?
- How do we document the lessons and how do we link lessons with the next phase of planning?

2. Experience Sharing Workshops:

NAHEP would organize an annual workshop each year so that experiences could be shared and lesson learned could be implemented, with corrective actions if needed. Post workshop, the report shall be shared with implementing AUs and the National Team.

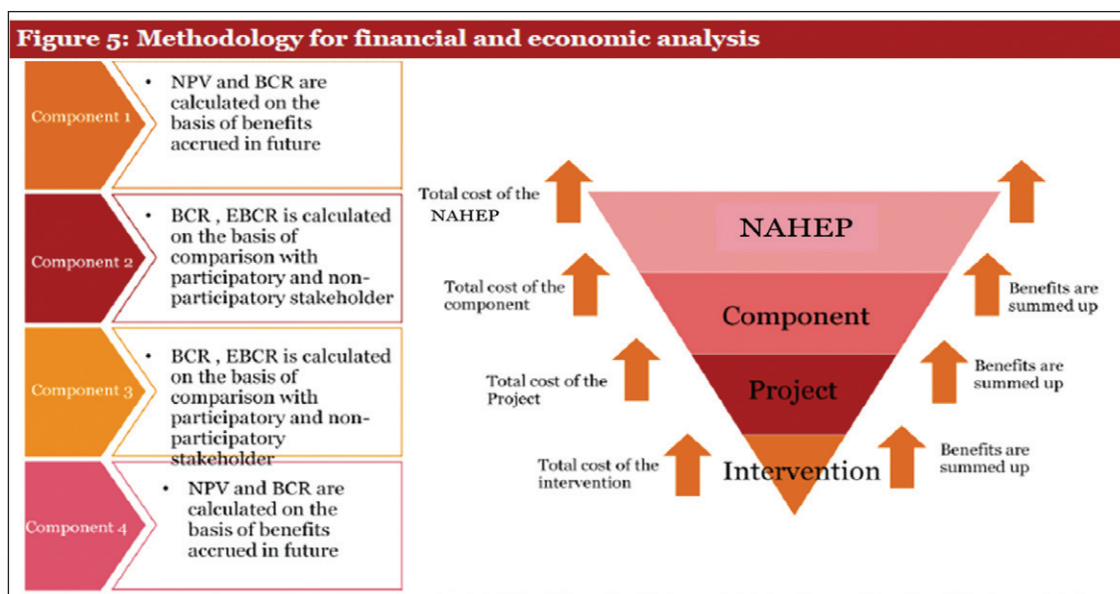
3. Documentation of innovative Case Studies :

Documentation has proved to be most useful to support learning and information acquisition and absorption. Under NAHEP, the documentation of best experiences of participating AUs could be undertaken.

- The AUs will be encouraged and facilitated in preparing the relevant case studies of their experiences of implementation process that led to better results or unsatisfactory results.
- Some selected case studies shall also be prepared by PIU to share the lesson learned.

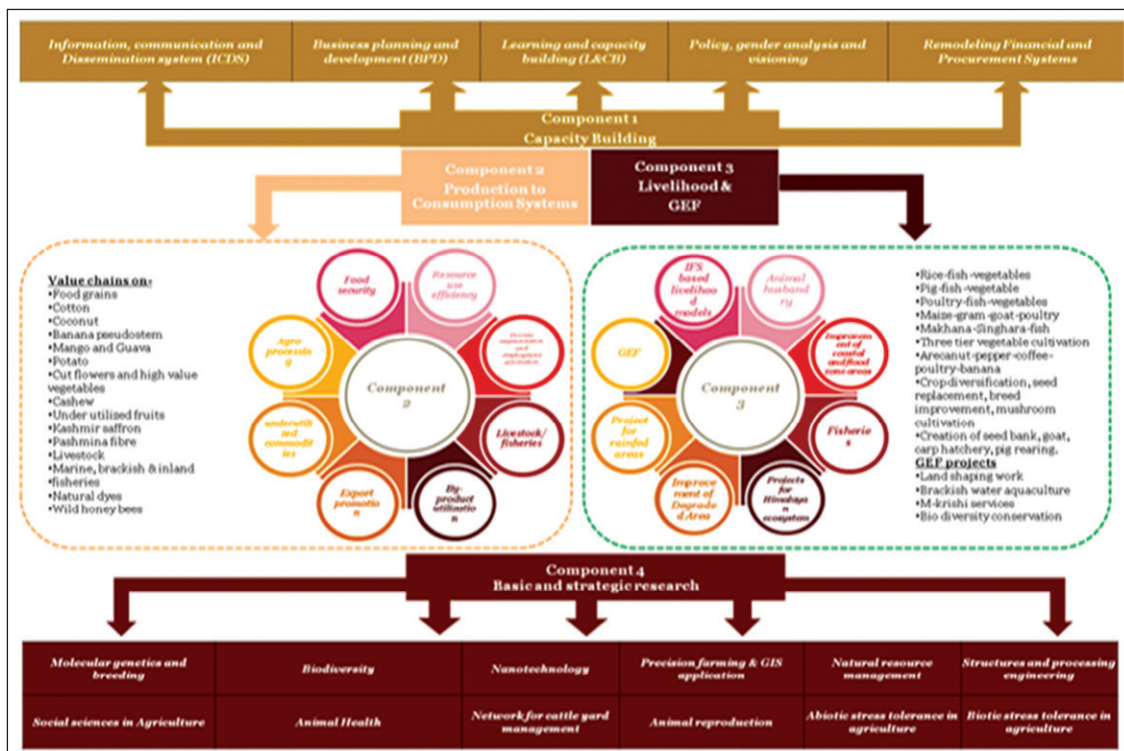
PIU would also use prior experience of innovative documentations during execution of similar assignments.

Depiction of methodology to be adopted for financial and economic analysis for NAHEP (Illustrative)



Source : PwC Analysis , *BCR: Benefit Cost Ratio : Economic Benefit cost Ratio

Structure of End Term Report-Overall representation of major areas of intervention under Project (Illustrative)



Source : PwC Analysis

4. Linking with Media to develop documentaries / newsletter / brochures:

Media has a critical role in disseminating the focus of the innovative projects, outcomes and impact on the beneficiaries. Following could be possible prospects under this dissemination technique:

- AUs will be encouraged to connect with the media to disseminate the lessons and achievements made by AU under NAHEP.
- PIU could also identify innovative interventions taken up by AUs under NAHEP and publish / document it at national level.

5. Regular updating and content enrichment of Project Website:

NAHEP will have a dynamic, updated and content enriched website with user-friendly features. Following will be its key features:

- This website will serve as one stop information market place for sharing the up to date experiences on implementation of projects of the AUs.

- This website would also have baseline data, case studies, information on forthcoming workshops and seminars.
- It could also serve as an open platform for exchange of views among AUs, including PIU.

6. External Reviews & Evaluations

NAHEP will have the following external reviews:

- Mid-term evaluation: Half way through the project life span
- Completion review after project closure
- Other review missions (Annual and / or intermittent visits, if needed)

Learnings from Mid-term Evaluation:

- Provide independent and constructive criticism that will help AUs to reflect on and identify lesson learned that can improve actions;
- Present a fair judgement of project progress that needs improvement;
- Help identify priorities for the remaining time of the project to support the rational use of resources (financial, human, & material)
- Good opportunity for reflective discussions with project stakeholders on what is proceeding well and what could be improved
- Promote dialogue between project stakeholders and the external reviewers as much as possible, by setting up a programme that includes meeting with a range of diverse stakeholders

Learnings from final project Evaluation / completion review:

- What did we learn about knowledge management in the project (which technical/ institutional innovation occurred)?
- What was the impact of the project as perceived by the primary stakeholders?
- Did the project generate any output/ success that has potential policy implications and impacts?
- What did the project achieve in building partnership with private sector, farmers and others?

Although, modalities and efficacy of these dissemination techniques are yet to be worked upon for each stakeholder, AUs / PME Cells could play leadership role in suitably identifying and implementing project specific and, there in, right mix of dissemination methods.

7. M&E ACTION PLAN

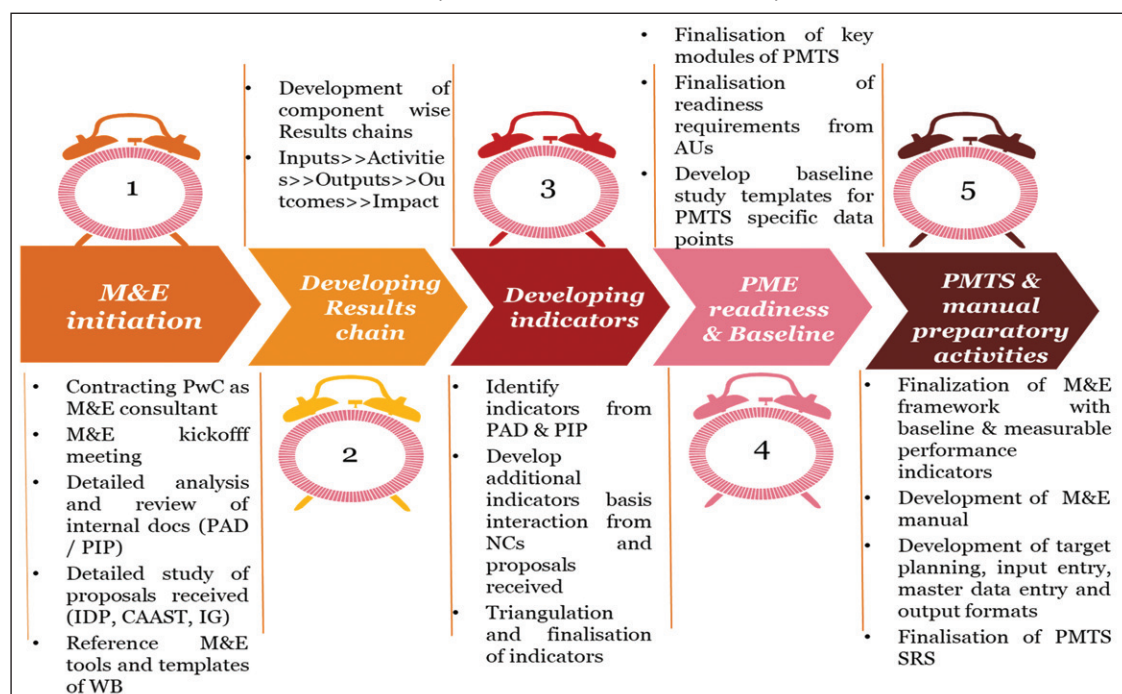
7.1. Preliminary activities and future roadmap

The manual covers the key concepts, processes and steps required to set up and implement a robust M&E system for NAHEP both at the PIU and at the participating AUs level. It describes the outlined procedures and implementation modalities of NAHEP M&E systems including learning and knowledge management.

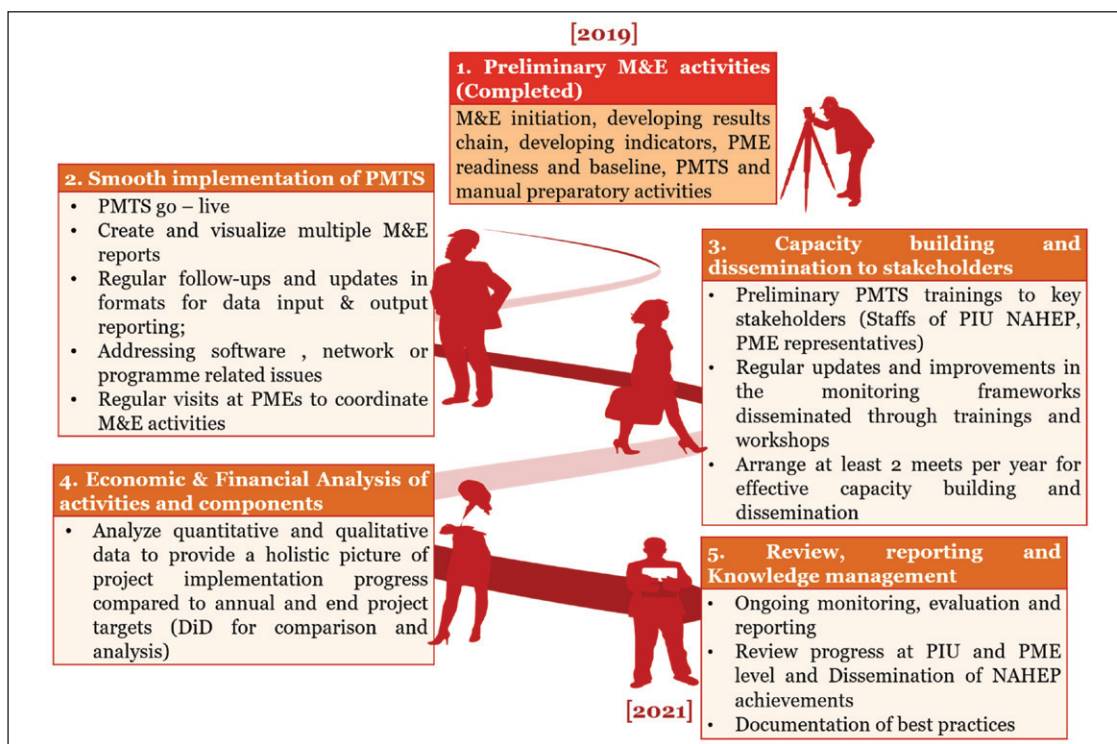
Initial project phase, preferably in the initial 6 months, an as-is study and desk research will be carried out for the identification of measurable M&E indicators and development of PMTS to carry on M&E activities throughout the project.

In detail, the preliminary M&E activities of NAHEP include development of results chain, developing M&E indicators, finalization of PME readiness requirements, finalization of specific baseline data points required for PMTS and M&E framework and other preparatory activities related to PMTS and manual preparation. Going forward, future road map in the form of broad actionable areas, has also been identified for NAHEP M&E systems and it is presented below.

Exhibit: Preliminary M&E activities undertaken by PIU NAHEP



Aforementioned activities, especially development of M&E manual and PMTS will ensure the smoother implementation of upcoming M&E activities of project. Mid-course correction and continuous learning will be ongoing tasks integral to M&E action plan.

Exhibit: Way forward / upcoming key M&E activities of NAHEP


Smooth implementation of PMTS, Capacity building and PMTS dissemination to stakeholders, economic and financial analysis of activities and review, reporting and knowledge management are the key upcoming M&E activities, planned for next 2-3 years. The actionable areas identified in the exhibit above would require a concerted effort from all the stakeholders involved in strategy formulation, consultation and implementation.

For an effective implementation of identified actionable areas, role of PMEs would be critical under the necessary strategic direction and handholding by PIU. Exhaustive guidelines and checklists have been prepared for PME and are presented herewith.

7.2. M&E guidelines and checklist for PMEs

- Set up M&E unit (PME Cell) with identified resources as per readiness requirements (*already captured in detail in chapter I of manual*);
- PME Cells need to identify the output and outcome variables, aligned with PAD document (including the environmental and social variables) and finalize a work plan. The approved proposals will form the basis to start the operation;
- PME Cells need to assist PIU for need based data collection, whenever required;
- PME Cells need to monitor inputs, outputs and outcomes, generate necessary reports and share observations with PIU from the very start of the operations. It is assumed that PME cells

will readily familiarize and align themselves with the Project monitoring and tracking system (PMTS).

- Environmental and Social indicators will also be tracked as per structured proforma and required periodicity.
- PME Cells at AU need to act as a decentralized Project Implementation Unit and adhere to the following technical guidelines for effective implementation:
 - Align the outcome variables of the AU with the broad outcome indicators in the PMTS (Based on project as a whole).
 - Create an assigned project specific baseline with the appropriate sample design covering control areas and intended project areas; select the control areas that are comparable.
 - Conduct selected case studies for assisting the project evaluation and learning as indicated in the manual.
 - Follow up surveys need to collect the indicators of impact (income, employment generation, improvement in QS University rank, and rise in contribution of agri education to agri GDP etc.) as well as information on project activities and project inputs.
 - Prepare a plan for training programmes and capacity building of PME Cell staffs and other AU stakeholders.
 - Assist the PIU during review mission as indicated in the manual.
 - Experience sharing and exposure visits with other AUs and create a learning environment

Through this manual, significant efforts have been made to provide AUs necessary support for the effective M&E implementation of NAHEP. The focus of manual has moved from meeting compliance needs towards creating an impact on project beneficiaries with gender inclusivity and developing an agro based knowledge ecosystem with mutual learnings and favorable policy environment.

As we understand that the M&E is a dynamic concept and it evolves continuously with day to day technological advances viz. digital innovations, Artificial Intelligence, impact of social media, big data analytics etc. Hence, it is imperative for all the stakeholders to recognize these changes and equip themselves accordingly.

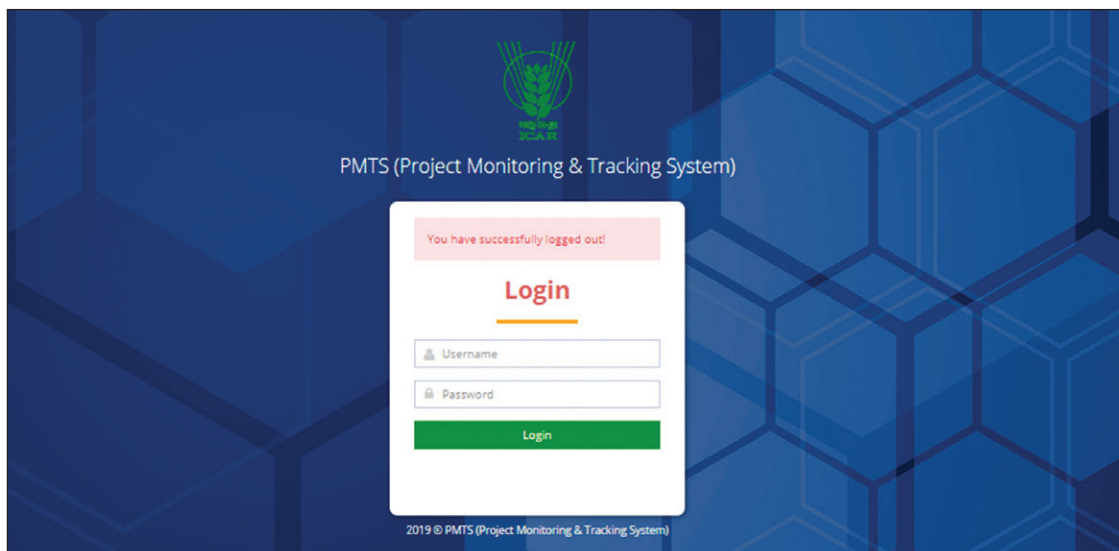
REFERENCES

- Alex, G., and D. Byerlee. 2000. Monitoring and Evaluation for AKIS Projects. Framework and Options. Agricultural Knowledge and Information System (AKIS). Good Practice Note. Washington, DC: World Bank.
- Kusek, J. and R. Rist. 2004. Ten Steps to a Result-Based Monitoring and Evaluation System: A handbook for Development Practitioners. Washington, DC: World Bank.
- UNFPA. 2004. Programme Managers Planning, Monitoring and Evaluation Tool Kit.
- The World Bank. 2014. India: Accelerating Agricultural Productivity Growth (<https://openknowledge.worldbank.org/handle/10986/18736>) (Accessed on 14 December 2018).
- IFAD. 2003. A Guide for Project M&E: Managing Impact for Rural Development. Office of Evaluation Studies, IFAD (OE). <http://eldis.org/document/A30188>. (Accessed on 17 December 2018).
- The World Bank. 2005. Agriculture and Rural Development. Discussion Paper No. 20.
- UNDP. 1997. Result Oriented Monitoring and Evaluation: A Handbook for Programme Managers. Office of Evaluation and strategic Planning, New York.
- The World Bank. 2004. Monitoring and Evaluation – Some Tools, Methods and Approaches.
- PIU-NAIP, ICAR. 2007. Monitoring and Evaluation Manual, NAIP, New Delhi.
- Government of India. 2017. Pocket Book of Agricultural Statistics, 2017. Directorate of Economics and Statistics, Ministry of Agriculture and Farmers Welfare, GoI, New Delhi.
- Chand, R., P. Kumar, and S. Kumar. 2011. "Total Factor Productivity and Contribution of Research Investment to Agricultural Growth in India," Policy Paper 25, National Centre for Agricultural Economics and Policy Research (NCAP), New Delhi, India.
- Evenson, R.E., and K.O. Fuglie. 2010. "Technology Capital: The Price of Admission to the Growth Club." Journal of Productivity Analysis 33: 173–90.
- NAARM. 2010. Assessment of Future Human Capital Requirements in Agriculture and Allied Sector. Hyderabad. <http://krishikosh.egranth.ac.in/bitstream/1/2058759/1/NAARM%2032.pdf>. (Accessed on 18 December 2018).
- The World Bank. 2010. Challenges in Monitoring and Evaluation: An Opportunity to Institutionalize M&E Systems. Fifth Conference of the Latin America and the Caribbean Monitoring and Evaluation (M&E) Network. Washington, D.C.
- The World Bank. 2012. Designing a Results Framework for Achieving the Results: A How-To Guide. Washington, D.C.
- The Presidency. 2007. Policy Framework for the Government-wide Monitoring and Evaluation System. Pretoria, SA.
- USAID. 2018. Leaning Lab. <https://usaidlearninglab.org/qrg/me-learning>. (Accessed on 22 December 2018).
- Rogers, Patricia. 2014. Overview of Impact Evaluation, Methodological Brief- Impact Evaluation,

- No.1. UNICEF. https://www.unicef-irc.org/publications/pdf/brief_1_overview_eng.pdf. (Accessed on 27 December 2018).
- Rogers, Patricia. 2014. Theory of Change, Methodological Brief- Theory of Change, No.2. UNICEF. https://www.unicef-irc.org/publications/pdf/brief_2_theoryofchange_eng.pdf. (Accessed on 27 December 2018).
 - The World Bank. 2013. Results Framework and M&E Guidance Note. Washington, D.C.
 - Hewlett. No date. Evaluation Principles and Practice: <https://hewlett.org/wp-content/uploads/2016/08/EvaluationPrinciples-FINAL.pdf>. (Accessed on 29 December 2018).
 - The Presidency. 2007. Policy Framework for the Government-wide Monitoring and Evaluation System. Pretoria, SA.
 - Kusek, J.Z. and R.C. Rist. 2004. Ten Steps to a Result Based Monitoring and Evaluation System; A Handbook for the Development Practitioners. The World Bank, Washington, D.C.
 - Bruns, Barbara. 2008. Demystifying the Results Agenda and Linking M&E: What You Need to Know. Cairo. <http://pubdocs.worldbank.org/en/903151526315035485/English-Demystifying-the-ResultsAgenda-Bruns-Cairo.pdf>. (Accessed on 31 December 2018).
 - UNWFP. No date. Monitoring and Evaluation Guidelines: What is RBM Oriented M&E? <http://unpan1.un.org/intradoc/groups/public/documents/un/unpan032491.pdf> (Accessed on 31 December 2018).
 - Guijt, I. 2008. Seeking Surprise: Rethinking Monitoring for Collective Learning in Rural Resource Management. Wageningen, Netherlands: Wageningen University. Retrieved from <http://edepot.wur.nl/139860>. (Accessed on 3 January 2019).
 - Riege, A. and Lindsay, N. 2006. Knowledge management in the public sector: stakeholder partnerships in the public policy development. *Journal of Knowledge Management*, 10 (3): 24-39.
 - Woodhill, J. 2006. M&E as Learning: Rethinking the dominant paradigm, in *World Association of Soil and Water Conservation (ed.), Monitoring and Evaluation of Soil Conservation and Watershed Development*.
 - Ramalingam, Ben (2005). *Implementing Knowledge Strategies: Lessons from International Development Agencies*. Working paper 244. London: ODI.
 - Talisayon, S.D. 2009. *Monitoring and Evaluation in Knowledge Management for Development*. IKM Working Paper No. 3. European Association of Development Research and Training Institutes, Bonn, Germany.
 - European Commission. 2017. *Introduction to Monitoring and Evaluation using Logical Framework Approach*. Umhlaba Development Services, Johansberg, SA.
 - Twersky, F. and Lindblom, K. 2012. *Evaluation Principles and Practices*. The William and Flora Hewlett Foundation.
 - The World Bank. 2017. *Project Appraisal Document (PAD), National Agricultural Higher Education Project (NAHEP) of India*. Agriculture Global Practice for the South Asia Region.
 - ICAR. 2016. *Project Implementation Plan (PIP), National Agricultural Higher Education Project (NAHEP)*, Project Implementation Unit, Education Division, ICAR, Gol, New Delhi.

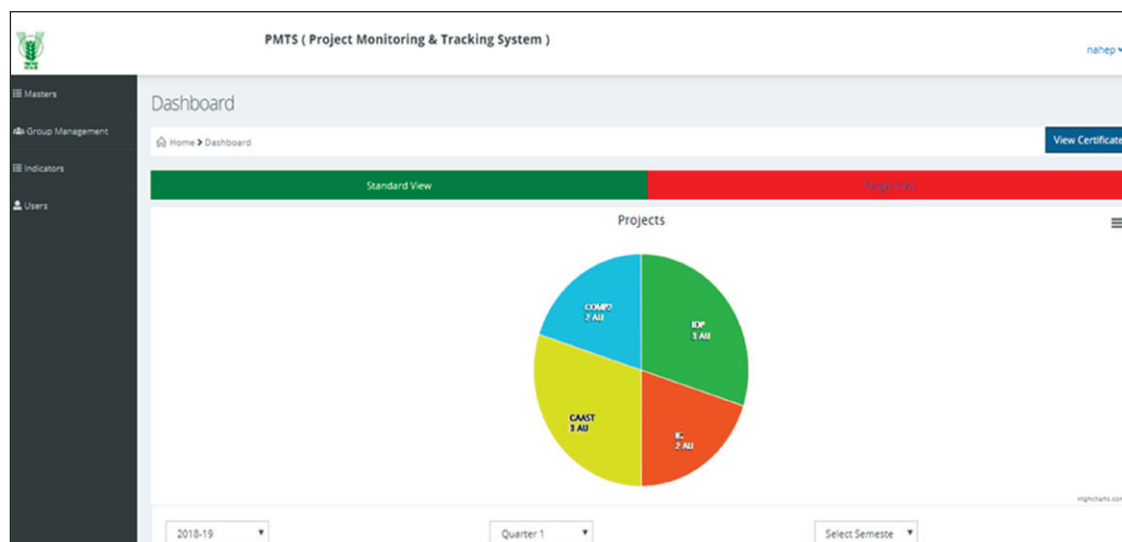
PMTS DISPLAY SCREENS

A.1. User login page

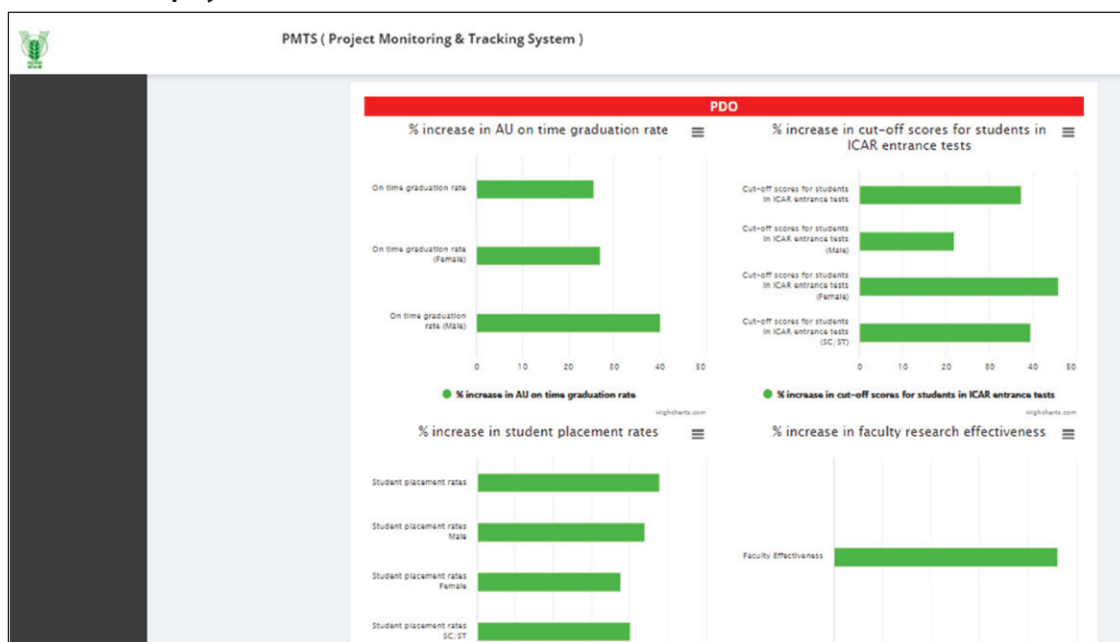


A.2. Dashboard display of Super admin and Management admin

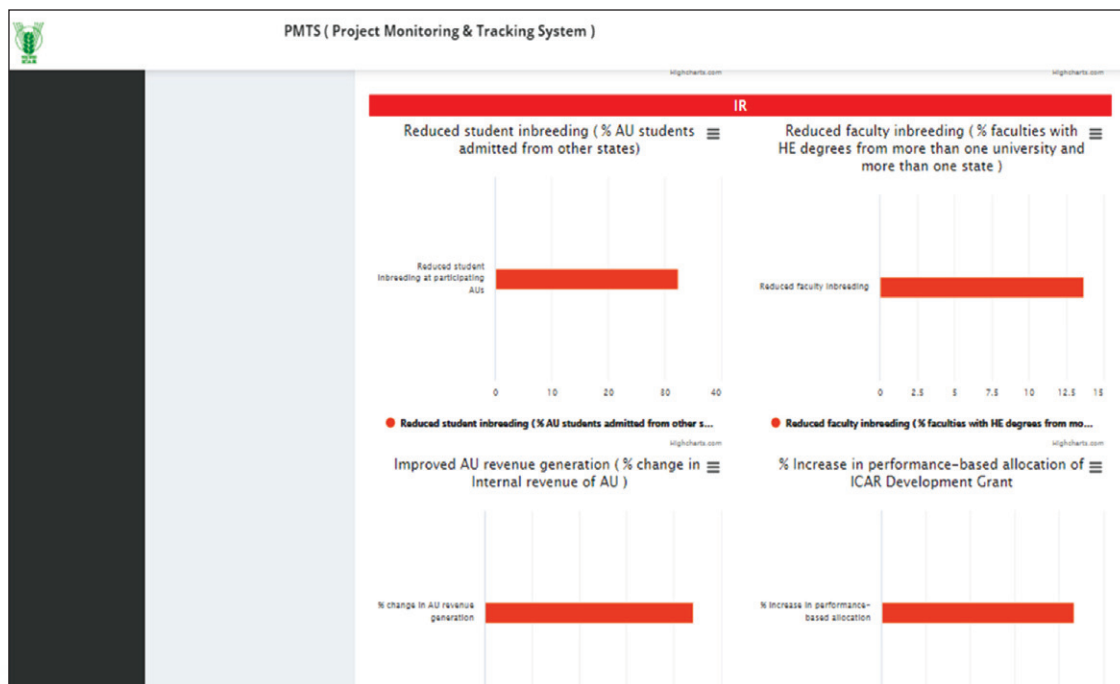
Dashboard super admin and management admin with standard and target view options



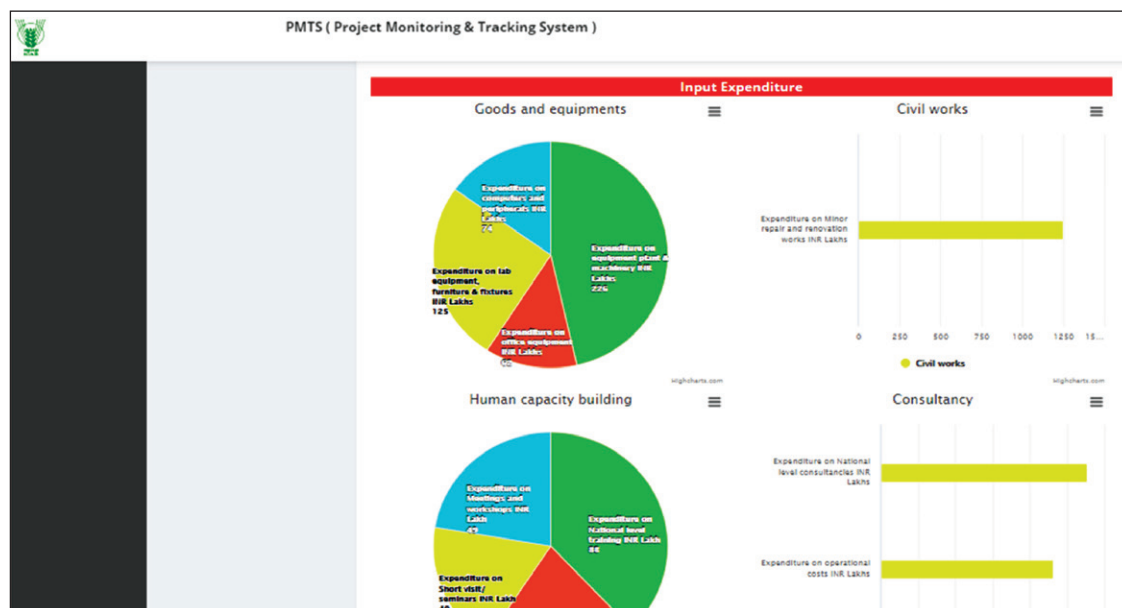
Dashboard display for PDO indicators



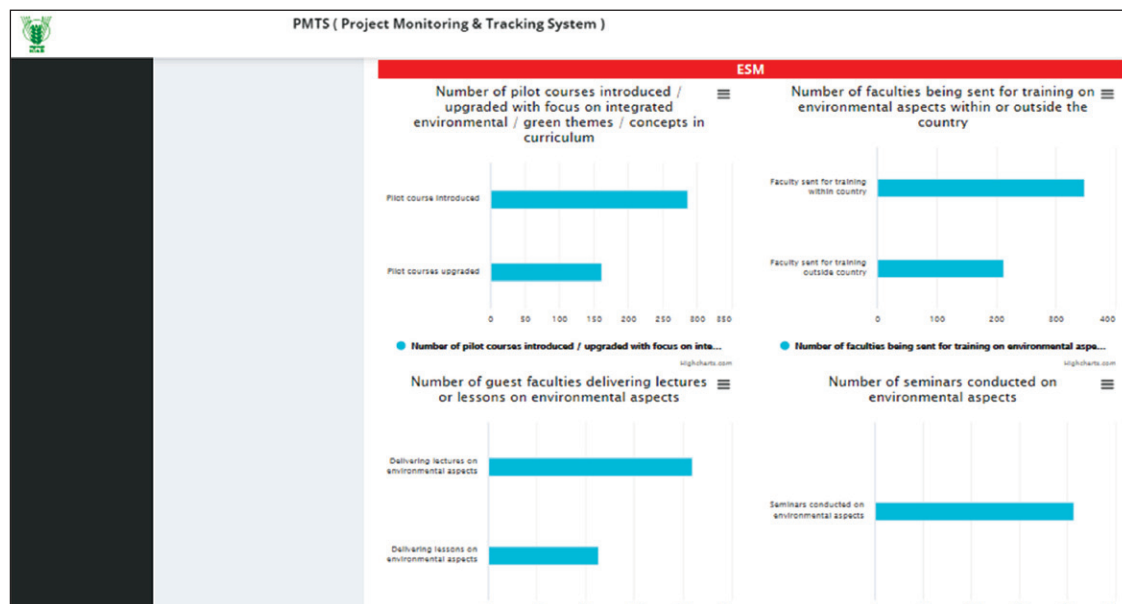
Dashboard display for IR indicators



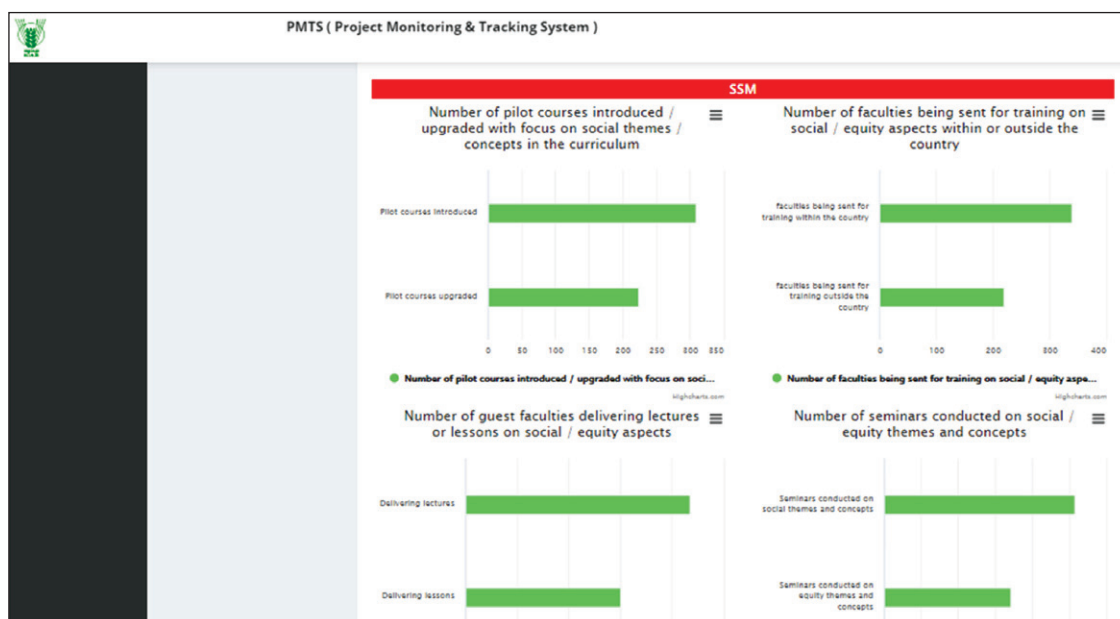
Dashboard display for Input expenditures



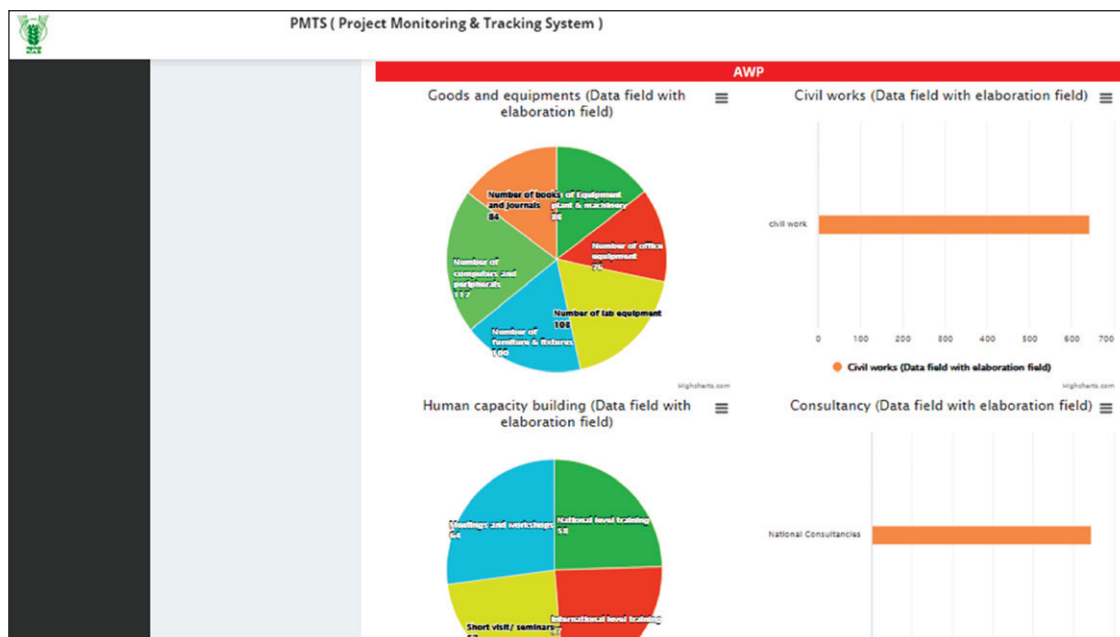
Dashboard display for Environmental safeguard measures



Dashboard display for social safeguard measures



Dashboard display for social safeguard measures



A.3. Input entry system in PMTS

Input entry system for IDP users (Screen -1)

PMTS (Project Monitoring & Tracking System)
[ACHARYA N G RANGA AGRICULTURAL UNIVERSITY]

Indicators List

Indicator Category > PDO

Search:

Id	Indicator Title	Indicator Description	Baseline	Frequency	Calculation type and session type	Indicator category	Action
1	% increase in AU on time graduation rate	Increase in the percentage of UG students at participating Aus that graduate on time (defined as four years)	0%	Annual (31st May)	1-1	PDO	<input checked="" type="checkbox"/>
2	% increase in AU on time graduation rate (Female)	Breakdown by gender	0%	Annual (31st May)	1-1	PDO	<input checked="" type="checkbox"/>
3	% increase in AU on time graduation rate (Male)	Breakdown by gender	0%	Annual (31st May)	1-1	PDO	<input checked="" type="checkbox"/>
4	% increase in cut-off scores for students in ICAR entrance tests	Higher cut-off scores for students in ICAR entrance tests at participating Aus / Percent increase in Cut-off percent (Cut off score / Maximum possible score) in ICAR UG entrance tests	0%	Annual (31st May)	1-1	PDO	<input checked="" type="checkbox"/>
5	% increase in cut-off scores for students in ICAR entrance tests (Female)	Breakdown by gender	0%	Annual (31st May)	1-1	PDO	<input checked="" type="checkbox"/>
6	% increase in cut-off scores for students in ICAR entrance tests (Male)	Breakdown by gender	0%	Annual (31st May)	1-1	PDO	<input checked="" type="checkbox"/>
7	% increase in cut-off scores for students in ICAR entrance tests (SC/ST)	Breakdown by SC/ST	0%	Annual (31st May)	1-1	PDO	<input checked="" type="checkbox"/>
8	% increase in student placement rates	% UG students placed out of total graduating UG class strength	0%	Annual (31st May)	1-1	PDO	<input checked="" type="checkbox"/>

Input entry system for IDP users (Screen -2)

PMTS (Project Monitoring & Tracking System)
[ACHARYA N G RANGA AGRICULTURAL UNIVERSITY]

Indicator Category > PDO

% increase in AU on time graduation rate

% increase in AU on time graduation rate 2018-1 ▼

Fill the number of final year UG students graduated in current year

Fill the number of final year UG students appeared in exam in current year

Determine the percentage of final year UG students graduated in current year.

Determine The Percentage Increase Over Last Year

Input entry system for CAAST users (Screen -1)

PMTS (Project Monitoring & Tracking System)
[Agriculture University, Kota]

Indicators List

Indicator Category > IR

Search:

ID	Indicator Title	Indicator Description	Baseline	Frequency	Calculation type and session type	Indicator category	Action
22	Number of industry-sponsored projects and positions in cutting-edge areas of agriscience	Measured in number	0	Semi annual (May and nov)	5 - 2	IR	✎
32	Number of faculty exchange programmes (both national and international) initiated by AU	Number of faculty exchange programmes (both national and international) initiated by AU	9	Quarterly	3 - 3	IR	✎
33	Number of student exchange programmes (both national and international) initiated by AU	Number of student exchange programmes (both national and international) initiated by AU	12	Quarterly	3 - 3	IR	✎
35	Number of technologies transferred to industry / private sector / national / international organisations	Measured in number	13	Quarterly	3 - 3	IR	✎
36	% Increase in JRF / SRF / ARS	Measured in % increase of number of students selected in JRF / SRF / ARS	0%	Annual (31st May)	2 - 1	IR	✎
37	% Increase in number of students who were admitted in foreign universities	Measured in % increase of number of students admitted in foreign universities	0%	Annual (31st May)	2 - 1	IR	✎
38	% Increase in PG student placements	% PG students placed out of total graduating PG class strength	0%	Annual (31st May)	1 - 1	IR	✎
39	% Increase in PG student placements (male)	% PG students placed out of total graduating PG class strength (male)	0%	Annual (31st May)	1 - 1	IR	✎
40	% Increase in PG student placements (female)	% PG students placed out of total graduating PG class strength (female)	0%	Annual (31st May)	1 - 1	IR	✎

A.4. Output reporting system in PMTS

PMTS (Project Monitoring & Tracking System)

nahep

Reports

Home > Reports

View Certificate

Project * University Year * Frequency *

Select Project 2019-20 Annual

Indicator View Report

All Indicator



PROJECT IMPLEMENTATION UNIT – NAHEP

Indian Council of Agricultural Research

Krishi Anusandhan Bhawan II

Pusa Campus, New Delhi (India)

<https://nahep.icar.gov.in/>