Terms of Reference

A Study on Assessment of Human Resource Requirements in Agriculture & Allied Sectors in India

NAHEP
(National Agricultural Higher Education Project): An ICAR – WB Project

1. Background

NAHEP is implemented by ICAR (GoI) and World Bank with the total project cost of USD 165 Million[1], having 50:50 cost sharing between GoI and World Bank. It 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**. 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 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.**

IDP financed activities majorly focus on **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 and collaborations to enhance employability of agriculture graduate as well as to help AUs to generate their own resources.**
CAAST aims to support interdisciplinary advanced Centres for innovative approaches to teaching, research, extension and capacity building in the specialized areas of agricultural science for holistic development. It encompasses a number of thematic areas such as **Conservation Agriculture, Precision farming / Farm Mechanization, Secondary Agriculture, Specialty agriculture, Renewable Energy Sources, Integrated Farming System (IFS), Agriculture Market Intelligence, Good Agricultural Practices, Hitech / Protected Cultivation, Climate Resilient Agriculture, Food Safety, Big Data Analytics and Genomics-assisted Breeding**.

IG projects have been awarded to select participating AUs to attain accreditation. The key activities included under this component were **national trainings for faculty upgradation, master and Ph.D. sandwich programs, alumni linkages, industry seminars and professional workshops, e- enabled learning activities** etc.

Component 2 aims to support ICAR to carry out **institutional reforms** within ICAR and enhance effectiveness in coordinating, guiding and managing agricultural higher education in the country.

[1]INR 1100 Cr approximately at 1USD=INR 64.47 as on June 1, 2017, Project Appraisal Document (PAD) NAHEP

ICAR has time to time assessed the future human capital requirements in agriculture and allied sectors in country so as to put development of agricultural human capacity development on a rational footing. The latest assessment was made in year 2011 with a study titled "**Assessment of Future Human Capital Requirements in Agriculture and Allied Sectors" conducted by ICAR NAARM, Hyderabad and IAMR, New Delhi.**

In order to assess and understand the progresses made in the field from the point of time the aforementioned study was undertaken and to look at possible way ahead to determine the current, latent and future potential requirements of human resources across agri and allied value chain in India along with a holistic demand- supply estimation, a study under NAHEP has been proposed. This study will be based on evolving sectoral trends in last few years.

As mentioned earlier, ICAR has been contributing significantly in meeting the demand of future ready agri graduates and skilled human resources through improving the quality and relevance of Agricultural higher education in country. Looking at the intended outcomes of NAHEP, the much-needed impetus has been laid to conduct such study under the ambit of ICAR NAHEP. This study will further aid in the ongoing **Monitoring and Evaluation (M&E) efforts of NAHEP** through possible alignment of project activities meeting HR demand potentials of sub-sectors, related M&E advisories & orienting impact assessment study and bringing more directional efforts in overall implementation of NAHEP, leading to achievement of key project outcomes such as **improved student placement rates & entrepreneurship, enhanced industry sponsored projects in cutting edge areas etc.**

2. Broad Objective of study

To provide a holistic human resource market outlook for Agri and allied Sector in India for **next 20 years** that could serve as basis for developing strategy and action plans - to address key human resource challenges and create potential employment opportunities.

3. Scope of work

The scope of work for the study has been developed in a way that it suitably addresses the broad Objective i.e. assessment of human resource market for agri and allied sector in India for **next 20 years i.e. upto 2040**. It would encompass the following points:

3.a) As is assessment: Industry overview and human resource market trends

- Geographic, Economic overview and Agribusiness Industry trends
- Understanding Agri and allied value chain: Key trends and challenges
- Employment profile and labor market patterns across sub- sectors in agri and allied sectors – Employment, Geographical distribution, Demographic & workforce characteristics (public and private sector, gender, education attainment, occupation etc.)
- Regulatory environment enabling employment opportunities in sector – Key Institutions, Acts and Policy level initiatives
- Assessment of need gaps in the sector and HR needs in the sector

3.b) Study the potential of employment needs and preferences towards Agri and allied sector

- Mapping of each sub-sector / occupations influencing the Human Resource demand in Agribusiness sector (Both public and private sector)
- Outline the key geographical clusters/ where employment generation in Agribusiness sector will play a significant role
- Discipline wise / sub- sector wise potential of employment in Agri and allied sector based on existing and future investments
- Study the preferences of students regarding their career choices and factors influencing on decisions of career paths in agriculture and allied sciences
- Study the opinion of students and teaching faculty regarding relevancy in the present curriculum in imparting professional and technical skills and curriculum delivery mechanisms and eliciting their suggestions to further improve it

3.c)Ascertain the human resource requirement forecast over a period of next 20 years

- Forecast to be developed keeping two scenarios – Conservative (e.g. considering current trends) and Expansionary Views (e.g. any policy/ regulatory shift, evolving technology and automation trends, enabling positive implications on Agribusiness sector)
- Human resource demand forecast – sub-sector wise, discipline wise, organized and unorganized, education and experience levels, geography, key occupation/ Job roles
- Human resource supply forecast - education and experience levels
- Hiring requirement forecast for Indian Agribusiness sector – Sub- sector specific and overall

3.d) Strategic roadmap and action plan

- Identify and prioritize the top 3 challenges/ problem areas emerged from findings of study
- Conduct key stakeholder consultation and expert interactions for preparing the roadmap to address the key challenges/ problem areas
- Develop short, medium and long-term action plan outlining the approach to implement the roadmap

4. Proposed methodology

The proposed study broadly aims to discuss features of modern higher agriculture education programs in response to agriculture job market developments and demands. To meet the above objectives, quantitative and qualitative data will be collected through nationwide surveys and by organizing Focus Group Discussions with various stakeholders. The issues relating to employment, skills needed for employment in public and private sectors, and educational strategies to develop appropriate human resources, etc. will be addressed through this approach. The survey responses will be received from all agricultural universities, employees with degree in agricultural sciences, alumni, industrial organizations employing agricultural graduates.

The survey data in conjunction with secondary data will be collected to be used to forecast future human capital requirements for next 20 years i.e. 2040 and to draw strategic plan for future educational requirements. A system dynamics model is planned to develop for forecasting supply-demand scenario of agricultural human resources requirement in different sectors viz. government, private, academic, financial institutes, non-governmental organizations, self-employment, and others (non-agriculture) in India. The model results will also be compared with the actual values to validate the efficacy and relevance of model

simulation to depict the reality. Apart from this, reviews will be done to understand the profile of Agriculture and Allied sectors on the growth of agriculture and allied sectors in India for the last 10 years such as crops, horticulture, forestry, veterinary, fishery, dairy, agri- engineering and biotechnology etc. Sector-wise Demand-Supply Reports will be prepared through Secondary data on supply and demand of graduates, employment pattern, existing stock, distribution and demand etc. Besides the survey and secondary information, Individual Experts Surveys will be carried out Supply Projections will be made based on the outturn data available for various years in various universities. Supply projections and demand-supply gap estimates will be calculated based on the growth in the supply. Various forecasting methods and their applications in agriculture sector, and details specific methods will be decided later amongst members of the current project.

The ICAR has time to time assessed the future human capital requirements in agriculture and allied sciences in advance so as to put development of agricultural human capacity development on a rational footing (last assessment made in 2011 under NAIP by NAARM, Hyderabad and IAMR, New Delhi in 08 sectors. Forecasts required in 2020 were made with a mix of exploratory and normative forecast methods through a modified Parnes's approach (Parnes 1962). Although, choice of method was based on the data availability in different sub- sectors. Demand forecasts were made in terms of stock, i.e. the number of economically active personnel. Supply stock was estimated from the annual outturn of graduates from academic institutions.

For the study purpose agriculture and allied sectors will cover all the streams covered by ICAR through its Agriculture Education Division. Data will be collected from Final year UG students, PG, Doctoral students & Diploma holders from State Agriculture Universities along with their associated colleges, Deemed Universities, Central Agriculture Universities, Central Universities with Agriculture faculty, private colleges, employees with degree in agricultural sciences, alumni, industrial organizations and employing agricultural graduates, secondary school graduates etc.

5. Duration of the assignment

The proposed study is for a period of **12 months**. The proposed duration of the contract with Technical support agency / partner will be **from January 2021.**

6. Reporting Requirements

- Technical support Agency (TSA) / Partner will report to the National Director (ND), NAHEP
- In carrying out the assignment, the TSA is expected to consult with and work closely with PIU, AUs and key relevant stakeholders of NAHEP, ICAR – AED, ICAR institutions, policymakers and industry representatives.
- TSA will submit an inception report within 1 month of contracting, which will encompass the study methodology, research framework and key implementation activities planned to be undertaken by them with the work plan for the next 11 months. The TSA will submit a mid-term and a project completion report at the time of closure of the study.

7. Procedure for review of progress and final report

The reports received from the Technical Support Agency (TSA) / Partner will be reviewed by a Committee consisting of the National Director, NAHEP or his representative, National Coordinator (s) to be nominated by the ND, NAHEP, Deputy Director (Finance) and Deputy Secretary (Procurement), PIU- NAHEP.

The Technical Support Agency (TSA) / Partner will attend the meetings called by NAHEP from time to time to monitor the progress.

The performance of the TSA will be monitored by a committee chaired by the National Director or his representative. The committee will review the functioning of TSA through **review meetings**, whenever required and the **progress on preparation of HR report** as required quarterly.

8. List of key positions whose CVs and experience would be evaluated

Preferably a Consulting firm of national and international repute with prior experience in handling **multilateral assignments with ICAR**

Sl	Proposed experts	Required Experience and Qualifications	Exp. In Yrs
1.	**Team Leader (1)**	• S/He should be an MBA in Agribusiness Management with graduation in Agriculture/ allied fields with professional experience of more than 20 years • Preferable with proven capabilities to execute this assignment as a Team Leader • Should have been part of executing high value assignments in agri and allied sectors through-out his/her career • Should have in-depth understanding of the Indian agribusiness sector, trends, regulatory and policy environment enabling employment opportunities • Must have worked with multi-national organization/s in agri and allied sector at decision making position for at least 10 years in his/her career	20
2.	**Agri-Business Expert (1)**	• S/He should be an MBA in Agribusiness Management / Economics with graduation in Agriculture/ allied fields with professional experience of more than 10 years. • The expert should have experience in managing at least three projects with focus in Agri-marketing, food processing, creation of Agri market infrastructure, Institution building, community mobilization, market linkage, program management and monitoring, project evaluation/appraisal and investment facilitation/mobilization. • Should also have worked with ICAR - AU system for at least one Agriculture/Horticulture project with focus on value chain enablement and strengthening	10

		• Should have detailed understanding of agribusiness industry, trends, job market and employment opportunities in the sector	
3.	**Human Resource Expert (1)**	• Master's in business administration, preferably in Human Resource Management • Should have minimum 10 years' experience in HR mapping and requirement assessment, talent management, competency Mapping, organizational Restructuring, manpower planning, performance management, employee engagement and job evaluation	10
4.	**Agri-Economist (1)**	• Ph.D. in Economics / Agricultural economics • Preferable experience in supply-demand analysis, forecasting and Case-control • Should have fair understanding of the agricultural higher education, ICAR- AU system and Indian agribusiness	10
5.	**Survey Specialist (1)**	• Master's in business administration /Agribusiness Mgmt. • Experience in Agri industry market surveys, survey designing, quantitative and qualitative market research methodologies and should have administered and conducted CAPI based survey during his/her career	5