भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन, नदी विकास
और गंगा संरक्षण विभाग
केन्द्रीय जल आयोग
राष्ट्रीय जल अकादमी

सत्यमेव जयते

Government of India
Ministry of Jal Shakti
Dept of Water Resources,
River Development & GR
Central Water Commission
National Water Academy

परिपत्र/Circular

विषय: NWA Vision Document - 2047 : Inviting Suggestions from Young CWES Officers for Refinement and Implementation of NWA Vision 2047 **- संबंध में।**

NWA, CWC, Pune has prepared a comprehensive Vision 2047 document titled **"National Water Academy – Vision 2047: Training and Capacity Building in the Water Sector and Strengthening of NWA, CWC, Pune"** which outlines a strategic roadmap for transforming NWA into a nationally and globally recognized Centre of Excellence in water-sector training, capacity building, research, innovation, and knowledge management. The Vision focuses on key priority areas, including infrastructure development, digital transformation, faculty strengthening, institutional growth, research and innovation, and international collaboration. A copy of the Vision 2047 document is enclosed for ready reference.

NWA Vision 2047 document was presented before the 24th Meeting of the Advisory Board of NWA held on 30 May 2026. During the deliberations, JS&FA, DoWR, RD & GR suggested that inputs from younger officers may also be considered while refining and implementing the Vision, as they would be leading the water sector in coming decades. Accordingly young officers of CWC at the level of JE & above upto Directors may submit their suggestions and ideas for further strengthening the NWA Vision 2047 document and its implementation framework. Suggestions may be provided on, but need not be limited to, the following areas:

1. Future training and capacity-building requirements in the water sector.
2. Digital learning, artificial intelligence, and emerging technologies.
3. Infrastructure and institutional development of NWA.
4. Faculty development and knowledge management.
5. National and international collaborations.
6. Research, innovation, and outreach initiatives.

All concerned are requested to submit their valuable suggestions in brief (point wise) through email at directorac.nwa@gov.in by 31 July 2026. The suggestions shall be considered for further updation of the draft NWA vision 2047 framework.

यह परिपत्र मुख्य अभियंता, राष्ट्रीय जल अकादमी, पुणे की स्वीकृति से जारी किया गया है।.

Digitally signed by
Ankit Dudeja
Date: 10-07-2026
11:12:28

(अंकित डुडेजा)
निदेशक (प्रशासन और समन्वय)

प्रतिलिपि सूचनार्थ:

1. केंद्रीय जल आयोग, नई दिल्ली के अध्यक्ष के प्रधान निजी सचिव।

प्रतिलिपि:

1. निदेशक (प्रशिक्षण), केंद्रीय जल आयोग, नई दिल्ली - CWC पोर्टल पर अपलोड करने के अनुरोध के साथ
2. केंद्रीय जल आयोग के सभी अधिकारी (कनिष्ठ अभियंता से निदेशक स्तर तक के अधिकारी)
3. राष्ट्रीय जल अकादमी की वेबसाइट
4. कार्यालय प्रति

खडकवासला, पुणे -सिंहगढ़ रोड, पुणे -411 024
टेलीफोन: 020-23381212 /#9422309043
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ई-मेल: nwa.mah@nic.in/ cenwa.mah@nic.in
जल संरक्षण सुरक्षित भविष्य.

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Conserve Water- Save Life

सत्यमेव जयते

Ministry of Jal Shakti,
Department of Water Resources,
River Development & Ganga Rejuvenation
Central Water Commission

National Water Academy: Vision 2047

Training and Capacity Building in the Water Sector
and
Strengthening of National Water Academy, CWC, Pune

May 2025

सत्यमेव जयते

Government of India
Ministry of Jal Shakti
Department of Water Resources,
River Development & Ganga Rejuvenation
Central Water Commission

National Water Academy : Vision 2047

Training and Capacity Building in the Water Sector and Strengthening of National Water Academy, CWC, Pune

National Water Academy, Pune
May 2025

National Water Academy: Vision 2047

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Executive Summary

Vision 2047: Training and Capacity Building in the Water Sector & Strengthening of National Water Academy, CWC, Pune

This executive summary outlines the core elements of the Vision 2047 document, presenting the pathway for NWA's transformation to meet the future challenges and aspirations of India's water sector.

Genesis

Water is a fundamental resource impacting all aspects of economic, social, and cultural life. It plays a vital role in energy and food security, public health, disaster resilience, and sustainable development. Efficient water management is crucial for climate adaptation, economic growth, and environmental sustainability.

India, with 18% of the global human and cattle population but only 4% of the world's water resources, faces significant water management challenges. The country's water availability is subject to high spatial and temporal variability, further intensified by climate change. Rapid urbanization, industrialization, and changing lifestyles are increasing water demand. Ensuring adequate supply and sustainable management has become a critical challenge.

India's Water Vision @2047

Aligning with the national vision of Viksit Bharat (Developed India) by 2047, India's Water Vision @2047 aims to ensure water security, sustainability, and resilience against climate change. This vision prioritizes water conservation, resource optimization, and stakeholder engagement, integrating people's participation and state collaboration.

Challenges in the Water Resources Sector

Key challenges and issues include:

- Uneven water distribution and seasonal fluctuations
- Depleting groundwater levels
- Water pollution and ecosystem degradation
- Inefficient Use & Wastage in Every Water Use Sector
- Inadequate R & M od water infrastructure
- Inter-state, Intra State & Inter Sectoral Conflicts
- Inequitable Distribution of water resources
- Fragmented Approach

- Inadequate Legal Framework
- Low Awareness About Overall Scarcity & Economic Value of Water
- **Limited institutional capacity and workforce development**
- **Need for skilled manpower in the water sector**

Need for upscaling Training & Capacity Building in the Water Sector

Addressing India's water challenges demands a skilled professionals trained in cutting-edge technologies & management strategies, forward-looking leadership, and continuous innovation. National Water Policy of India emphasises the need of the skilled manpower in the water sector with regular training and capacity building in water management. It recommends re-training and quality improvement programme for water planners and managers at all levels in India, both in private and public sectors.

The National Water Academy, as the apex training institute of the Central Water Commission, stands at the forefront of India's efforts to strengthen the knowledge, capacity, and leadership in water resource management. As India approaches 2047, marking 100 years of independence, the Academy envisions itself evolving into a global centre of excellence, fostering innovative thinking, capacity building, and policy influence in the water sector.

Training and capacity building are central to equipping water sector professionals with the knowledge, skills, and mindset needed to meet these emerging demands. In this context, NWA's role needs a quantum leap — from a national training institution to an international centre of excellence and innovation.

With a vision "To transform NWA into a world-class centre for excellence, leadership, and innovation in water resources management and sustainable development by 2047," NWA aims to be globally recognized for nurturing leadership, catalyzing innovation, and building a community of water professionals equipped to meet the future challenges. This Vision 2047 document gives a progressive roadmap for the future towards this objective.

Vision 2047: Strengthening and Expanding the National Water Academy (2025-2047)

As a Centre of Excellence, the Vision 2047 sets out the following key strategic objectives:

- **Strengthening Capacity Building** : Expanding coverage of topics and scope of training to include emerging areas like climate resilience, smart water

management, AI/ML applications in water resources management, and sustainability. Introduce tiered training programmes, from entry-level to specialized leadership development courses.

- **Enhancing Infrastructure and Technology Adoption**: Upgrade physical infrastructure to international level with smart, green campus having state of the art facilities. Adoption of distance learning (DL) modules, digital tools, and AI-driven analytics for training delivery & Fostering e-learning ecosystem.
- **Faculty and Workforce Expansion**: Increase in faculty strength, staff and recruitment of consultants and young professionals to support upscaling of training activities.
- **Global Collaboration and Outreach** : Strengthening linkages with national and international institutes, universities, and industry leaders. Hosting international conferences, workshops, and exchange programmes. Partnership with international water institutions and UN bodies to position NWA on the global map.
- **Promoting Training related Research and Innovation**: Establish dedicated chairs for specialised areas within NWA focusing on real-world water sector challenges, undertaking Training related research, etc.

Enabling Mechanisms and Future Roadmap (2025-2047)

The roadmap envisages a phased implementation approach which will ensure systematic enhancement of training infrastructure, training areas and stakeholder coverage. The phased approach is divided in three parts as follows:

- **Short-Term initiatives (2025-2032)**- **Foundation Building** : In this phase, NWA will focus on laying the critical groundwork through Infrastructure development with a new international-level facilities; engagement of consultants and young professionals to support expansion of training & capacity building activities; development of Distance Learning (DL) modules; expanding distance learning through MOOCs & faculty assisted DL programs; programs for International Participants; upgrading facilities; broadening the coverage; faculty development & Faculty Exchange Programs; leveraging IT tools for Better management of training activities; etc.

- **Mid-Term initiatives (2033-2040) - Scaling Up** : The focus of this phase will be on consolidating gains and expanding NWA's reach and impact through establishing regional training centres; focus on Faculty Development Programs(FDP) & Training of Trainers (ToTs) to create pool of trainers; upscaling Linkages with National / International Institutes/ Universities; capacity building

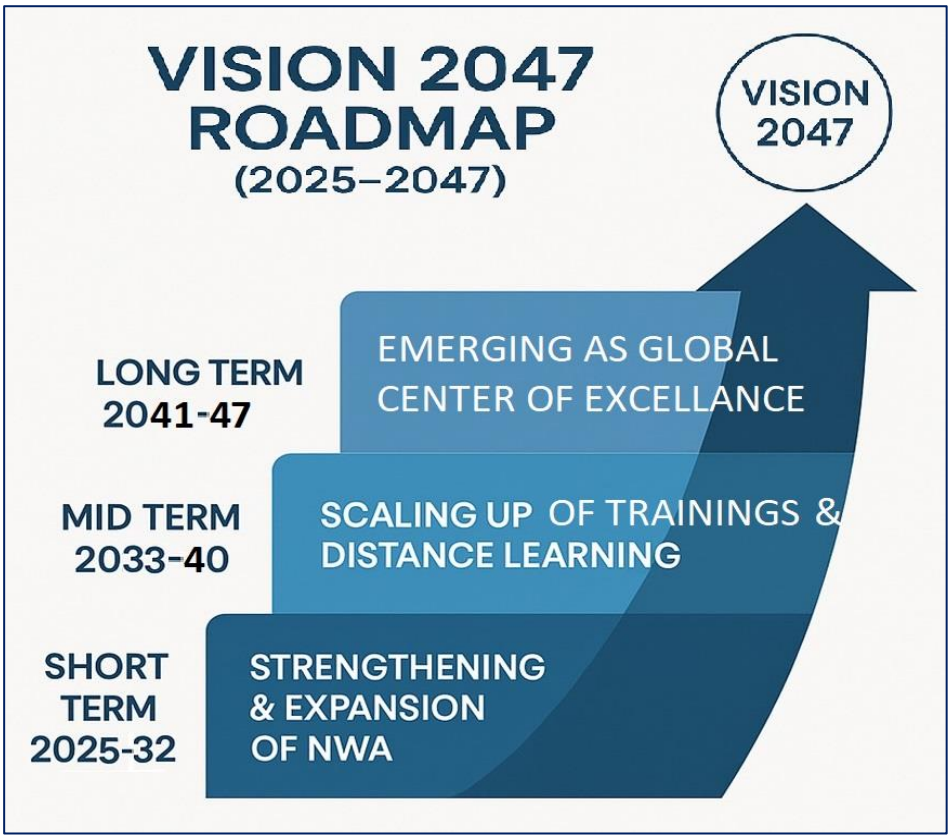
in States; Water education in B-schools; Developing Network of Institutions across India for synergising Capacity Building efforts, etc.

- **Long-Term initiatives (2041-2047)- Global Leadership** : By 2047, NWA envisions itself as a globally acclaimed institution through full-scale institutional transformation; establishment of centres on various topics; Research & consultancy on Training & Capacity Building; setting of Chair for specialized areas, tie up with a universities for diploma/degree/PG course; global outreach; leadership in water resources capacity building at all levels, etc.

Conclusion

Through a strategic focus on strengthening institutional capabilities, scaling up of training and capacity building activities, and embedding excellence in every sphere, NWA is poised to play a pivotal role in India's water-secure future and contribute meaningfully to the global water agenda.

The Vision 2047 document outlines a strategic roadmap to empower India’s water sector through knowledge, training, and capacity building.



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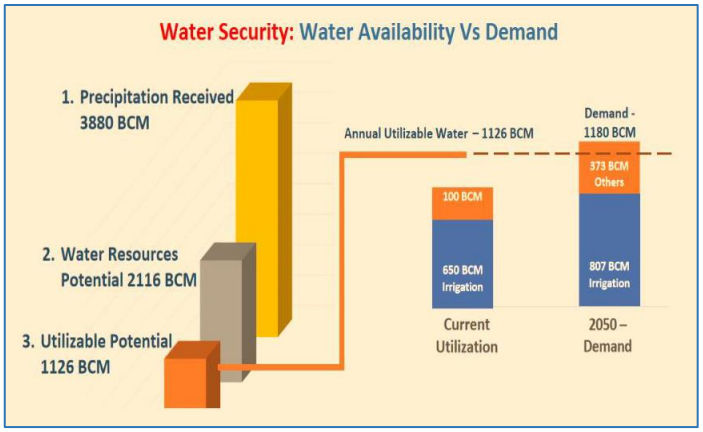
Vision 2047

Training and Capacity Building in the Water Sector and Strengthening of National Water Academy, CWC, Pune

1. Genesis

India has to support about 18% of the world human and cattle population with only 4% of the world's water resources. Due to monsoon, the country has high temporal and spatial variabilities, in respect of precipitation it receives. The variability is further accentuating and becoming more unpredictable due to impacts of climate change. To provide water, in requisite quantity and of desirable quality and in the time of need, to all the stakeholders has become huge challenge in view of rapid urbanization, changing lifestyle, increasing industrialization etc.



Water is a pervasive natural resource that touches all human activities, economic, social and cultural. Water, per se, is not a sector but everybody's business. Water use pervades across primary (natural resource development), secondary (manufacturing) and tertiary (service) sectors of the economy. An efficient water management system is pivotal for ensuring energy, food and nutritional security; water quality; socio-economic development; alleviating poverty and contribution to sustainable development. Efficient water management also builds resilience against natural disasters in/for and flood management.

Food Requirement

Year	Population (in million)	Food production/ requirement (in million tonnes)
1950s	~ 400	~ 51
2000	~ 1025	~ 208
2010	~ 1200	~ 240
2025	~ 1400	~ 350
2050	~ 1600	~ 450

2. Challenges in Water Resources Sector

Water is among the most pressing global challenges of both today and the future. Climate change and scarcity have intensified pressure on water resources. Reversing this trend needs cross-disciplinary collaboration, behavioural improvements, and governmental reforms. India is a vast country. Consequently, water issues vary greatly from region to region. The semi-arid northwest, for instance, has always had to adapt to limited water supplies. Other areas, such as the Gangetic plains of Bihar and West Bengal, usually have sufficient water for year-round use, even if economic constraints limit what can be accessed. To face these water challenges, local and regional conditions need to be taken into account.

- The security of our water future depends on how we manage our water resources today. This will require a concerted effort on the legal, policy, regulatory, and institutional fronts for better management and efficient usage of water. Accurate data and information systems are key to effective planning and management of water. Appropriate valuation of water uses will be necessary to design and promote demand management, recycling of wastewater, rainwater harvesting, and also to deter the polluting of water bodies.

- There is a need for increasing the availability of water and reducing its demand. For increasing the availability of water resources, there is a need for better management of existing storages and creation of additional storages by constructing small, medium and large sized dams considering the economic, environmental and social aspects.

- The availability of water resources may be further enhanced by rejuvenation of dying lakes, ponds and tanks and increasing the artificial means of ground water recharge. In addition to these measures, inter-basin transfer of water provides one of the options for mitigating the problems of the surplus and deficit basins.

- Priority must be accorded to flood management (flood prevention and control measures), as well as sedimentation control, where required.

- Integrated and coordinated development of surface water and groundwater resources and their conjunctive use should be envisaged right from the project planning stage and should form an integral part of the project implementation. IWRM is a holistic approach to managing water resources that considers social, economic, and environmental factors. Capacity building efforts can promote

interdisciplinary collaboration and stakeholder engagement to ensure the sustainable use of water resources and minimize conflicts over water allocation.

- There is a need for proper management of ground water resources, which presently require adequate input including manpower, financial inputs, technologies, etc. Some of the important measures which may be taken up for sustainable development of groundwater resources include improving public water supply, use of energy pricing and supply management to manage agricultural groundwater draft, increasing rain-water harvesting and groundwater recharge, transfer of surface water in lieu of groundwater pumping, etc.

- The components of the hydrologic cycle are being affected because the hydrological processes are no longer stationary due to point and non-point changes taking place in the river basins. An accurate assessment of available surface and groundwater resources, considering the man made changes, is needed for planning, design and operation of the water resources projects as well as for watershed management. There should be a periodic reassessment of the surface and groundwater potential on a scientific basis, taking into consideration the quality of water available and economic viability of its extraction. Since the hydrological processes are continuous and quite complex, an accurate assessment of quantities of water simultaneously passing through all these processes is quite a difficult task. Thus, in this regard, a comprehensive, reliable and easily accessible Information System for water resources data is a pre-requisite.

- Climate change is posing a challenge before the water resources engineers. Hydrological studies are required to be taken up for assessment of water resources under changing climatic scenarios. For predicting the future climatological variables on micro, meso and macro watershed scales, a comprehensive general circulation model is required to be developed for India, giving due consideration to the global scenarios.

- With the rapid industrialization and increasing use of fertilizers and pesticides, the quality of surface and groundwater resources is deteriorating. The movement of pollutants in the rivers, lakes and groundwater aquifers needs to be regulated. In this regard, regular water quality monitoring program has to be launched for identifying the areas likely to be affected because of the water quality problems. For maintaining the quality of freshwater, water quality management strategies are required to be evolved and implemented. Many regions are facing water scarcity due to factors such as population growth, urbanization, climate change, and pollution. Training programs can equip professionals with the skills to manage water resources efficiently, optimize

water usage, and implement water quality monitoring and management strategies.

- Minimum flow must be maintained in the rivers to meet the criteria of Environmental Flow Requirement (EFR). The eco-hydrological approach based on the concepts of blue and green waters may be considered as an integral part of the water resources management practices by balancing water between human beings and nature.
- The concept of virtual water transfer requires to be introduced at policy level for food trade, water management and agriculture.
- Today the water sector is facing number of challenges not only in terms of water availability or water quantity; even water quality is becoming equally important. Water Quality is of sub-optimal standards (is below standard) in many parts of the country. Potable Drinking water is not available at many places particularly in the sub-urban areas. Increasing urbanization is leading to degradation of water quality in terms of disposal of urban sewage.
- Infrastructure Development and Management: Developing and maintaining water infrastructure is essential for ensuring adequate water supply and sanitation. Capacity building programs can provide engineers and technicians with the knowledge and skills required for designing, constructing, and managing water supply systems, dams, reservoirs, and wastewater treatment plants.
- Increasing industrialization is also adding stress on available water resources in terms of water requirement for industrial processes. In spite of legal provisions on pollution issue, large amount of pollution seems to be coming through industrial uses.
- Transboundary water resources and their use are of great importance to riparian States. In this connection, cooperation among those countries may be desirable in conformity with existing agreements and/or other relevant arrangements, taking into account the interests of all riparian States concerned.
- Data Management and Modeling: Effective water resource management relies on accurate data and modeling tools to assess water availability, predict future water demands, and evaluate the impacts of different management scenarios. Capacity building can enhance professionals' proficiency in data collection, analysis, and modeling techniques.
- Policy and Governance: Improving governance frameworks and policies is essential for promoting equitable access to water resources and ensuring their sustainable management. Capacity building initiatives can help policymakers,

regulators, and water managers develop and implement effective policies, regulations, and institutional mechanisms.

- Community Engagement and Awareness: Engaging local communities and raising awareness about water issues are crucial for fostering behavior change and promoting water conservation and sustainability. Training programs can empower community leaders, educators, and outreach workers to effectively communicate water-related information and mobilize community action.
- Emerging Challenges: Rapid urbanization, industrialization, and demographic changes are leading to new challenges in the water sector, such as groundwater depletion, water-energy-food nexus, and emerging contaminants. Continuous training and capacity building are essential to adapt to these evolving challenges and innovate solutions.

3. Need for Training & Capacity Building in Water Sector

Addressing the Issues & challenges being faced by India's water sector necessitates a skilled professionals trained in cutting-edge technologies and management strategies. It also needs trained workforce in all water use sectors as well as capacity building of all stakeholders. National Water Policy of India emphasizes the need of the skilled manpower with regular training and capacity building in water management. It recommends re-training and quality improvement programme for water planners and managers at all levels in India, both in private and public sectors.

With the ever-changing scenario of the water sector domain and upcoming challenges in the sector, training and capacity-building needs are also changing. There is a huge need to build Human Resources for the Water Sector in India. The primary issue in the Water Sector is insufficient workforce capacity, which is further aggravated by personnel skill set deficiencies. A well-trained and motivated manpower is the backbone of any developmental activity. In a very diverse subject like the water sector, there is a pressing need for sustainable human resource development through multi-level training of personnel involved in the sector to undertake the challenging tasks ahead.

Addressing the critical issues within the Water Resources Development and Management (WRD&M) sector necessitates the active participation of all stakeholders, encompassing government bodies at various levels, such as the central government, state governments, municipal corporations, zilla parishads, and gram panchayats, as well as end users, industries, and non-governmental

organizations (NGOs). In this multifaceted landscape, there is significant room for contributions from various stakeholders.

One of the key strategies for effective water resource management is to bolster the capabilities of relevant institutions while enhancing managerial skills and the overall human resource base. This encompasses not only the formulation but also the implementation of policies, and the strengthening of institutions at the central, state, and local levels, extending all the way to grassroots functionaries. Implementing a comprehensive ecosystem of capacity-building programs is imperative for every stakeholder, as it is essential for achieving the goal of sustainable development within the water sector. Looking ahead, training institutions specializing in the field of water resources face several future challenges, which include:

- ✓ To prepare these institutions to handle some of the emerging themes in the sector, such as water resources management, water allocation and water demand management, participatory surface and groundwater management, etc., which have strong ecological, economic and social focus.
- ✓ Use multi-disciplinary approach for modern-day Integrated water resources management (IWRM) practices.
- ✓ Understanding the current skill sets available with the water resources/service organizations and mapping with the current & future requirements of these organizations to upgrade the skill sets & competencies of the personnel according to the needs of the sector.

The water sector is highly interdisciplinary in nature. The need for holistic training and capacity building of the water sector professionals and stakeholders has been discussed in various forums. The National Water Policy adopted by the Government of India in 2012, underscores the need for research and training in the water sector and has recommended (excerpts from the National Water Policy (2012) – Para 15.0) about training and capacity building needs.

> *Continuing research and advancement in technology shall be promoted to address issues in the water sector in a scientific manner. Innovations in water resources sector should be encouraged, recognized and awarded.*
>
> *It needs to be recognized that the field practices in the water sector in advanced countries have been revolutionized by advances in information technology and analytical capabilities. A re-training and quality improvement*

programme for water planners and managers at all levels in India, both in private and public sectors, needs to be undertaken.

An autonomous center for research in water policy should also be established to evaluate impacts of policy decisions and to evolve policy directives for changing scenario of water resources.

To meet the need of the skilled manpower in the water sector, regular training and academic courses in water management should be promoted. These training and academic institutions should be regularly updated by developing infrastructure and promoting applied research, which would help to improve the current procedures of analysis and informed decision making in the line departments and by the community. A national campaign for water literacy needs to be started for capacity building of different stakeholders in the water sector.

Department of Personnel and Training, Government of India adopted the National Training Policy in 2012 and has issued operational guidelines which inter-alia emphasizes the need for training in a systematic manner and for transforming human resources, it is imperative to move towards a strategic human resource management system, which would look at the individual as a vital resource to be valued, motivated, developed and enabled to achieve the Ministry/Department/ Organization's mission and objectives. Within this transformational process, it is essential to match individuals' competencies with the jobs they have to do and bridge competency gaps for current and future roles through training.

4. Background of National Water Academy (NWA)

4.1. Establishment of National Water Academy: The then Ministry of Water Resources (MoWR), Government of India upgraded the erstwhile Central Training Unit which was established in 1988 to a full-fledged National Water Academy in 2001 (IX Plan) at Khadakwasla, Pune. The primary objective of NWA is to function as 'Centre of Excellence' in training

the water sector professionals and other stakeholders Central and State Organizations on various aspects of Water Resources Planning, Development & Management, and to develop institutional capability at the national level for imparting training in new emerging technologies in water resources sectors on continued basis. Programs encompassing almost all aspects of Water Resources Development and Management are being organized by NWA, and the programs of NWA are available to all stakeholders of water sector.

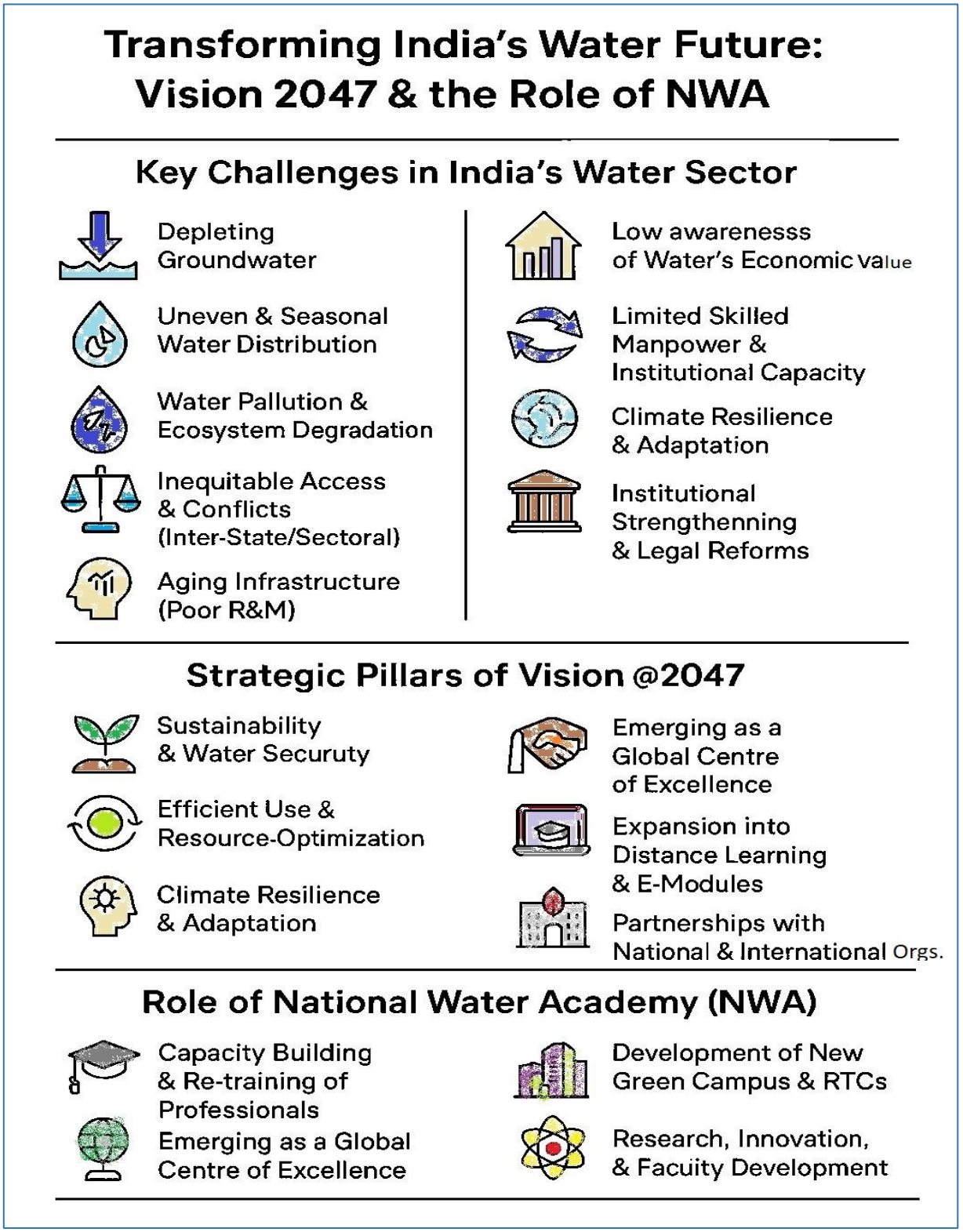
4.2. Objective, Vision & Mission of NWA

NWA is a Central Training Institute (CTI), an epitome of learning for over last 35 years, functioning as "Centre of Excellence" with an objective of training and building capacity of Water Sector Professionals (technical as well as non-technical) from Central & State Govt. Organizations, Public and Private Sector Units, Academicians, foreign nationals, Media personnel, NGOs, Panchayati Raj, representatives of Water User Associations (WUAs), personnel involved in watershed management etc., in achieving goals set forth by Ministry of Jal Shakti and all other stakeholders associated with Water Resources Planning, Development and Management. The Mission of Central Water Commission (CWC) is ***"to promote integrated and sustainable development and management of India's water resources by using state-of-art technology and competency and by coordinating all stakeholders"***. Furthering the mission of CWC, NWA's goal is "***to educate all stakeholders to manage water resources issues and overcome problems faced in water sector in an integrated and sustainable manner".***

4.3. General Objectives

- ✓ Keeping up-to-date and enhancing professional knowledge and skills needed for better performance of individuals and organizations;
- ✓ Orienting participants to various emerging issues in the Water Resources Sector, and the underlain philosophy, values, principles and functional priorities & requirements of the organizations where they are likely to work during their service tenure;

- ✓ Promoting better understanding of engineering professional requirements as well as sensitization to professional and socioeconomic environment in which work is done;
- ✓ Bringing about right attitudinal orientation and transform to build professionalism and responsive water resources engineers;



4.4. Mandate and Activities of NWA

NWA, Pune is Central Training Institution (CTI) mandated to conduct Induction Training Program (ITP) for Central Water Engineering Services (CWES) - Group 'A' officers recruited through Engineering Services Examination (ESE) conducted by the Union Public Service Commission (UPSC). NWA is also involved in the training and capacity building of engineers from Central and State Government Organizations and other stakeholders on various aspects of Water Resources Planning, Development & Management. NWA's activities include organizing training, workshops, seminars, and conferences to promote integrated and sustainable development & management of Water Resources. Also, assistance is extended to Central/ State Government organizations and their training institutes for addressing their specific training needs. Developing and maintain linkages with leading institutions in India and abroad dealing with training related activities in water resources sector for sharing the expertise and imparting trainings. Training for professionals from international organizations viz. Customized programs as per demand; Programs under ITEC Scheme of MEA; Distance Learning (DL) Programs.

4.5. Increased mandate/activities of NWA:

Being a premier institute, NWA conducts training courses on all aspects of water resources development and management and also on general administration and management for those engaged in Water Resources Development and Management. Since 2019, NWA is also mandated to conduct ITP for CWES - Group 'B' officers, Mandatory Cadre Training Programs (MCTPs) for CWES - Group A & Group B officers and scientific cadre of CWC. In recent times many new initiatives have been incorporated/ envisaged leading to a diversifying the mandate /activities of NWA in terms of training activities. The total portfolio of activities of NWA is now as follows:

- To conduct Induction Training for newly recruited Assistant Directors/ Assistant Executive Engineers of Central Water Engineering (Group A) Service newly joined Junior Engineers, draftsmen, Senior Research Officers and newly joined officers/staff of other cadres of CWC.
- To organize Mandatory Cadre Training Programs for various levels of officers of Central Water Engineering Services "Group A", "Group B" and other cadres of Central Water Commission.
- To organize induction/orientation training to newly promoted "Group B" engineering officers of CWC
- To conduct core area training programs in the diverse themes of water sector such as Basin Planning and Management, Appraisal of Water Resources Projects, Hydrology, Flood Forecasting/ Hydrological Observation, River

Management, Dam Safety, Inter-state & International aspects on water sector, Coastal Management, Water Management, Survey and Investigation of WR Projects, Civil & Structural Design of WR Projects, Monitoring of Water Resources Projects, Hydro-Mechanical Design of WR Projects, Human Resource Management etc.

- To conduct customized training programs for specific needs of government organizations and institutes.
- To establish and maintain linkages with leading institutions in India and abroad dealing with training-related activities in water resources sector.
- To organise the training programs for PRI Functionaries, WUAs/ Farmers
- To conduct the training programs for NGOs & Media Professionals
- To host the training programs for Educational Institutions & Teachers
- To conduct training program on Personality Development & Communication Skills aspects
- Conducting collaborative DL programs in association with WMO (NWA is a component of Regional Training Centre (RTC) of WMO).
- Conducting capacity building & training programs of NHP, DRIP and other flagship schemes of DoWR, RD &GR.
- Conducting training programs for developing countries under ITEC Scheme of MEA
- To host Management Development Programs
- To conduct Trainers' Development Programs
- To conduct customized Programs at Client Locations
- To conduct training programs in advanced technology areas related to the water sector.
- To facilitate Faculty Development Programs for CWES officers
- To conduct mass awareness programs, online certification courses, non - technical programs etc.
- To conduct specific modules of Induction Training Programs for newly joined Officers of other organizations of the Ministry of Jal Shakti such as NWDA, FBP, CGWB, NERIWALM etc.
- To develop training modules/case studies on new emerging technologies

- Synergizing with RGNGWTRI, Raipur; NERIWALM, Tezpur; all Water And Land Management Institutes (WALMIs) and irrigation Management Training Institutes (IMTIs) created for training related to land and water resources in the country
- To conduct Distance and Blended Learning Programs and webinars on focus areas and to develop online content of DL courses for NWA e-learning platform and also for iGoT platform for the benefit of all stakeholders.
- To provide need-based training to participants from foreign countries
- To conduct Mass awareness and sensitization programs for furthering water conservation.
- etc.

In summary, NWA, standing as the sole National-level Institute for Capacity Building and Training in the water sector, must undoubtedly assume a pivotal role. Its unique position and mandate empower it to shape and lead the way in enhancing the capabilities and skills of professionals in the water sector, thereby contributing significantly to the sustainable management of this precious resource. With its expertise, NWA can spearhead initiatives, innovations, and knowledge dissemination to foster excellence and proficiency across the water sector professionals, ultimately ensuring the responsible and efficient utilization of water resources for the betterment of our nation.

4.6. Categories of NWA Programs

On any given topic, different course content is designed depending on the profile of target participants. The programs are divided into the following six categories.

- **Exposure Programs**

These are intended for exposing senior technocrats to what is new. These are not training programs, in the sense the participants are not expected to learn & how to do it; but only appreciate what is the state of art, so that they can take strategic decisions to use it in their own departments. These are short duration programs, covering 4 to 6 topics over 2-3 days.

- **Operational Level Training Programs**

In this category different programs are designed for Junior Level Officers (separately), where the participants are trained at operational level in the given topic. These are 5 days to 15 days duration programmes and focus on one topic only.

- **Refresher programs**

In separately designed programs for Middle / Junior Level, refresher programs are intended to bring the participants up-to-date on latest developments in the given topic and brush up forgotten concepts. These are short programs of about 3-days and address more than one topic. The difference between this category and Exposure programs is that, in Refresher Programs the participants are expected to be already aware with the subject and are brought up to date with the latest developments, whereas in Exposure Program new ideas are introduced.

- **Brain Storming Sessions**

These are for Senior Level Officers. These are short (3-days) programs where there is no "faculty" and no "teaching". The format is that of open discussion in brain storming mode to "take the thinking forward" and create a "think tank". 4 to 6 topics are discussed over a 3-day period.

- **Customized Programs**

In addition, NWA also takes up custom-made training programs as per the requirements of client Organisations on any topic related to water resources development and management.

- **Distance Learning**

NWA since 2012, has been conducting Distance Learning Programs. Amid Covid-19 pandemic situation NWA has also started conducting Distance Learning programmes using user friendly tools, Moodle Platform and other.

4.7. Present Training areas of NWA

Being a premier institute, NWA conducts training courses on all aspects of water resources development and management; and also on administration and management.

Since October 2010, the Academy has opened its doors also to Public Sector Undertaking, Private Sector, Foreign Nationals, Media Personnel's, NGOs, individuals, in fact virtually covering every one. From the feedback received from the client organizations and from the participants, NWA has developed confidence that facilities and quality of training available at NWA is at par with other similar institutions elsewhere in the World. During the last few years NWA has taken number of initiatives to increase its visibility among the target audience and also to add more activities to its portfolio. NWA has made open its regular training program to all. On an average, NWA conducts more than 32 training program in year and it includes regular training programs at NWA and custom-made training program based on the client's demand at the client's location or at NWA. Since,

2019 NWA is also mandated to conduct ITP for CWES - Group 'B' officers, Mandatory Cadre Training Programs (MCTPs) for CWES - Group A & Group B officers and scientific cadre of CWC.

Broadly, the expert areas which are to be handled at NWA can be categorized as under:

Technical Areas

Designs	Design of all kinds, barrages, canals, HCD, Hydro-mechanical Equipment, FEM and other advanced design techniques etc.
Project Planning	Investigation, project formulation, preparation of DPR, Project Appraisal, processing of DPR.
Hydrological Sciences	Operational and Project Hydrology including HIS and Telemetry.
Irrigation Management & Agriculture	Agronomy, irrigation, drainage, performance evaluation and benchmarking, PIM and WUA etc.
Hydropower Engineering	Civil Aspects of Hydropower Schemes.
Information Technology	GIS, RS, various Software application in Water Resources Sector
River Management	Morphology, Flood Management, Flood Forecasting, Reservoir Operation, Water Quality Management, Urban Flooding, GLOF Studies, Coastal Management etc.
Basin Planning	Integrated River Basin Planning & Management, Integrated Water Resources Management, River Basin Organisation, Water Assessment etc.

Non-Technical Areas

Environmental Science	Environmental impact of river valley projects, remedial measures, Legal aspects, EIA, low flows, Climate Change, Carbon Credits etc.

Social Science	Social impacts of river valley projects, stakeholders management, legal aspects, mandatory public hearing, gender issues
Economic aspects	Economic and financial aspects of river valley projects, financial sustainability of infrastructure.
Management Development	Management Development Programs for the officers of various levels (Basic to Advanced Level)
Policy issues	PPP, CSR, Water rights, water markets, trading in water, water pricing etc.
Water Law	Water Law at National, State and International Water Law
Financial Management & Procurement	e-GEM, CPP, Contract Management, World Bank Procurement Procedure etc,

In the coming years, the areas being handled by NWA will be expanded to cover

- Advanced and Emerging Technologies in Water Resources Management
- Application of Geospatial technologies in water sector
- Geospatial Data Integration and Data Fusion Techniques
- Application of Artificial Intelligence and Machine Learning in Water Resources Management
- Big Data Analytics for Water Resources Planning and Decision Making
- Management of Hydrometric Data System and Information Technology
- Smart Water Networks and Sensor Technologies for Real-time Monitoring and Leak Detection
- Internet of Things (IoT) and its Role in Water Resources Monitoring and Control
- Applications of Drones in Water Resources Monitoring and Management
- Advanced Water Treatment Technologies for Sustainable Water Management
- Advanced Hydrological Forecasting and Predictive Analytics
- Hydrological Modeling of River Basins in changing climate
- Climate Change Adaptation and Resilience in Water Resources Management, etc.

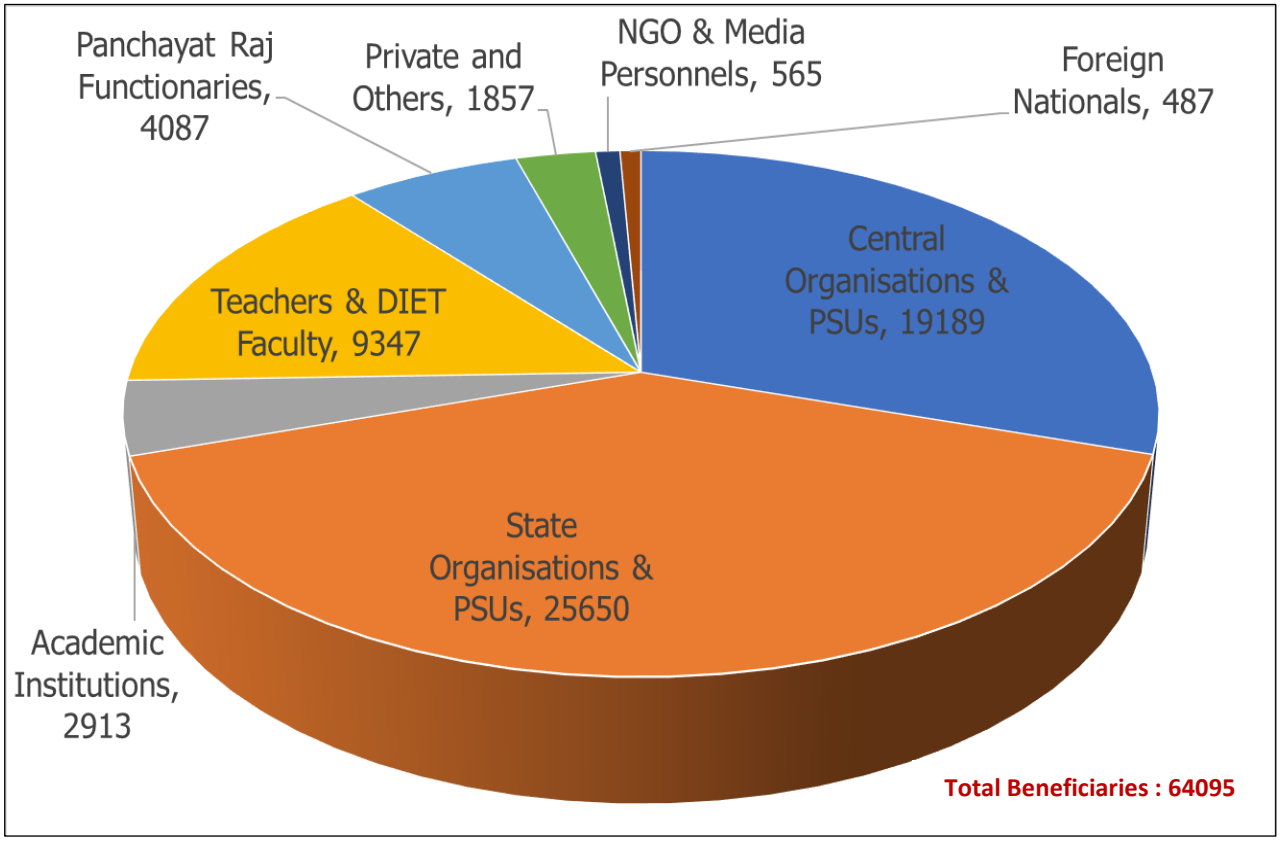
4.8. Achievements of National Water Academy, Pune in Terms of Capacity Building and Training

Since its inception in 1988, NWA has immensely contributed in the Capacity Building &Training in Water Resources Sector. The outstanding achievements of NWA are multidimensional, which includes demand driven programs; capacity building under Hydrology Project; collaborative efforts with other expert Organizations; programs under National Water Mission; programs under Pradhan Mantri Krishi Sinchai Yojana; Dam Safety Rehabilitation Projects, customized programs for foreign nationals, and programs for all other stakeholders viz school teachers; PRIs; Media Personnel and NGOs etc. NWA always endeavor to cater to every aspect of training in Water Resources Planning Development and Management including emerging and advanced areas. In the recent past many new areas have been added to the NWAs Portfolio of training.

Since the year 1988, NWA has conducted a total of 1059 training programs upto 30 January 2025 and training more than 64000 officers. The Category-wise beneficiaries of NWA training programs since 1988 to 2025 (30 January 2025) are given below:

Sr. No.	Beneficiaries from	Total Beneficiaries	Remarks
a.	Central Organisations & Central Public Sector Undertakings	19189	Participants Comprises of Central Govt Organisations, Central PSUs, etc.
b.	State Organisations & State Public Sector Undertakings	25650	Participants comprises of State WRD, Irrigation Dept., State PSUs etc.
c.	Academic Institutions	2913	Participants from Colleges, Institutes like Professor, Research Associates Students etc
d.	Teachers & District Institute of Educational Training (DIET) institutes Faculty	9347	School Teachers and DIET Faculty Pan India

e.	Panchayati Raj Functionaries & WUAs	4087	Panchayati Raj Representatives, WUA functionaries etc
f.	Private and Others	1857	Private Companies, Individual and Consultants
g.	NGO & Media Personnels	565	NGOs and Media Personnels Pan India
h.	Foreign Nationals	487	Participants from Asian, African Countries
Total		64095	



Publications: NWA has published and presented more than 100 research papers, books, training documents on various themes of water resources and environmental modelling, remote sensing and GIS applications to environment, statistical data analysis, advanced programming & graphics, spatial data analysis, coastal erosion and watershed management etc.

Recognition: The capability of NWA in terms of infrastructure and academics have been very well appreciated by various agencies viz. both at International and National Level. Also various dignitaries and delegates visiting Academy have always appreciated the NWAs Program and hospitality. During March 2012, 25th Session of the Executive

Council Panel of Experts on Education and Training of WMO visited NWA. The Panel Members noted that NWA is well organized with excellent programs and support facilities at par with International level. The Panel in its report recommended to the Executive Council to recognize NWA as a third component to WMO RTC in India. Recognizing the efforts of NWA in field of Training and Capacity Building, it has been conferred with CBIP Award during CBIP Day for contribution of NWA in "Multidimensional and Customized Capacity Building Program in Water Resources Sector" in the year 2015.

Academic / Present Faculty Structure of NWA : At present, the NWA is headed by a Chief Engineer and has five Directors and three Deputy Directors as core faculty. The core faculty is drawn from CWES (Central Water Engineering Services-Group A) cadre who have long practical experience in Water Resources Development and Management. The guest faculty comprises of academicians and scientists of eminence from premier Research Centers and Universities in India, as well as practicing professionals and specialists drawn from other organizations and agencies. The total sanctioned staff strength as on date is 32. The present organogram is enclosed at Annex-I.

5. India's Water Vision@2047

Integral to life and indispensable for comprehensive growth and development, water is key to India achieving its holistic vision of **Viksit Bharat** by 2047. In line with this perspective, India's Water Vision @2047, **places water at the centre of the inclusive development agenda.** It aims to ensure water security for the country by addressing key challenges, including the protection and improvement of water resources, along with emerging concerns such as climate change. Infused with the spirit of conversation, cooperation, and care, this collective vision is enriched with the constructive involvement of people and active collaboration with states.

Box-1

22 Recommendations

i. *Climate Change - Adaptation & mitigation*
ii. *Demand & Supply Management*
iii. *Enhanced People's Participation*
iv. *Use of IoT and other Technologies*
v. *Building Piped Irrigation Network*
vi. *Promotion of Micro Irrigation*
vii. *Single State Water Regulatory Body*
viii. *Rationalized Water Tariff*
ix. *Recycle & Reuse of Wastewater*
x. *Drinking Water Source Sustainability*
xi. *Springshed Management in Hilly Region*
xii. *Application of state-of-the-art technology,*
xiii. *Promote Water Budgeting at various level*
xiv. *Enhancement of Water Storage, Effective Sediment Management*
xv. *Highest priority to Drinking Water*
xvi. *Encouragement to Inter-Basin water Transfer*
xvii. *Adopting Appropriate Cropping Pattern*
xviii. *Monitoring River Health & Maintaining eFlow*
xix. *Proper O&M of Irrigation Infrastructure*
xx. *Regular Safety Inspection of Dam*
xxi. *Jal Shakti Abhiyan & Conservation Programs*
xxii. *Expedite Flood Plain Zoning*

The Ministry of Jal Shakti, Government of India initiated All-India State Water Ministers' Conference in Bhopal in 2023 to advance the Prime Minister's vision of Viksit

Bharat by 2047. The Bhopal Conference laid the foundation for this initiative by formulating Water Vision @ 2047. The Bhopal Conference laid the foundation by focusing on five key areas: water security, water use efficiency, governance, climate resilience, and water quality. It resulted in 22 actionable recommendations given in **Box-1**, which have already begun guiding water management strategies across states.

A follow-up review of its objectives and the actions taken by various states was conducted at the Secretaries' Conference in Mahabalipuram in January 2024. This conference was divided into five thematic sessions in the area of water management. The **first** thematic session, focused on Climate Resilience, underscored the urgency of adapting to and mitigating the impacts of changing climate on our water resources. The **second** session, Water Governance, acknowledged the need for effective policies, legal & institutional framework for collaborative decision-making. In the **third** session, Water Use Efficiency took centre stage. With the growing demand for water in various sectors, optimizing our water use is paramount. The **fourth** theme recognized the pivotal role of reservoirs and other storage mechanisms in water management. **Finally**, People's Participation emerged as a key theme which facilitates the inclusive decision-making processes by actively involving communities. The five major takeaways of this conference of January 2024 are given in **Box-2**.

Box-2

Major takeaways of this conference include:

i. Assessment of actions taken on agreed 22 recommendations;
ii. Agreement to accelerate action on areas that are lagging;
iii. Evolving Water Vision@2047 Conferences as peer learning platform and forum for collaboration & partnerships;
iv. Setting a foundation for continuous dialogue on strengthening water security;
v. Identification and sharing of capacity building needs.

Building on the outcomes of the two conference of 2023 & 2024 respectively, the Second State Water Ministers Conference, was held in Udaipur on during February 2025 which was significant step in shaping India's water security future with a focus on the concrete actions required to turn the Water Vision@2047 into reality.

The objective of the Second All-India State Water Ministers' Conference was to strengthen efforts toward achieving water security and Viksit Bharat by 2047. The conference, themed "India@2047 – A Water Secure Nation," emphasized the importance of sustainable water management to support agriculture, industry,

and domestic use while preserving our rivers and ecosystems for future generations.

The conference structured around six themes viz (i) Strengthening Water Governance; (ii) Water Storage Infrastructure & Augmenting Supply; (iii) Water Delivery Services with a Focus on Drinking Water; (iv) Water Delivery Services with a Focus on Irrigation & Other Uses ; (v) Demand Management & Water Use Efficiency; and (vi) Integrated River & Coastal Management. The major takeaways of this conference of February 2025 are given in Box-3.

Box-3

Major Takeaways of the Conference of February 2025

xxiii. *Adapting Integrated Water Resources Management (IWRM) to state-specific contexts requirements*
xxiv. *Strengthening participatory water governance, particularly at the grassroot level*
xxv. *Adopting Water Budgeting to balance demand with available resources*
xxvi. *Leveraging data, technology and innovation as key enablers*
xxvii. *Development & Maintenance of optimum water storage infrastructure for sustainable water supply and climate change*
xxviii. *Adopting all possible interventions of water conservation at every level*
xxix. *Achieving the mission 'Har Ket ko Pani' through strategic interventions*
xxx. *Adopting Evapotranspiration (ET) based irrigation performance assessment*
xxxi. *Improving on farm application efficiency through various measures including micro irrigation*
xxxii. *Accelerating Command Area Development for last mile connectivity*
xxxiii. *Promoting conjunctive use of surface and ground water and treated water through guidelines and SOPs*
xxxiv. *Enhancing the reach of the Pressurized Irrigation Network (PIN), Underground Pipe Line (UPGL)*
xxxv. *River Rejuvenation through waste water treatment, recycle & reuse, e-flow, flood plain zoning, river front development, community participation*
xxxvi. *Promoting ecological restoration and bio-diversity conservation in river and coastal region*
xxxvii. *Rejuvenating springs and other natural sources for augmenting river flows*
xxxviii. *Promoting circular economy and water tourism as self-sustaining economic model*
xxxix. *Etc.*

The government has been conscious of the water sector's significant role in achieving the overarching goal of a developed India by 2047. Thus, water being a necessity for all the economic activities, it becomes crucial to adopt smarter ways of water resources management. It is essential to visualize the future scenario and develop strategies and plan for equipping the country with trained manpower at all levels for maintaining our water-food-energy security in the changing projected scenario.

Aligning with the national vision of Viksit Bharat (Developed India) by 2047, India's Water Vision @2047 aims to ensure water security, sustainability, and resilience against climate change. This vision prioritizes water conservation, resource optimization, and stakeholder engagement, integrating people's participation and state collaboration

Considering the above background, it is felt necessary to prepare NWA's **"Vision 2047: Training and Capacity Building in the Water Sector**" in order to chalk out a roadmap for 2047. The vision 2047 gives a plan for institutional, academic, technological and infrastructural path to be followed for "Training and Capacity Building" in Water Sector to achieve the goal of sustainable development.

6. Vision 2047: Strengthening and Expansion of National Water Academy (2025-2047)

As a "Centre of Excellence," NWA plays a pivotal role in training and capacity building of all stakeholders across the country. However, many further initiatives need to be taken in capacity building at various level to bring out significant impact on the sector for achieving the sustained development. Certainly, all these cannot be achieved in one go. Initiatives to be taken include increased manpower, restructuring, infrastructure development, broadening of horizons of programs, use of information technology, improving the pedagogy of delivery mechanism etc. Some of these planned initiatives are interdependent on each other. It is obvious that all cannot be taken up in a short period of time, hence a structured way needs to be adopted by phasing the implementation plan over a period of 22 years. Accordingly, the Vision document 2047 has been prepared based on short term; medium term and long-term initiatives. Development of academics in NWA has been planned in synchronization with the institutional development.

Implementation of vision@2047 for NWA is discussed in the following paras comprising of Short-Term Plan, Medium Term Plan and Long Term Plans.

7. Short Term Initiatives

7.1. Increase in manpower (Regular as well as on contract/consultancy basis)

The central training unit (CTU) which was established in CWPRS campus in 1988 started conducting training programs specifically on Integrated River Basin Planning and Management (IRBPM). Initially, the mandate was to conduct training programs for Central and state government officers in IRBPM and other emerging technologies in the water sector. The CTU, which commenced with a sanctioned strength of 60 positions, including 9 faculty members, witnessed a gradual reduction in its sanctioned strength over the years down to 34 now. In 2001, a transformative milestone was reached as the CTU was elevated to the prestigious status of the National Water Academy (NWA), with new, self-contained campus.

The need for restructuring of NWA with additional manpower and infrastructure facilities was appreciated way back in 2003-04. Accordingly, the then MoWR initiated taking up a study by IIM-Ahmedabad which suggested the need for restructuring of NWA. Further, the Working Group of CWC way back in 2007 recommended restructuring of NWA to increase the training coverage with additional manpower. The restructuring of NWA was also approved in SFC/EFC XI and XII Plan. This proposal involves the increase in the staff strength from 26 to 56 and then to 81 subsequently. This increase is tied up with a

corresponding increase in the number of programs gradually from present 32 to 45 and then to 84; and officers trained from 800 to 1100 and then to 2100. However, the sanction for additional posts did not come through during XI & XII plan, and the sanctioned staff strength remained more or less same.

The activities of the National Water Academy increased manifold, however, few posts were added only in the categories of AD-II & MTS. There was no increase in the sanctioned strength of the faculty. Presently, the total sanctioned strength remains at 34, inclusive of 9 faculty members. These post were never filled up fully. Against this sanctioned strength of 34, only 22 positions are currently filled, underscoring the need for hiring consultants/young professionals to fully realize the Academy's potential.

There is immediate need of increase in manpower of NWA either through creation of regular posts, or through outsourcing till the new posts are created. The outsourcing can be done in two ways, on contract basis for low skill jobs like logistics & support staff, and on consultant/young professionals for high skill jobs like faculty & course coordination.

At present outsourcing route has been adopted for maintenance, security and housekeeping. Some of activities of NWA which cannot be otherwise taken care by employing NWA officials in the absence of requisite sanctioned posts are being carried out on contract basis, since the creation of NWA. No posts are earmarked for Civil, electrical and horticultural maintenance and housekeeping of NWA and the same is carried out on contract basis. Civil & horticultural maintenance of the NWA campus is managed by CPWD, while electrical maintenance is being carried out by NWA on a contract basis. Similarly, the house keeping of the institutional building, housekeeping & round the clock attendance of hostels and guest houses, catering Services (mess), pest control services etc. is being continued to be done on contract basis.

7.2. Need for the hiring of Consultants and Young Professionals

NWA currently has only 9 sanctioned faculty positions including a Chief Engineer & head, 5 Directors (3 filled at present) and 3 Deputy Directors, of which one Director and one Deputy Director are entrusted with administrative, logistics and financial duties. As is apparent, there is a severe scarcity of in-house Resource Persons (Core faculty) considering increased training activities to be conducted.

The effectiveness of NWA’s faculty in conducting training programs relies heavily on the crucial support provided by AD-II/JE-level staff. These individuals play a pivotal role in a multitude of preparatory tasks prior to program initiation,

facilitate logistics and hands-on assistance during the programs, and handle essential follow-up work after program completion. However, the existing shortfall in the number of AD-II/JE-level personnel is having a profound impact on the faculty's ability to deliver high quality training programs. Presently, NWA has mere five posts at the JE/AD-II level, who are tasked with numerous responsibilities. These include not only supporting the faculty in their training endeavours but also managing a wide spectrum of campus maintenance and administrative duties. These encompass civil, horticultural, and electrical maintenance, office and hostel/guesthouse housekeeping, catering services, and water supply, as well as overseeing all procurements and contracts for various campus-related functions. The current situation necessitates a shared deployment of these manpower resources across a range of functions. However, the pressing issue lies in the absence of dedicated manpower exclusively for supporting training activities. This deficiency adversely affects the faculty's potential to deliver training programs effectively and efficiently, highlighting the urgent need to address this staffing shortfall.

To effectively address the burgeoning demands and to maintain the quality of training programs, it is imperative to enhance the existing resources at NWA. This increase in the faculty/staff strength of NWA was proposed & approved in SFC/EFC of XI and XII Plan, however the sanction for additional posts did not come through and the sanctioned staff strength remained at about 32. Therefore, hiring of consultants and young professionals becomes imperative in the current scenario to meet the increasing activities of NWA. By hiring consultants and young professionals, NWA gains the advantage of flexibility and adaptability. These resources can be engaged for specific programs based on their expertise, allowing NWA to address varying training needs efficiently. This approach enables NWA to swiftly respond to emerging challenges and opportunities in the water sector, delivering timely and relevant training to professionals. The proposed hiring of three (3) numbers of consultants and ten (10) numbers of young professionals, holds the potential to significantly increase the number of training programs with a slight incremental cost. With this broader resource base, NWA can simultaneously run multiple programs across various domains of water resources management. This not only enhances NWA's capacity to accommodate more participants but also broadens the skill sets and knowledge areas covered in its training portfolio. Young professionals, well-versed in modern technology and digital tools, can contribute to the development of innovative training methodologies. Their fresh perspectives and familiarity with e-learning platforms and interactive teaching techniques can further enrich NWA's training delivery methods, creating a dynamic and engaging learning experience for participants. Their support would be vital for all training programs at NWA.

Consultants with their domain expertise & experience in respective field can contribute to training and capacity building by leveraging their real-world experience and expertise. They can offer practical insights, mentorship, and guidance to participants based on practical knowledge. Additionally, they can develop and deliver specialized courses, workshops, and seminars, enriching the curriculum with up-to-date WRD&M trends and case studies.

Currently, the National Water Academy (NWA) conducts approximately 32 to 35 training programs every year. However, the limited number of Course Coordinators has hindered the academy's ability to fully capitalize on its institutional assets & capabilities. By engaging consultants and young professionals, NWA will have the opportunity to significantly increase the number of training programs offered with marginal incremental cost and without any additional permanent or regular establishment posts.

In light of the increasing demand for training and the need to maintain the highest standards of quality and relevance, the proposal to hire consultants and young professionals is a strategic step for the National Water Academy. Until the sanctioned strength of core faculty at NWA is revised commensurate with the expected outcome, the hiring of "Consultants" and "Young Professionals" will be able to supplement the efforts at NWA in conducting programs as envisaged. The consultants hired will act as Course Coordinator and conduct training programs independently, young professionals so hired will be attached to support the consultants & the existing core faculty of NWA. This augmentation of resources will not only enable NWA to handle a larger number of programs but also enhance the overall effectiveness, efficiency, and adaptability of its training initiatives, contributing significantly to the growth and development of the water sector workforce in India.

The proposal of strengthening of NWA with additional manpower (based on the IIM study and recommended by working group & approved by MoWR) involved an increase in the staff strength from 28 to 56 and then to 81 subsequently. This increase was tied up with a corresponding increase in the number of programs. The proposed relaunching of NWA, Pune of CWC had the in-principal approval of the competent authority to action plan. The approval of relaunching of NWA was conveyed vide DoWR, RD & GR (Ministry of Water Resources) letter No. 18/1/2001-E.I dated 11th May 2007. The following table gives the details of the increase in the faculty/staff strength and the associated increase in the training output as proposed in this action plan:

Sl.No.	Name of the Post	Sanctioned Staff Strength now	Phase-I	Phase-II
1.	Chief Engineer	1	1	1
2.	Director	5	7	7
3.	Deputy Director & Executive Engineer	3	7	15
4.	Assistant Director /AD-II	3	2	14
5.	Section Officer	-	1	1
6.	Assistant Engineer	-	2	2
7.	System Analyst	-	1	1
8.	Sr. PA to CE	-	1	1
9.	Junior Engineer	2	2	2
10.	Draftsman (Grade I)	-	1	1
11.	AAO/JAO	-	1	1
12.	Research Assistant	-	1	1
13.	Stenographer (Gr I)	3	3	3
14.	Stenographer (Gr II)	3	5	7
15.	Library Information Asst.	-	1	1
16.	Assistant	2	-	2
17.	Upper Division Clerk	1	2	2
18.	Lower Division Clerk	2	4	4
19.	Lower Division Clerk (Library)	-	1	1
20.	Staff Car Driver	3	4	4
21.	Multi Tasking Staff	7	9	10
	TOTAL	**34**	**56**	**81**
	No of Programs to be conducted	**32**	**45**	**84**
	No. of officers to be trained	**800**	**1100**	**2100**

To start with and also with a view to optimize the resources, it is proposed to hire consultants to act as faculty & course coordinators and young professionals to act as support personnel to the consultants & core faculty of NWA. With the hiring of consultants and young professionals and the integration of DL technology and innovative teaching tools, NWA will be well-equipped to deliver a significantly higher number of programs than 45 envisaged in action plan. This strategic combination of expertise and technology enhances our capacity for program expansion, furthering our mission to provide quality training in water resource management.

This proposed hiring of consultants & young professionals can be phase I of manpower enhancement at NWA. As per the status of the creation of new posts and actual requirements at a later stage, the further enhancement of manpower as envisaged in the above table for phase II can be taken up subsequently.

7.3. Outsourcing of services

- At present, NWA is outsourcing the services of stenographers and library assistants against the sanctioned posts. Large number of vacancies at the support level is going to occur in the coming years due to superannuation of staff. For faculty to take up the increased targets, it is crucial that the faculty has support staff at his disposal to cater to day-to-day secretarial services due to which quality time of faculty is being wasted in clerical works while conducting the programs which otherwise could be utilized for core activities. Hence, it is proposed to outsource the six numbers of Stenographers / IT support / Secretarial Assistant for efficient functioning of the academy.
- Yoga, Gymnasium, swimming, sports, Billiards, trekking and other outdoor activities etc. are included as a part of soft skills training and ITP trainings. These all activities require experts for giving training and the same will have to be arranged through outsourcing/contract.
- At present AMC of NWA's computer hardware is being done on contract basis. The software-based training programs, DL activities and advanced IT facilities like training, SAP, recording studio will require IT support. It is envisaged special IT cell needs to be established, entrusted with the responsibility of all IT related activities including maintenance of hardware and software through an outsourced agency.
- Apart from DL programs which are conducted for a given duration of time with the involvement of faculty, there is a scope and option for opening learning to other stakeholders without involvement of faculty. DL Modules needs to be developed and can be put on e-learning tool like (MOODLE etc) for wider participation of all stakeholders and dissemination of knowledge. Interactive sector specific e-modules viz. domestic, industrial, education, institutes, farmer, gender specific, modules highlighting the importance of water conservation and management. IT is proposed to outsource the service of developing such e-modules to an expert agency for hoisting the DL Program on MOODLE Cloud Platform.
- Security of the main institutional area, residential complex including hostels, guest house, residential quarters and property of NWA will also be continued to be outsourced to a DGR empanelled agency on contract basis.
- There are guidelines and directives from CWC as well as Rajbhasha Committee to prepare training material and other compilation in English & Hindi. However, looking at the huge amount of work involved and non-

availability of experts in Hindi translation in NWA, the translation work will have to be undertaken through outsourcing.

- It is proposed to enhance the manpower available with NWA, through hiring of consultants & young professionals. Hiring young professionals and experienced consultants is essential for the sustained growth and success of National Water Academy (NWA) and its role in water resources management. The activities can be increased manifold so as to address the wide spectrum of topics as well as wide spectrum of stakeholders. The need for hiring young professionals and consultants is crucial to maintain a dynamic and forward-thinking organization like the National Water Academy. By embracing new talent and specialized expertise, the NWA can reinforce its role as a leading institution in water resources management, contributing significantly to the sustainable development and management of water resources in India.

7.4. Restructuring of NWA

It is evident that the National Water Academy is to play a prominent role in terms of "Capacity Building" to all stakeholders covering the whole gamut of WRD&M with more holistic and multidisciplinary approach. Further the Advisory Board, during 22nd meeting, has decided that NWA should also conduct research on training related matters in water sector. Such research can be focused on improving training contents, pedagogy, Training Impact Assessment, Training Need Assessment etc. The research will expand the activities of NWA manifold.

To cater to the requirement, it is very essential, that the present administrative set-up of NWA may also be enhanced in line with the aforesaid increased activities. In view of the facts stated so, it is proposed that NWA may be headed by a Director General (HAG Level Officer). In fact, many of the institutions similar to NWA are headed by an officer of the rank of Additional Secretary and above. Further to assist the Director General, it is proposed to have two posts of Additional Director General (SAG level Officer) at NWA. This is proposed without changing the total number of Faculty. The detail of the proposed structure is enclosed at **Annex-II.**

7.5. Broaden the coverage

Keeping in view the importance of water resources development and management in long run, in addition to areas that are being handled presently by NWA, new areas and also the areas that require academic inputs in water sector include:

- Dam Safety Aspects
- Water policy, Water Laws

- Water Budgets, Water Economics, Economic Value of Water, Financing of Water Sector, Water Markets
- Water Institutions and Water User Behaviour
- Advances in Water Infrastructure and Technology
- Management of Hydrometric Data System and Information Technology
- Management of Water Environment and Climatic Change
- Stakeholder Management, Water Ethics
- Monitoring & Management of Water Quality, Clean Technology, Water Quality Mapping Using GIS
- Watershed Management, Management of Community Water Supply Services
- Operational Management of Inter-basin water transfer and Inter-State Dispute
- Flood Disaster Management, flood risk assessment using IT tools, Urban flood Management
- Integrated Reservoir Operation
- Reservoir sedimentation and Sediment management
- Legal and Social Aspects of Water Resources Projects
- Land Use and Land Cover using RS-GIS
- Environmental Management, Sustainable Water Management, Environmental Flows
- Climate Change Impact; mitigation measures; modelling tools GCM; RCM;
- Leadership development programs for the Water Resources Managers
- Water Security, Water-Food-Energy Nexus.
- Water diplomacy & trans-boundary water management
- Water Hazards, Risks, Disaster management and Climate
- Water and Health- Drinking Water & Sanitation
- Water Resources and Ecosystem Health
- Water Science and Engineering in Hydropower Development- Hydropower- from planning to design
- Coastal Hazards, Risks, Climate Change and Adaptation
- Wastewater management & technology
- Desalination technology
- Solid waste management
- Water accounting and auditing
- Gender and water
- Urban Water management, Smart cities and Water
- Micro Irrigation and advanced techniques in water management
- Irrigation water management
- Flood forecasting & Management

Some of these areas are dealt with by organizations outside DoWR, RD & GR/CWC like Ministries or departments of Power, environment and forests, agriculture, rural development and urban development, Panchayati and Zilla Parishad bodies,

municipal corporations and equipment manufacturers and suppliers. Many of these areas are non-technical, non-engineering and non-conventional, but are intimately related to water sector, and hence need to be covered in a more systematic and substantial manner in the strengthened NWA, by inviting experts from these departments as Guest Faculty. In view of the emerging challenges in the water sector and importance that water is going to gain in the coming years, it is pertinent to handle these issues with more holistic and multi-disciplinary approach.

7.6. Efficient use of existing infrastructure

The following infrastructure development works are proposed to be undertaken in the existing campus to augment the facilities & to facilitate efficient use of existing infrastructure:

- Up-gradation of Ganga guest house
- Construction & Furnishing of four additional suites in Krishna on second floor
- Construction & Furnishing of eight additional suites in Godavari
- Construction of dining hall on the 1st floor of the existing mess hall
- Solar heating system of the swimming pool
- Elevator in the main building
- Construction of under pass across the Pune Sinhagad Road
- Developing a strong IT infrastructure Support to take up DL Programs in a bigger way to reach a larger stakeholder.
- Development of drip and sprinkler system in the campus for easy demonstration of latest irrigation methods to trainees.
- Focus on DL in a larger way with Learning Management System (LMS) – Establishment of MOODLE LMS and use of state-of-art online technology
- Creation of studio room with higher band width
- Infrastructure for Virtual classroom support and other related IT Support
- etc.

7.7. Infrastructure development : Construction of New Infrastructure and land acquisition

In recent times, many new initiatives/responsibilities have been taken up/entrusted to NWA leading to a quantum jump in the workload in terms of training & capacity building activities requiring additional resources on urgent basis to cater to these increased activities & also to the vast emerging needs.

In addition to the training needs for National requirements, the need for training of international participants, particularly from developing nations is emerging in a big way. With Indian's expertise in water sector due to its rich

institutional capabilities, India can play a vital role in training & capacity building of international participants. India has been taking a lead for bilateral cooperation with neighbouring countries as well as other developing countries with capabilities to provide the technical leadership in the area. India has been cooperating & collaborating with other countries in the field of WRD&M in terms of Training & Capacity building, Transfer/share of technology, Sharing of experiences and expertise, Specific studies, Consultancy services and Support for developmental activities, etc. With water and water related issues gaining significance across the world, India can provide a leadership and leverage its capabilities and expertise in the sector to collaborate with other nations through capacity building & training.

The present infrastructure available with National water Academy is highly inadequate to cater to such vast & growing needs. Accordingly, NWA is proposing to establish a new International level campus with enhanced infrastructural facilities. strengthened NWA is possible only if the Infrastructure of NWA is adequate for the increased activities.

The proposal of NWA for additional infrastructure has been recommended from the senior level officers from the DoWR, RD & GR as well as CWC.

(i) Secretary, DoWR, RD &GR, MoJS made a visit to National Water Academy (NWA), CWC, Pune in October 2022. Secretary also took a tour of NWA premises, and was shown various infrastructural facilities. Secretary appreciated the training activities conducted at NWA and also the upkeep of its infrastructure facilities and the campus as a whole. During the briefing session chaired by Secretary, DoWR, RD & GR, MoJS, he gave various suggestions and instructions for upscaling the activities of NWA, for national & international trainings and also for further infrastructure development. Some of the important instructions pertaining to further infrastructure development are as follows:

- International participants from South East Asia and Africa etc. may be invited as part of NWA's regular Induction Training Programs. A proposal in this regard may be submitted by NWA to DoWR, RD & GR for taking up with MEA. The water scenario of the region may be included in such training courses.
- The possibility of including engineers from State Government departments in Induction Training Programs conducted by NWA may be explored. Alternatively, programmes for newly recruited engineering officers of Water Resource Department of State Governments based on their training needs can be conducted.

- Evaluate the infrastructure needs: For training international participants, infrastructure like hostels, catering etc. needs to be enhanced. World class recording facility and lecture halls to deliver programs in hybrid mode should be created.
- The existing land parcel with NWA is almost saturated with construction. NWA needs additional land parcel for upgrading infrastructure. A proposal may be submitted in consultation with CWPRS, for acquiring adjoining land parcels from CWPRS.

The copy of the action points emerged during the Visit of Secretary, DoWR, RD &GR are enclosed as **Annex-III**.

(ii) Chairman, CWC held a meeting with CWC Chief Engineers for Short, Medium and Long Terms Action Plan during February 2023. NWA presented its action plan during the meeting. Thereupon, NWA was directed to submit a proposal for acquiring land from CWPRS for creating new infrastructure facilities for its upgradation to the next level.

(iii) During the recent TNA workshop held at New Delhi, Training need on topics of Dam Safety, Hydro-informatics and other training needs have emerged which require enhanced infrastructure to cater to those training needs.

The existing infrastructure of National Water Academy was created in the land parcel which was got transferred from CWPRS, Pune. The present total land holding of NWA, CWC, Pune is approximately 11.61 acres, comprising of academic complex (5.4 acres) and residential complex (6.18 acres) respectively. The NWA campus is divided into two parcels, on one side of the Sinhagad road is academic complex and the other side is residential complex. Further, the present infrastructure of NWA houses, (i) M&A Directorate, under MCO, CWC, Nagpur; (ii) Upper Krishna Division and Upper Bhima Sub-Division under KGBO, CWC, Hyderabad; (iii) National Dam Safety Authority; and (iv) CPWD Maintenance Sub-Division etc.

NWA since its upgradation from 'Central Training Unit' to NWA in 2000, about 23 years ago is catering to the wider training needs of the water sector professionals across Indian and international participants. The existing set-up is barely enough to meet the requirement of conducting 28-32 programs in a year. The present capacity in the guest houses of NWA is just sufficient for organizing 2-3 short term programs with limited capacity concurrently along with one long term program like Induction Training Program; Core Area Training; Orientation program etc.

Now, NWA, CWC, has a much bigger role in training and capacity building of all

stakeholders across the country and also cater to the training needs of International Participants. Upgradation and improvement on various fronts are to be taken up to have a significant impact on the sector for achieving sustained development. Initiatives like increased manpower, infrastructure development, broadening of horizons of programs, use of information technology, improving the pedagogy of delivery mechanism, strong IT infrastructure etc., must be taken up immediately. Some of these initiatives planned are inter-dependent of each other.

In view of that, development of academics in NWA needs to be planned in synchronization with the institutional / infrastructural development to take NWA to next level. The existing land parcel of NWA has been utilized to the maximum.

Thus, the proposal was initiated by NWA for enabling formal transfer of land from CWPRS, Pune to NWA for taking up infrastructure development for expansion of NWA as directed by Secretary, DoWR, RD & GR during his visit in October 2023 and also per the directions of Chairman, CWC.

The decision regarding the transfer of 11 acres of land was taken in meeting Chaired by secretary, DoWR, RD & GR on 14 May 2024, in consultation with the officers from CWPRS & NWA. Accordingly, a total of 11 acres of land adjoining the existing NWA institutional and residential campuses has been transferred by CWPRS to NWA.

(i)	For New Institutional Complex	:	8 Acres
(ii)	For New Residential Complex	:	3 Acres

The proposal is for creation of infrastructure on this 11 acres land parcels, for creating new International level Campus comprising of Institutional and Residential facilities for upscaling the National & International level Training and Capacity Building activities has been prepared and submitted to the competent authority.

Rationale behind additional infrastructure for new International level Campus

The establishment of a new international campus at the National Water Academy is a vision to address the growing national & global demand for advanced water resources management training and capacity building, by enhancing its facilities, expanding its capacity, and fostering national & international level collaboration.

Addressing Global Water Challenges

- *Growing Global Demand for Water Expertise*: The increasing complexities of global water management, driven by climate change, population growth, and urbanization, require a new generation of water resource professionals

equipped with cutting-edge knowledge and skills. The new international campus will position NWA as a leader in providing this expertise on a global scale.

- *Climate Change and Water Security:* As climate change exacerbates water-related risks such as floods, droughts, and sea-level rise, there is an urgent need for specialized training in climate-resilient water management strategies. A dedicated international campus will allow NWA to offer targeted programs that address these emerging challenges.

Enhancing Training and Research Capabilities

- *State-of-the-Art Facilities:* The establishment of a new campus will enable NWA to build state-of-the-art facilities, including modern classrooms, specialized laboratories, and advanced centers. These facilities are essential for delivering high-quality training in water resources.
- *Expanded Training Capacity:* The new campus will significantly increase NWA's capacity to host national and international participants, allowing the institution to meet the growing demand for advanced training programs. This expansion will also enable NWA to diversify its course offerings and introduce new, specialized programs.

Promoting International Collaboration

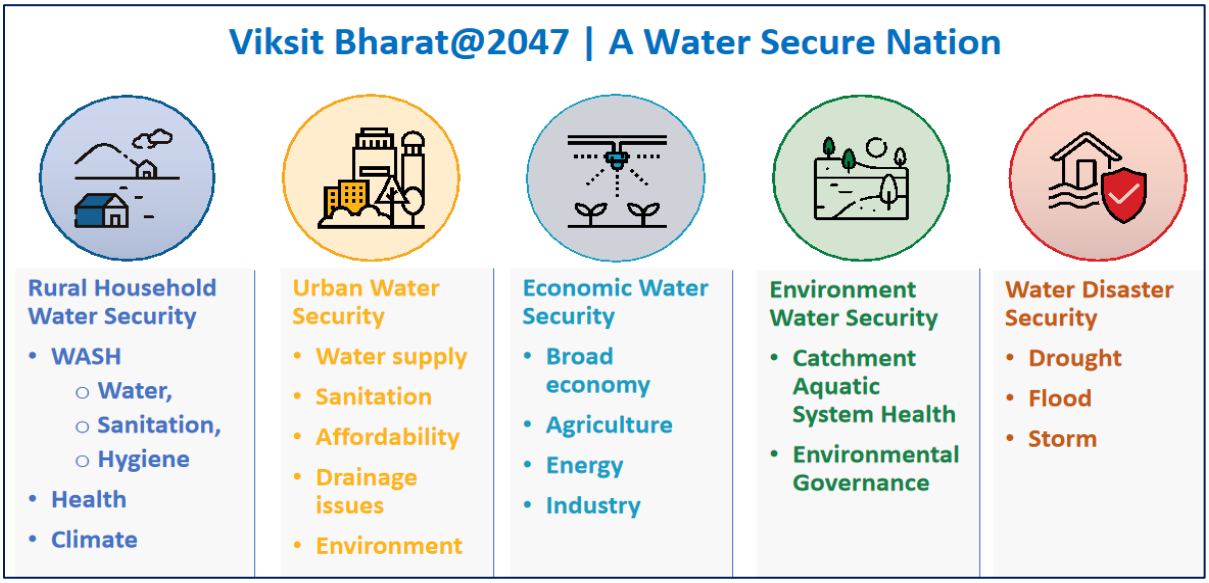
- *Global Hub for Knowledge Exchange*: The new international campus will serve as a global hub for knowledge exchange, attracting water resource professionals, researchers, and policymakers from around the world. This will facilitate the sharing of best practices, innovations, and strategies for sustainable water management.
- *Strengthening Partnerships with International Institutions:* The campus will enhance NWA's ability to collaborate with leading international institutions, including universities, research centers, and global organizations. These partnerships will support joint training initiatives, exchange programs, and collaborative training efforts, further elevating NWA's global standing.
- *Hosting International Conferences and Workshops:* The new campus will provide the infrastructure necessary to host large-scale international conferences, workshops, and seminars. These events will bring together experts from diverse backgrounds to discuss and develop solutions for global water challenges.

Supporting Sustainable Development Goals (SDGs)

- *Contribution to SDG 6 (Clean Water and Sanitation):* The new campus will help India in contributing to achieving Sustainable Development Goal 6, which aims to ensure the availability and sustainable management of water and sanitation for all. By training professionals in sustainable water management, NWA will play a pivotal role in advancing this global agenda.
- *Capacity Building in Developing Countries*: Many developing countries face significant challenges in water resource management due to limited capacity and expertise. The new campus will allow NWA to expand its training programs to include participants from these countries, helping to build the necessary skills and knowledge to manage water resources effectively.

Meeting the Needs of "Water Vision 2047" of India

- *National Leadership in Water Management*: As India faces its own water challenges, including managing its vast and varied water resources, the new campus will strengthen NWA's role as a national "center of excellence" in catering to the training and capacity building needs of water professionals which aligns with the National water Policy and also with the agenda of Water Vision@2047.
- Details of action plan and steps needed to address water demand upto 2047 were discussed during the State Ministers' Conference organized during 5-6 January, 2023 at Bhopal with the theme 'Water Vision@2047'. The action plan and key recommendations of this conference requires that India has strong capabilities for training & capacity building in water sector to achieve these objectives.
- All India Secretaries' Conference on Water Vision @ 2047 - Way Ahead' conducted at Mahabalipuram on 5-6 January 2024 discussed the key objectives to strengthen the water security of the country and came out with vital recommendations on Climate Resilience & River Health, water governance, water use efficiency, Water Storage & Management, People's Participation /Jan Bhagidari, etc.
- The Second All-India State Water Ministers' Conference organized in January 2025 at Udaipur, themed "India@2047 – A Water Secure Nation," emphasized the importance of sustainable water management to support agriculture, industry, and domestic use while preserving our rivers and ecosystems for future generations. One of the key underpinning factors for all these areas was training & capacity building. The new campus of NWA will enable creating requisite competencies & skills needed to implement India's Water Vision 2047.



- **Mission of Central Water Commission (CWC)** is "to promote integrated and sustainable development and management of India's water resources by using state-of-art technology and competency and by coordinating all stakeholders". Furthering the mission of CWC, NWA's vision is "to educate all stakeholders to manage water resources issues and overcome problems faced in water sector in an integrated and sustainable manner". The new campus will enable NWA to take forward this mission in a substantive way.

Enhancing India's Leadership in Water Management

- *National and International Recognition:* The new international campus will enhance NWA's reputation as a leading institution in water resource management, both within India and globally. This will strengthen India's leadership role in addressing global water challenges and contribute to the country's diplomatic efforts in the water sector. This recognition will also attract international partnerships and opportunities for collaborative projects.

- *Contribution in international water policy*: By training a global cohort of water professionals, NWA will enhance India's contribution in international water policy and management discussions., contributing to more effective and sustainable water management at a global scale.

Providing Modern Institutional, Residential and Support Facilities

- *Facilities for International Participants*: The new campus will offer comfortable and well-equipped institutional facilities, accommodation and support facilities for international participants, faculty, and visiting scholars.

This is essential for attracting global talent and ensuring that participants can fully engage in the training programs without logistical concerns.

- *Holistic Learning Experience:* The campus will include facilities such as dining halls, recreational areas, and wellness centers, creating a conducive environment for learning and collaboration. The participants will have a well-rounded experience that supports both their academic and personal growth during their time at NWA.

The establishment of a new international campus at NWA, CWC, Pune, will significantly enhance the academy's ability to contribute to global training and capacity building in water resource management. With expanded facilities, increased training capacity, and strengthened international collaborations, NWA will be well-positioned to address the pressing water challenges of the 21st century and contribute to sustainable development goals.

7.8. New proposed campus with infrastructural facilities

The various facilities proposed to be developed in the 11 acres of land are as given below:

I. Institutional Campus (8 acres plot)

A. Office /Institutional building: One Institutional building with capacity to accommodate various units. Offices for NWA officers and their supporting staff and offices for various supporting units e.g. administration, establishment, accounts etc., are proposed in new institutional building with all modern amenities; Reception, Visitors lounge, VVIP Longue etc., have been proposed in the new campus as there is not much space available in the existing NWA office building. The new building will be of the international standard with all modern and State of Art facilities like smart classroom, centralize AC, elevators etc.

B. Classrooms: To cater for different batch sizes, spacious classrooms of different sizes have been proposed with all modern infrastructure facilities and of international standard. They are required to cater to different batch size of trainees.

C. Studio / recording rooms: In the view of increasing demand and speculation of its demand in future, recording rooms have been proposed to be created with the required infrastructure for recording video lectures for distance learning courses and taking online classes. The Studio/Recording rooms can be integrated in the Institutional Building.

D. Auditorium: State of the art auditorium with exhibition space, breakaway rooms with different seating capacity, VIP lounge, Space for Catering services, and outside open space for outdoor exhibition, have been proposed in the new infrastructure facilities.

E. Multipurpose Hall: Multipurpose Hall with amenities like Indoor Badminton, Table Tennis, Yoga & Meditation, space for exhibitions and other educational & recreational activities.

F. Open Air Amphitheatre: It has been proposed to have an Open Air or Semi-covered Amphitheatre to host various activity based training and various other activities in natural and open environment.

G. Other Institutional facilities: Security Rooms at Gates, Security watch towers at required locations in institutional and residential campus, Maintenance Block, Electrical Substation, DG Set room, Water Filtration plant/Unit, Overhead Water Tank, Sewage Treatment Plant, Common Utility Building, Dispensary/Health Unit, Parks, Gardens, adequate vehicle parking spaces and Open Spaces etc. are proposed in new campus.

H. Lawn Tennis / other recreational facilities: Lawn tennis facilities are not available as of now on the NWA campus and many trainee officers have requested for the same to be created. To cater to the need of international participants, lawn tennis courts are also proposed in the new infrastructure facilities.

I. Green Area: It is proposed to maintain green area in the institutional campus to make the environment conducive for training and learning.

II. Residential Campus (3 acres plot)

A. VIP Guest House: One VIP guest house with double room suites with facilities of bedroom, drawing room and mini kitchen are proposed to be constructed to host various dignitaries and international guest faculties and others.

B. Trainees Hostel: New multi-storey trainee hostel with modern infrastructure facilities of international standards having 100-120 suits is proposed to be constructed in the new residential campus.

C. Dining Area with mess: It is proposed to have a mess facility in the new residential campus with the capacity of hosting 100-120 trainee officers/guest at a time. It is also proposed to have VIP lounge and VIP dining facility along with the proposed mess to cater the need of VIPs as well as international trainees.

D. Garden and open spaces: Like the present campus, garden, adequate vehicle parking spaces and open spaces have been kept in the new layout plan for aesthetic and functional purpose.

E. Gymnasium: At present the gym is accommodated in a temporary & small area in Krishna Guest House. So, it is proposed to have proper and a separate gym in the residential campus to cater to the need of international as well as national participants.

F. Additional facilities like common room, reading room, recreation facilities: It is also proposed to create additional facilities like common room, reading room, recreation facilities in the new residential campus which are basic requirements for recreational and mental wellbeing of the participants.

G. Connecting road requirement for the campuses on both sides of road.

The upgradation of National Water Academy with development of a New International Campus is proposed to enhance NWA's ability to conduct high-quality training and capacity-building programs. The establishment of a new international campus at the National Water Academy is also in line with the vision to address the growing global demand for advanced water resource management training and capacity building, by enhancing NWA's facilities, expanding its capacity, and fostering international collaboration.

Taking into cognizance, the above requirements of NWA, Proposal for Infrastructure development of new International level Campus comprising of Institutional and Residential facilities in National Water Academy, Central Water Commission, Pune and upscaling the National & International level Trainings and Capacity Building activities has been prepared amounting to ₹ 18130 lakhs. The proposal will be implemented over a period of 07 years (seven years) i.e. from 2025-26 to 2031-32.

The detailed proposal along with justification and year wise phasing of financial requirement is prepared and submitted to CWC-HQ/Ministry for seeking approval of the competent authority during November 2024. Accordingly, above Construction of New Infrastructure will be taken up on receipt of approval and making available the funds at the disposal of NWA.

The existing computer hardware, software and library facilities, has added to the strength of NWA in terms of its training capabilities/capacity. However, in view of the proposed upgradation and strengthening of NWA in terms of increased training activity, additional staff strength & infrastructural facilities and the fact that computer hardware/software and training equipment which looks latest

today may become obsolete within a short period due to technological advancements taking place, continuous upgradation is a must and accordingly, the maintenance, upgradation, new purchase for all the required office/hostel/guest house/mess equipment, training aids, audio-visual equipment, computers, peripherals, laptops, UPS etc. remains an important aspect of infrastructure development.

The capital investment proposed in the coming years would certainly enhance its capabilities and capacity keeping in view the training demands and requirements in water sector.

The Proposal for Infrastructure development of new International level Campus has been submitted to CWC-HQ/Ministry. The tentative layout plan fulfilling the needs of new campus is for the proposed infrastructure development activities as submitted with the proposal is enclosed at **Annex-IV.**

7.9. Proposed Green Initiative in the new Campus

The new campus will be developed with environmentally friendly measures, with a particular emphasis on energy and water conservation. As decided in the meeting held on 14 May 2024 chaired by Secretary, DoWR, RD & GR, efforts will be taken to develop the infrastructure by keeping the existing green cover intact. Additional and compensatory tree plantations will be undertaken once the layout is finalized, with open areas extensively covered by trees.

Special attention will be given to landscaping and horticulture. All buildings will feature rooftop solar panels for heating and power generation. Rainwater will be properly collected and channelled for gardening and other purposes. Additionally, dedicated facilities will be provided for the collection, processing, and appropriate disposal of organic and non-organic waste.

7.10. Faculty development in a big way with dedicated budget

The development of core faculty is essential for NWA to fulfil its mandate. It is crucial not only to update the faculty's core expertise but also to provide exposure to emerging areas that may become relevant to NWA’s future plans. To achieve this, NWA faculty should be given opportunities to participate in international training programs, workshops, seminars, exposure visits, and study tours. Such experiences enable faculty to gain insights into global best practices in water resources management, understand related challenges, and stay updated on emerging tools and technologies. Additionally, Faculty Development Programs and Training of Trainers (ToT) initiatives must be prioritized to enhance and update faculty skills, ensuring they evolve not just as educators but also as innovators and leaders in their respective fields.

Often, a shortage of funds hinders faculty development initiatives. To address this, a dedicated budget should be allocated from the annual provision to support such activities.

Several institutions in India and abroad offer trainer certification programs. NWA faculty should be encouraged and nominated to participate in these programs to obtain the necessary certifications. For example, the Department of Personnel and Training (DoPT) offers trainer certification courses such as the Direct Trainer Skills (DTS) program. Such courses would be highly beneficial for NWA faculty and could be considered for mandatory participation.

7.11. Faculty Exchange Program

A multi-disciplinary approach to water sector management is crucial given the complex and interconnected nature of water issues. As water availability patterns change due to factors such as climate change, population growth, urbanization, and industrialization, it becomes increasingly important for water management professionals to have a diverse skill set and expertise from various fields. A Faculty Exchange Program for the faculty of NWA/CWC would indeed be essential for enhancing the skills and knowledge of faculty members involved in water resources training. Faculty exchange programs are essential for fostering collaboration, knowledge sharing, experiential learning, and cultural understanding among faculty members and institutions involved in water resources training. Such programs enhance skills, expand professional networks, and promote best practices. There is a need for a well-structured faculty exchange program at NWA, which should be made mandatory for faculty members. This will enable them to develop specialized training modules and contribute to building institutional capacity within NWA and other training institutions. Ultimately, this will help these institutions better prepare water management professionals to tackle current and future challenges in the water sector. It is to mention that NWA over a period has developed linkages with leading national and international institutions such as IISc, IITs, IIMs, WMO, IHE-Delft AIT-Bangkok etc.

Thus, in order to gain International Exposure, Faculty Exchange Programs with various international organizations like Stockholm International Water Institute (SIWI), Asian Institute of Technology (AIT), Bangkok, U.S. Army Corps of Engineers (USACE),US Environmental Protection Agency (EPA), International Water Management Institute (IWMI) etc. needs to be strategically developed and implemented over the long term.

7.12. Focus on Distance Learning (DL) courses in a big way

NWA's output depends not only on its capacity to conduct training but also on the ability of Central and State agencies to nominate participants. Even with increased

training capacity, the effectiveness of NWA's programs relies on a corresponding rise in participant nominations from various organizations. Distance Learning (DL) programs address the challenge of participants being unable to leave their offices for training. With advancements in internet technologies, delivering DL programs has become more accessible. Recognizing their growing importance, a Centre for Excellence should introduce DL programs on a large scale for various modules in the water resources sector.

While classroom-based training remains essential due to the value of direct faculty interaction and peer learning, learner-centered DL programs, such as Massive Open Online Courses (MOOCs), offer significant advantages. They expand the reach of training programs, are cost-effective, and enable the participation of expert faculty from around the world. To maximize these benefits, NWA plans to expand its capacity to deliver training in a hybrid or *phygital* (physical plus digital) mode. Developing the necessary infrastructure—including state-of-the-art recording studios, smart classrooms, and mentoring services to help faculty adapt to new technologies—can be supported under DRIP or advanced NHP. This will enable NWA to reach a broader audience in a cost-effective manner.

7.13. Development of Distance Learning (DL) modules & their availability in public domain

Apart from the DL programs which are conducted for a given duration of time with the involvement of faculty, there is a scope and option for opening learning to the other stakeholders without involvement of faculty or time constraints. There are many such topics / coverage in the water sector viz. environmental management, social aspects, rehabilitation & resettlement, disaster management, water-food-energy security nexus, water ethics etc. which may not require involvement of faculty. DL modules can be developed and made available in the public domain to encourage wider participation from all stakeholders and facilitate broader knowledge dissemination. E-modules can also be developed for specific sector, viz. domestic, industrial, education institutes, farmers, gender specific modules highlighting the importance of water conservation and management.

7.14. Better management of training activities using IT tools

Enterprise Resource Solution is a versatile tool nowadays used for managing all the activities of training organizations in an integrated manner. For e.g. Institution like NWA handle various tasks, including preparation of course brochure; floating of training; inviting nominations; finalization of nominations; acceptance of nominations; preparation of course schedule; faculty letters; estimate; preparation of course material and the overall conduction of training programs. After the conclusion of training, follow-up actions like feedback, training

impact assessment, preparation of trainees database, trainer's database with profile, etc. are also carried out. Thus, to achieve end to end solution, IT tools can be used to handle all the above activities in an integrated manner. This will enable the academy to achieve effective workflow in a time-bound manner. Such an end-to-end solution will also help in building a complete and authentic database of training activities which will enable NWA to have various statistical analysis and development of strategies.

8. Mid Term Initiatives

8.1. Focus on FDP & ToT mode to create pool of trainers

The total demand for training in the water sector is too vast to be managed by NWA alone. While NWA has primarily functioned as a training institute, there is an urgent need to nurture similar training institutions at the state level, even though this is not part of NWA's formal mandate. Currently, very few states have dedicated training institutes for water engineering, and those that exist operate on a much smaller scale compared to NWA, which itself operates on a modest scale.

The Water and Land Management Institutes (WALMIs), established with external funding, have seen their functioning severely impacted following the withdrawal of such support. Moreover, WALMIs primarily focus on training farmers at the grassroots level on agricultural issues, whereas training engineers in water resources engineering is an entirely different undertaking. Establishing such specialized training institutes in every state may be impractical. However, a feasible approach would be to develop three or four strategically located institutes across the country, supported and mentored by NWA, to cater to regional training needs effectively.

8.2. Linkages with National / International Institutes/Universities

- There is a requirement for developing linkages with national and international training institutes, universities and government agencies for collaboration launching short-term, long-term training programs, workshops, seminars/webinars for knowledge sharing and developing professional networks. It is to mention that NWA over a period of time has developed linkages with leading national and international institutions such as IISc, IITs, IIMs IHE-Delft, AIT Bangkok etc.
- Collaboration with potential National and International institutes offering short term online certification courses on specific topics and even long term courses or the full course duration. For e.g. high quality e-learning course of two years duration with focus on Geographical Information Systems and Earth Observation for environmental modelling and natural resource

management is being offered by ITC Faculty of Geo-information science and Earth Observation of the University of Twente, The Netherlands. As e-learning is getting more popular, more of such courses can be identified and offered under DRIP and NHP for benefit of faculty of NWA and State training institution.

- Collaboration with Academic Institutions: Forming linkages with National, International agencies and academic institutions of repute for excellence in training is a part of the mandate assigned to NWA by the DoWR, RD & GR. Working towards this direction NWA has already established linkages at National level institutions like IITs, WALMIs, NIRD, NIDM etc.

- Collaboration with ISRO/IIRS: Earlier, the National Natural Resource Management System (NNMRS) Division of Indian Space Research Organization had recognized NWA as a centre for organizing training programs on use of Geo informatics in Water Sector. The NNMRS had provided funds for organizing training program by NWA on Use of Geo-Informatics in Water Sector. As a part of this process Geo-informatics laboratory for organizing training programs on use of GIS software has been set up with necessary computers and software. The lab is also used for other software based training programs, with each participant getting a computer for hands-on. The collaboration with ISRO/IIRS needs to be revived considering the importance of use of Geospatial technology in the use of WRDM.

- Collaboration with WMO: NWA has already been recognized a Regional Training Centre (RTC) by WMO. NWA is regularly conducting DL programs in association with WMO. This will be continued & upscaled in the long run also. In addition to DL courses, residential programs are also proposed to be conducted as per the WMO competency framework.

- Collaboration with International Commission on Irrigation & Drainage (ICID): NWA has gained considerable expertise in conducting Distance Learning Program. In order to expand its reach for other topics a long term association / collaboration between NWA and ICID in the field of Distance Learning courses on the topics of Irrigation; Drainage and Flood Management is proposed. Long term association / collaboration can also envisage funding from the international donors. This will provide a forum/platform to NWA amongst the international community which will pay dividends not only for the trainings sponsored by ICID but for all other programs of NWA. Under the long-term goal, One year Diploma/ Certification Course (Residential) like IHE, Delft/IIT Roorkee or JICA (Japan) on Hydrology/IWRM can be done in collaboration with ICID.

- Collaborative Programs with the ISTM, Hyderabad; LBSNAA, Mussoorie, WALMIs/IMTIs etc
- Collaborative Program with the International Organisations

8.3. Targeted capacity building in States

8.3.1 Strengthening of WALMIs/IMTIs

The Water & Land Management Institutes (WALMIs) / Irrigation Management Training Institutes (IMTIs) were set up during the eighties to provide need based trainings to all the officers / staff of concerned State departments including farmers under USAID assisted Water Resources Management & Training (WRM&T) Project. As of now 14 WALMIs/IMTIs / other Institutes are functioning in the various State of the country.

However, after the winding up of the WRM&T Project at the end of 1992, most of the WALMIs could not keep pace with the identified objectives due to various constraints, including financial constraints due to inadequate support from State Governments to run these institutions and absence of proper incentive schemes to attract faculty and staff members. Accordingly, need was felt to initiate actions to rejuvenate and strengthen these institutions.

To look into the issues affecting WALMIs/IMTIs and other institutes functioning in various States across the country in detail, a Task Group was constituted by the MoWR, GoI in Sep. 2008 in accordance with the decision taken in the National Colloquium. The Task Group, of which National Water Academy (NWA) was a member, studied the issues in great detail and submitted various recommendations for rejuvenation of these 14 Institutes.

Further, it was decided to provide financial assistance for strengthening of WALMIs/IMTIs by the Ministry, subject to fulfilment of the requirements as recommended by the Task Group Report. It was also decided that the NWA would be the Nodal Agency for release of Grants and supervising the implementation of the recommendation of the Task Force in all WALMIs/IMTIs. NWA prepared a Scheme for the “Strengthening of all WAMIS/IMTIs” and submitted to the Ministry to be included under (Incentivization Scheme for Bridging Irrigation Gap) ISBIG Scheme as a component. However, the ISBIG scheme has not taken up yet.

The focus of the WALMIs was to train farmers at grassroots level in agriculture and related issues. Training content for farmers has a very strong local context and has to be conducted in local language. Also, irrigation at field level is quite different from irrigation at basin level. For all these reasons, NWA have to tie up with regional institutes, agricultural institutions and most importantly

WALMIs/IMTIs for upscaling the training & capacity building activities in agricultural sector.

NWA, Pune and INCID jointly conducted "WALMIs Meet 2022" in collaboration with WALMIs/IMTIs to understand their activities in respect of the issues, solutions, constraints etc

Based on outcome/recommendations of WALMI Meet 2022 and also All India WALMI Meet 2023 – A Report "WALMI Meet 2022-23 -Synergizing Water Education in India" was prepared and submitted by NWA during October 2023. A further supplementary report has also been submitted to CWC-HQ outlining the modalities for further synergisation with WALMIs/IMTIs and concrete workable revival strategy.

This is a big step for NWA to play a nodal role for strengthening the WALMIs/IMTIs & also to act as an umbrella organisation for all WALMIs/IMTIs.

8.3.2 Support to & collaboration with State Institutions

NWA can help the States in nurturing their own training institutes. NWA has already taken the initiative in these direction & signed MOU with Maharashtra Engineering Research Institute(META). and addressed to all the states offering assistance in capacity building for their own training institutions.

8.3.3 State specific programs

Many states have approached NWA for ITP, MCTP for their officers as well as capacity building in specific areas like dam safety aspects, design aspects, DPR preparation, advanced technologies like RS/GIS etc. Secretray DOWR, RD & GR also emphasised this aspect during his visit to NWA in 2023. Being a National level institute NWA can play a big role in Targeted capacity building in States.

8.4. Water education in B-schools

Water management is a very important component of national development, and all citizens who are going to be in a position of influence irrespective of whether within the government or private sector, need to have some familiarity with management of water and natural resources. Moreover the nation is witnessing a change in paradigm where the government may not procure natural resources like land and water on behalf of private sector. In future, it is very likely that the private sector will have to interact and negotiate directly with the stakeholder for procurement of natural resources. With this objective attempt are being made to introduce "Water & Natural Resources Management" in the B-schools. This can be at three levels:

- One week exposure course purely as an additional activity.

- A one semester course as standalone topic.
- A full-fledged MBA in "Natural Resources Management"

8.5. Developing Network of Institutions across India – WALMIS, State Institutes, National level Institutes, IITs for synergisation of Capacity Building efforts

Capacity Building of all stakeholders has been identified as one of the important tools to achieve the sustainable developmental objectives. It is felt that the Capacity Building efforts would be more fruitful if all the organizations working on various aspects of water synergize their resources and efforts. The National Water Academy which is catering to the training needs of water professional in various facets of 'Water Resources Development and Management (WRD&M)'. Developing Network of Institutions across India – WALMIS, State Institutes, National level Institutes, IIT etc will form strong ground for synergizing the efforts of various Ministries/Organizations dealing with Capacity Building in Water Resources Development and Management. In order to come to a common platform Workshops/ Conferences need to be organized in long run. Developing such a network across the India is a huge task, and it has to be accomplished in phased manner. Region-wise distribution is to be worked out viz Western; Northern; Southern; Central; North-Eastern Region to cover the whole country. Region wise Workshops/ Seminars need to be planned for identifying the various institutes /organizations working towards common goal of water resources development and management and bring under one umbrella of NWA. Such an Institutional Development will be very beneficial to address various needs of training and capacity building by sharing of resources; improved delivery capacity through accessing multi sectoral knowledge and skills; economies of scale; learning environment; enhanced impact; increased visibility, influence and prominence.

9. Long Term Initiatives

9.1. Research, consultancy on Training & Capacity Building

For a country like India having huge population, Capacity Building & Training needs especially in water sector are multidimensional. To address the Capacity Building & Training Needs strategically it calls for 'Research "in the following areas:

- Training &Capacity Building Needs
- Methodology to be adopted
- Stakeholders requirement
- **Andragogy** and **Heutagogy**
- Focus areas
- Competency required v/s available

- Statistics of gaps in competencies available
- Training Impact Assessment

NWA can certainly venture in the above area and take up research and create strategies based on the substantive research. Over the period of time, the academy has gained expertise in activities like TNA, TIA etc. where it can also provide its service to other organizations in water management sector. In the long run, NWA can play a vital role and develop expertise in this area with a structured planning after a Faculty Development.

9.2. International Training programmes

It has been outlined in the various forums that NWA should open its training programs for foreign nationals also. NWA has conducted special training programmes for International participants in DL as well as classroom mode. It has conducted custom made course for participants from African Nations, Bhutan, etc. In few of its regular programmes, foreign nationals have also participated. NWA will be widening the scope of its international programmes not only for the south Asian countries but also for the Nations form other continents having bilateral cooperation with India in water sector. The ITEC scheme of MEA can be one of the source of funding for such programmes. There is large scope for conducting DL courses on various aspects of WRD&M for international participants.

9.3. Establishment of centres on various topics

- "**Centre for Water, Energy and Environment Policy Studies (CWEEPS)"** may be created in NWA. The said centre is supposed to act as a "Think-tank" and will conduct policy research, churn policy options, also act as a bridge between the Government and Civil Society in the concerned sector.

- **"Centre for Instrumentation (CFI)",** which will cater to training & pedagogical requirements in the field of instrumentation in terms of practicum's, demonstration, hands-on etc. It will also be a Centre of Excellence in the field for guidance, promotion, collaborative efforts and knowledge sharing.

- **Exhibition Centre: NWA** has also been trying to create general awareness about the various issues related to water sector and its development amongst the various constituents of the society. In this direction, it is considered appropriate that an 'Exhibition Centre' is created where different facets of water resources development and management can be displayed. The centre can also display various

educational models on popular subjects like Interlinking of rivers, hydro-power, basin development, rainwater harvesting etc. As it is, NWA is located right on the Sinhagad Road, which has become very important and busy road, being the only connection with the famous Sinhagad Fort and Khadakwasla-Panshet-Varsagaon dam complexes. Many people travel on this road with family and children and would like to stop-by, if such a centre is created which is accessible to passers-by. This would act an interesting interlocutor between future citizens and importance of water resources. Thus, it would add to the CSR quotient of NWA. In addition, it would also be beneficial to the participants of the various programs organized at NWA. Therefore, it is proposed to create such a centre within the premises of NWA.

- **Centre for Disaster Management:** The mission of the Centre for Disaster Management will be to educate the next generation of researchers, analysts, policy makers and professional managers in disaster management-related disciplines through a world-class integrated program of innovative knowledge generation. It also involves developing a decision support system for practicing managers operating in uncertain environments. The Centre will provide a visible point of contact for public agencies at local, state, national and international levels of jurisdiction for research and education in disaster management.

- **Similarly, few more Centres which can be setup are as under:**

  a) Centre of Design of Water Resources Structures
  b) Centre for On-line and Continuing Learning
  c) Management Development Centre
  d) Centre of Geo-informatics in Water Sector etc.

9.4. Setting of Chair for specialized areas

The purpose of the Chair is to promote an integrated system of training, information and documentation in the fields of water resources management and policy issues. It is also an opportunity to create collaborations between other such institutes of international repute. In a university there is tradition to sponsor faculty persons as “Chair”, either for some specialized topic, or in the honour of some great scholar. CWC has already sponsored eight such Chairs in various universities for research on “Climate Change”. In Sponsoring the Chair, government essentially provides the funds to pay for salary. The university

concerned has a freedom to appoint a faculty person using this funding. Mechanism needs to be worked out for creating subject chair in NWA.

9.5. Tie up with a university for diploma/degree courses or project work

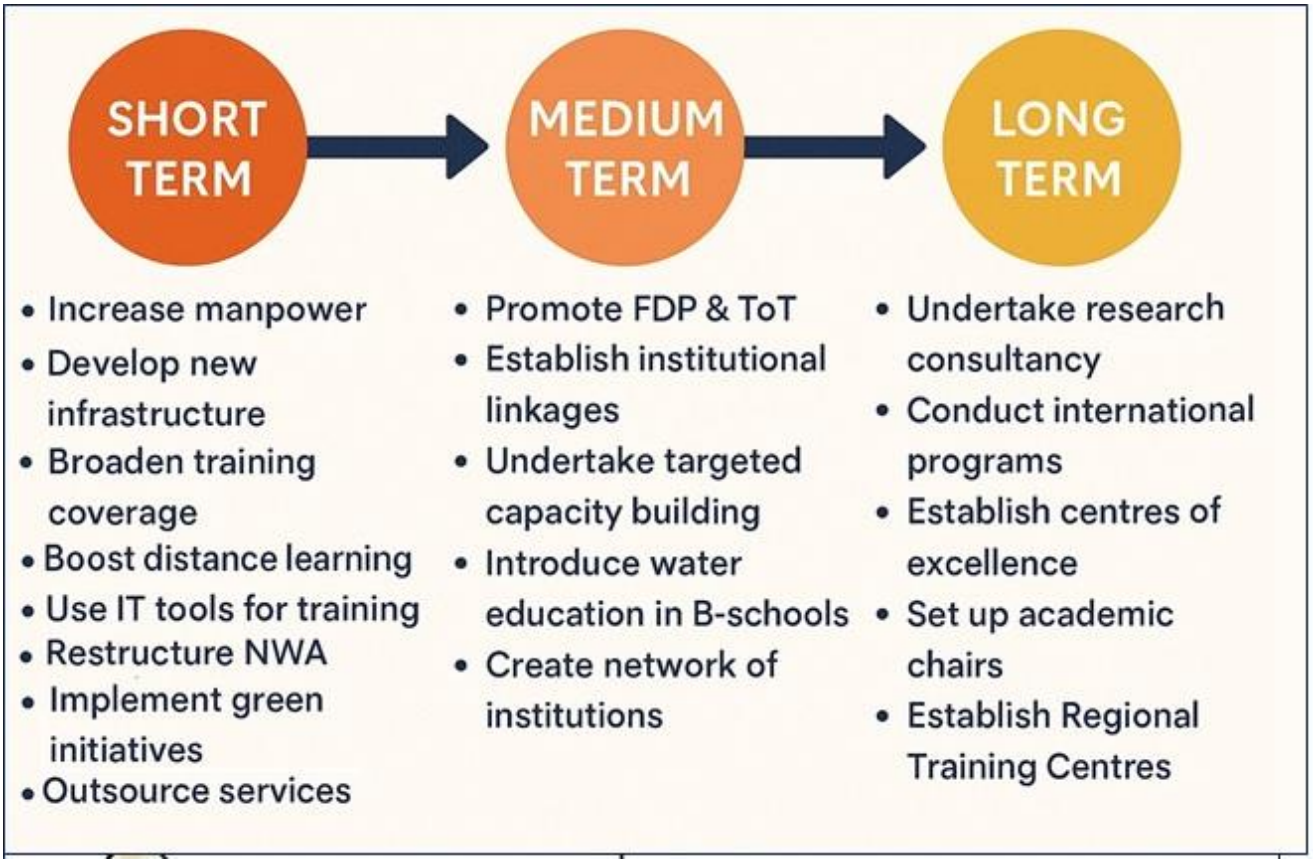
Erstwhile CTU was having tie-up for PG Diploma course with University of Pune when CTU used to conduct nine months course on Integrated River Basin Planning and Management with project works. However, with the reduced duration of IRBPM course from nine to six months the recognition from University of Pune was discontinued. As per the UGC norms the course was for reduced duration to award Diploma.

Now it is proposed that the academics content of the various trainings at NWA can be structured in such a way that the content coverage and duration can be spread over a period of time with requisite project works to be taken-up and the participants can be awarded points. When the participants earns requisite points on topics then he / she shall be awarded PG Diploma. In such a case participants can take-up 3-4 areas together simultaneously and earn points. It can also be explored if Universities can grant Diploma / Recognition for such shorter duration programs.

Moreover, NWA conducts Induction Training Program for Group 'A' officers. Over a period of time ITP content is well structured and developed covering the whole gamut of water sector in detail including technical and non-technical coverage. This program has a potential to get recognition from University. At present the course duration is of six months which is less then norms of UGC, however with assigning Project Work, Field Attachment, six more months can be added for participation from their respective place of work or posting. On completion of this program a degree / M tech in WRDM can be awarded.

9.6. Regional Training Centres (RTCs) across India

The NWA, located in Pune, has a broad scope for training and capacity building. However, its considerable distance from other regions in India may hinder the achievement of its full potential. The RTC of NWA can play a vital role in achieving the training and capacity building needs at different locations across India. NWA can act as a Nodal Centre for such an RTCs across India. This can be achieved by establishing Centres in the Regional Offices of CWC located in 14 regions. Centres can be established in WALMIs/IMTIs; State Training Institutes; Universities / Regional Engineering colleges; IITs/IIMs etc. Such a vision can have significant impact in addressing diverse challenges in water sector in future.



10. Upscaling Training & Capacity Building in water sector in line with the vision@2047. - Future role of NWA

NWA, for over last 35 years, is addressing the training needs of water resources professionals both technical (Engineering) and non-technical (non-Engineering). In its National role, the NWA is concentrating on conducting training courses for all water sector professionals, including the specialized and emerging areas. In addition training programs are also being conducted focusing on areas which includes analysis & design of structure of water resources projects including hydropower projects, mathematical modelling for flood management and overall management of water resources.

Upscaling training and capacity building activities undertaken by the National Water Academy (NWA) in line with the vision for 2047 is crucial for achieving sustainable water management and addressing the evolving challenges in India's water sector. Overall, scaling up of NWA's training and capacity building activities in accordance with the 2047 vision is critical for developing a skilled workforce, promoting innovation, increasing resilience, encouraging community engagement, strengthening governance, and achieving long-term water management outcomes in India. The future role of the National Water Academy (NWA) in terms of training and capacity building for water resources professionals is likely to be significant and multifaceted. Here are a few possible facets of its future function:

i. **Systematic Training Need Assessment (TNA)** for gathering data on training needs : NWA conducted one-day National Level Workshop on 'Training Needs Assessment (TNA) for Water Resources Development and Management" on 07 July 2023 at New Delhi under the aegis of DoWR, RD &GR, MoJS to gather inputs on the training needs. The workshop brought together approximately 160 officers from various State Water Resources Departments, Water Resources and Land Management Institutes (WALMIs), Irrigation Management Training Institutes (IMTIs), and other State/Central Institutes. Five breakaway sessions were conducted during the Workshop to discuss the training needs of the five sub-sectors of WRD&M to deliberate upon the training and capacity building needs of respective sub-sector in focused manner covering the purpose, target groups, roles and competency requirements, identification of competency gaps, curriculum design, modes of delivery, need for Training of Trainers (ToT) courses, institutional mechanism for addressing the needs, creation of faculty pool and knowledge repository etc. Throughout the workshop, it became evident that there is a significant and growing need for training and capacity-building interventions in the water sector. More such workshops will have to be conducted at regular intervals with the stakeholders to assess the training needs of the sector in a comprehensive manner.

ii. **Cadre Training Programs:** CWES Group A, Group B and other Cadres of CWC forms the backbone of CWC and also other organisations under DoWR, RD & GR. NWA has been conducting Induction Training Program for CWES (Group A)

Probationary officers. Since 2019, NWA has been mandated to conduct Mandatory Cadre Training Programs (MCTPs) for CWES Group A, Group B and other Cadres of CWC. These MCTPs are in line with Government of India's Policy to impart training at various levels to enrich the officers with modern approach in government, policy issues and technological advancement in Water Sector. The objectives of these Cadre Training Programs are to groom the officers holistically and equip them to cater to the diverse responsibilities that officers are expected to shoulder. Further, specific programs on the upcoming areas will be conducted to build the capacity and to ensure continued pool of experts on critical issues.

iii. Training and Capacity Building under the various flagship schemes of DoWR, RD & GR

National Hydrology Project: The erstwhile CTU was upgraded to National Water Academy during 2001 under the Hydrology Project. Under the World Bank aided Hydrology Project -I and II and in the on-going NHP being implemented since 2016, a robust hydro-meteorological monitoring system has been established by the Implementing agencies. To utilize water data and information products more appropriately in basin-scale planning and operational management of water resources, continuous training and capacity building and sustained efforts are needed. The envisaged Advanced Phase of NHP additional efforts are needed for improving institutional and individual capacities to use data and information products related to water. NWA under CWC, Pune was entrusted with the responsibility of "Training and Capacity Building" in the areas covered under Hydrology Project for all agencies involved in the implementation of HP-I and HP-II. Under HP-I, a total of 43 courses benefiting 689 officers were conducted by NWA on variety of topics like Hydrometry, Computer Skills, Surface Water Data Processing, Hydrology, Sacramento Model (HYMOS) for IWRM Studies, Advanced HYMOS, ToT for RIBASIM & Basin Planning, WISDOM Software etc. Also working sessions for IWRM studies and guidance to engineers of Govt of Maharashtra were provided by NWA. Under HP-II, a total of 63 courses benefiting 1449 officers were conducted by NWA. Under NHP also, NWA continued to be a nodal agency for training and capacity building activities. Thus, NWA is envisaging to continue a prominent role ahead in taking up 'Training and Capacity Building activities' under Advanced phase of NHP as well.

In the TNA workshop, Hydro-informatics, Technology Tools and Applications in WRM emerged the topmost broad subject area, in which the respondent departments/ organizations would like to be trained. NWA has already initiated trainings on some of the training areas that emerged during the Workshop.

Provide training and capacity building programs focused on emerging technologies and tools relevant to water management such as remote sensing, GIS (Geographic Information System), IoT (Internet of Things), and data analytics. Equipping professionals with skills in these areas will enhance their ability to address complex water challenges. The identified training areas are:

- Advanced and Emerging Technologies in Water Resources Management
- Python Programming for Remote Sensing and GIS
- Geospatial Data Integration and Data Fusion Techniques
- Application of Google Earth Engine for Remote Sensing Analysis
- Remote Sensing and Geographic Information Systems (GIS) for Water Resources Assessment
- Application of Artificial Intelligence and Machine Learning in Water Resources Management
- Big Data Analytics for Water Resources Planning and Decision Making
- Smart Water Networks and Sensor Technologies for Real-time Monitoring and Leak Detection
- Internet of Things (IoT) and its Role in Water Resources Monitoring and Control
- Applications of Drones in Water Resources Monitoring and Management
- Water quality monitoring and management
- Advanced Water Treatment Technologies for Sustainable Water Management
- Advanced Hydrological Forecasting and Predictive Analytics
- Hydrological Modeling of River Basins
- Climate Change Adaptation and Resilience in Water Resources Management
- Water Accounting Framework (WA+)
- Integrated reservoir operation,
- Specific programs on the request of CPMU, etc.

Dam Rehabilitation & Improvement Project (DRIP): India ranks third in the world in terms of number of large dams and they are ageing. Central Water Commission (CWC) had established a Dam Safety Organization (DSO) in 1979 and Dam Rehabilitation programs were launched by the Government of India to create sustainable dam safety culture. Since the implementation of DSO Scheme, NWA was actively involved in conducting trainings and workshop. NWA over the years has created strong knowledge base on these important topics and resource pools which are disseminated through its various training programs.

DRIP Phase-I (April 2012 – March 2021) - The DRIP-I Scheme addressed overarching pillars of dam safety like structural integrity, surveillance and maintenance, instrumentation and monitoring, design intrinsic risks, natural hazard risks, emergency and operational planning with adequate provision of capacity building including physical rehabilitation. NWA contributed immensely to

DRIP-I in terms of training & capacity building of DSOs by conducting the training/ workshops.

DRIP Phase-II & Phase–III (April 2021-March 2031): The initiatives of NWA to cater to the training needs in dam safety aspects are being continued. Due to COVID-19 disruption, the physical trainings could not be taken up. NWA quickly shifted to the Distance Learning Mode, based on the training needs which was also attended by the officials from DRIP implementing agencies. Two days Webinar on "Legal and Institutional Framework for Dam Safety in India" was conducted by NWA, Pune during March 2022 for providing an insight to the Water sector professionals into the legal and institutional framework aspects related to Dam Safety Act 2021. Further, Two Customized Program on "Dam Health and Rehabilitation Monitoring Application (DHARMA) was organised for WRD, Govt of Maharashtra during January 2023. Customized Program for officers of WRD, Gujarat on "Dam Safety Aspects" was conducted during May 2023.

As "Centre of Excellence" in WRD&M and with the prior experience of NHP & DRIP-I, NWA is equipped to act as "Nodal Agency' in order to take up the training and capacity building activities under DRIP with enhanced infrastructure, manpower and faculty development.

With the passage of Dam Safety Act (DSA), 2021, State Dam Safety Organizations (SDSOs) are now mandated to keep perpetual surveillance, carry out inspections and monitor the Operation & Maintenance (O&M) of all specified dams. Section 23 of the DSA, 2021 mandates that 'every individual responsible for safety of specified dams and all activities related thereto shall possess such qualifications and experience and shall undergo such training as may be specified by the regulations. Building the organizational and individual capacities to fulfil the obligations and implement the provisions of the DSA, 2021 is a humongous task. Broad Identified Training areas to be undertaken in future are:

- Provisions of Dam Safety Act, 2021 & vis-a vis works in DRIP
- Overall Dam Safety Aspect, Legal and Regulatory requirements
- Safety Inspection of dams
- Dam break modelling & Inundation Mapping
- Instrumentation in dams
- Operation and Management, Integrated Reservoir Operation
- Quality Control/ Quality Assurance
- Geophysical Aspects/ Tomography
- Monitoring and Surveillance

- Training on HEC-HMS, HEC-RAS, Mike 11, FEM software etc.,
- Seismic Safety Evaluation of dams
- Structural design of dams, spillways, and energy Dissipators
- Seepage through Dams
- Hydrology: Design Flood Review, Flood Routing
- Hydro-Mechanical Components in Dams
- Structural and Hydraulic Design including software
- Dam Stability aspect
- Comprehensive risk assessment in dams and cluster of dams
- Vulnerability and Hazard classification of dams
- Sediment Management in Reservoirs
- Latest Rehabilitation technologies
- Introduction to web-based tool- DHARMA
- Sustainable Tourism around Dams
- World bank procurement procedures for DRIP implementing agencies, etc..

Irrigation Water Management & increasing Water Use Efficiency: Our irrigation systems have been struggling with poor management practices and low Water Use Efficiency (WUE). Accordingly, improvement of WUE is a thrust area for the Government of India. Many efforts are underway to enhance the cropped area covered under Micro Irrigation (MI), encourage adoption of Piped Irrigation Network (PIN), execute command area development works under various components of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), a flagship programme of the GoI. Apart from policy changes, it is essential that well-coordinated and focused efforts are made towards training and capacity building of all stakeholders involved in irrigation water management. The prevalent water stress conditions in many river basins of India, increasing water demands and severe gap that exists in the last mile connectivity. The need for water pricing, metering, benchmarking, and adoption of circularity: recycle and reuse of wastewater. To mitigate the issues, Pradhan Mantri Sinchan Kshetra Adhunikaran Upyojana (PMSKAU)' is being proposed for bringing Institutional & Technology changes, Water Accounting & Monitoring systems, Infrastructure upgradation and On-farm management. Broad Identified Training areas to be undertaken in future are:

- Piped Irrigation Network (PIN), Micro Irrigation (MI), Internet of things (IOT) based systems, Alignment with Digital Agriculture

- Geo mapping, AI based valve controls, Pricing/ Quota of electricity & water
- One Water: Treated wastewater/ Thermal Power Plant/GW/SMI
- Understanding WUE at all levels, Indicators for monitoring WUE based on uses/user
- Measurements of WUE: Water Auditors
- WUE ratings, WUE Credit programs
- Community Role in WUE, Regulations for Non-Efficiency
- DPR Preparation for Irrigation Projects
- Hydrology, Hydrometry, Hydro informatics and Hydrological Modelling
- Flood Management, Surface Water Management, Measurement of Irrigation Water
- Irrigation Water Supply and Management

iv. **Coastal Zone Management and CMIS:** Coastal Zone Management (CZM) and Coastal Management Information Systems (CMIS) are crucial components of the Government of India's efforts to manage and protect its coastal areas effectively. Though NWA has been conducting this program, there is a need for continuous learning and adaptation in future by updating and incorporating emerging issues, best practices in CZM and CMIS. Continuous learning and adaptation ensure that NWA remains at the forefront of coastal management education and training.

v. **Pumped Storage Hydroelectric Projects:** Government of India has initiated several measures to promote Pumped Storage Hydroelectric Projects (PSH) as part of its efforts to enhance renewable energy capacity, improve grid stability, and meet growing electricity demand. The initiatives by GoI demonstrate the commitment for promoting the development of Pumped Storage Hydroelectric Projects as a sustainable and reliable source of electricity generation and grid stability enhancement. By integrating Pumped Storage Hydroelectric Projects in line with GoI policy into its curriculum and training programs, NWA strive to equip water professionals and engineers with the knowledge, skills, and tools needed to contribute to sustainable energy and water management solutions in future.

vi. **Capacity Building in Use of Modelling tools in Water Sector:** There has been unprecedented development in computing hardware and software,

especially mathematical models, during last few years and the pace of development is further accelerating. On the other hand, the data collection/availability, in digital way, from various sources, by different agencies has also improved with tremendous pace. Building capacity of water sector professionals has become essential who are engaged in planning, designing, and managing water resource systems for effectively using these technological advancements. These tools are also excellent for generating What-if scenarios in the wake of climate change impacts on water resource besides supporting decision making with highly informed inputs.

CWC is entrusted with the work of flood forecasting on inter-State and international rivers in India. CWC has initiated 5-day advisory flood forecast for major flood prone river basins and efforts are on to calibrate and update the mathematical models, mainly, developed using DHI software. In the long run, it is envisaged to develop Early Flood Warning System (EFWS) including Inundation Forecast for all major flood prone river basins based on 2D/1D&2D coupled modelling which requires development of High-Performance Computing (HPC) infrastructure to process high resolution DEM data being/to be acquired from Survey of India. Setting up of HPC infrastructure with remote access facility along with modelling tools and software for training and capacity of the professionals was earlier proposed by NWA as part of the proposal for establishment of "Centre of Excellence for Smart Water Management". Training and Capacity building of officers in the gamut of tools and software related to flood modelling, river basin modelling, Modeling and Management of Irrigation Systems, Modelling of Coastal Processes etc. can be taken by NWA, CWC, Pune. This aspect was also emphasized by Secretary, DoWR, RD & GR during his visit to NWA, that *"Emerging fields and new knowledge should be mapped, and modules should be developed. NWA should keep up-to-date and be equipped with state of art tools and technologies etc"*.

vii. Faculty Development Programs: Faculty development programs are crucial for maintaining the quality and relevance of training institutions like NWA and other state training institutions. They offer opportunities for professional growth, enhanced teaching effectiveness, adaptation to changing trends, research, improved student learning outcomes, promotion of diversity and inclusion, quality assurance and accreditation, leadership development, and institutional innovation and excellence. These programs help trainers stay updated with the latest developments in their discipline, contribute to knowledge creation and dissemination, and foster a culture of inquiry for promoting critical thinking, innovation, and continuous improvement. To sum up, faculty development programs are essential for nurturing a skilled,

motivated, and diverse faculty workforce capable of delivering high-quality education and driving institutional excellence. One of the outcomes of the TNA workshop was to conduct FDP on regular basis. NWA has started conducting this program, this is a very important program to be conducted continuously by NWA.

viii. **Design of Water Resources Structures:** India's water resources sector has seen significant growth since independence, with over 6135 existing dams. The Design and Research Wing in the Central Water Commission (CWC) has played a pivotal role in planning, analyzing, and designing various water resources and hydropower projects. CWC has provided engineering solutions for complex problems encountered during project execution and operation, using modern computational tools and technologies. The knowledge and experience gained from these projects are regularly disseminated to water sector professionals to build institutional capacity for addressing future challenges. The NWA conducts training and capacity building programs for stakeholders in water resource design, but the field of water resources engineering is constantly evolving with new technologies and methodologies. Continuous training is needed to equip engineers with the necessary skills and tools for effective water resource management.

ix. **Bureau of Water Use Efficiency (BWUE) under NWM:** The setting up of BWUE under the National Water Mission, is an effort to promote efficient and sustainable water use practices, address water scarcity challenges, and achieve its water conservation goals. In addition to internal capacity building within BWUE, training programs can also target stakeholders such as government agencies, water utilities, industries, farmers, and communities. By building the capacity of these stakeholders, BWUE can create a broader impact and foster a culture of water conservation and efficiency across the country. Overall, training and capacity building are essential for strengthening the capabilities of BWUE and its stakeholders to effectively promote water use efficiency, achieve water conservation goals, and ensure sustainable water management in India.

x. **Capacity building of specific states:** NWA has been mandated for Capacity Building for State, Central Government Organisations & PSUs etc. Many tailor-made programs have been conducted on the request of State Governments. Some of the prominent Capacity building activities includes programs for officers of Government of Bihar, Haryana, Kerala, Telangana, HPPCL Himachal Pradesh, Maharashtra, North-Eastern Region of India, Govt of Gujarat, Rajasthan, UT of Leh & Ladakh, CWPRS, CGWB etc. Since 2014, around 540 officers have been trained by NWA through the specific customized program as per the requirement. Over the years, the specific needs have been increasing,

which will have to be catered by NWA continuously. The recently held TNA workshop also brought out huge demand from states & UTs in training of their personnel in various topics.

xi. **Water Policy and Governance:** Water policy and governance are essential for promoting sustainable, equitable, and efficient management of water resources, addressing water-related challenges, and achieving water security for present and future generations. By investing in capacity development in water policy and governance, countries can strengthen their institutional capacities, enhance stakeholder engagement, promote sustainable water management practices, and address water-related challenges effectively. Recognizing the need, NWA since 2012 has conducted training program on Water Law, Interstate River Water Disputes, Transboundary Water Cooperation etc. Recently, NWA also organized a webinar series with an objective of knowledge sharing to all the stakeholders and building their capacity on the important subjects . Further, the need for capacity building on Water Policy etc. has been highlighted in the Annual Capacity Building Plan prepared by Capacity Building Commission. Thus, continuous training and capacity building is needed.

xii. **Synergization in Water Education:** Special Secretary, DoWR, RD & GR, MoJS in keynote address during the Workshop on TNA urged for the necessity of synergy among all training institutions/centers of the country for addressing the training and capacity building needs of the water resources sector. Further, the need for structured capacity building measures was emphasized in view of huge number of stakeholders involved – personnel of Central and State Government Departments/Organizations, office bearers and managing committee members of Water User Associations (WUAs), Panchayatii Raj functionaries, farmers etc., NWA was urged for exploring the modalities of associating various training institutions, agricultural extension centers, agricultural colleges and universities, non-governmental organizations etc. and was advised to adopt 'hub and spoke model' with institutions like NWA, NERIWALM and RGNGWTRI acting as focal points for providing handholding support to State WALMIs/IMTIs, other State training institutions and centers.

xiii. **Contribution in the field of Water Literacy and Education :** Recognizing the need for water education and to spread water literacy amongst the masses, the Academy in addition to its mandated technical programs and Cadre Training Programs, also conducts mass awareness programs for promoting Water Conservation and Management targeting School Teachers, NGOs, Media Professionals and Panchayati Raj Functionaries, Farmers and WUAs. Periodic

training to these groups has become part of the NWA training calendar. Water Literacy and education programs for water conservation and management are essential for promoting sustainable water use, protecting ecosystems, improving public health, empowering communities, and building resilience to climate change. By raising awareness, changing attitudes, and mobilizing action at the individual, community, and societal levels, these programs contribute to a more water-secure and sustainable future. The role of NWA will continue towards this endeavor in long run also.

xiv. Broad basing of training and capacity building as directed by Senior Officers from CWC/DoWR, RD & GR during the recent visit to NWA:

a. The possibility of including engineers from State Government departments in Induction Training Programs conducted by NWA be explored. Alternatively, programmes for newly recruited State engineering officers of Water Resource Departments based on their training needs can be conducted.
b. Develop modules on Wastewater treatment especially reuse of treated wastewater for industrial, irrigation use, etc.
c. The concept of the river as an ecosystem or living system be introduced. Topics such as how rivers form, how water and sediments flow, why catchment health is vital, and how it serves diverse purposes once it reaches the plains, as well as how the river itself is replenished, how health of the river can be maintained etc. could be included.
d. Emphasize on need for developing case study-based learnings. Compare the success and failures of a multipurpose project built with adequate planning with some other project executed with poor planning. Demonstrate any multipurpose project - from conception to completion, different challenges encountered, interdisciplinary approach, village success stories, and so on.

Investing in training and capacity building in the water resources sector is essential for building a skilled workforce, enhancing institutional capacity, and fostering innovation to address current and future water challenges effectively. With the thrust towards people's participation in all stages of water management, training and capacity building is a valuable investment to enhance human potential with an emphasis on attitudinal and behavioral change. To the trainees, training presents an opportunity to be proficient by understanding a relevant portfolio of issues, changing environment, policies, projected mandates and appropriate technologies, good practices and resource management techniques, principles of change, compatible ethics and value systems and conceptual framework, business

objectives and related strategies, using a variety of training devices and delivery methods. In the context of water resources sector, training in the form of capacity building is indispensable for:

- Strengthening the enabling institutional environment which takes the organization in right directions;
- Optimizing the available water resources which is becoming more and more critical with the passage of time;
- Establishing responsibility and accountability at all appropriate levels of hierarchy to usher in the needed efficiency;
- Understanding and appreciating value of water as social and economic commodity;
- Developing and encouraging reliable information on policies, program and projects and systems of sharing this information to bring in transparency; and
- Keep finding innovative solutions to problems, technical or otherwise, facing the sector to manage resource sustainability.

In view of the emerging challenges in the water sector and importance that water is going to gain in the coming years, it is pertinent to handle these issues with a more holistic and multi-disciplinary approach. **The NWA in the coming years is poised to take big leap and has to play a pivotal role in terms of "Training and Capacity Building" in Water Resources.**

xv. Upscaling the International Training Programs

Since 2010, the mandate of NWA was widened by taking up training program for foreign nationals as well. Accordingly, NWA has been conducting international training programs, in the past programs for Ethiopian nationals, African Countries (under ITEC Scheme of MEA); Officials of Royal Govt of Bhutan etc. were successfully conducted. Recently NWA conducted training program for Nepalese Officials and Rwanda Nationals.

During the visit of Secretary (WR), DoWR, RD & GR to NWA, it was emphasized that the International participants from South East Asia and Africa etc. may be invited as part of NWA's regular Induction Training Programs. NWA for past 36 years is functioning as "Centre of Excellence" and has established its footprint at the National level. With the passage of time, NWA can expand its international footprint, foster global collaboration, and contribute to building capacity in water

resource management on a broader scale. NWA has to strategize way ahead so as to play a pivotal role in building the capacity of underdeveloped and developing nations in water resources development and management. The few strategic initiatives that can be undertaken by NWA are as below:

a. **Collaboration with WMO**: NWA has already been recognized an RTC by WMO. NWA is regularly conducting DL programs in association with WMO on topics of Basic Hydrology and Advanced Hydraulic Sciences. This can be continued in the long run also.

Basic Hydrological Sciences	**11 courses**	• **623 Indian participants from State, Central, PSU, Academic, NGOs etc.** • **204 Foreign participants from countries of Regional Association – II, WMO (Asian Countries)** **Total participants = 827**
Advanced topics in Hydraulics and Hydrological Sciences	**4 courses**	

Few more areas like Hydro-Meteorological Training Programs; Climate Change Adaptation and Resilience; Flood Management and Early Warning Systems; Water Quality Monitoring and Assessment; Drought Management and Mitigation; Capacity Building for National Meteorological Services etc can also be added in the long run. Also, possibility of Organizing international workshops, conferences, and seminars on topics related to hydro-meteorology and water resources management can be explored. Establishing a long-term partnership between NWA and WMO will help NWA in upscaling its already existing collaboration with WMO in these key areas. Thus, NWA can strengthen its training program, enhance its expertise in hydro-meteorology, and contribute to more effective water resources management practices globally.

b. **Collaboration with ICID**: NWA in collaboration with ICID has successfully conducted a program on "Micro Irrigation" for International and National Participants. In order to expand its reach for other topics a long-term association / collaboration between NWA and ICID in the field of Distance Learning courses on the topics of Irrigation; Drainage and Flood Management is proposed. Long term association / collaboration can also envisage funding from the international donors. This will provide publicity and visibility to NWA amongst the international community which will pay dividends not only for the trainings sponsored by ICID but for all other programs of NWA.

c. **Collaborate with International Organizations**: Presently, NWA has collaborated with Asian Institute Technology, Bangkok & IHE Delft, the

Netherlands for conducting Mandatory Cadre Training Programs (However, this collaboration needs to be revived). NWA in the long run can establish collaboration with other reputed international organizations such as UNESCO, World Bank, Asian Development Bank or UN Water to leverage their expertise, resources, and networks. Jointly designed programs can attract a broader audience and enhance the academy's credibility.

d. **Memorandum of Understandings:** Ministry of Jal Shakti regularly enters Memorandum of Understanding with foreign countries in the areas of Water Cooperation. Many MoUs focus on knowledge sharing, technical cooperation, and capacity building. NWA can take up capacity building components of such MoUs. These can be implemented by integrating NWA into these MoU, such initiatives can maximize the impact of international water cooperation agreements, further solidifying India's leadership in the water sector. This will certainly enhance the role of the National Water Academy (NWA) as a central hub for capacity building and knowledge exchange in water resource management under international Memoranda of Understanding (MoUs) signed by the Ministry of Jal Shakti.

e. **Regional Centres of Excellence**: NWA in the long run can establish regional centres of excellence in collaboration with partner institutions in underdeveloped and developing regions. These centres can serve as hubs for capacity-building activities, research, and knowledge sharing, catering to the specific needs of their respective regions.

f. **Establishing tie-ups with International Universities:** Tie up and Collaboration with potential International institutes offering short term online certification courses on specific topics and even long term courses or the full course duration. For e.g. high-quality e-learning course of two years duration with focus on Geographical Information Systems and Earth Observation for environmental modelling and natural resource management being offered by ITC Faculty of Geo-information science and Earth Observation of the University of Twente, The Netherlands. As e-learning is getting more popular, more of such courses can be identified and offered under DRIP and NHP for benefit of Indian participants.

g. **Faculty Exchange:** Facilitate faculty exchange programs and research collaborations with international universities to promote knowledge exchange and academic collaboration. This can involve joint research projects, co-supervision of graduate students, and collaborative publication efforts.

h. **Online Learning Platforms: P**artner with international universities & institutions to develop online learning platforms and Massive Open Online Courses (MOOCs) in water resources management. This allows participants to access high-quality educational content from anywhere in the world, promoting inclusivity and accessibility.

i. **Internship and Practicum Opportunities**: Collaborate with international universities and institutions to provide internship and practicum opportunities for participants in water-related organizations and research institutions abroad. This hands-on experience will enhance participants' practical skills and professional networks.

j. **Degree / Diploma in the specialised Areas:** by tying up degree or diploma programs in specialised areas with international universities NWA can contribute to building a skilled workforce capable of addressing the growing challenges on a global scale. For e.g. tying with international universities on the dam safety aspects training thereby contributing to skilled workforce.

k. **Short-Term Certificate Programs:** NWA can collaborate with international universities to offer short-term certificate programs in specialized areas of water resources management. These programs can range from a few weeks to a few months and provide participants with targeted skills and knowledge in specific areas of interest.

11. Enabling Mechanism (2025-2047)

Para 4 and 7 brings out the list of activities, development in terms of infrastructure that augmentation of manpower that NWA is planning to undertake in the next five years so as to take NWA to the next level. The objective is to upscale the training and capacity building activities in a bigger way and also to shape NWA as “Centre of Excellence” at the National and International level. NWA has the capacity to hold customized training for catering to the requirements of developing nations of the world. Further to make this possible, NWA need a separate enabling mechanism.

It may be seen that, NWA has continuously upgraded itself to the present position (from erstwhile CTU) and given more output despite the fact that manpower strength has declined. This has been possible only with active support of CWC. Being a part of CWC, it is easier for NWA to develop linkages with international institutes/Organisations for faculty exchange, technical knowledge sharing and institutional tie up. It has immensely grown in terms of training areas, infrastructure, reputation, competence etc. and is continuously growing The CTU

has grown into a full- fledged national academy only under the overall guidance and active co-operation from officers of CWC.

A large pool of CWES officers is available to NWA as faculty on almost call basis, only because it is a part of CWC. This large pool of faculty is technically competent with sound professional experience. They have a sense of belonging to NWA only because it is a part of CWC. NWA has consistently delivered as per the mandate given by MoJS and is quite confident to match to any expectations of MOJS/CWC. The present setup is fully geared to take any initiative as per the requirement & direction of MOJS. The strength of NWA is certainly due to the fact that it is a part of CWC. The growth of NWA, which has happened in last 36 years, is because of the active support from CWC Headquarter. NWA is also the main unit for implementing Training Policy of CWC. The technical & non-technical manpower of CWC is trained at NWA.

Keeping in view the importance of water resources development and management in long run, in addition to areas that are being handled presently by NWA, there are new emerging areas that would require academic inputs in water sector In view of the emerging challenges in the water sector and importance that water is going to gain in the coming years, it is pertinent to handle these issues with more holistic and multi-disciplinary approach. Capacity Building of all Stakeholders will be continued with the focus on emerging areas and vital issues pertaining to Water Resources Development and Management. To achieve this herculean task of training and capacity building in the coming years, the Academy needs support on the following counts:

Delegation of Power: Enhanced powers are required for the following items:

a. **Procurement of Hardware/ Software for training:** NWA being a training institute, the need for state-of-art comprehensive IT infrastructure in terms of Networking facilities; high-speed internet connectivity; computer peripherals, audio-visual equipment; studio room with complete acoustics etc., is very important for conducting various software-based training & Distance Learning Programs etc. In order to keep pace with the development of IT, the existing equipment needs upgradation and also procurements are to be done to cater to the needs of emerging technologies. Every core area training involves hands-on training using various Software pertaining to WRDM e.g. RS-GIS; Design; Water Planning; Modelling Software etc which are required to be used during various session of training programs for demonstration and to conduct proposed hands-on session.

b. **Nomination of NWA faculty for Conferences, Seminars, etc**.: To remain at the forefront of global agenda for water resources, faculty of NWA must be

nominated to participate in seminars, conferences, and other events. Such participation would enrich the faculty with professional insights and experiences, as well as help them stay abreast of emerging trends, technologies, and best practices in the water sector. Such exposure not only enhances their professional development but also provides them with new insights and methodologies that can be integrated into NWA's training programs, thereby enriching the learning experiences of future water professionals. Participating in such events also promotes collaborative relationships and knowledge exchange activities, building a thriving ecosystem of learning and innovation in the water sector. Thus, empowering the NWA to nominate NWA faculty to participate in seminars and conferences demonstrates the Academy's commitment to expanding knowledge, fostering collaboration, and tackling the complex challenges confronting the global water community.

c. **Powers for treating visiting officials as NWA Guest:** NWA is a national-level institute that is routinely visited by officials from various government delegations and international visitors. Hosting State Guests reflects positively on NWA as an institution, indicating its commitment to fostering international relations, teamwork, and goodwill. Delegating power to NWA improves NWA's institutional capacity to communicate with dignitaries and officials from various backgrounds and jurisdictions, which promotes the organization's reputation and collaborative engagements.

d. **Powers for conducting Workshops and Seminars etc.:** Conducting workshops, seminars, and similar events at the National Water Academy is instrumental in knowledge dissemination, capacity building, networking, addressing emerging issues, facilitating policy dialogue, promoting innovation, supporting lifelong learning, and enhancing institutional visibility. These activities substantiate NWA’s role for advancing excellence in water resources management education and contributing to sustainable water management practices globally. Delegating the powers to NWA for conducting workshops, seminars, and similar events at NWA is essential for leveraging their expertise, strategic planning abilities, resource management skills, stakeholder engagement capabilities, quality assurance efforts, promotional activities, and commitment to continuous improvement.

e. **Collaborative arrangements with National/ International agencies:** Collaborative arrangements with national and international agencies are vital for enhancing NWA's capacity, expertise, network, innovation, policy influence, and promote institutional excellence in water resources management training and capacity building. These partnerships enable NWA to leverage external resources, expertise, and opportunities to address complex water challenges

effectively at the national and global levels. Delegating the power to NWA for collaborative arrangements with national and international agencies for training and capacity building enables effective partnership building and promotion of NWA's initiatives on the global stage. This delegation of power will empower NWA to play a pivotal role in advancing NWA's mission of promoting excellence in water resources management training and capacity building.

f. **Hiring of consultants/Young Professionals:** The National Water Academy (NWA), with its existing manpower, has reached a saturation point. Over the years, its role and mandate have expanded significantly, and they are expected to grow manifold in the coming years to address emerging challenges in the water sector. To bridge the gaps in water sector organizations, the availability of trained manpower is crucial. In this context, the role of NWA is pivotal in training and capacity building.

   As a recognized *Centre of Excellence*, NWA must equip its human resources to effectively continue and expand its training and capacity-building activities. Given the multidisciplinary nature of the water sector, the existing and future manpower alone will not be sufficient to holistically address capacity-building needs.

   To meet these increasing demands, the human resource requirements can be addressed through the hiring of consultants and young professionals. Therefore, it is essential that NWA be delegated the power to hire young professionals and consultants to achieve its expanded targets effectively.

g. **Training allowance**: Discontinuation of the Training Allowance has adversely impacted the morale of the core faculty of NWA. This needs to be restored as an incentive for faculty working in the Academy in line with practice being followed by the other National Level Institutions.

h. **Enabling mechanism for conducting International programs**: NWA, CWC, has a much bigger role in training and capacity building of all stakeholders across the country and also cater to the training needs of International Participants. It has been discussed in various forums that NWA should open its regular training programs for foreign national also. NWA has conducted special training programmes for International participants in Distance Learning as well as residential mode. It has conducted customized programs for participants from African Nations, Bhutan, Nepal etc. In few of its regular programs, foreign nationals have also participated. NWA will be widening the scope of its international programs not only for South Asian countries but also for the Nationals from other countries having bilateral cooperation with India in Water Sector. The ITEC Scheme of MEA can be one of the sources of funding for such programs.

NWA is functioning within the framework of delegated powers at various level, widening the scope of NWA for its international training programs will need appropriate delegation of power and dedicated manpower.

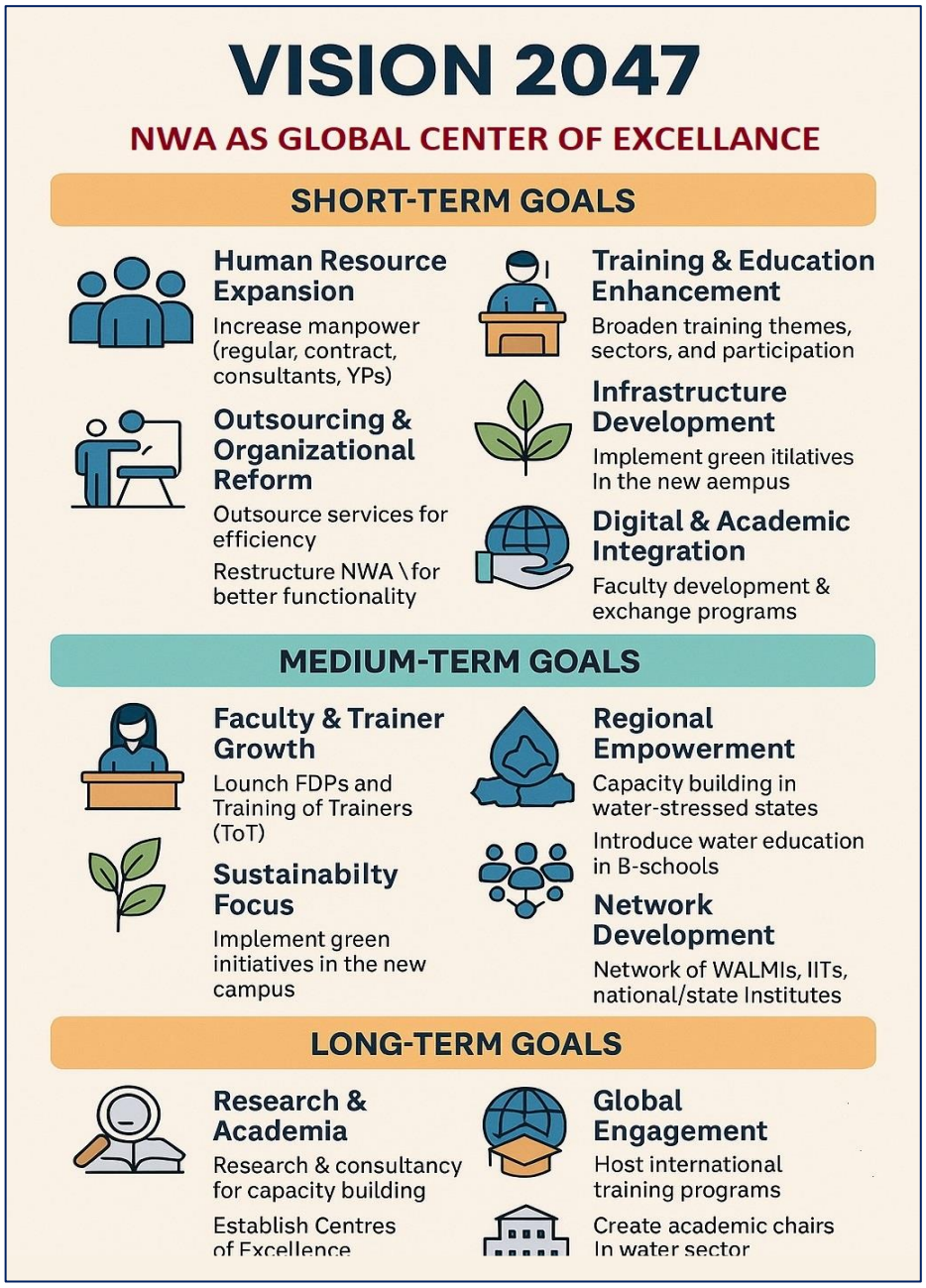
It is felt that NWA can broaden the horizon of international trainings by entering Memorandum of Association with WAPCOS (PSU of Ministry of Jal Shakti) which provides consultancy services in all facets of Water Resources, Power and Infrastructure Sectors of India and abroad. Further, WAPCOS has its presence in 51 countries in Asia, Africa, CIS countries, Oceania, Eurasia, Central America, North America, South America & Pacific Islands etc. Entering MoU with WAPCOS will increase the visibility of NWA and facilitate easy coordination with Responsibilities can be divided between NWA and WAPCOS for conducting international programs. Thus, MoU with WAPCOS is a promising option enabling mechanism for conducting International Programs.

Standard Operating Procedure (SOPs): While the mandate of NWA has expanded to include capacity building for all stakeholders, the mechanism for decision making and processing of the NWA proposals needs to be clearly defined. As NWA ventures into the areas like training for foreigners, linkages with international organizations, appointment of faculty on contract basis, use of course fee/departmental charges by NWA etc. there are many issues that are likely to come up which are not conventional. To facilitate time bound & effective decision making on these issues and also for routine proposals from NWA, there can be Standard Operating Procedures (SOPs) for expeditious processing of proposals from NWA.

Collaboration with expert agencies for MCTP programs: The MCTP is training in personality development and policy issues designed and conducted by those who are professionals in the management sector, rather than professionals in water sector. The MCTPs of two to three weeks duration long includes not only many more hours of management and personality development topics, but also outdoor activities for confidence building and team spirit development. The MCTPs for CWES officers are being conducted in association IIMs, IISc & IITs on the basis of respective MoUs. NWA has been receiving requests from State authorities & other organisations in conducting MCTPs for their officers as well on payment basis. E.g. NWA recently got request from Govt of Maharashtra for conducting MCTP for WRD officers up to the level of Secretary. Part of such program can be conducted At NWA but some of the components of such MCTPs will have to be outsourced to an expert agency or organisation like IIMs, IITs for specialised management related aspects. NWA needs to have necessary enablers to take up such programs for states.

12. Way Forward (2025-2047)

The National Water Academy, as an apex training institute stands at the forefront of India's efforts to strengthen the knowledge, capacity, and leadership in water resource management. As India approaches 2047, marking 100 years of independence, the Academy envisions itself evolving into a global centre of excellence, fostering innovative thinking, capacity building, and policy influence in the water sector.



Training and capacity building are central to equipping water sector professionals with the knowledge, skills, and mindset needed to meet these emerging demands. In this context, NWA's role needs a quantum leap — from a national training institution to an international centre of excellence and innovation.

With a vision "To transform NWA into a world-class centre for excellence, leadership, and innovation in water resources management and sustainable development by 2047," NWA aims to be globally recognized for nurturing leadership, catalyzing innovation, and building a community of water professionals equipped to meet the future challenges.

This Vision 2047 document gives a progressive roadmap for the future towards this objective. The Plan for Expansion of NWA's Capacity is envisioned in three phases :

- Short Term Plan (to be implemented 2025-2032)
- Medium Term Plan (to be implemented 2033-2040)
- Long Term Plan (to be implemented 2040-2047)

Through a strategic focus on strengthening institutional capabilities, scaling up of training and capacity building activities, and embedding excellence in every sphere, NWA can to play a pivotal role in India's water-secure future and contribute meaningfully to the global water agenda.

Annex – I

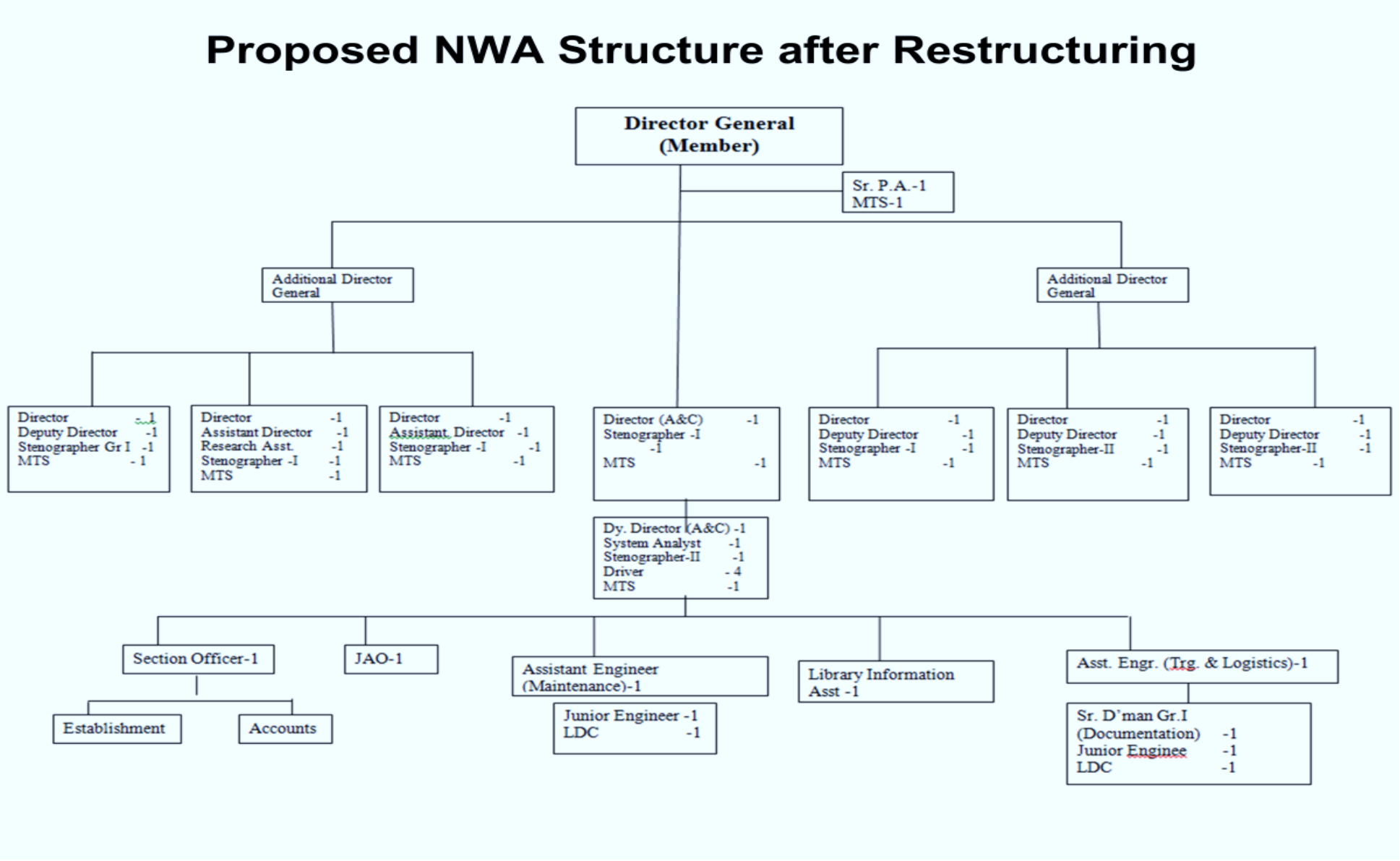
Incumbency Position of NWA, CWC, Pune as on 1 April 2025
Sanctioned /Working (in position) Staff Strength including NPS in respect of NWC, CWC, Pune are as under:

#	Name of the Post	Sanctioned	Filled (in Position)	Vacant
1	Chief Engineer	01	01	0
2	Director	05	03	2
3	Deputy Director	03	03	0
4	Assistant Director -II	03	03	0
5	Junior Engineer	02	02	0
6	Stenographer	03	02	1
7	Assistant	02	00	2
8	Upper Division Clerk/SSA	01	02	(-) 1*
9	Lower Division Clerk / JSA	02	02	0
10	Driver	03	01	02
11	Multi-Tasking Staff	07	05	02
	Total	**32**	**24**	**08**

***One post of UDC is adjusted against the vacant post of Assistant/ASO**

Annex – II

Proposed NWA Structure after Restructuring



Annex – III

Visit of Secretary, DoWR, RD & GR, MoJS to National Water Academy, CWC, Pune on 15 October 2022

Shri Pankaj Kumar, Secretary, DoWR, RD &GR, MoJS made a visit to National Water Academy (NWA), CWC, Pune on 15.10.2022. During his visit, Shri Sushil Kumar, Chief Engineer, NWA briefed him about various activities of NWA. Secretary also took a tour of NWA premises, and was shown various infrastructural facilities. Secretary appreciated the training activities conducted at NWA and also the upkeep of its infrastructure facilities and the campus as a whole.

During the briefing session chaired by Secretary, DoWR,RD & GR, MoJS, he gave various suggestions and instructions regarding activities at NWA, which are enumerated below:

1. International participants from South East Asia and Africa etc may be invited as part of NWA's regular Induction Training Programs. ***A proposal in this regard may be submitted by NWA to DoWR, RD & GR for taking up with MEA.*** The water scenario of the region may be included in such training courses.

2. ***The possibility of including engineers from State Government departments in Induction Training Programs conducted by NWA may be explored.*** Alternatively, programmes for newly recruited engineering officers of Water Resource Department of State Governments based on their training needs can be conducted.

3. ***Modules on wastewater treatment especially reuse of treated wastewater for industrial, irrigation use etc. may be developed.***

4. ***The concept of the river as an ecosystem or living system may be introduced.*** Topics such as how rivers form, how water and sediments flow, why catchment health is vital, and how it serves diverse purposes once it reaches the plains, as well as how the river itself is replenished, how health of the river can be maintained etc could be included.

5. ***Teaching methodology may incorporate strategies that make modules extremely engaging so that trainees retain the concepts delivered for an extended period of time. Tasks in group should be encouraged.***

6. Capacity building in water sector invariably needs a multidisciplinary approach. Thus, it is imperative that ***multidisciplinary approach combining all disciplines, institutional memory etc may be made part of the various training programs conducted at NWA.***

7. ***Case study based learning may be encouraged by analyzing the success or failure of a multipurpose project identifying causes including quality of planning with execution other project executed with poor planning and strategy. Case studies may be developed for the purpose with due care.***

8. ***NWA should prepare a document on 'Vision for 2047'. NWA should also envisage to become a leading institution in the region with a holistic vision to train water resources sector professionals.***

9. Evaluate the infrastructure needs: ***For training international participants, infrastructure like hostels, catering etc needs to be enhanced. World class recording facility and lecture halls to deliver programs in hybrid mode should be created.***

10. The existing land parcel with NWA is almost saturated with construction. NWA needs additional land parcel for upgrading infrastructure. ***A proposal may be submitted in consultation with CWPRS, for acquiring adjoining land parcels from CWPRS.***

11. Need for connecting the residential complex of NWA with its academic campus across Sinhagad Road through an underpass on an urgent basis was agreed upon. ***NWA may submit a proposal for construction of an underpass.***

12. ***Holistic outlook amongst trainees may be encouraged so that they can look for solutions from various aspects and can work with multi-disciplinary teams.*** While planning training programmes, this aspect may be kept in view.

13. ***An Internal Committee for acquiring books and journals etc. in NWA library on regular basis may be constituted.***

14. ***Emerging fields and new knowledge should be mapped and modules should be developed.*** NWA should keep itself up-to-date and be equipped with state of art tools and technologies etc.

15. ***Faculty level vacancies at NWA be filled up on priority.***

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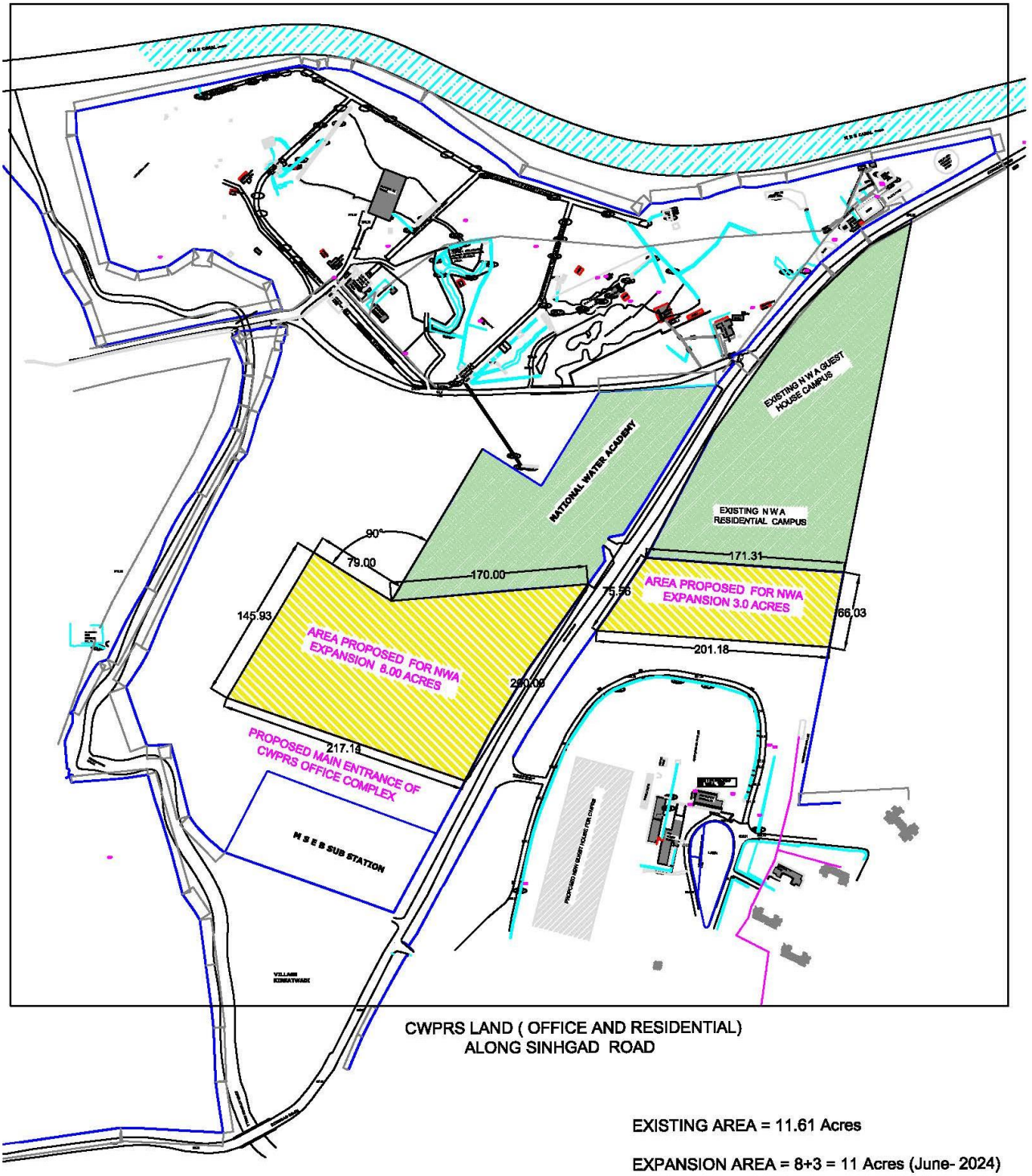
Annex -IV



CWPRS LAND (OFFICE AND RESIDENTIAL)
ALONG SINHGAD ROAD

EXISTING AREA = 11.61 Acres

EXPANSION AREA = 8+3 = 11 Acres (June- 2024)

National Water Academy
Central Water Commission

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