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## **International Hydrological Programme**

**PROPOSAL FOR THE ESTABLISHMENT OF A CATEGORY II WATER  
RELATED CENTRE ON**

## **Water Security**

**THE INSTITUTE OF ENGINEERING, NATIONAL AUTONOMOUS  
UNIVERSITY OF MEXICO IN COLLABORATION WITH THE MEXICAN  
INSTITUTE OF WATER TECHNOLOGY**

# Proposal for the establishment of a UNESCO Category II Centre

## Centre for Water Security

Mexico city, Mexico



**INSTITUTO  
DE INGENIERÍA  
UNAM**



**IMTA**  
INSTITUTO MEXICANO  
DE TECNOLOGÍA  
DEL AGUA

**Institute of Engineering, National Autonomous University of Mexico.**

**Mexican Institute of Water Technology**

## **Aim**

The Centre is proposed to enhance scientific cooperation at regional level and to improve the understanding on water research, with focus on water security as a framework to cross the common divides of water services and resources. This Centre will follow a risk-based approach to understand and tackle water security problems across a wide range of (spatio/temporal) scales and socio-economic contexts. Furthermore, it will provide the foundation for collective regional by science, policy and enterprise communities for achieving water security, as well as knowledge transfer with a valuable contribution to the International Hydrologic Programme [IHP-VIII](#) and the World Water Assessment Programme ([WWAP](#)).

## **Concept**

Water security was the focus of the 2013 Stockholm World Water Week and will be for the next [World Water Forum in 2015](#). Water is the fundamental link between the climate, the human society, and the natural environment; thus, water security represents one of the greatest challenges for humanity. It requires innovative governance as well as interdisciplinary research, given the complexity of analysing interrelationships between vulnerability, risk, and resilience across scales, sectors, and disciplines in the context of limited predictability. The value of scientific results as a basis for sustainable water management under the global change threat, will be enhanced by developing methodologies and strategies for adaptation, which will enable the achievement of sustainable development objectives (e.g., the [Millennium Development Goals](#)). The best policy decisions will be made with basis on scientific evidence, which must be presented openly and honestly, particularly recognising any uncertainties. The Mexican experience built on its research and problem-solving capacity will be focused and become available on the regional and international level, especially for countries in the region of Latin and South America as well as other developing countries. Therefore, this proposal will allows than more than 40 years of Mexican contribution to UNESCO IHP will be transferred into a centre which will serve the UNESCO Member States.

## **Partners**

World Water Assessment Programme (WWAP), UNESCO-IHE, International Sediment Initiative of UNESCO, International Flood Initiative of UNESCO, WMO, UNU, IAHS and ISDR, WMO/Water and Climate Programme, National Water Commission (CONAGUA), National Autonomous University of Mexico, Universidad de las Américas Puebla (UDLAP), CONACYT, National Meteorological Service, Mexican Civil Protection System, Mexican Ministry of Defence, Mexican Ministry of Foreign Relations, National Centre for Disaster Prevention (CENAPRED).

## **Budget**

The budget is foreseen to ensure the assets such as operational work of the Centre, the equipment, and the regular expenses such as communication, water, power, gas, salaries and compensations for the Secretariat and the staff, plus the expenses of holding the sessions of the Governing Board and the meetings of the Scientific Board. The total budget is ensured by the Mexican Water Commission (CONAGUA), the Mexican Institute of Water Technology (IMTA), and Institute of Engineering of the National Autonomous University of Mexico (II-UNAM).

## **Key Subjects**

- Decision-making risks for water security.
- Delivering secure water for health and wealth.
- Strengthening institutions to promote water security.
- Promote knowledge into action through an improved interaction among scientists, society and decision makers.
- Research for application, education and capacity development

## Centre for Water Security

### Regional Category II Centre under the auspices of UNESCO

Water security is a defining global challenge in the 21st century. The enduring struggle to cope with water access and shocks is now magnified by global change to societies, economies and climate at multiple scales. Living in poverty has long been synonymous with the precarious struggle for water security. Absent or unreliable water and sanitation services, unpredictable floods and droughts, and degraded ecosystems threaten the lives and livelihoods of many of the world's population. Rapid change – in populations, economies, geopolitics and climate – will make achieving water security by countries that are currently water insecure much more difficult, and could threaten the water security of long-secure nations.

All over the world, a multi-billion dollar investment gap is growing to meet and maintain water services delivery systems in developed and developing countries. Increasing water competition, deteriorating water ecosystems, intensified flood and drought shocks, and related social tensions are all envisaged. Current and future costs, not only economic but also in terms of human suffering, sustained poverty, constrained growth, migration, and social unrest are unacceptably high and largely avoidable.

Eighty percent of the global population faces a high level risk to water security. Many low-income countries face greater water security risks while having less capability to mitigate such risk through appropriate and sequenced investments in infrastructure and institutions. The poorest live in the most vulnerable areas, such as urban slums, rural hinterlands and floodplains, yet have the least capacity to invest in resilient and flexible measures to mitigate risk. Private investors are risk averse, crowding in investment where water security is already largely achieved. Recent global assessments of climate risks, infrastructure finance and economic growth, illustrate that water security risks are not being effectively addressed by current responses from science, government or enterprise.

Under this perspective, it is proposed that a centre focusing on these issues be established as a Category II Centre under the auspices of UNESCO in Mexico City, Mexico. The centre will be hosted by the Institute of Engineering of the National Autonomous University of Mexico (II-UNAM) in association with the Mexican Institute of Water Technology (IMTA). The collaboration between the two Mexican leading institutions in water resources research, provides the guarantee for a high quality research with a direct route which enables knowledge transfer from research results into practice. The effective integration of science into policy development and practical problem-solving will entail sustainable development; transferring research and scientific findings into applied adaptive strategies.

This proposal is presented by the Mexican National Commission for Cooperation with UNESCO (CONALMEX), on the basis of International Hydrologic Programme (IHP) Intergovernmental Council Resolution XV-XX.

Water security represents the central theme to address the global challenges expressed by Member States, [IHP-VIII](#); it incorporates and extends key aspects of Integrated Water Resources Management, with emphasis on linkages between land-use change and hydrological systems, between ecosystems and human health, and between political and scientific aspects of water management. The Centre is a valuable contribution to address new challenges of [IHP-VIII](#), through the integration of a risk-based approach for defining and managing water security. This will be done by motivating interdisciplinary research to investigate: the framing of decisions in risk-based terms, the non-stationarity and uncertainty of knowledge, the tradeoffs and valuation of risks across multiple and often competing objectives, and working across scales to address social, environmental, political and economic externalities.

Risk offers a unifying framework to link across multiple water security challenges. Opportunities stem from insights from social theory of a “risk society” where modern society has “manufactured risks”, such as water pollution, closed river basins and groundwater overabstraction, beyond or amplifying “natural risks” of floods or droughts, which leads to a self-reflexive examination by society of the nature and

process of modernity– a process that is in constant flux and contestation. Increased water security risks offer important opportunities for policy change. Limits stem from the poor, as well as the high levels of residual uncertainty associated with rapid global change.

It has been largely acknowledged that the Millennium Development Goals have not delivered secure water supplies to all. Recent studies have highlighted limitations of current monitoring data on water reliability and quality, hence demonstrating that safe water provision is over-estimated. With the UN General Assembly recognising the Human Right to Water and Sanitation, a more ambitious approach is necessary both in terms of delivering water to all and moving beyond a basic water supply.

Innovative aspects of the Centre include a conceptual focus on three key themes: a) Understanding water security risks to natural water systems; b) Science and technological pathways to reduce water insecurity and protect natural water systems; and c) Balancing risk management policy across the water-energy-food nexus. This emphasis will support the coping of the region to food security challenges related to droughts (invisible water risk), increased sectoral competition between irrigation, energy and environment (visible water risk), regional risks related to food trade, and those related to the impacts of land use change on water resources.

It will specifically target themes related to water security, adaptation to the impacts of a changing climate and natural disasters on water resources management with focal areas including 1.1, 1.2, 1.3, 1.4 and 1.5. Additionally, the development of sustainable groundwater resources management strategies is also incorporated (focal areas 2.1 and 2.4). Theme 3 focal areas are another critical aspect among the proposed activities, promoting innovative water governance through the use scientific knowledge into practice (3.1 3.2) and addressing water quality and pollution issues within the integrated water resources management framework (3.4 and 3.5). Focal areas of Theme 5 will be incorporated, as research topics related to ecohydrology will be added in favour of the generation of a more environmentally friendly engineering in the region (5.1, 5.2 and 5.3). Moreover, an improvement on the reconnection of the coastal zone with continental river basins will be foreseen to improve both water quality and the health of coastal systems (5.5). An encouragement of water education is envisaged by means of socialization of knowledge, contributing significantly to [IHP-VIII](#) theme 6. The centre also contributes significantly to fulfilling the ambitious Millennium Development Goals, particularly goals 1, 7 and 8. Understanding the complexities of the interrelationships of natural and social domains is vital (i.e. stationarity is dead). The effective integration of science into policy development and practical problem-solving will entail sustainable development. These are all issues addressed by the proposed centre.

The centre will contribute to new challenges in the development of scientific research, focused to study, develop and evaluate the implications of global change on water security. Consequently, the new centre will promote national and international education, training and awareness-raising at all levels. Worldwide scientific network and operational services as well as the transfer of information and knowledge through IHP are the key for a successful operation of the proposed centre.

Following the endorsement of the [IHP-VIII](#) during the [20th session](#) of the IHP Intergovernmental Council, and the current joint activity of one of the host institutions (II-UNAM) with UNESCO-IHE, the proposed centre paves the road towards the multi-levelled and international successful cooperation that is essential for adequately managing water resources.

## **Background**

Water security is a challenge on a global dimension among governments due to increasing water scarcity and uncertainty with the associated impacts on water for people, energy, food and ecosystems. While the future of the planet is urban the greatest inequities are rural – this poses unique challenges in achieving water security. Therefore, achieving improved levels of water security promotes economic growth and development. However, this process is not even, predictable or replicable. Context matters. Recent floods and droughts in developed and developing countries alike demonstrate the weak capacity for

governments and businesses to cope. While the resilient poor find strategies to survive these enduring challenges, their prospects remain uncertain with significant and increasing health, welfare, income, mobility and political costs for global society. Developing regions have long been associated with scarce data for hydrological studies, high levels of poverty and governance challenges, now they are equally associated with high economic growth, technology innovations and rapid urbanization – these present both old and new water security risks and opportunities.

With increasing pressures on water quality due to human activities, there is a worldwide need to improve efficiency and effectiveness of water and wastewater treatment technologies, and to assess impacts of contaminants on environmental and human health. Treatment challenges include appropriate technology for rural communities; development of advanced water treatment technologies to tackle emerging contaminants in our water systems, improved technologies for the treatment of industrial wastes, including those generated by natural resource extraction, and improved technologies for remediation of pollution. Areas of application involve the needs of the oil and gas sector, the food and beverage industry, natural resources (particularly mining), industry, municipalities, and rural water supply and sanitation.

Knowing that approximately 46% of deaths worldwide are attributed to unsafe water and poor sanitation and that water supplies may have natural contaminants (e.g. arsenic), or become contaminated through human, agricultural or industrial activities. It is undeniable the strong link between water and human health. Nutrient levels are increasing in rivers and lakes due to human activities, which can produce blue-green algae under certain conditions. These algae produce toxins capable of killing animals and harming human health. A changing climate is likely to exacerbate this issue and favour environmental degradation, which directly affects human health through death and disease.

Thus, with the enhancement of health and economic growth in mind, a unifying risk-based approach is implemented in order to tackle the twin objectives of universal access to drinking water supplies and sustainable management of water resources. Recognising the achievement of universal access to minimum water and sanitation services, and sustainable management of groundwater and surface water ecosystems as first priorities. Such an approach will enable the identification and promotion of mechanism for sustained engagement to address shared water security risks. Substantive areas of collaboration may include: strategic basins under pressure, global data monitoring and analysis, infrastructure investment, sustainable cost recovery for water services, rural water delivery, drinking water quality in developing countries, public water supply issues addressing questions such as: How safe is our water? What are the public perceptions of that safety? And health impacts of the legacy of resource development activities (e.g. fracking).

The aim of this Centre is to contribute to a sustainable development and the well-being of society, through the generation and dissemination of knowledge and technology in hydrological, environmental and meteorological sciences under the situation of climate change and devastating water-related disasters in the world. It is urgent to adapt and respond adequately. Otherwise the water resource will be a limiting factor in poverty alleviation and economic recovery, which in due course may constrain economic development. Response to these impacts must also be looked through international collaboration. A possible way forward is to strengthen and facilitate international cooperation bringing all players together: governments, research institutions, universities, other UN agencies, NGOs, and national or international organizations. This initiative will foster cooperative and collaborative activities in the Eight Phase of IHP ([IHP-VIII, 2014-2021](#)), enabling the generation of better management strategies for a multiplicity of threats.

## **Mission statement and aims**

**To reduce the risk of water insecurity in Latin-America.**

The overall aim of this research centre is to provide the foundation for regional action by science, policy and enterprise communities to achieve water security across scales and contexts. This will be done through the organization and promotion of outstanding interdisciplinary research on water resources and water services, spanning a wide range of scales from local to national, regional and global. This mission statement fully embodies both the II-UNAM and IMTA ethos of purposeful applied research and knowledge exchange.

Specific objectives of the proposed Centre are:

**Objective 1:** to develop a platform for decision-making for water security.

The management of water security risks is underpinned by improved information which reduces uncertainty and prompts political action. While political decisions under uncertainty are inevitably made, decisions may be evaluated considering their consequences. Improved measurement can reduce data uncertainty to inform the political process of decision-making across multiple and often conflicting perspectives across science and society. New information and communication technologies that can remotely, accurately and reliably capture data are rapidly emerging and being tested (e.g. Tropical Rainfall Measuring Mission, Gravity Recovery Experiment, etc.). These emerging sources of information can promote accountability and transparency in managing uncertainty to respond to water security challenges.

On the other hand, energy production is intimately related to water security. Crude oil uses five times more water than coal per unit of energy produced. Authorising and regulating new technologies such as hydraulic fracturing (“fracking”) to release oil or gas from in rock layers have important but contested groundwater security implications globally. Where energy demands for water increase, trade-offs will occur for other competing land and water uses for food, livelihoods and ecosystems moderated by local, regional and global political economy questions. Understanding and mitigating water security risks in areas of rapid energy expansion in developing regions is required to balance competing interests with unequal power and influence.

**Objective 2:** to reduce the risk of water-related natural hazards by means of dynamic adaptation.

Minimizing losses from floods, droughts, landslides, hurricanes, water pollution and soil contamination can improve health and livelihoods in both developing and developed countries. Water related disaster losses stem from hurricanes, cyclones and other major storms, floods, landslides and droughts. This will be achieved through the development of a probabilistic framework for environmental prediction of extreme hydro-meteorological events, which will support the generation of adaptive strategies to manage these risks. Additionally, the Centre will also study the reliability and safety of the current infrastructure (such as dams, levees, water supply and sewerage systems), which are commonly used to mitigate these hazards. This will enable the adaptation of this infrastructure to foreseeable changes in both magnitude and frequency of these hazards.

**Objective 3:** to deliver secure water for health and wealth.

It has been recognised that over 780 million people remain water insecure and 2.5 billion without improved sanitation services. The greatest inequity is in rural areas with four out of five people water insecure. Following the Millennium Development Goal, a transparent and global call-to-action is highly needed, as society has responded inadequately to the known and intolerable risks for the hundreds of millions of water insecure over decades, which implies a risk-based logic is a useful but insufficient condition for transformative change, particularly for the most vulnerable. Recently, limitations of current monitoring data on water reliability and quality have been highlighted, demonstrating that safe water provision is over-estimated. Therefore, the Centre will take a more ambitious approach both in terms of monitoring water ecosystems to enable a vision beyond a basic water supply. This focus will explicitly measure linkages and risks between sustainable water resource management and universal



water service delivery. This would facilitate the evaluation of policy performance across competing goals of economic growth, human development and environmental sustainability.

**Objective 4:** to develop new assessment and remediation technologies by understanding the interactions between ecotoxins, the hydrological cycle and wetland ecology.

Remediation techniques could include the use of engineered wetlands for wastewater treatment. Integrating pollutant assessments across terrestrial and aquatic ecosystems will enable better understanding of the ecological and human toxicity of oil sands pollutants. By understanding how pollutants biodegrade and how they are sequestered, the Centre will develop integrated decision-support tools for risk assessment and remediation of contaminated land and water. This will enable the examination of the potential for the development of extraction and processing technologies that have a reduced environmental footprint.

**Objective 5:** to improve our understanding of interactions between terrestrial ecosystems and atmospheric processes, and of the impacts of climate variability on water-related ecosystem functions.

This will be done by enhancing the quality of global and regional climate models (with better downscaling for water-related climate change impacts assessment) and their use in the evaluation of water supply and quality variability, including impacts from a changing climate.

**Objective 6:** to establish and promote a coherent and shared agenda for global water security using a unifying risk-based approach to focus on the twin objectives of universal access to drinking water supplies and sustainable management of water resources. The agenda would aim to contribute to the delivery and reform of existing, water-related commitments at the global level, including the Sustainable Development Goals, the Millennium Development Goals and the Human Right to Water and Sanitation.

**Objective 7:** to identify and promote mechanisms for sustained engagement and productive outcomes for policy, enterprise and research communities to address shared water security risks.

This will require the integration of a common understanding between stakeholders. In particular, on what they identify as threats to water security. Substantive areas of collaboration may include: strategic basins under pressure, infrastructure investment, sustainable cost recovery for water services, global data monitoring and analysis, and entrepreneurial models for rural water delivery. This will reduce the potential for water-related conflict by means of an engagement to wider society by listening to, exploring with, and challenging our stakeholders to develop a shared response to 21st Century challenges.

**Objective 8:** to develop truly multidisciplinary research to tackle the challenges of uncertain environmental change.

Societies may have to contend with non-linear interactions between ecosystems and climate change. To this, we add the complexity of population growth. Unattended, these interactions could lead to a sudden upward shift in the level of hydro-meteorological related damages and disasters that finally result in civil unrest in some regions of the world. The uncertainty associated with predicting extreme weather events has serious implications for the developing world, owing to the greater societal vulnerability to such events. Continual exposure to unanticipated extreme events is a contributing factor for the descent into perpetual and structural rural poverty. Therefore, with an emphasis in the current limited predictability, the Centre will promote the establishment of an integrated programme of understanding processes of change, their feedbacks and interactions.

**Objective 9:** to draw on specialist scientific understandings of risk from a wide range of disciplines and to deliver effective communication of risk.

This will be done through a world-class inter-disciplinary research programme focused on all aspects of water security. This will include the establishment of permanent international co-operation and



collaboration with similar organizations and experts. Moreover, the Centre will work along with Communities and Local Government to develop guidance for development in areas highly exposed to water insecurity.

**Objective 10:** to undertake effective capacity-building in risk and uncertainty science at institutional and professional levels.

For this, the Centre will host various international workshops and conferences, which will enable the exchange of hydrological knowledge. In association with other organisations, such as other UNESCO category II centres, it is anticipated that the Centre will delivery short-courses for the local and regional water sector and organize cooperative activities in line with the strategy of UNESCO, which is currently being developed.

The sharing of knowledge and best practice could help to tip the balance and persuade governments and communities to take action to improve their response to complex conditions that reduce water security. This will allow the generation of more robust solutions that will make societies more resilient. The centre will contribute to new challenges in the development of scientific research, focused to study, develop and evaluate the implications of global change on water resources. Transferring research and scientific findings into applied adaptation strategies is the crucial for successful mitigation of effects the population face from the global change impacts.

### **Functions of the Centre**

The Centre will have the following functions:

- Provide specialised training on water security issues, analysis of dams and water quality to national and international professionals.
- Promote the exchange of experiences and technical capacities with other Category 2 Centres that share areas of interest.
- Develop highly specialised water security consultancies and studies for the different levels of government, especially in the region of Mexico, Central America and the Caribbean.
- Further cooperation, synergies and coordinated work of the Category 2 Centre with international academic and research institutions to attain the objectives of the International Hydrological Programme Phase VIII (IHP-VIII).
- Carry out workshops, seminars and conferences for the local and regional water sector and organise cooperative activities with other organisations for this purpose.

### **Legal Status**

- The Centre will be independent from UNESCO;
- The Government of Mexico will ensure for the Centre to have in its territory the operational autonomy necessary for the implementation of its activities and its legal capacity to contract, act accordingly and acquire and dispose of movable and immovable property.

### **Constitution**

The Constitution of the Centre shall have the following provisions accurately specifying the following:

- a) Legal status granted to the Centre within the national legal system
- b) Its structure and organisational form
- c) Capacity required to exercise its functions, receive funds, obtain payments for services rendered, and acquire any means necessary to operate
- d) Inclusion of UNESCO representation in the governing body of the Centre
- e) Form of participation, where appropriate, II-UNAM and IMTA and various institutions in its governing body, and the rights and obligations of each of them. In any case, one of the

aforementioned institutions shall act as representative officer before UNESCO but they shall have a collaboration agreement among them for the functioning and operation of the Centre and jointly undertake the projects of the Centre.

## **Management Structure**

The structure of the Centre will be comprised of:

### **Governing Body**

The Centre will be managed and supervised by a Governing Body elected for a six-years period and shall be composed of:

1. A representative of the Government of Mexico who will serve as Chair of the Governing Body;
2. A representative of the Director General of UNESCO;
3. A representative of the member institutions associated to achieve the objective of Centre, among which shall include a representative of "CONAGUA", "IMTA" and "II-UNAM".

The main functions of the Governing Body are:

- a. Approve the programmes in the medium and long terms of the Centre;
- b. Approve the annual working plan of the Centre, including staffing;
- c. Appoint and remove the Director of the Centre;
- d. Review and assess the annual reports submitted by the Director of Centre, including biennial self-assessment reports on the contribution of Centre to the objectives of the UNESCO programme;
- e. Review the periodic and independent audit reports on the financial statements of the Centre and oversee the submission of the accounting records required for the preparation of financial statements;
- f. Define and approve rules and regulations for the operation of the Centre;
- g. Decide on the involvement of regional intergovernmental organisations and international bodies in the work of the Centre;
- h. Ensure appropriate conditions for the establishment of Centre;
- i. Planning and budgeting activities for the development of the Centre and its activities; and
- j. Raise funds for the implementation of the activities and programmes of the Centre.

The Governing Body shall hold regular meetings at least once a year, and extraordinary meetings convened by the Chair, either on their own initiative or the Director General of UNESCO, or at the request of its members.

The Governing Body shall adopt its own rules and regulations. At its first meeting the procedure established by the Government and UNESCO shall be followed.

The Governing Body at its first meeting shall elect the Director of the Governing Body from among its representatives.

### **Scientific Committee**

The Centre shall have a Scientific Committee composed of experts whose functions shall be to constitute

itself as the consultation body in the definition of objectives and overall operation regarding the Centre. The Scientific Committee shall elect a Chair and Vice Chair. The Chair and Vice Chair shall be also members of the Governing Body.

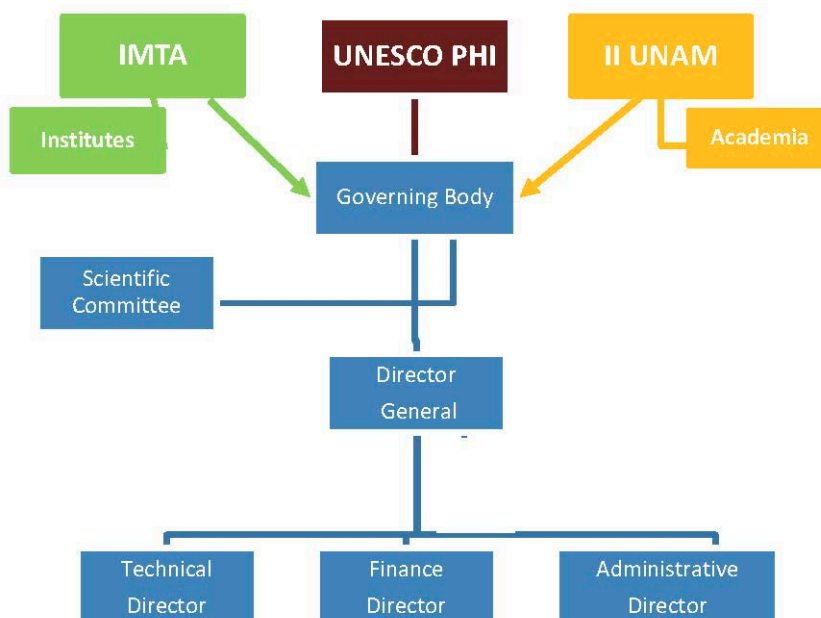
The Scientific Committee shall be composed of:

- a. Representatives of international organisations such as IWA, IAHR, AIDIS, UNESCO, among others;
- b. Representatives of national and international universities and operational hydrological services;
- c. Representatives of other countries in the region and of international organisations;
- d. Representatives of other centres related to UNESCO;
- e. Experts with extensive and proven track record on water security that had been invited by the Governing Body to that effect.

**Director of the Centre**

The Director shall have the functions for coordinating and directing its operation. The Director General shall be elected by the Governing Body and shall hold office for a period to be defined in accordance with the regulations of the Centre. The Director General may support their work on the technical directors according to the Directorate positions to be created and an Administrative Director responsible for the management of the operation of the Centre.

The definition of the structure of the Centre includes human resources with permanent administrative and scientific staff, postdoctoral, scientists associated and exchanges with professors and visiting students, mainly from the region.



**Figure 2.- Proposed Management Structure for the Centre Category 2- UNESCO**

**Constitution**

The Constitution of the Centre will include the following provisions:

A legal status granting to the Centre, under national legislation, the legal capacity necessary to exercise its functions and to receive subventions, obtain payments for services rendered and carry out the acquisition of all means required; a governing structure for the Centre allowing UNESCO representation within its governing bodies.

## **Financial aspects**

The Government of Mexico through II-UNAM and IMTA shall defray the costs related to the operation and administration of the Centre. This does not preclude for the Centre to obtain financing from other institutions such as the National Water Commission, the Federal Electricity Commission (CFE), the Ministry of Interior (SEGOB), the Ministry of Defense (SEDENA) and the Secretariat of the Navy (SEMAR).

The budget required for the establishment and operation of the Centre consists of:

1. Operating costs  
Utilities (water, gas and electricity)  
Maintenance of infrastructure and telecommunications  
Salaries and compensations  
Meetings of the Governing Body and Scientific Committee
2. Research and development expenses  
Projects including seminars and publications
3. Training expenses  
International conferences, seminars and workshops  
Short courses and certification programmes for the water sector at local and regional level
4. Citizen participation activities  
Knowledge transfer and expert advice to local and national governments  
Education of the general public on the subject (conferences, printed material)

The Government will provide all necessary means, financial and in kind, for the administration and proper operation of the Centre.

As part of its obligations to the Government shall:

- a. Provide the necessary funding to cover the costs of the facilities, staff, administration and operation of the Centre;
- b. Provide the equipment, tools and furniture required for the operation of Centre;
- c. Facilitate cooperation and technical assistance of experts from the various agencies of the Public Administration, and its deconcentrated and decentralised bodies.

## **Infrastructure and scope of the Centre**

The Centre will be hosted by the II-UNAM in association with the IMTA and will be located within the facilities of the II-UNAM counting at all time with the infrastructure and technical support of the IMTA. The Centre will have the infrastructure needed for its operation, inter alia, offices, databases, specialised library, auditoriums with audio, video and videoconferencing, training and reading areas, computers, whiteboards, projectors, laboratories, specialised equipment and instruments, and staff qualified in research and teaching with experience in fieldwork and desk job. The "Center" will count on the

participation of researchers and academics partially or full-time commissioned from the II-UNAM and the IMTA as well as from various colleges, research institutes and other institutions, which may contribute to the overall capacity of the Centre.

Research and regional development efforts are focused and available at regional and international level, especially for countries of Latin America and the Caribbean, as well as other developing countries. The Centre will increase the creation of multidisciplinary networks in the region. The main theme of interest is focused on addressing water security, including management of hydro-meteorological disasters, construction of flood risk maps, protection and monitoring of water quality for its various uses, aiming at a better use of resources and reduction risks and uncertainties management. This Centre will scientifically analyse international water-related disasters for the development of more effective risk reduction strategies, contributing to increased water security.

### **Capacities of the II-UNAM**

The II-UNAM is a leading research institution on engineering in Mexico, with national and international prestige with a total community of 1,089 people of whom 96 are full time researchers, 105 research assistants (academic technicians), 143 administrative staff, and 745 students from bachelor's, masters and doctoral levels. The Institute's policies are oriented towards doing theoretical and applied research concerning problems in engineering; collaborating with public and private entities in order to improve engineering at a national level by the application of research's results to specific problems. It has two decentralized units located in Yucatan and Queretaro. The experimental facilities are related to the following areas: Hydraulics, river engineering, coastal engineering, wastewater treatment, drinking water supplies, environmental microbiology, remediation of contaminated sites, treatment and disposal of solid waste.

### **Capacities of the IMTA**

The IMTA is a leading research institution, which belongs to the Mexican government through the Ministry of the environment. It is comprised by 250 full time researchers, circa 100 students from masters and doctoral levels. It is divided in six research areas related to water resources. It is located in an area of 20 ha within the municipality of Jiutepec, Morelos (70 km from Mexico City). It has experimental facilities related to: Hydraulics, wastewater treatment, microbiology, toxicology, membranes, water quality, drinking water, atomic absorption, among others.

### **National and International cooperation**

The Centre will be establish close collaboration agreements with other partner national institutions such as the following: The Center for Scientific Research and Higher Education at Ensenada, (CICESE); Autonomous University of Baja California, (UABC); Juárez Autonomous University of Tabasco, (UJAT); Electric Research Institute, (IIE); Advanced Materials Research Center, (CIMAV); Mexican Association of Engineering Science and Environmental Management, (AMICA); National Water Commission, (CONAGUA); National Autonomous University of Mexico, (UNAM); Universidad de las Américas Puebla, (UDLAP); National Council for Science and Technology, (CONACYT), National Meteorological Service, (SMN); Mexican Civil Protection System; Mexican Ministry of Defence, (SEDENA); Mexican Ministry of Foreign Relations, (SRE); National Centre for Disaster Prevention (CENAPRED).

The Centre will count with the support of responsible ministries and international associations such as the International Association of Hydrological Sciences (IAHS), the International Association for Hydro-Environment Engineering and Research (IAHR), and the International Water Association (IWA), the Interamerican Sanitary and Environmental Engineering Association (AIDIS), the World Meteorological Organization (WMO); the United Nations University (UNU).

## **Cooperation with UNESCO and other IHP Centres**

World Water Assessment Programme (WWAP), UNESCO-IHE, International Sediment Initiative of UNESCO, International Flood Initiative of UNESCO, the International Strategy for Disaster Reduction UN ISDR and the CONAMEXPFI-UNESCO.

It is important to mention that both IMTA and II-UNAM have already signed an agreement with the UNESCO-IHE Institute for Water Education, in Delft, the Netherlands, to promote research and increase capability in the field of water resources, academic exchange, and development of technical activities of mutual interest and set up a network of scientist, information, knowledge and technology transfer. The Centre will establish collaboration with other regional UNESCO Centres.

## **Creation Commitment**

The creation of the Centre shall be carried out with the participation of IMTA and II-UNAM, using coordination, collaboration and joint participation schemes to be defined through an agreement among the parties within the period of creation of the Centre. Both instances shall be supported by other institutions in water decision making, among them CONAGUA, for which the necessary multiannual agreements will be established.