



Findings on Capacity Development in WMO Technical Departments (CDP-ET-TDs)

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World Meteorological Organization
Executive Council (EC)
Fifth Meeting of the Capacity Development Panel (CDP)

EC-CDP-5
19 to 23 September 2022
Geneva



CDP-ET-TDs Members

Facilitator:

Dr Carla Gulizia

Members:

Dr Somenath Dutta,

Prof Dwikorita Karnawati,

Prof Peter Odjugo,

Ms Nirivololona Raholijao,

Dr Anna Timofeeva,

Mary Scholes (representative of the Research Board – RB),

Jennifer Milton (representative of the Infrastructure Commission - INFCOM),

Roger Stone (representative of the Services Commission - SERCOM),

Christophe Cudennec (representative of the Hydrological Coordination Panel - HCP),


Omar Chafki (representative of Joint WMO-IOC Collaborative Board (JCB))



CDP-ET-TDs Terms of References

Monitor and make recommendations on the following:

- i. Capacity development of technological infrastructure
- ii. Capacity development in Services delivery
- iii. Capacity development in hydrology and water resources
- iv. Capacity development in research, science and innovations
- v. Work in close collaboration with the appropriate departments in the Secretariat as well as with WMO Bodies and Technical Commissions
- vi. Work in close collaboration with the rest of the CDP-ETs identifying possible interactions based on the contributions received by the CDP-ET-TDs invited members
- vii. Promotion of existing strategies on capacity development in various areas of service delivery, hydrology and water resources, by way of providing advisory on how to support least developed and developing countries.
- viii. Promotion of existing strategies in the areas of research, science and innovation.



EC-73 Decision 9 Items assigned to the CDP-ET-TDs

Recommendation 1 from CDP-3 stated that
*“As regards its future activities, the Panel will give
priority to the implementation of Decision 9
(EC-73) (...)”*

Review and update the current competency frameworks as needed, and support development of new frameworks in areas not yet addressed, with the support of the Education and Training Office, as well as to benefit from the experiences and knowledge of the WMO Regional Training Centres (RTCs), in close coordination with the RTC Representatives;

2 CDP-ET-HRDET & CDP-ET-TDs

Coordinate the Technical Commissions (SERCOM and INFCOM) in the development of a capacity development framework to support the implementation of their activities;

3 CDP-ET-TDs

Develop strategies to foster engagement of academic and NMHS staff at the local and regional levels on research and research transfer to operation and application to improved operational delivery;

4 CDP-ET-HRDET & CDP-ET-TDs

Make recommendations on how to foster systematic contributions from academia towards the enhancement of the research-to-operation continuum which should address approaches to promotion of capacity development and service capabilities in weather, climate, hydrology and environment at regional levels through promotion of collaboration and communication between regional centres such as Regional Specialized Centres, Regional Climate Centres, Regional Training Centres (RTCs), WMO Integrated Global Observing System (WIGOS) Centres and WMO Information System (WIS) Centres, etc;

5 CDP-ET-HRDET & CDP-ET-TDs

1. Report on activities of the CDP-ET-TDs



1. Report on activities of the CDP-ET-TDs

Online meetings between ET facilitator, Dr. Gulizia and:

- Anna Timofeeva (CDP ET-HRDET)
- Technical Commissions (INFCOM, SERCOM) representatives in the CDP (Jennifer Milton (INFCOM), Roger Stone (SERCOM), and Secretariat (Secretariat: Yinka Adebayo, Mustafa Adiguzel, Paul Bugeac, Luciane Veeck, Hong Fan)
- Jürg Luterbacher and Jon Cox (Science and Innovation Department)
- Claudio Caponi, Giacomo Teruggi and Nirina Ravalitera (Hydrology Water Resources Division)
- Jennifer Milton (INFCOM Representative)
- Julian Baez, Andrés Orias-Bleicher, Daniel Vila and Cristian Escobar (Regional Office for the Americas)
- Paula Etala (National Meteorological Service of Argentina - RAIII)




1. Report on activities of the CDP-ET-TDs (Cont.)

Email communication and reception of inputs, considered for the preparation of the current report, from:

- Christophe Cudennec (HCP Representative in the CDP)
- Mary Scholes (Research Board Representative in the CDP)
- Roger Stone (SERCOM Representative in the CDP)
- Anna Timofeeva (Chair of the CDP-ET-HRDET and CDP Member)
- Peter Odjugo (RTCs Representative in the CDP)
- Dwikorita Karnawati (CDP member)
- Somenath Dutta (CDP member)
- Marcela Perez (Focal point of the hydrological component of the RA-III RTC in Argentina)
- Pat Parrish (SC-MMO ET-CCD Chair) and John Parker (SC-MMO Chair)

Inputs provided on request from CDP-ET-TDs (Christophe & Carla) to the HCP for reviewing HCP-4/Doc.10 on Regional needs/proposals to include in HCP recommendations to TCs.

2. Presentation of main achievements of the ET



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Make recommendations on how to foster systematic contributions from academia towards the enhancement of the research-to-operation continuum which should address approaches to promotion of capacity development and service capabilities in weather, climate, hydrology and environment at regional levels through promotion of collaboration and communication between regional centres such as Regional Specialized Centres, Regional Climate Centres, Regional Training Centres (RTCs), WMO Integrated Global Observing System (WIGOS) Centres and WMO Information System (WIS) Centres, etc;

5 CDP-ET-HRDET & CDP-ET-TDs

Meeting with CDP-ET-HRDET Facilitator, Anna Timofeeva, to discuss item 2 and 5 at the end of 2021. Actions included:

- Request for brainstorming to the CDP through Moodle platform particularly on item 2 with some starting point questions
- Letters to Technical Departments Directors were sent with prior discussions and approval of the Chair of CDP, Dr. Kijazi.



Make recommendations on how to foster systematic contributions from academia towards the enhancement of the research-to-operation continuum which should address approaches to promotion of capacity development and service capabilities in weather, climate, hydrology and environment at regional levels through promotion of collaboration and communication between regional centres such as Regional Specialized Centres, Regional Climate Centres, Regional Training Centres (RTCs), WMO Integrated Global Observing System (WIGOS) Centres and WMO Information System (WIS) Centres, etc;

5 CDP-ET-HRDET & CDP-ET-TDs

WMO Symposium on education and training SYMET-14 concluded that "Cooperation between the Universities, NMHS training centers, WMO Regional Training Centers, WMO / CGMS VLab, CALMet and international education and training partners provides a solid foundation for: increased sharing of teaching and learning resources and approaches; collaboration on development and delivery of education and training opportunities; developing model or common accreditation, certification, evaluation and assessment systems and their underlying quality control systems; and developing shared tools and platforms for developing, delivering and monitoring / reporting education and training activities."

Communication of national examples of our own of satisfactory collaboration with the regional centres were mentioned in the letter.

Request on Technical Departments workplans for 2022 and to identify the regional meetings where representatives of the regional centres mentioned in the Decision could be invited so that communication between these actors be established and/or further promoted.



Coordinate the Technical Commissions (SERCOM and INFCOM) in the development of a capacity development framework to support the implementation of their activities;

3 CDP-ET-TDs

Meeting with Technical Commissions (INFCOM, SERCOM) representatives in the CDP held on April 8th, 2022.

Attendees: Roger Stone (SERCOM), Jennifer Milton (INFCOM), Carla Gulizia (CDP-ET-TDs). Secretariat: Yinka Adebayo, Mustafa Adiguzel, Paul Bugeac, Luciane Veeck, Hong Fan

The **purpose** of this meeting was to do a brainstorming among the SERCOM, INFCOM and CDP representatives after the recommendation from the EC-73 (Decides 3) to the CDP, for which the CDP-ET-TDs was assigned to lead.



Meeting with TCs Representatives in CDP

Carla has presented several considerations as starting point for discussion. The presentation has been uploaded to the new folder named “**Coordination with Technical Commissions (EC-73 Decides #3)**”, in the Expert Teams CDP-ET-TDs section within the CDP Moodle Forum.

The aim to achieve the expectations on “Decide 3” is to recommend the Technical Commissions (TCs) to coordinate their own overarching mandates on capacity development (CD). CDP can support and facilitate the development of the CD framework of high-level principles for each TC.

- Recommend each TC to foster coordination between its existing Standing Committees and report their CD activities and priorities to the CDP-ET-TDs facilitator.
- Draw capacity development strategies together to prepare an overarching picture for each TC
- There is a need to share information under a “**living inventory**” of: what is going on within the different TCs, what already exists, what capacity development activities are aligned to what future actions, what are the priorities and next actions to be address within each TC
- Need for monitoring of success and challenges after implementation of capacity development activities, as well as monitoring of who is taking each training activity. Support from ETR for this can help on adopting best practices.
- Identifying linkages of TCs with RTCs



Meeting with TCs Representatives in CDP

Some overarching Capacity Development aspects were suggested to be taken into consideration by the TCs while discussing their CD priorities and high level CD mandates. These may include, but are not limited to:



- Training
- Policy
- Modernization
- Management and Leadership
- Availability of resources

The WMO Capacity Development Strategy is still in process, but in the meantime the TCs should start discussing on their own CD priorities. Once it is finalized, further discussions between TCs and CDP-ET-TDs will continue to consolidate the TCs overarching CD mandates and priorities under the WMO CD Strategy.



Meeting with TCs Representatives in CDP

Decisions from the meeting:

1. After internal discussion and approval within relevant TCs, information with respect to priorities in capacity development activities will be shared between INFCOM and SERCOM. Based on the WMO Capacity Development Strategy and the TCs CD priorities, potential linkages between SERCOM and INFCOM CD mandates will be explored with the aim to develop an overarching framework identifying common high level principles. A timeline will be proposed and aligned, once the TCs have identified how they wish to proceed. Jennifer and Roger, as representatives from INFCOM and SERCOM, respectively, will share in due time with the CDP-ET-TDs.
2. Carla will contact Hydrological Coordination Panel representative, Christophe Cudennec, to gather information on the stage of the update of Hydrology and Water resources Capacity Development Strategy. 
3. Carla will contact Research Board representative, Mary Scholes, to gather information related to current capacity development strategies within the research dimension. 



Research Board (RB) contribution

Mary Scholes - Representative RB
in CDP

- 1) The **regions** are considered to be important by the RB. There is still a very strong push for the research programmes and their content to dominate the time of the RB.
- 2) The **concept notes**, on a range of topics, that were commissioned by the RB are **mostly complete** and many of them have **aspects of research in the regions** - these concept notes, once they are all of an acceptable standard will be issued by the WMO formally as a numbered document.
- 3) From the focus on regions there was a suggestion that the **regions should look for synergies within a region and across similar regions** e.g. Brazil and Angola and what would be gained
- 4) There will be a **workshop for the regions** (dates TBD) at which these matters could be discussed, but there is nothing definite yet.



INFCOM

Jennifer Milton - Representative in
CDP

INFCOM is developing an inventory of a sub-set of CD activities that will occur in 2022-2025, aligned with its workplan

INFCOM is preparing an Information paper on Capacity Development that will be presented during INFCOM 2 meeting scheduled in late October



SERCOM

Roger Stone
Representative in CDP

SERCOM is planning to organise a major strategic Capacity Development workshop across all of SERCOM, incorporating a specialist in capacity development (Prof Graham Baker).

Due to a shortage of Secretariat Staff in Geneva at this time they hope to have this strategy development workshop on SERCOM Capacity Development in 2023.



Inputs from HCP & HWR Division

Contribution to the WMO Capacity
Development Strategy

Call for proposals: WMO Hydrological
Research Strategy



Contribution to the WMO Capacity Development Strategy

Hydrological Coordination Panel

Hydrological community is developing and implementing capacity development strategies for hydrology since 2004 (CHy-XII)

Current version: WMO Strategy on Capacity Development in Hydrology and Water Resources Management for the Period 2021-2024

Delayed due to WMO Reform

SC-HYD providing input to the Strategy through a dedicated activity on capacity development, in support to C. Cudennec (focal point for hydrology)

WMO Hydrological Research Strategy

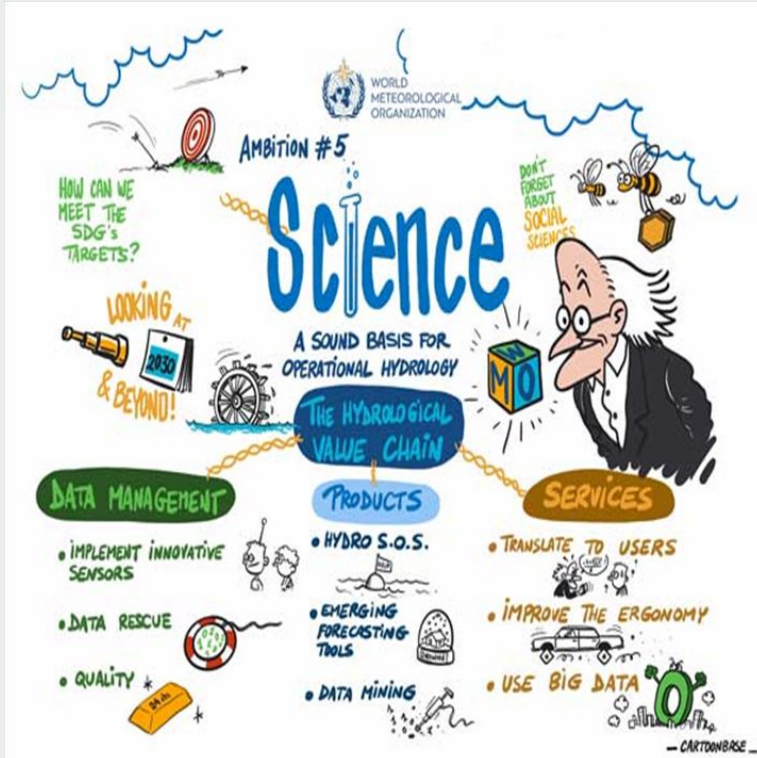
Call for research proposals

Deadline 30 September 2022

Grant up to 100k CHF for 1-2 retained proposals

Proposals to focus on one or more of the three generic objectives of the WMO Research Strategy for Hydrology

Technical Evaluation Board composed by representatives of WMO HCP, Research Board, IAHS and UNESCO-IHP



The WMO Hydrological Research Strategy

Purpose: To accelerate research that improves the delivery and use of hydrologic data, information, and services and responds directly to the needs of National Hydrological and Meteorological Service providers – particularly in low-resource settings.

Objectives:

Generate hydrologic and cryospheric information to better assess and manage water resources



Increase access to hydrometeorological data that can inform decision making

Improve hydrological forecasting



Photos :
• Georgian Hydrometeorological Department (NMHS)
• Junior A. Mathurin, Water Resources Management Agency - St.Lucia
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The WMO Hydrological Research Strategy

Implementation:

1. Effectively communicate the need for science research to advance NMS and NHS services.
2. Use the Strategy to shape national and international funding efforts for applied science that supports operational hydrology
3. Convene science groups to solicit research proposals
4. Strengthen existing and develop new partnerships that support integrated research



HCP-CDP Collaboration

Several activities of the Plan of Action (AP) for Hydrology have associated capacity development components. Thus, as reported during CDP-4, collaboration between CDP-ET-TDs and HCP were initiated

SC-HYD prepared the “Assessment Guidelines for End-to-End Flood Forecasting and Early Warning Systems (E2E FFEWS)”

FICH-UNL (WMO RTC Hydrological component in Argentina) is working with SC-HYD in the development of the training material which will be used in the training for the E2E FFEWS



HCP-CDP Collaboration

TRAINING: asynchronous virtual training, 4-days training in person, and 1 month for participants to do it in their country and send them to get feedback.

Asynchronous virtual training: will cover all possible issues of flood forecasting in line with their specific level of implementation and requirements – from basic levels of services to state-of-the-art practices and services according to WMO recommendations.

The concept addressed should be related to the forecasting needs for any type of flooding. This part could be done ahead of the class (prerequisite) and it could be followed by a mini-exam. Questions could be sent to the trainers so they can respond them at the beginning of the in-person training.



HCP-CDP Collaboration

Person from Assessment Guidelines team, that developed the matrices, should teach them.

It is needed to create a “participants profile.”

Important to define where the pilot would take place.

Estimated date for pilot: The soonest would be April or May, 2023 and the latest September to November, 2023



Review and update the current competency frameworks as needed, and support development of new frameworks in areas not yet addressed, with the support of the Education and Training Office, as well as to benefit from the experiences and knowledge of the WMO Regional Training Centres (RTCs), in close coordination with the RTC Representatives;

2 *CDP-ET-HRDET & CDP-ET-TDs*

Contributions from the **Standing Committee on Marine Meteorological and Oceanographic Services (SC-MMO)** chaired by John Parker, particularly from the Expert Team on **Competencies and Capacity Development (CCD)**, chaired by Pat Parrish



SC-MMO, ET-CCD

Updates provided after ET-CCD 4
to the ET-TDs

The expected deliverables of the ET-CCD are as follows:

1. Ice Forecasting Competency Framework
2. Global Marine Forecasting Competency Assessment Program
3. A marine forecasting resource collection
4. Progress on the Marine Services Course
5. WMO/IMO collaboration on weather training for mariners



1. Ice Forecasting Competency Framework

The title was changed from “Sea Ice Forecasters” to more explicitly include not only sea ice as the target, but also bergy waters, interior lakes and rivers and their interactions with the land.

The framework also merges the originally separate draft sea ice analyst and forecaster frameworks.

Training and assessment content guidelines are provided in the newly revised publication WMO-No. 574, Sea Ice Information and Services, to assist in the implementation of the framework.



1. Ice Forecasting Competency Framework

Successful revision of the aviation competency assessment program website and WMO-No. 1205, Guide to Competency. These are being used to create adapted resources to directly support the Marine Forecasting competency assessment.

Adaption of the aviation forecasting competency toolkit, because many aspects are applicable to marine services.

Set up of a collaborative space to promote discussions among Members planning to or having completed implementation of national marine weather forecasters competency assessment programs.



3. Resources collection

This activity does not have an output that is expected for submission to SERCOM but will be ongoing work. The ET are looking for many types of resources that support the competency frameworks and not just training materials (including self-directed training resources, shareable protocols and public outreach materials). An invitation letter was drafted and the intention is to eventually circulate the invitation to Members. In the letter, Members are requested to look within their organizations for shareable information/materials either created by them or offered by other sources. One long-term goal would be to incorporate this collection into a larger WMO Global Campus collection.



4. WMO Marine Services Course

The WMO Marine Services was designed to address marine service delivery competencies and issues, rather than marine forecasting, according to the priorities put forth by the Head, Marine Services Division. This includes user communication, understanding user needs for marine weather information, and providing more user-centered services. Participants conduct a marine service delivery context analysis for their national service during the course, based on the WMO Service Delivery Strategy and resources from WMO-No. 1129.

The course has already been successfully implemented in different languages depending on the region.



5. WMO-IMO collaboration on weather training for mariners

Findings from the first WMO-IMO Symposium in 2019 concluded that a **communication gap existed between mariners and the weather community**. To further understand and address this gap, the IMO model courses for mariners will be examined to potential updates to include the latest information on marine weather forecasting relevant for mariners.

An initial investigation is being conducted by looking at casualty reports generated by IMO to see how many accidents are caused or affected by weather events. The Secretariat will further work with IMO to understand the gaps identified and recommend options for revising the training mariners receive. At the same time, it is an opportunity to examine if the sharing of weather information with mariners can be improved.



SC-MMO further updates

WMO/IMO Symposium on Extreme Maritime Weather held in 2019. In partnership with the IMO, the WMO has commenced addressing these recommendations, with the SC-MMO advancing the work to ensure that progress will be reported and discussed at the Second Symposium.

A second Symposium is anticipated to be held in late 2023. Practical preparations for this event are underway and once confirmed, will be announced. The participation and engagement of National and Intergovernmental Authorities, Marine Industry, Port Administrations, and Marine Weather Centers and Forecasters among other key partners is vital to the success of the Symposium.



Engagement between academics and NMHSs staff/operational community

Contributions from ET-TDs
members

ET provides a valuable collection of concrete examples and experiences at national level on successful strategies implemented.

- Argentina (Dr. Carla Gulizia)
- Nigeria (Prof. Peter Odjugo)
- India (Dr. Somentah Dutta)
- Indonesia (Prof. Dwikorita Karnawati)

3. Discussion of the main challenges identified by the ET





Some of the challenges encountered

Communication through Moodle Platform (lack of active participation)

Summer break in the near period prior to the CDP-5 - hard to contact people, get inputs since many were out of the office

ToRs are too wide, difficult to cover all the aspects efficiently. *[What would be the best path to move forward? TBD later]*


4. Recommendations



Recommendations

Coordinate the Technical Commissions (SERCOM and INFCOM) in the development of a capacity development framework to support the implementation of their activities;

3 *CDP-ET-TDs*



**It is recommended
that the Technical
Commissions (TCs) to
coordinate their own
overarching
mandates on
capacity
development (CD)**

CDP can support and facilitate
the development of the CD
framework of high-level
principles for each TC.

Recommendations

Develop strategies to foster engagement of academic and NMHS staff at the local and regional levels on research and research transfer to operation and application to improved operational delivery;

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Make recommendations on how to foster systematic contributions from academia towards the enhancement of the research-to-operation continuum which should address approaches to promotion of capacity development and service capabilities in weather, climate, hydrology and environment at regional levels through promotion of collaboration and communication between regional centres such as Regional Specialized Centres, Regional Climate Centres, Regional Training Centres (RTCs), WMO Integrated Global Observing System (WIGOS) Centres and WMO Information System (WIS) Centres, etc;

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5 *CDP-ET-HRDET & CDP-ET-TDs*

Meeting with Jürg Luterbacher & Jon Cox - Resources Mobilisation, Science and Innovation Technical Department

Individual inputs from the CDP-ET-TDs with several concrete examples at the national level of good practices and projects which foster engagement between academics and NMHSs staff.



Resources Mobilisation - Science and Innovation Technical Department

Jürg Luterbacher & Jon Cox

Some initial thoughts on the following issues:

- 1) How can NMHSs, particularly those with limited resources, engage in research?
- 2) how could young experts be incentivized and mentored to carry out research?
- 3) In the absence of national research foundations and limited budgets, what funding opportunities are available for NMHSs to pursue research?
- 4) The issues in which NMHSs contribute require interdisciplinary research. How can this be promoted particularly considering the requirement of socio-economic data seating outside the NMHS and the involvement of social sciences?
- 5) How can WMO help NMHSs in the development of projections to support policy and development planning.




1) How can NMHSs, particularly those with limited resources, engage in research?

The simplest answer is 'by actively seeking external partnerships' with funding providers and other recipients of research funding. The more complicated answer depends very much on region.

Many major funding bodies (international, such as the EU, joint governmental programmes; national funding programmes with an international development angle, etc) require submissions to include partner organisations from within target regions – usually, the global South. So this is a key mechanism to include NMHSs in the research ecosystem, including as recipients of actual external funding. Even without funding, there is usually potential for local partners to be included even as secondary (unfunded) participants.

Within the WMO, Science and Innovation can play a key role in brokering and matching research needs (funding calls) with appropriate sources of regional expertise.




2) How could young experts be incentivized and mentored to carry out research?

Within the Science and Innovation programmes, the existing frameworks to support and utilise ECRs are fairly well established. The World Climate Research Programme (WCRP) has capacity development, mentoring and ECR training (WCRP Academy) as one of its Lighthouse activities. In a similar vein, the WWRP has developed good links with organisations like Future Earth and Young Earth System Scientist (YESS), which enable ECR involvement in research programmes.

The best role the WMO can play is as an enabler and lighthouse, so that NMHSs can be supported with examples to realise the value of research in the development of policy and planning. This enthusiasm for research is clearly somewhat lacking in many RAs. For example, the WMO Young Scientist award was recently endorsed at EC-75. Yet not all the RAs forwarded the nominations they received to the award committee (RA for Africa and the SW Pacific did not submit nominations).

Given the clear role that the WMO Young Scientist award – which is administered by SI – should play in incentivizing early career researchers, there is a clear need to better articulate the value in the Awards to RAs. This will be done during the coming award cycle.



3) In the absence of national research foundations and limited budgets, what funding opportunities are available for NMHSs to pursue research?

The EU research programmes (top down directed calls) – in conjunction with most research funding providers - will typically mandate the inclusion of target region organisations within consortia and this remains the single best way for NMHSs to engage (in any and all ways) with research to deliver real policy and practice impact. This is also particularly true of many privately funded Foundations.

There is also considerable untapped potential for projects funded by CREWS and SOFF to include research elements alongside, and complementary to, their operational mandates. If, for example, all SOFF and CREWS funded projects or programmes had a mandatory research component, the entire budgetary and research landscape for NMHSs across the next decade would be transformed at a stroke.



4) The issues in which NMHSs contribute require interdisciplinary research. How can this be promoted particularly considering the requirement of socio-economic data seating outside the NMHs and the involvement of social sciences?

WMO can help, promote, and encourage such interdisciplinary action (nationally and regionally) with best practice guidance and capacity building support. But there must also be local (national) policy support for interaction between civil society (e.g. 'last mile' and community level behavioural work to support the implementation of early warning systems) and national (intra-national) governments to align social science actors with data from NMHSs.

Again, the issue comes back to the WMO encouraging and supporting NMHSs to engage with national and international Universities across a range of relevant research areas. The WMO (Science and Innovation) and the broader UN ecosystem can better advertise its potential role to NMHSs to broker, facilitate and support the development of such knowledge networks.



5) How can WMO help NMHs in the development of projections to support policy and development planning

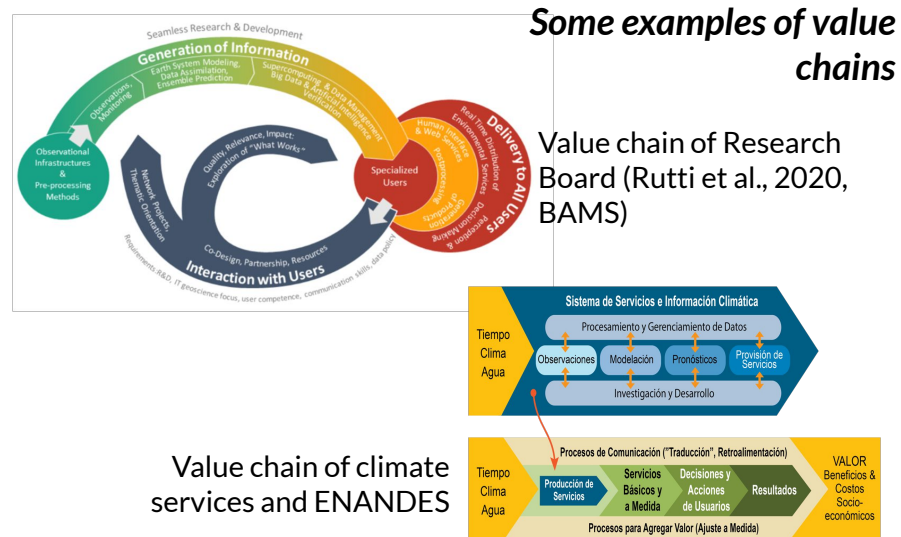
By disseminating the outputs of research in which the WMO is involved. For example, Science and Innovation is co-ordinating a submission (due November 2022) to an EU research call (Disaster Resilient Society; call is 'Improved impact forecasting and early warning systems supporting the rapid deployment of first responders in vulnerable areas'). The areal focus for this call is on the south Mediterranean region, but the technologies to be developed (which must achieve 'close to deployable' readiness) ought to be utilisable globally.

Strategies to foster engagement between Academic and NMHS staff and enhancing contributions with collaboration of regional centres

The role of the WMO Regional Offices includes facilitating the link between the WMO Technical Commissions with the respective Regional Association Working Groups and Regional Centres.

It is recommended to develop a value chain at the regional level to identify what and how each of the components described above could contribute to this value chain.

Take advantage of the **Regional Projects** for looking for opportunities of engagement between Research and Operational Communities.






Strategies to foster engagement between Academic and NMHS staff and enhancing contributions with collaboration of regional centres

Besides operational, there are examples of NMHSs stating that they also receive long-term requests (5-10 years) from sectorial users and stakeholders. The articulation with climate researchers in the Universities and Research Institutions at the national level will be valuable.

Link with World Climate Research Programme (WCRP) My Climate Risk LightHouse Activity Regional Hubs can also be explored on this aim.

ENHANCING THE ACCESS TO CLIMATE DATA

It is recommended that the NMHSs articulate with the Academies for facilitating the connection with the Regional Climate Centres (RCCs), since these produce quality control information over the region.



Strategies to foster engagement between Academic and NMHS staff and enhancing contributions with collaboration of regional centres

Observations are not always captured in prediction (importance of data assimilation). That is why warning information is not precise, and so actions are not clear for society (e.g. is evacuation the right action at this particular situation?) **Integration of monitoring system, prediction system, hydrological prediction system as well.**

Integrate all these components: integrated big data simulation, nowcasting, numerical weather prediction, and hydrological modeling from the monitoring system. This can produce a very precise information to deliver warnings.

To achieve this integration, partnerships between academics and NMHSs staff are key.

To enhance capacity development on communication with local communities, on awareness and preparedness

To improve articulation between weather and land communities, hydrological and meteorological communities

5. Future work of the ET until Congress (2023)





Future Work of the CDP-ET-TDs

To review in this discussion session of this ET-TDs the concrete examples (and possibly get further ones from other Members and/or RAs) in order to consolidate general recommendation we want to potential submit to the EC-76.

Continuous communication and interaction with CDP-ETs members, representatives from RB, HCP, JCB, SERCOM and INFCOM, as well as with Technical Departments Directors at a regular basis for continuous improvement of coordination and delivery of WMO capacity development activities.

Identify concrete priorities and actions/projects to focus in the next intersessional period.

Identify ET-TDs members willing to lead the potentially identified priorities and actions/projects.

Thank you - Merci - Gracias

Dra. Carla Gulizia

Facilitator of the CDP-ET-TDs

Contact: <gulizia@cima.fcen.uba.ar>

