

REVIEW REPORT

Submitted by
Achievements Review Committee
of NERIWALM
for the period from
01/04/2017 31/03/2022



North Eastern Regional Institute of Water and Land Management
Department of Water Resources, River Development & Ganga Rejuvenation
Ministry of Jal Shakti, Govt. of India
Dolabari, Tezpur, Assam

Review Report

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Foreword from Chairman

NERIWALM was established under the aegis of Ministry of DoNER, Govt. of India in 1989 to promote advancement of science and acquisition of scientific knowledge for capacity building in water and land management for irrigation and agriculture. Since 2012, the Institute has been placed under the administrative control of Jal Shakti Ministry, Govt. of India.

The 2nd ARC is mandated to assess and review the achievements of NERIWALM during 2017 to 2022 leading to executable recommendations for the Institute as per framework of National Standard for Civil Service Training Institute (NSCSTI) and to transform the Institute into a Centre of Excellence in line with Vision 2047 of Jal Shakti Ministry.

Accordingly, 2nd ARC embarked on a visit of NERIWALM during July 2 – 3, 2023 for acquiring first-hand perception on the Strengths, Weaknesses, Opportunities of NERIWALM to chart out the roadmap for the way forward to accomplish the professed goal.

In course of the visit, ARC could avail comprehensive frank interactions with all key stakeholders – faculty, staff, students, researchers, government officials, farmers etc. to elicit their feedback and suggestions for progression of NERIWALM. These vibrant interactions immensely benefited ARC to objectively chart out the road map ahead for NERIWALM on R&D initiatives to problems of floods, erosion, insufficient irrigation facilities subdued with low crop water use efficiency and further inhibited by outmoded agriculture farming practices unsuited with global warming.

In this Report, ARC strived to present an objective assessment of NERIWALM to articulate recommendations for its envisioned upliftment to a Centre of Excellence equipped with State-of-the-Art research infrastructure and competent scientific manpower. Such a transformed Centre of Excellence would be able to meaningfully contribute towards developing sustainable solution to the problems of flood, erosion and irrigated agriculture in NER.

In fine, we earnestly trust that implementation of our recommendations will pave the way for uplifting NERIWALM into a Centre of Excellence, so that it can distinctively contribute towards economic growth of relatively backward NE Region through innovative R&D and capacity building on cutting edge technology.

Date: 19th September, 2023


Professor Nayan Sharma, Ph.D.

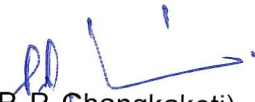
Certificate from the Committee

This is to certify that the Achievement Review Committee of North Eastern Regional Institute of Water and Land Management (NERIWALM), constituted vide order no. A-50013/136/2017-E-II dtd. 01/06/2023, under the Chairmanship of Prof Nayan Sharma, Former Professor & Head, Department of Water Resource Engineering, IIT Roorkee has visited NERIWALM on 03/07/2023 and reviewed its activities and state of affairs as a national institute. The committee also interacted with faculty, staff, trainees and other stakeholders including district authority, irrigation, agriculture departments of Assam, KVK Sonitpur, farmers and students of its post-graduate and PhD programme. The committee reviewed the institute as per the Terms of References as notified by the DoWR, RD &GR.


The committee made the records of all the achievements accomplished by the institute from 1st April 2017 to 31st March 2022 and also analysed the impediments faced by it. The committee made executable recommendations in four sub-heads, i.e. administrative, academic, infrastructure and others for developing the into a Centre of Excellence under the framework of National Standard for Civil Service Training Institute recommended by Capacity Building Commission of India.

The committee made all the records in this report through consultation and unanimous resolutions in the greater interest of the institute, region and the nation at large.


(Pradip K Bora)
Director, NERIWALM &
Member-Secretary, ARC


(P. P. Changkakoti)
Member, ARC


(Man Singh)
Member, ARC


(Nayan Sharma)
Chairman, ARC

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EXECUTIVE SUMMARY

As per the Clause-X of the MoA of NERIWALM, an Achievement Review Committee (ARC) is to be constituted by the President of Governing Body of NERIWALM once in 5 years to review the achievement of the institute. The 1st ARC constituted under the Chairmanship of Professor Dulal Ch. Goswami, Former Professor of Environmental Sciences, Gauhati University, Guwahati, was formed in July 2018, which reviewed the performance and achievements of the institute from 1st April 2012 to 31st March 2017 and submitted its report on 10/10/2018. The Executive Council of NERIWALM in its 5th meeting formed a sub-committee to give the executable recommendations of the 1st ARC report. The action taken report on the executable recommendations of the sub-committee has been submitted by the Director, NERIWALM, which is included in the Chapter-2 of this report.

The 2nd Achievement Review Committee for NERIWALM has been constituted by the President, Governing Body of NERIWALM under the Chairmanship of Prof. Nayan Sharma, Former Professor & Head of Water Resource Engineering, IIT, Roorkee vide order no. A-50013/136/2017-E-II dtd. 01/06/2023. The 2nd ARC was given the mandate to review the performance of the institute for the period from 1st April 2017 to 31st March 2022. The committee visited NERIWALM on 03/07/2023 and held discussion with the faculty, employees, students and other stakeholders (farmers and in-plant trainees). Representative from the department of Agriculture, Irrigation, Soil Conservation, KVK Sonitpur and district administration took part in the meeting and presented their views about the activities of the institute.

The Director, NERIWALM who is also the Member-Secretary of the ARC, presented the achievements of the institute for the period. The Chairman and other members of the ARC appreciated the achievements made by the institute during the period. The objective wise achievements during the period are recorded in the Chapter-3. The committee analysed the achievements and the roadmap for the institute as per the Terms of Reference notified by the DoWR, RD & GR.

One of the Terms of Reference (ToR-C) entrusted the ARC to recommend to develop the institute as per National Standard for Civil Services Training Institute (NSCSTI) framework. The Capacity Building Commission of Govt. of India has already carried out the provisional assessment of NERIWALM and given its report along with the action points for the institute under eight pillars of NSCSTI. The ARC analysed the action points as suggested by CBC and took into consideration for suitable actions on few of the observations which are recorded in Chapter-3 under ToR-C.

The ARC was also asked to examine the state of affairs of the institute and to identify the impediments which might have stunted its growth. The committee had the interactions with all the faculty and staff and other stakeholders of the institute and recorded few observations where urgent attention of the DoWR, RD & GR was requested. The ARC felt that incompatible pay structure to the faculty, poor promotional avenues for the administrative staff due to non-pyramidal cadre structure, etc. are few of the important issues to be addressed for the health and development of the institute.

The ARC reviewed the curriculum and the topics of trainings and suggested addition of few new topics in order to create an outlook and environment to align with the Vision@2047 of Govt. of India in water sector. A list of new topics is given under ToR-E in the Chapter-3.

The ARC also suggested on the national and international collaboration for two-way knowledge flow such that national and international faculty might be invited to the institute and the faculty of the institute could also be sent for international or national training in the institute of high repute having cutting-edge research. The committee justified and indicated few institutes of international repute for collaboration in research and capacity building activities in Chapter-4. The highpoints of the ARC endorsements pertaining to – i) Collaboration with National and International Institutions, and ii) Road Map and Executable Recommendations are presented in Chapter 4 and Chapter 5, respectively.

Finally, the committee recorded its executable recommendations under four heads i.e. administrative, academic, infrastructure and others so that NERIWALM may have a visible transformation in a short period of time to establish itself as an international institute standing tall on the eight pillars of the NSCSTI framework.

The Capacity Building Commission, Govt. of India has already carried out the provisional assessment of the Institute and has given its report along with the action points for the institute under eight pillars of National Standard Civil Services Training Institute. NERIWALM achieved average score of 78% on the eight pillars viz. *Training Needs Assessment, Faculty Development, Resource Targets, Trainee Support, Digitisation, Collaboration, Training Evaluation, Governance and Operations*, which is higher than the scores achieved by National Water Academy, Pune and Rajiv Gandhi National Ground Water Training & research Institute, Raipur.

CHAPTER-1

INTRODUCTION

North Eastern Regional Institute of Water and Land Management (NERIWALM) was established by the North Eastern Council then under Ministry of DoNER in 1989 as society registered under Society Registration Act 1860. Since 1989 till 31st March, 2012, the Institute was governed by Management Council constituted for the institute by the NEC. The institute was later transferred to the Ministry of Water Resource, River Development and Ganga Rejuvenation (now Ministry of Jal Shakti) w.e.f. 01/04/2012 through a tripartite agreement.

1.1 Objectives of NERIWALM

NERIWALM was established with the following objectives:

- a) To promote advancement of science and acquisition of scientific knowledge to provide instruction and training in all branches of science, both theoretical and applied, particularly in water and land management for irrigation and agriculture.
- b) To offer quality training programme catering to the needs of regional, national and international clientele like in-service professionals (i.e., officers of government departments like irrigation, water resource, agriculture, horticulture, soil conservation, rural development, etc., KVKs) farmers, members of Water Users Associations and students.
- c) To prescribe courses for instruction and training in water and land management for irrigation and agriculture and hold examination and grant certificates, diploma, degree, etc.
- d) To seek affiliation of the said society with universities and other appropriate academic bodies both in India and abroad and to obtain recognition of the said courses conducted at the said society and for the said examination conducted by the Society and degree, diploma, certificates, etc.
- e) To provide consultancy service to the government, local bodies and other organisations in Water and Land Management in Irrigation and Agriculture.
- f) To undertake research and conduct experiments in various aspects of water and land management and to collaborate with other organisations for research and development.
- g) To send within the country and abroad for specialized training in Water and Land Management for Irrigation and Agriculture persons including members of staff of the said society and bear and pay the cost of such training.
- h) To organize outreach activities like training and capacity building of in-service professionals, farmers or members and functionaries of Water users Associations

(WUAs) with a view to enhancing their technological and managerial capabilities and ensuring their active and effective participation in the development and management of water distribution network and their jurisdiction.

- i) To set up field centres at key locations to facilitate better coordination with the North Eastern States and support the outreach activities relating to land and water management.
- j) To establish network with non-governmental organisations (NGOs/ private partners (pp) with a view to carrying outreach activities effectively at the grassroot level.
- k) To start, conduct, print, publish and exhibits magazines, periodicals, newspapers, books, pamphlets, or posters that may be considered desirable for the promotion of the objectives of NERIWALM.
- l) To invest and deal with funds of the NERIWALM.

1.2 Management of the Institute

The institute is managed by 3-tier governance. The highest administrative body is the Governing Body. The President of the Governing Body is the Union Minister of Jal Shakti, Government of India and Director, NERIWALM is its Member-Secretary. The Vice Chairman of the Governing Body is the Minister of State, Ministry of Jal Shakti. The Ministers of Agriculture and Water resources/ Irrigation of all eight states are the members of Governing Body. Some key officials of Government of India related to water sector are also members of the Governing Body. The Governing Body meeting is generally convened once a year.

The Executive Council is the second administrative body in the hierarchy. The Chairman of the Executive Council is the Secretary, Department of Water Resources, River Development and Ganga Rejuvenation with Director, NERIWALM as the Member Secretary. The EC meeting normally is to be convened twice a year.

The Technical Advisory Committee is the 3rd body dealing with the technical programmes of the Institute. The Director, NERIWALM is the Chairman of the TAC with Professor In-



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charge of Training is the Member-Secretary. TAC meeting is convened twice a year for preparation of training calendar and mid-term evaluation of the progress of technical activities.

As a registered society, the institute has its own Bye-laws and MoA. As per Para No. X of MoA, an Achievement Review Committee is to be constituted for reviewing the activities of the institute. The Para X- clauses 49-51 read as:

49. There shall be an Achievements Review Committee to be appointed by the President of the Governing Body once in 5 years to assess the performance of NERIWALM. The Achievements Review Committee may co-opt any other experts/ advisers as it may deem necessary.

50. The Achievement Review Committee may also be entrusted by the Executive Council to examine any other specific items and make recommendation hereon.

51. The report of the Achievement Review Committee and its various recommendations shall be placed before the next meeting of the Executive Council for consideration and necessary directions.

1.3 Achievement Review Committee

The 1st Achievement Review Committee evaluated the achievement of NERIWALM for the period from 01/04/2012 to 31/03/2017 and submitted its report. The executive Council of NERIWALM constituted a sub-committee to give executable recommendations from the observations of the Achievement Review Committee. The Director, NERIWALM has submitted the action taken report on the executable recommendations of the 1st Achievement Review Committee and presented before the 2nd Achievement Review Committee constituted to evaluate NERIWALM for the period from 01/04/2017 to 31/03/2022.

The 2nd Achievement Review Committee was constituted under the Chairmanship of Prof. Nayan Sharma, Former Professor & Head, Department of Water Resources Development and Management, IIT Roorkee vide order no. A-50013/136/2017-E-II dtd. 01/06/2023. The ARC is mandated to review NERIWALM as per ToR given in the order and has to submit the report within a period of six months. The order of constitution of ARC with Terms of Reference is enclosed as Annexure-I

The Achievements Review Committee:

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|--|----------|
| 1. Prof. Nayan Sharma, Former Professor & Head
Department of Water Resources Development & Management
IIT, Roorkee | Chairman |
| 2. Prof. Man Singh
Project Director | Member |

Water Technology Centre,
Indian Agricultural Research Institute, New Delhi

- | | |
|--|------------------|
| 3. Er. P. P. Changkakoti | Member |
| Former Secretary,
Department of Water Resources
Govt. of Assam | |
| 4. Director, NERIWALM, Tezpur, Assam | Member-Secretary |

1.4 Terms of Reference of the Committee

The Achievement Review Committee is constituted with the following Terms of Reference

- a. To assess the achievements of NERIWALM vis-à-vis the objectives outlined in the Clause 3 of Memorandum of Association for the period from 01/04/2017 to 31/03/2022.
- b. To review the achievements in other aspects not covered under the objectives in the Clause 3 of Memorandum of Association for the period from 01/04/2017 to 31/03/2022.
- c. To give executable recommendation to develop the institute as per the framework of National Standard for Civil Service Training Institute (NSCSTI) and to transform the institute into a Centre of Excellence.
- d. To identify the factors which facilitated or impeded in the growth of the institute and to give recommendations for amendment.
- e. To examine the domains of operation of the institute and to suggest modification, if required, in view of Vision 2047 of the Ministry of Jal Shakti and the country.

NERIWALM has started M. Tech (Water Resource Management) programme with the approval of Executive Council and Governing Body as a Self-Financed programme from the Academic Year 2019-20. The intake capacity is eighteen. The target group for the programme is primarily in-service engineers of state departments. Two batches have already passed out. The Academic Programme is affiliated to Assam Science and Technology University, Govt. of Assam and recognized by the AICTE

The Ph.D programme has been started from the Academic year 2022-23 with the admission of a research scholar. The common entrance examination is conducted by Assam Science and Technology University for PhD programme.

CHAPTER-2 ACTION TAKEN REPORT

The Institute has submitted the report of the 1st Achievement Committee constituted under the Chairmanship of Prof. Dulal Ch. Goswami, Former Professor, Gauhati University, Guwahati to the 2nd ARC. The 6th meeting of Executive Council also constituted a sub-committee to give the executable recommendations on the report of the 1st Achievement Review Committee. The institute has taken definite and time bound actions on all executable recommendations of the sub-committee.

2.1 Action Taken Report on the Recommendation of 1st meeting of the Sub-Committee of Executive Council constituted to suggest ‘Executable recommendations’ of Achievement Review Committee of NERIWALM held on 6th October 2020.

Agenda No.1/1(A)	Recommendations on Strengthening of Capacity building & Research Efforts
Executable recommendation	The committee suggested to strengthen potentiality of Capacity Building activities of NERIWALM. The committee recommended that NERIWALM being situated in the bank of the Brahmaputra River, it should focus on Water and Land issues and those which directly confront to these aspects namely River Rejuvenation, Irrigated Agriculture/ Horticulture, Water Management in Char Agriculture and Eco-restoration with reference to water quality. The committee suggested to use virtual platform where physical presence is difficult.
Action Taken	<ol style="list-style-type: none"> 1. As the topics suggested by ARC i.e river rejuvenation eco-restoration, char & river bank management fall under the domain of Brahmaputra Board activities at present, to avoid duplication and conflict of interest, NERIWALM is taking up joint training programmes with NEHARI, Brahmaputra Board. 2. Active collaboration has been achieved with various department of states such as WRD, SWC & Basin Development in Meghalaya, Irrigation Departments, Agricultural universities, KVK, ATRI, CWC, CGWB, NIH, etc.
Agenda No.1/1(B)	Recommendations on Upgradation of Laboratories and Advanced Instrumentation for Field Investigations
Executable Recommendation	Due to the pandemic of COVID -19 the trainings may be conducted on-line at present and infrastructure facilities of NEHARI may be explored for use during trainings by NERIWALM as and when required. The committee recommended to constitute a committee for scrutinising the findings of water testing done in NERIWALM laboratory, for which a proposal should be prepared for consideration. It is agreed that the NABL accredited laboratories of CGWB, NIH and CWC may be shared for conducting experiments by NERIWALM also.

Action Taken	The Hon'ble President, Governing Body suggested to develop the newly built laboratory into a NABL accredited laboratory. The construction of the laboratory building is completed and furnishing is in process. NERIWALM has also started documentation for NABL accreditation with the support from the scientist of CGWB, Regional Centre, Guwahati.
Agenda No.1/1(C)	Recommendations on Academic course
Executable Recommendation	The committee appreciated the opening of post graduate academic course, as a long-term training programme, is an ambitious achievement, which shall enhance quality and recognition of the Institute. The course may be continued to improve the quality of the stipulated training and research activities of NERIWALM. The facilities of NEHARI may also be utilised for conducting research programmes of NERIWALM.
Action Taken	<p>a) NERIWALM started M. Tech (Water Resource Management) with intake capacity of 18 students from 2019-20. Two batches have already passed out. The 3rd & 4th batch are new in the role. In the 4th batch, 3 GATE scholars have also joined the programme.</p> <p>b) Ph.D programme with the affiliation to Assam Science and Technology University has been started from the Academic year 2022-23 with the admission of a research scholar. The entrance examination is conducted by Assam Science and Technology University.</p>
Agenda No.1/1(D)	Recommendations on Opening of field centres at each state of the NE region
Executable Recommendation	The committee suggested to strengthen the Tezpur campus first while field centres can be located at NEHARI or any related institute like Horticulture, or approach Assam Agricultural University instead of opening separate field centres in other locations, as it will add to establishment expenditure.
Action Taken	Strengthening, NERIWALM centre is the priority now. Further, due to shortage of manpower new field centres may not be possible at this moment. However, NERIWALM signed MoUs with NEHARI, Assam Agricultural University, Central Agricultural University & Agricultural Technology Application and Research Institute, ICAR to utilise facilities available with them and to collaborate for capacity Building Programmes whenever possible.
Agenda No.1/1(E)	Recommendations on Acquiring of additional land
Executable Recommendation	The committee agreed that the matter may be raised to Deputy Commissioner of Tezpur and Nagaon Districts for allotting desired land suitable for farming and demonstration.
Action Taken	NERIWALM is in touch with the Dy. Commissioner, Sonitpur, for allotment of 10 ha of additional land. Hon'ble Minister of Jal Shakti also asked the DC, Sonitpur to allot land to NERIWALM while

	visiting NERIWALM on 17 th September, 2021 during 3 rd meeting of Governing Body of NERIWALM.
Agenda No. 2/1(A)	Recommendations on Funding Pattern
Executable Recommendation	The Sub Committee of EC suggested that NERIWALM should send a proposal for providing salary of staff from “Non-Scheme Head” for consideration of the Ministry.
Action Taken	NERIWALM has been receiving the GIA from the MoJS under establishment expenditure as a non-Scheme component since October, 2021.
Agenda No. 2/1(B)	Recommendations on Recruitment rules
Executable Recommendation	The Sub-Committee recommended that if no response comes even after two times of advertisements, the deputation posts should be filled on contractual basis from eligible retired officers/ experts of relevant field. The salary package should be extended as prescribed by Govt. of India rules as applicable for re-employment of retired employees. The maximum age for such contractual appointments may be kept at 65 years usually and in exceptional cases more than 65 but not beyond 68 years, if found to be medically fit. This arrangement may be continued till the officers of the feeder category qualifies for promotion.
Action Taken	Recruitment Rules have been framed and modified recently in August- September, 2022 in the line of model RRs of DoPT to recruit qualified people against the vacant positions in a sustainable manner by removing the visible bottlenecks. Against the vacant post of Professor, Associate Professor, Administrative Officer and Research Associates, 01 Consultant (Agriculture), 01 consultant (Administrative officer) and 05 Young Professionals were employed till recruitment by regular basis. Advertisement for all vacant posts were published for recruitment.
Agenda No. 2/1(C)	Recommendations on Infrastructural Facilities
Executable Recommendation	The Committee accepted the recommendations of ARC for improving infrastructural facilities and suggested to prepare a Master Plan by recognised Architect, incorporating all proposed infrastructural development in the campus, in a holistic manner. The master plan should be submitted the committee. The old laboratory building may be demolished as the building is in a deplorable condition and the maintenance cost of such old building is huge. Sport facilities and bicycle should also be introduced within the campus for the trainee participants.
Action Taken	<ul style="list-style-type: none"> a) Prepared a master plan by recognised Architect, incorporating all proposed infrastructural development in the campus, in a holistic manner and submitted to concern authority. b) Strengthening water and soil laboratory and process is on to get the laboratory accredited through NABL. c) Old laboratory building is proposed to be demolished considering its present condition. The Approval has

	<p>already been accorded in the 4th meeting GB held on 3rd March, 2023. Procedure as per GFR 2017 will be followed.</p> <p>d) Laboratory equipment's are being acquired as per budget availability.</p> <p>e) Approval has already been taken from Executive council for Automatic irrigation System. The process to acquire one is started.</p> <p>f) Women's Hostel is constructed through NPCC as PMC from Corpus Fund Deposit and occupied in April,2023.</p> <p>g) A new International Trainees' Hostel is approved by the EC and work has already been given to NPCC Ltd, (PMC), hence vertical expansion is postponed.</p> <p>h) Resource persons and international trainees will be accommodated in the upcoming international hostel.</p> <p>i) Furnishing of laboratory is in process. Computer Laboratory has already been furnished.</p> <p>j) 3 Smart Classrooms are already installed. Two more Smart Classrooms are coming up in the new laboratory building.</p> <p>k) Design & estimate is prepared for conversion of one Type-II quarter into Boy's Hostel. At present students are occupying the same building.</p> <p>l) Separate academic block may not be required at this moment as new classrooms / conference rooms are available in the new Laboratory building.</p> <p>m) Road expansion and renovation will be done in the 3rd phase of Master Plan works which will be executed in 2023-2024.</p> <p>n) Drainage lines in the campus are already constructed.</p> <p>o) Vermi-compost and waste decomposition unit has been constructed.</p> <p>p) Auditorium is ready with all aspects.</p> <p>q) External service block is already taken up in 2nd phase of infrastructure development works.</p> <p>r) Yoga Centre and community hall is being planned in the top floor of the new laboratory Building.</p>
Agenda No. 3/1 TOR-C	To consider the role of the different bodies such as Technical Advisory Committee etc., towards fulfilment of the objectives and suggest modifications in the working procedures of the Institute, if called for.
Executable Recommendation	The committee recommended that two meetings per year for TAC should suffice.
Action Taken	TAC is being conducted twice a year.
Agenda No. 4/1 TOR-D	To identify and assess the factors which facilitated or impeded the achievements of the objectives

Executable Recommendation	The issue of policy of recruitment of Director of the Institute may be discussed with competent authority, within the Ministry.
Action Taken	Amended RRs are also framed for the position of Director and approved by the competent authority of Govt. of India.
Agenda No.5/1 (A)	Recommendation of ARC on R & D areas for future studies and research
Executable Recommendation	Committee accepted and recommended all the 14 suggested areas for future studies and research.
Action Taken	All the areas as suggested by the ARC and the EC Sub-Committees are being taken up for the training programme in the institute.
Agenda No. 5/1(B) Agenda No. 5/1 (C) Agenda No. 5/1 (D)	Recommendation of ARC on Contractual Appointments Recommendation of ARC on Proposed Steps to Carry Future Research Recommendation of ARC on Engagement of External Domain Experts/Advisers
Executable Recommendation	The committee recommended engagement of External Domain Expert/ Advisers on contract basis in Water Resources Management, Agricultural Studies and Social Science for a period of three years with remunerative pay as per executable recommendation against Agenda 2/1(B).
Action Taken	(a) Contractual appointments are being done against vacant positions with the approval from the competent authority of the Ministry either in the form of consultant or as Young Professionals. (b) Research is at present being done in the area of groundwater quality assessment, good water management practices. Recently one externally funded project has been won by Dr. Ch. Victoria Devi to address the issue of participatory irrigation management in the state of Manipur. (c) Domain experts are not engaged so far. As the institute is working to fill up the vacant positions, it will reassess the needs of domain expert once regular faculty positions are filled up specially at the level of Associate Professor and Professor.
Agenda No. 5/1 (E)	Recommendation of ARC on Training
Executable Recommendation	The Committee recommended that training activities of NERIWALM may be extended to other proposed line departments, except Department of Rural Development, but with specific focus on Water and Land Management and river rejuvenation.
Action Taken	All the line departments including Soil and Water Conservation Department and Forest department are included as the target department based on the topics and their relevance to the departments.

	However the sub-committee of EC observed the recommendation of Agenda No. 5/1 (E) and suggested to extent training activities of NERIWALM to Department of Rural Development as some of the works of the Department is related to water and land management which is functioning at the grassroot level.
Agenda No. 6/1	Discussion on the Recommendations of the ARC on Addition to the recommendations given by the ARC in reference to the specific TORs
Executable Recommendation	The committee recommended that the terms of reference of ARC be extended. The committee recommended that while expanding trainings to other states, NERIWALM should give due importance to the NE region, which is its concerned work area. The committee suggested for taking up activities in states other than NE region only in project mode and if the said states offered fund for organising the training programme. The committee recommended that existing offers available with Ministry to take up training programmes for neighbouring countries like Bhutan, Nepal and Myanmar etc. may be explored for implementation by NERIWALM.
Action Taken	Trainings are being conducted for the Hydrometeorological officials of Bhutan. Process is also going on to conduct training for the officials of Mekong region under Mekong-Ganga cooperation as proposed by the Ministry of External Affairs. Upgradation of existing hostel and construction of international hostel are the steps towards this objective only. As recommended by ARC committee training programmes for farmers of Haryana and Faculty Development programme for IMTI, Tamil Nadu were organised from the fund provided by respective state/organisation.
Agenda No. 7/1 (A)	Enrolment of Ph.D. Student at NERIWALM
Executable Recommendation	The committee recommended the proposal as it will enhance the prestige of the institute. The committee suggested to formulate terms and conditions for enrolling Ph.D students with justification of contribution of expanding this activity in enhancing capability of NERIWALM.
Action Taken	Ph.D programme of NERIWALM has been approved by the Executive Council and Governing Body. NERIWALM has also been recognised as a Ph.D. programme centre by Assam Science and Technology University. The admission is done through Common Entrance examination conducted by the University. In the Academic year 2022-23, one PhD scholar has joined the programme.
Agenda No. 7/1 (B)	National Pension Scheme for new and existing employees
Executable Recommendation	The committee recommended that NERIWALM should submit a proposal for adoption of National Pension Scheme for consideration of the Ministry.

Action Taken	Proposal has been submitted for both groups of employees-the employees joined the institute before 01/01/2004 and the employees joined the institute after 01/01/2004. The proposal is under examination in the Ministry of Finance as reported by the MoJS.
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NERIWALM is preparing itself, albeit with baby steps, for international training programmes. Two batches of officers from Royal Government of Bhutan have been trained in 2028-19 and 2022-23 on Hydro-meteorology in collaboration with Central Water Commission. The Ministry of External Affairs also nominated 20 officials from five countries (*viz. Myanmar, Thailand, Vietnam, Cambodia and Laos*) for 21-day training programme on Water Resource Management.



Gerbera flower at research farm



Capsicum fruit at research farm

CHAPTER-3

ACHIEVEMENTS OF THE INSTITUTE

The Achievement Review Committee has prepared the report on the achievement of NERIWALM as per given Terms of Reference.

3.1 Terms of Reference (a): To assess achievements of NERIWALM vis-à-vis the objectives outlined the clause 3 of Memorandum of Association for the period of 01/04/2017 to 31/03/2022.

NERIWALM has submitted a report of achievements of the institute for the period from 1st April, 2017 to 31st March, 2022. The institute has also submitted the action taken report on the executable recommendations of the 1st Achievement Review Committee which was outlined by the Sub-Committee of the ARC constituted by the 5th meeting of the Executive Council of the Institute. The achievements of the institute have been placed as per the objectives as outlined under the Clause 3 of the MoA. The following points are noteworthy:

- a) In order to promote advancement and quest for scientific knowledge, the institute has upgraded the Soil and Water laboratory with all modern state-of-the-art equipment, agro-meteorological laboratory with AWS, computer laboratory with GIS and AutoCAD software and other necessary field equipment such as Total Station, Current Meter, Auto Level Recorder, etc. It has developed 3 laboratories viz. Soil and Water Testing Laboratory, Computational and GIS Laboratory and Irrigation Laboratory.
- b) It has also acquired micro-irrigation for demonstration, vermi-composting unit, water harvesting structure, poly-house, insect proof net house for adoption of advance agricultural and water management techniques.
- c) During the last five years institutes conducted 315 no. of trainings against the target of 325. The deficit was clearly due to COVID 2019 related set-back. However, it has exceeded the target of participants and achieved 121.7%.
- d) There was an appreciable divergent participants and majority of the participants were from farmers and water users' associations (WUA).
- e) The institute got affiliated with Assam Science and Technology University, Guwahati, Assam which is a University under Government of Assam for its M. Tech (Water Resource Management) and PhD (Water Resources Management) programmes. These courses of the institute are also approved by AICTE. The M. Tech programme was started from Academic Year 2019-20 with intake capacity of 18 students and PhD programme was started from 2022-23 with intake capacity of 5 students per year.
- f) The institute also initiated a 6-months Certificate course on "Analysis of Environment Parameters- Water Analysis" in 2019-20.

- g) The institute provided a good number of consultancies to the states of Assam and Meghalaya for PMKSY programme and CWC for Semi-detailed soil survey in Jharkhand, Tripura and Assam. A research project viz. Good Water Management Practices in NE Region for better basin planning has been executed with the sponsorship from Brahmaputra Board.
- h) NERIWALM is also acting as the Nodal Agency for State Specific Action Plane (SSAP) for Climate Change Action under National Water Mission of 19 states in the country.
- i) The institute has developed a culture of scientific collaboration with different institute under the Ministry such as National Institute of Hydrology and Central Ground Water Board and other institutes like North Eastern Space Application Centre, Umiam, Tezpur University, Assam Agricultural University, Jorhat, Central Agricultural University, Imphal, Tata Institute of Social Sciences, Guwahati Centre.
- j) Most of the M. Tech students of the institute were found to work for dissertation on field problems, which is in fact commendable.
- k) As a part of FDP, NERIWALM also sent its 3 (three) faculty members and the Asstt. Director (Civil) abroad to attain advanced training under JICA programme in 2018 and 2019.



Demonstration for micro irrigation on solar operated pump

- l) NERIWALM conducted International Training for the officers of Royal Government of Bhutan during November, 2018. It is also reported that another training scheduled in 2019 was postponed due to COVID-2019 was held for the officers of Royal Government of Bhutan during 6-17 February 2023. The Ministry of External Affairs is also finalizing another training to be conducted in NERIWALM for the delegates from Mekong-Ganga region in the later part of 2023.
- m) NERIWALM also organised an International Seminar during 18-20 January, 2018 on Land and Water Issues in South East Asia: Status, Challenges and Opportunities.
- n) Another National Symposium cum Workshop was held on Spring shed Management during 18-19 November, 2022.
- o) As mandated, NERIWALM also finalized Bye-Laws and MoA of the society along with the Recruitment Rules in November 2017 and streamlined the administrative works in the institute. The Recruitment Rules were further modified in 2020 as per 7th CPC.

3.2 Terms of Reference (b): To review the achievements of other aspects not covered under the objectives in the Clause-3 of Memorandum of Association for the period from 01/04/2017 to 31/03/2022.

The ARC has visited the institute and its facilities during its first seating and also interacted with the faculty, staff and the stakeholders including state government officials of irrigation, agriculture and district administration. In-plant trainee students, M. Tech and PhD students at the institute and farmers were invited for the interaction. The committee appreciated the participation of diverse group of stakeholders and opined that such participation of the stakeholders indicated that institute could reach the target groups very effectively.

The ARC is also in strong opinion that in-house expertise with up-to-date domain knowledge is paramount for the development of the institute. At the same time state-of-the-art laboratory, positive environment in the administration, proper career progression of the faculty and staff and reliable support systems are very important for the progress of any institution.

3.2.1 Achievement in Human Resource Development:

- a) Due to absence of Recruitment Rules for the institute and absence of regular Director, no vacant post could be filled up. The institute given promotion to two Associate Professors to Professors, one Assistant Professor to Associate professor and 3 eligible Research Associates to Assistant Professors in 2018.
- b) During the period of transition, which was in fact very long, some of the senior people also superannuated. As a result, 28 post were deemed to be abolished (vacant more than 2 years) or abolished (vacant for more than five years). Out of

28 vacant positions, 4 positions were MTS, which were not permitted to fill up as per decision of the 5th meeting of the Executive Council. The institute has done a commendable job by reviving 24 posts of various levels.

- c) The institute also revisited the Recruitment Rules again in 2021 to amend certain visible impediments in recruitment. It started recruitment process after revival of the post and filled up 3 posts till March, 2022. At the time of ARC meeting, it has been reported that the institute recruited against all the Direct Recruitment category posts and effort is on to recruit suitable officers against Deputation category.
- d) The institute also constituted DPC as per RRs and gave financial upgradation to 26 officers which was pending for a long time.
- e) The institute also recruited its Director in the month of March, 2021.



World Water Day

3.2.2 Achievement in Infrastructure Development:

- a) With the approval of the competent authority, the institute started the construction of a three storied Laboratory building through Project Management Consultant, Assam Public Works Department, Govt. of Assam. (At the time of ARC meeting, the building is inaugurated by the Hon'ble Minister of State, Ministry of Jal Shakti, Govt, of India Shri Bishweswar Tudu.)
- b) The institute has developed 3- smart classrooms with interactive boards and internet connection.
- c) A women hostel is constructed with the money from the Corpus Fund as maintained by the institute.

- d) Water filtration plant is installed for supplying iron free drinking water to the residential campus and hostel.
- e) As a step towards reducing carbon footprint, the institute installed a 100 kV roof top grid connected solar power plant under RESCO model.
- f) Institute could get 33 kV dedicated power connectivity for the institute from APDCL, Govt, of Assam.
- g) The Auditorium, foundation stone of which was laid in 2004, could be completed in January 2021.
- h) e-Office could be initiated through on-boarding in the server of the Ministry of Jal Shakti, Govt. of India.
- i) Institute also upgraded the computational laboratory by procuring new series of computers and GIS software (Arc-GIS v.10.0).

In continuation to the achievement during the period of review, the institute has also prepared Master Plan for infrastructure development as suggested by the 1st ARC of the institute. It is reported to the committee that the authority has approved the master plan to be executed phase wise. The allocation of the budget is also given for execution of the master plan till 2025-26. It was reported to the committee that NERIWALM has taken up following construction works since 2022:

- i. Upgradation of Auditorium with 16' X12' LED display screen and motorized curtains.
- ii. An International Hostel for foreign trainees
- iii. Residential Quarters for the Director
- iv. Two residential quarters for professors.
- v. Providing elevator in the administrative building as a provision for differently abled persons.
- vi. External service block for Post Office and UCO bank with a canteen
- vii. Land scaping around the auditorium.
- viii. Development and extension of internal roads.
- ix. Boundary walls around the campus.

However, the ARC also observed that some important works were not included in the infrastructure development:

- a. A boys' hostel of at least 30-seater capacity.
- b. A family accommodation for PhD scholars or in-service M. Tech students.
- c. A barrack for security and guest house workers.
- d. At present the women hostel can accommodate 18 students. The institute should consider for extension of the Women's hostel for total capacity at least 30 students.
- e. Sports and recreation facilities for the trainees.

3.2.3 Additional Comments of ARC

- A. The committee is in the opinion that after construction of New Laboratory building, old laboratory building has no utility as the structure is very old inherited from Indian railways constructed as temporary facilities during Kalia Bhomoora bridge construction in the eighties. The Director informed that replacement of old structures had already been approved by the Governing Body of NERIWALM in its 4th meeting, which will be done in phased manner. As the laboratory is being developed ambitiously, the institute should urgently work towards accreditation of the laboratory under NABL.
- B. The committee also appreciated the automation works initiated for its Library. Efforts is also made to create digital repositories of books and journals in the near future. However, space for Library is limited for expansion and providing reading tables.
- C. Irrigation / water management Technology demonstration field laboratory is very essential component. It was reported that the Sonitpur district authority was actively considering giving NERIWALM a suitable land, where such field laboratory can be developed.
- D. The ARC is not in favour of creating field centres in other states of NE region. Rather, it is of topmost importance to develop NERIWALM Tezpur centre for attaining the standard as per the framework of NSCSTI and accomplish the intended goal to reach the level of a Centre of Excellence in line with Vision 2047 of the Ministry of Jal Shakti and the country.

3.3. Terms of Reference (c): To give executable recommendations to develop the institute as per the framework of National Standard for Civil Service Training Institutions (NSCSTI) and to transform the institute into a Centre of Excellence.

The Director, NERIWALM and the Member-Secretary of the ARC informed the committee that Capacity Building Commission has conducted the preliminary study on NERIWALM and gave certain action plans for developing the institute according to NSCSTI framework. Though the institute scored 78% (weighted average scores) on all the eight pillars of training institute, it scored badly in few pillars where attention is necessary.

The committee outlined some immediate action to be taken by NERIWALM as per action plan given by the CBC.

Pillar 01: Training Needs Assessment and Course Design

- a. TNA discussions once every year through workshops/ seminars etc.
- b. Stakeholders' discussions for course content design & review
- c. Panel of knowledge expert. The institute should create a list of experts in the domain areas from surrounding institutes to strengthen its pool of adjunct or part time faculty for training of different levels.

- d. Constitution of an Internal Committee for course content design & review
- e. Prepare a course design manual for designing training courses.

Pillar 02: Faculty Development

- a. Constitute FDP standing committee with specific ToR as suggested by CBC.
- b. Conduct one-day orientation program for newly recruited full-time (permanent, tenure) faculty.
- c. Develop methodology on screening of guest faculty.
- d. Conduct a two-day faculty knowledge sharing program.
- e. Organize short term Webinars by inviting specialized lectures from national & international domain experts focusing upon related frontier areas of research and knowledge pertinent to NER.

Pillar 03: Resource and Training Targets

- a. Develop Structured feedback mechanism.
- b. Maintain man-day target for all the training related activities.

Pillar 04: Trainee Support

- a. Constitute Trainee Support Committee with specific ToR as suggested by CBC
- b. Develop mentor-mentee dashboard.
- c. Constitute a trainee support committee.

Pillar 05: Digitalization and Training Delivery

- a. Capacity for digitalisation through i-GOT and social media portals.
- b. Convert all the existing course modules to digital mode.
- c. Upload the link for the digital courses and ensure utilization tracker of the courses.

Pillar 06: Applied Research Collaboration on Themes Relevant to NER

- a. Applied Research collaboration for engagement of Industry experts, subject domain specialists of national-international standing and other institutions.
- b. Collaborate with other institution for utilizing digital resources

Pillar 07: Training Evaluation and Quality Assurance

- a. Set up Training Course evaluation Committee with specific ToR
- b. Set up Course and Content Design Committee with specific ToR
- c. Set up Course Review Committee with specific ToR
- d. Set up mechanisms to collect feedback through different modes.
- e. Maintain Trainee repository.

Pillar 08: Governance and Operations

- a. Form a finance committee with specific ToR as suggested by CBC for generation of internal revenue.
- b. Consideration to engaging private sector **experts as guest faculty**.

- c. Constitution of IT committee for maintaining digital records and suggest IT up-gradation plan.

3.4 Terms of Reference (d): To identify the factors which facilitated or impeded in the growth of the institute and to to give recommendations for amendment.

- A. The ARC appreciated the action taken by the MoJS for modifying funding patterns for NERIWALM from scheme to non-scheme head.
- B. The committee also appreciated the effort of the institute and the DoWR, RD & GR for filling up the vacant posts.
- C. The committee commended the liberal approach of the EC and GB for recommending higher allocation in the capital grant in order to speed up infra-structure development works of the institute.

However, the committee has observed a major impediment constraining the development of the institute and foresees its growth inhibition, stagnation culminating to a regressive decaying state, unless these impediments are urgently addressed. The committee has critically analysed the situation and decided to bring all the relevant points with genesis for the consideration of the competent authority.

- i. The senior faculty positions i.e., Associate Professors and Professors in the discipline of Agriculture and Social Sciences have been vacant for a long time. The institute made multiple efforts to recruit against these posts. Since these posts can be filled up through 'Promotion/Deputation', experience for a certain period of years and PhD are the essential requirement for these posts. The positions of Associate Professor and Professor in the discipline of Water Resource Engineering are filled up with its own faculty through promotion.
- ii. The committee observed that one of the major issues for not getting any candidate in the senior faculty position was the pay structure which was lower than that offered in the colleges & universities. Since the faculty position in NERIWALM is deputation posts, person with high pay scale cannot be allowed to join against a lower pay scale post under deputation. Following is the anomaly of pay structure enumerated in the table.

Name of Position	UGC Pay in equivalence of 6 CPC (Academic)	UGC Pay in equivalence of 7 CPC (Academic)	Pay in NERIWALM as per 7CPC. (Administrative)
Professor	₹37,400-₹67,000 +AGP ₹10,000/-	Academic Level 14 ₹144,200/- to ₹2,18,200/-	Pay Level 13 ₹1,23,100/- to ₹2,15,900/-
Associate Professor	₹37,400-₹67,000 +AGP ₹9,000/-	Academic Level 13A ₹1,31,400/- to ₹2,17,100/-	Pay Level 12 ₹78,800/- to 209200/-

Asstt. Professor	₹15,600-₹39,100+ ₹6,000/-	Academic level 10 ₹57,700/- to ₹1,82,400/-	Pay Level 10 ₹56,100 to ₹1,77,500/-
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- iii. At the same time, the faculty of NERIWALM requires the educational qualifications equivalent to that of any faculty of academic institutes. This was approved since establishment of the institute. Further, NERIWALM is affiliated to Assam Science and Technology University, Guwahati and it offers M. Tech and PhD programme as recognised by AICTE with recommended educational qualification of its faculty.
- iv. As per UGC / AICTE regulation, faculty of college and University enjoy the Career Advancement Scheme/ Personal Promotion Scheme with certain academic achievements even if there is no functional position. That helps career progression of the faculty members.
- v. Under administrative grade of Pay the faculty of NERIWALM do not have any provision of career progression unless there is any vacant position as per hierarchy. They may be eligible only for MACP (financial upgradation) at the interval of 10 years and an Assistant Professor may retire from NERIWALM service as Assistant Professor after serving entire life. Further, due to very low cadre strength in NERIWALM in each of the category, a proper pyramid structure for career progression of its employees cannot be achieved.
- vi. These provisions of NERIWALM will never attract or retain any faculty in the institute.
- vii. The ARC also observed that the faculty of NERIWALM was given academic pay as per UGC regulations till 5th CPC. When 6th CPC was to be implemented, NEC has given Administrative Pay to NERIWALM through a provisional administrative order, however no approval of Management Council, which was the real decision-making authority for NERIWALM society, had ever been taken for such order.
- viii. NERIWALM saw a major exodus during 2008, when administrative pay structure was implemented and by 2010 the exodus was complete. Since then, NERIWALM could not recover and always remained as an institute without sufficient inhouse expertise.
- ix. It was also observed that since inception to 2010, NERIWALM did some commendable works particularly Watershed Development and Management, Groundwater Quality monitoring, Command Area Development, DPR preparation and could generate a substantial revenue through consultancy works.
- x. It was reported that NERIWALM approached for upgradation of pay structure for Associate Professors and Professors which is under consideration. The ARC felt that if the upgradation is done, it will solve only a part of the problem and approach will be considered myopic. Unless UGC/ AICTE pay structure is offered to its faculty the problem will never be solved.

- xi. It is worthwhile to mention that institute like WALMI, Aurangabad is given UGC pay structure.
- xii. As professed in ToR(c), NERIWALM is being fashioned to attain the level of a CENTRE OF EXCELLENCE to play a pivotal role for fostering applied research and training programmes relevant to the Eight states of backward North East Region of India. In the above context, ARC very categorically recommends that UGC pay structure should be considered for implementation for the faculty of NERIWALM, as has been done in WALMI Aurangabad. Sanction of UGC pay structure to NERIWALM faculty will ease the current impediments in hiring and retaining competent faculty in the Institute.

3.5 Terms of Reference (e): To examine the domains of operation of the institute and to suggest modification, if required, in view of Vision 2047 of the Ministry of Jal Shakti and the country.

1st Achievement Review Committee has recommended following topics as the domain for NERIWALM for its future studies and research. NERIWALM is offering training in the similar line as per the listed domains.

- i. Spatio-temporal distribution of water availability and demand on river basin scale
- ii. Efficient use of irrigation water in irrigation projects
- iii. Water quality assessment and management
- iv. River Rejuvenation
- v. Eco-restoration
- vi. Conjunctive use of surface and ground water
- vii. Efficient and innovative measures of water conservation
- viii. Micro-irrigation
- ix. Application of RS and GIS techniques in water and land management
- x. Rainwater harvesting
- xi. Water Quality Management
- xii. Watershed Management
- xiii. Studies of traditional water management system
- xiv. Social Impacts of irrigation projects.

The ARC discussed the suggested topics and also deliberated on the Vision@2047 of the Ministry of Jal Shakti and suggested some changes on its domain.

- a. The topic River Rejuvenation and Eco-Restoration may have conflict of interest of Brahmaputra Board and CWC and hence may not be area of studies for NERIWALM.
- b. Water Quality Assessment and Management & Water Quality Management are repetition and may be considered as one area i.e., water quality assessment and management.

- c. Though watershed management and micro-irrigation are the domain of Land Resources and Agriculture department, respectively at present, inclusion of these topics under the domain of NERIWALM for capacity building is suggested.
- d. As NERIWALM is working in NE Region, springshed management and Spring Rejuvenation should be included in its activities.
- e. The effect of climate change on water resource is quite prominent now. NERIWALM should include Climate Change issues for climate resilience in its curriculum.
- f. Circular Economy in water sector should be included.
- g. Research, training and demonstration on application of IoT should be considered.

3.5.1 New Topics for Capacity Building

The committee rejigged the list of domains after deliberation:

1. Enhancement of Crop Water Use Efficiency
2. Productivity Per Unit of Land and Per Unit of Water
3. Deficit Irrigation Regimes
4. Zero Till Farming Practices of Conservation Agriculture
5. Water Quality Assessment & Management
6. Command Area Development and Field Irrigation System Design
7. Micro-Irrigation
8. Watershed and Springshed Management
9. Climate Change vis-à-vis water Resources and Climate Resilience
10. Social Impact of Irrigation Projects and Water related issue due to climate change.
11. Strengthening of Water Users Associations with Gender Equality and Equity
12. Crop Specific Water Management and allied Crop related activities for better water productivity,
13. Circular Economy of Water including Green and Gray water management



Capacity Building Programme on Irrigation Management
For Newly Recruited Engineers of Irrigation Department, Govt. of Assam

CHAPTER-4

COLLABORATION WITH NATIONAL AND INTERNATIONAL INSTITUTIONS

Scientific development and knowledge dissemination, particularly in the field of applied technologies, to the end users cannot be done in isolation. Further, efforts taken to disseminate any knowledge which are borrowed from others becomes shallow and unconvincing. First-hand knowledge in technology development and thorough testing of the technologies give a definite confidence to the trainers. Therefore, capacity building of the trainers must be given priority. The trainers should not only have the basics of the issues on which they may impart trainings, but also an exposure to the recent development happening around the world on that particular topic. If continuous trainings of the trainers are not carried out, such trainers or the training institutes or any academic institute losses its relevance.

Breaking of the silos is present trend in almost all the domains. Those who works within a silo often do not like to collaborate. There may be two reasons for that, either such people have already lost their relevance, or they are afraid of getting exposed to the world which might have gone far ahead of them. This is happening in many of the institutes in India.

The 2nd Achievement Review Committee strongly felt that to take NERIWALM in the path of scientific development two-way channel of knowledge flow must take place. NERIWALM should send its scientific manpower for regular trainings in the academic institutes where advanced and cutting-edge research and development activities are taking place. At the same time NERIWALM should also have well thought out plan to invite the scientists and academicians who are involved in frontier research.

It has been informed to the committee by the Director, NERIWALM and the Member-Secretary, ARC that NERIWALM has established a very good network among the institutes working in the region for knowledge exchange and faculty exchange and such collaboration is happening on regular basis. The important institutes signed MoU with NERIWALM are:

1. North Eastern Space Application Centre, Umiam, Meghalaya
2. Tezpur University, Tezpur
3. Tata Institute of Social Science, Guwahati Regional Centre
4. Central Agricultural University, Imphal
5. Assam Agricultural University, Jorhat
6. Rain Forest Research Institute, Jorhat
7. Agricultural Technology Application Research Institute, Umiam

Besides, NERIWALM is affiliated to Assam Science and Technology University, Guwahati for its PG and PhD programmes.

The institute is also closely working with many of the sister organisations under the Ministry of Jal Shakti, Govt. of India. The institutes are:

1. National Institute of Hydrology, Roorkee and Guwahati Regional Centre
2. National Water Academy, Pune
3. Rajiv Gandhi National Ground Water Research and Training Institute, Raipur.
4. Central Ground Water Board, Guwahati Regional Centre
5. Brahmaputra Board
6. North Eastern Hydraulic and Allied Research Institute, Guwahati (Brahmaputra Board)
7. Central Water Commission (BOB), Shillong.

The institute has signed MoU with Indian Institute of Technology, Guwahati and Kharagpur for preparation of State Specific Action Plan, an action research project under National Water Mission carried out by the state governments of the country.

Though the collaboration with different organisations in the region is impressive the institute needs to look outside the region and should develop good network with important national institutes. Nevertheless, NERIWALM carried out few commission studies such as semi detail soil survey for irrigation project planning on behalf of Central Water Commission in the state of Jharkhand. It also worked with 19 states of India including the states of NE region for State Specific Action plans on water resource management as nodal agency for National Water Mission. Some of the institutes may be mentioned here with which NERIWALM may enter into broad based MoUs:

1. Indian Institute of Technology, Guwahati
2. Indian Institute of Technology, Kharagpur
3. Indian Institute of Technology, Roorkee
4. Indian Institute of Water Management, Bhubaneswar, etc.

The Ministry of Jal Shakti also desires to develop the institute into a Centre of Excellence in water sector. The ARC feels that the institute needs to create a sound research environment. At present very limited research work is undertaken by the institute. NERIWALM is primarily a capacity building organisation and imparting training to stake holders only. However, with the initiation of PG and PhD programmes, it should enter into applied as well as sponsored research projects. Funding pattern for NERIWALM was found to be robust under non-scheme Grant-in-Aid. The institute may not feel the need of research funding from other organisations. But to have a proper competitive scientific environment, the faculty should be encouraged to apply for competitive project from different funding organisations such as DST, MoEFCC or ICSSR. The Director NERIWALM informed that one of its faculty, Dr. C. Victoria Devi, Asstt. Professor won a competitive grant project from ICSSR in the 2022-23 financial year, which is a positive development.

The institute is imparting trainings to international candidates too. Officers from Royal Government of Bhutan have already participated in 2018. In the year 2022-23, another batch of Bhutanese officers were also trained in NERIWALM. It is informed that the MoEA has finalized to organise a training for participants from Mekong region of South East Asia. The ARC feels that for such international trainings, the institute should upgrade itself through international collaboration and research.

The ARC has envisioned that Innovation and Partnerships between NERIWALM with selected leading international institutions would open up new avenues giving a stimulus to the Institute faculty and research workers for raising their level of research to the global standard.

The underlying goal is to give a perceptible boost to NERIWALM's regional impact and to be recognized as a leader in innovation and entrepreneurship catering to NER specifically. Through the above partnerships, the aim is to create viable routes for translating research and inventions into products, processes, and services to benefit the society in NER, but also the country as well.

With the above avowed goal, to start with some international institutions can be mentioned, who are working energetically on land, water, and river science issues. These issues are currently of high priority relevance to address debilitating flood-erosion problems and sub-optimal irrigated agriculture in the North East Region of our country:



Training Programme on Hydro-Meteorological Observation for Officers of TMO (Gol Program) Hydrology and Water Resources Services Division, National Center for Hydrology and Meteorology, Royal Government of Bhutan.

1. Colorado State University, USA
2. Utah State University, USA
3. Wageningen University, The Netherlands
4. McGill University, Canada
5. University of Southampton, UK
6. University of Nottingham, UK
7. PL-LCH, EPFL, Switzerland
8. AIT, Bangkok
9. Tokyo University, Japan.
10. Bangladesh Agricultural Research Council

Such collaboration will however does not happen unless there are faculty level regular interactions. To begin with, the Govt. of India may consider sending faculty from NERIWALM to such institute for Faculty Development Programme or to attend Tailor Made programmes conducted by these universities. The IC & EA Division of the Ministry may create such environment and encourage the faculty to attend such programmes.

Though the collaboration with different organisations in the region is impressive the institute needs to look outside the region and should develop good network with important national institutes. Nevertheless, NERIWALM carried out few commission studies such as semi detail soil survey for irrigation project planning on behalf of Central Water Commission in the state of Jharkhand. It also worked with 19 states of India including the states of NE region for State Specific Action plans on water resource management as nodal agency for National Water Mission.

CHAPTER-5

ROAD MAP AND EXECUTABLE RECOMMENDATIONS

The 2nd ARC resolved unanimously to suggest a roadmap to NERIWALM for a better journey to the future along with certain executable recommendations.

5.1 Roadmap

A clear roadmap with milestones to be achieved is necessary to realise the mission and vision of the institute. NERIWALM has a responsibility to build capacity in water management sector in a region where water is not valued properly by the users. Further, barring Assam and part of Tripura, the hostile topography makes the situation further difficult. Poor irrigation infrastructures, traditional agricultural practices and subsistence farming might not have pushed the farming community to the wall in respect to water scarcity. As a result, water management education and training are not demand driven. However, in order to have future food security and climate resilience, educating the water users on better water management is a necessity. NERIWALM is finding itself in such unenviable position. In spite of all, the institute has to work for capacity building of the water managers and water users. NERIWALM has to transform itself into an institute to solve the foreseeable water related problems for the community of NE regions. Water quality monitoring and management, water conservation, watershed and springshed management, climate resilience and water related disaster management are some of the areas where the institute should make itself future ready. Some of the milestones, the institute should keep in its passage to development.

- a. It needs to develop its laboratory into a referral laboratory for water quality monitoring and management the get the NABL accreditation by the end of calendar year 2023.
- b. The faculty should be sent for training in national and international institute for developing capacity in-house starting from current financial year.



Research Farm

- c. A structured FDP plan should be prepared so that continuous training of the trainers can be achieved.
- d. Curriculum should be revisited and a new schedule with topics aligning the Vision@2047 of Govt. of India should be prepared by the end of current financial year so that new curriculum can be ready for next year.
- e. Structured training needs assessment should be started following proper framework.
- f. All efforts should be made to transform the institute into a Centre of Excellence by the end of 2024 calendar year.
- g. A field laboratory demonstrating all irrigation technologies and controlled structures should be installed either in the present campus or in the new campus when the additional land is given by Govt. of Assam.
- h. In research farm of the institute, demonstration of technologies such as IoT, smart irrigation, etc. should be installed.
- i. Online modules of all the training topics should be made ready by the end of the current financial year.
- j. Against the backdrop of climate change and global warming, relevance of Regulated Deficit Irrigation (RDI) regimes has gained urgency to sustain agriculture through optimal water use. Notably, the required irrigation facilities in Assam are still very much lacking to provide any viable support to agricultural growth. To make matters worse, the periodic visitations of drought inducing El Nino phenomena in NE pose serious challenge for sustenance of agriculture. In this fast-emerging scenario, innovative applied research in the Institute on Deficit Irrigation regimes can help innovate practicable solutions to confront the challenge posed by global warming. The requisite systemic and other facilities should be provided to NERIWALM for undertaking seminal R&D on the above which is going to assume great relevance in climate change scenario.
- k. To bring about a paradigm shift from the traditional Conventional Agricultural Farming practices to modern Conservation Agriculture or Zero-Tillage Farming, NERIWALM should undertake field-based pilot studies on Conservation Agriculture partnering with researchers in Assam Agriculture Department. Such a radical transformation will require highly dedicated R&D work by a core group of committed researchers in NERIWALM. Notably in the above context, it is heartening to learn by ARC in course of their interactions with stakeholders that the local Assam Agriculture Department Extension Training Centre located at Naltali, Near Kaliabor, in Nagaon District have already gainfully experimented for implementing No-Till Farming practice of Conservation Agriculture, which was imparted as training to the local farmers as well. Significantly, as a sequel to the above training in Conservation Agriculture by the

Extension Training Centre located at Naltali, some farmers have now adopted No-Tillage Farming Practice in their own agriculture fields in Sonitpur District.

- I. Significantly, Conservation or Zero-Tillage Agricultural Farming Practices, which are now increasingly adopted in USA, South America, European nations, Australia, Africa have following benefits –
 - prevent soil erosion and leaching of fertilizers & pesticides into ground water due to presence of crop residues or stubble cover;
 - improve activity of earth worms and other soil micro flora and increase water infiltration rate, reduces soil evaporation, thereby increase soil moisture storage;
 - with crop residue cover on soil surface, it will improve Soil Organic Carbon (SOC) content, thereby reduce fertilizer requirement as decomposed crop residues turn into organic manures;
 - reduces GHG emissions due to carbon sequestration in the soil;
 - reduces cost of cultivation due to absence of ploughing, curtailed irrigation water requirement (from less evaporation loss & better soil moisture storage).

As already stated above, it is again stressed by ARC for NERIWALM to actively conduct studies on Conservation Agriculture Farming Practices explicitly geared to the NER region specific agro-climatic attributes as well as duly weighing in the strategic considerations to harmonise with any sociological issues. The above studies may be conveniently performed in experimental farms as well as in farmers' fields in partnership with the local Extension Training Centre located at Naltali, of Assam Agriculture Department.

5.2 Executable Recommendations

5.2.1 Administrative

After analysing the visible bottleneck in the growth of the institute, the ARC recommended the following points in regard to certain administrative changes.

- a. The faculty of NERIWALM, with essential academic qualifications as per approved Recruitment Rules and the nature of service i.e., teaching to M. Tech and PhD students in Water Resource Management apart from other capacity building services, deserves a better pay structure equivalent to that of other academic institutes under AICTE/UGC. The ARC strongly advocates restoration of UGC pay structure for the faculty of NERIWALM.
- b. Five years tenure should be given to the Director of the Institute to creatively plan development strategies, supervise their meticulous implementation, see through their logical outcome with any necessary course correction, besides maintaining the continuity of the activities initiated.

- c. NERIWALM has a small number of posts in each cadre. As a result, pyramidal structure of cadre with promotional avenues is not possible. With very limited or no scope for upgradation through promotion, it is gradually resulting in frustration and inefficiency among the employees. The ARC feels that instead of case-to-case basis, a complete restructuring of the institute with future outlook should be carried out urgently.
- d. Even though NERIWALM is an autonomous body, it is provided with 100% GiA for its functioning. ARC feels that for maintaining administrative and fiscal discipline, the two positions viz. Deputy Director (Admin) and Financial Adviser (not available in the present cadre) should be filled up with equivalent officers from the ministry on deputation. If needed, MoA may be amended to this effect.
- e. NERIWALM does not have any Hindi Officer. Since, MTS/ staff Car driver/ Stenographer posts are not to be filled up, one Hindi officer position may be created on cost neutral basis against the surrendered posts.
- f. As the laboratory of NERIWALM will strive to be NABL accredited laboratory, the competent authority should also consider providing necessary manpower for the laboratory.

5.2.2 Academic

- a. Present composition of Technical Advisory Committee is appreciable with representation from all important organisations. The same may be continued.
- b. ARC agreed to the points of action to be taken as given by the Capacity Building Commission, Govt. of India. The executable issues are mentioned in the Chapter 3 under ToR (c). However, the ARC feels that instead of present mechanism of TNA, the detailed exercise for TNA should be carried out at a regular interval.
- c. NERIWALM should give major emphasis in research specially applied research in order to solve field problems thereby contributing towards the vision of the Ministry. It feels that without strong research foundation, training also becomes delinked from the objectives. In the above context, the constructive recommendations of ARC to forge research collaboration with national and international institutions is essentially necessary for the desired exposure and impetus to NERIWALM faculty, scientists and researchers.
- d. Recent development of water management technology should be included in the curricula and a regular updating of course should be carried out. The ARC has given a list of topics to be included in the curricula of NERIWALM in Chapter-3.
- e. Online presence of NERIWALM is not very good. ARC recommends that NERIWALM should create online modules both in English and other local languages of NE region to reach the unreachable for wider dissemination of knowledge.

- f. All India Radio and Television, apart from other social media, should be exploited in a best possible way.
- g. NERIWALM should also prepare a compendium of best water management practices, traditional water management practices and success stories of their activities for maximising impact of its activities.
- h. A structured Faculty Development Programme should be implemented for continuous education and training of the faculty of NERIWALM. Continuous education and training should also be linked with their career progression.
- i. The ARC has already discussed about collaboration of NERIWALM with other institutes. NERIWALM may be advised to follow the suggestions of ARC for maximising collaboration.
- j. NERIWALM should be ready for accreditation of its laboratory by the end of the year.

5.2.3 Infrastructure

It has been reported to the ARC that a major push has been given for suitable infrastructure development of the institute. It has also been given information on the Master Plan approved by the EC. The ARC would like to suggest few more infra-structures in the institute.

- a. A field laboratory demonstrating all irrigation structures, irrigation systems, methods, etc should be created at the earliest.
- b. In the emerging global scenario of cutting-edge developments on Artificial Intelligence (AI) and computer based numerical modelling to analyse complex physical processes, a well-equipped lab dedicated Exclusively to AI, Numerical CFD Modelling and Remote Sensing Techniques (including image processing of Optical & SAR Satellite data) will considerably raise the applied research competence of NERIWALM. Obviously, conducive service conditions in terms of grade of pay with facilities must be offered to attract and retain highly competent professionals manning such an advanced lab as recommended above.
- c. Audio-visual laboratory for creation of online module may be installed in the institute.
- d. Renovation of administrative building, upgradation and extension of present trainees' hostel, construction of Boys' Hostel, construction of married students' hostel, expansion of girls' hostel and construction of security barrack should be done.
- e. Sports facilities such as basketball, badminton, volleyball courts, amphitheatre, and indoor sports facilities such a table tennis, snooker, pool, etc. should be created in the trainees' hostel.

5.2.4 Others

- a. NERIWALM should plan to develop all the future infrastructure with the concept of Net Zero Carbon and utilize maximum solar energy wherever possible.
- b. In order to lead by example, NERIWALM should also install roof-top rain water harvesting systems for each of the buildings.
- c. With an eye on future development, NERIWALM should frame advance planning strategy for likely expansion of activities to applied R&D on relevant River Hydraulics experimental studies for Flood-Erosion, Dam Safety etc. in collaboration with NEHARI.

NERIWALM should give major emphasis in research specially applied research in order to solve field problems thereby contributing towards the vision of the Ministry. ARC feels that without strong research foundation, training also becomes delinked from the objectives. In the above context, the constructive recommendations of ARC to forge research collaboration with national and international institutions is essentially necessary for the desired exposure and impetus to NERIWALM faculty, scientists and researchers.

A-50013/136/2017-E-II
Government of India
Ministry of Jal Shakti
Department of Water Resources, RD & GR

Shram Shakti Bhawan, Rafi Marg,
New Delhi,01-06-2023

ORDER

Subject: Constitution of the Achievement Review Committee (ARC) to assess the performance of NERIWALM, Tezpur, Assam for the period from 01.04.2017 to 31.03.2022-reg.

In exercise of the powers vested under Rule-49 of Memorandum of Association and Rules and Regulations, the President of the NERIWALM society hereby constitutes the Achievement Review Committee with the following composition to review and assess the performance of the North Eastern Regional Institute of Water and Land Management, Tezpur during the period from 01.04.2017 to 31.03.2022:-

a. Prof. (Dr.) Nayan Sharma, - Chairman
Former Professor,
Department of Water Resources Engineering
IIT Roorkee

b. Prof. (Dr.) Man Singh, - Member
Project Director, Water Technology Centre, IARI,
New Delhi

c. Er. P. P. Changkakoti, -Member
Former Secretary, Department of Water Resources,
Govt. of Assam.

d. Director, -Member-Secretary
NERIWALM, Tezpur, Assam

2. The terms of reference of the Committee shall be as under:

- a. To assess the achievements of NERIWALM vis-à-vis the objectives outlined in the Clause 3 of Memorandum of Association for the period of 01.04.2017 to 31.03.2022.
- b. To review the achievements in other aspects not covered under the objectives in the Clause-3 of Memorandum of Association for the period from 01.04.2017 to 31.03.2022.
- c. To give executable recommendations to develop the institute as per the framework of National Standard for Civil Service Training Institutions (NSCSTI) and to transform the institute into a Centre of Excellence in Water Sector.
- d. To identify the factors which facilitated or impeded in the growth of the institute and to give recommendations for amendment.
- e. To examine the domains of operation of the institute and to suggest modification, if required, in view of vision 2047 of the Ministry of Jal Shakti and the country.

The committee will complete the work and make available its recommendation within a period of 6 (six) months from the date of issue of notification of the committee.

3. The sitting fees, TA/DA etc. of the Non-official Members will be in terms of Department of Expenditure, Ministry of Finance OM No. DOE OM. No. 19047/10/2016-E.IV dated 12.04.2017, OM No. 19030/01/2017-E.IV dated 13.07.2017 and OM no. 19047/1/2016-E.IV dated 14.09.2017.

NERIWALM will bear this expenditure on this account (including TA/DA payment for which Director, NERIWALM will be the Controlling officer).

(Vinod Kumar Gupta)
Under Secretary to the Government of India
Tel.no. 011-23711946

To

The Director, NERIWALM for circulation of the order among the Chairman and Members of the Committee.

Copy for information to:

1. PPS to Hon'ble Minister(Jal Shakti)
2. PPS to Secretary (WR, RD & GR)
3. PPS to Joint Secretary (PP/JS&FA/Admin), DoWR, RD & GR.



NORTH EASTERN REGIONAL INSTITUTE OF WATER AND LAND MANAGEMENT

Department of Water Resources, River Development and Ganga Rejuvenation

Ministry of Jal Shakti, Government of India

(Registered under Societies Registration Act, 1860)

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