

FEDERATION OF THE  
MYANMAR ENGINEERING SOCIETY  
WORLD WATER DAY 2024 CELEBRATION  
23 MAR 2024

Seminar on "Water for Peace Innovators:  
Engineering a Sustainable Water Future for Peace"

အင်ဂျင်နီယာဆန်းသစ်တီထွင်ပေါင်းစပ်မှုဖြင့် ငြိမ်းချမ်းရေးနှင့်  
ရေရှည်တည်တံ့သော ရေအနာဂတ်ကို ဖော်ဆောင်ကြပါစို့



## **Federation of Myanmar Engineering Society (Fed. MES)'s World Water Day 2024 Celebration**

**Seminar on "Water for Peace Innovators: Engineering a Sustainable Water Future for Peace**  
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Presentation Title:

**"Engineers Shaping a Future of Water for Peace:  
Innovating the Blueprint for Global Harmony"**

Keynote Speaker:

Prof. Dr. Khin Ni Ni Thein, Fellow, Fed. MES

Founder and Chair, Myanmar Water Academy

G100 Ecocivilisation Wing Myanmar Country Chair

# Engineers: who we are!

- Engineers make Impossible Possible!
- Engineers make that which was previously considered impossible, or unlikely, or not worthwhile doing into that which is functional and valuable.
- If they're good at what they do (in the larger context) they can make other people understand the value.
- **“How would you have done it if you had been allowed to do it right?”**
- Most managers live in fear of being let down by those they manage, so they ask only for incremental changes in what already works. This keeps the failure rates low, but also keeps the rate of progress low.
- Engineers do their best work when it is impossible to discern the difference between that work and play - when the pursuit of virtuosity (especially virtuosity of a team) takes control and the mental effort becomes a sort of ecstasy. This is called (as it is in sports) “operating in the zone”.
- With the recent advent of “crowd funding” we take one step closer to engineering development as sport - both participant and spectator. (Lee Felsenstein, Electronic design engineer, PC pioneer)

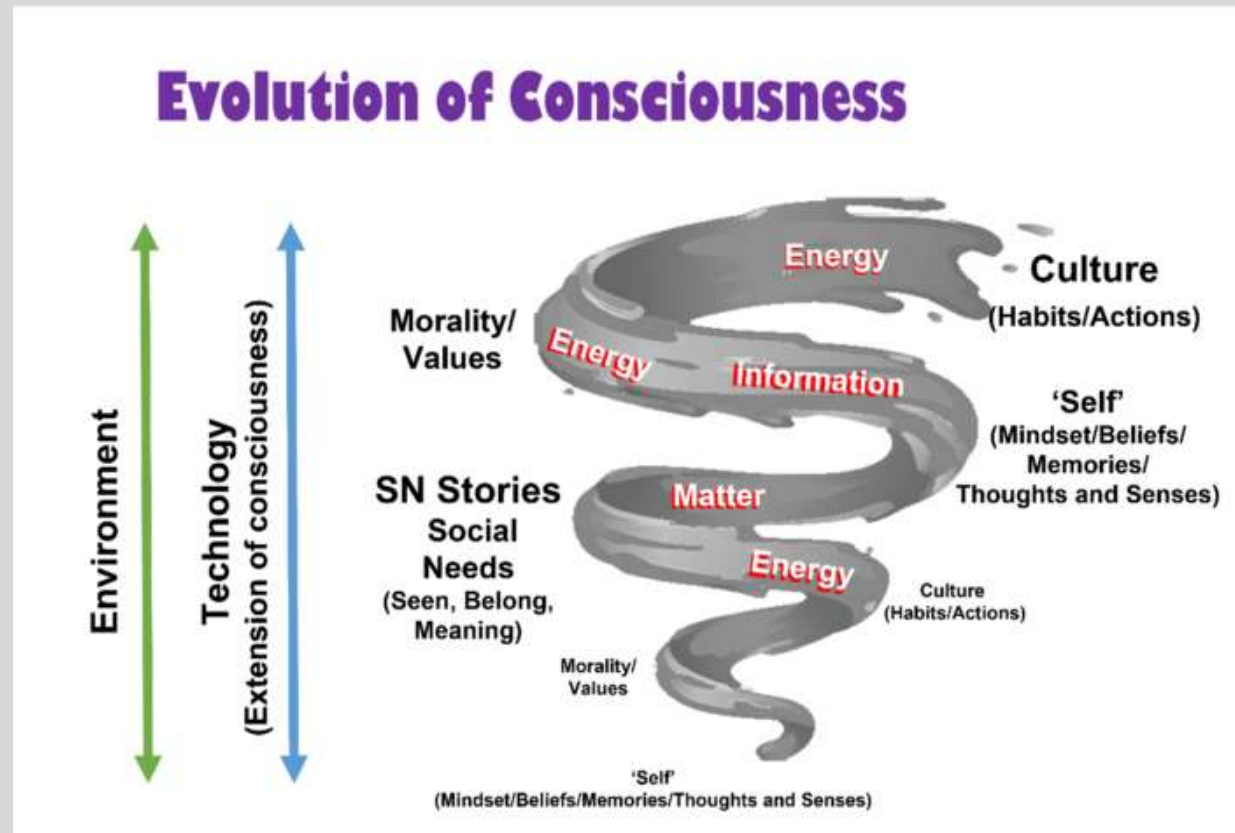
# *Good Will intention* မေတ္တာ

- This seminar talk by Prof. Dr. Khin Ni Ni Thein aims to establish an effective communication among all Myanmar engineers on the subject of the role of engineers in crafting a sustainable future with a focus on Water for Peace by both male and female engineers.
- Hope to contribute significantly advancing this dialogue and inspiring action within the Myanmar engineering community.
- Also to reintroduce Hydroinformatics as it was created by Prof. Dr. M.B. Abbott (IHE, Delf) in 1991 and later co-developed by the International Hydroinformatics Community.
- It's essential to recognize the interconnectedness of water management, peacebuilding, and sustainable development, and to empower engineers to lead in finding innovative solutions to these complex issues.
- The multi-dimensional nature of water management and the interconnectedness of various disciplines in addressing this critical issue requires innovative solutions rooted in water sciences, encompassing natural, social, and spiritual dimensions, are indispensable for nurturing peace and sustainability.
- Access to clean water stands as a cornerstone of human rights and societal stability. Engineers occupy a pivotal position in crafting sustainable water infrastructure to uphold equitable distribution and conservation of this invaluable resource. Technologies such as desalination, water recycling, and smart management systems including AI herald a paradigm shift in combating water scarcity and conflict.

# Good will intention (contd.)

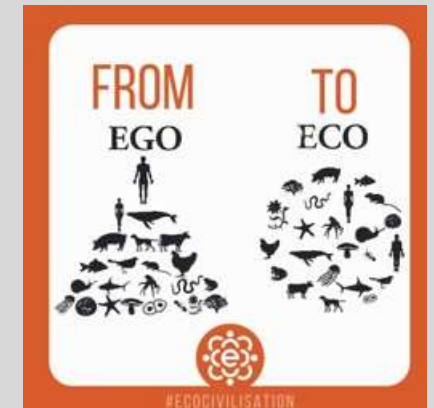
- Simultaneously, gender equality, water diplomacy, and spiritual enlightenment, fostering empathy and compassion, stand as indispensable pillars alongside technological advancements. Recognizing the holistic nature of water management, embracing diversity, and fostering inclusivity are vital for fostering resilience and harmony in our societies.
- We utilize Hydroinformatics tools as integral components in this endeavor. By intertwining scientific innovation with social and spiritual awareness, we can forge a path towards a future where clean water serves as a beacon of unity and prosperity for all.
- By harnessing innovation and cooperation, we can engineer a future where access to clean water becomes a catalyst for peace and prosperity on a global scale.
- The cornerstone of this vision lies in the evolution of Hydroinformatics, for example, <https://www.un-ihe.org/departement/hydroinformatics-and-socio-technical-innovation>, involving both the technical and social aspects of development of new kinds of Decision Support Systems, representing a new phase in water management. This innovative approach integrates advanced computational techniques with water sciences and engineering principles to enhance decision-making processes. By embracing innovation and cooperation, **we can engineer a future where access to clean water becomes a catalyst for peace and prosperity, societal wellbeing and environmental harmony on a global scale.**

# Evolution of Consciousness and Future of Humanity

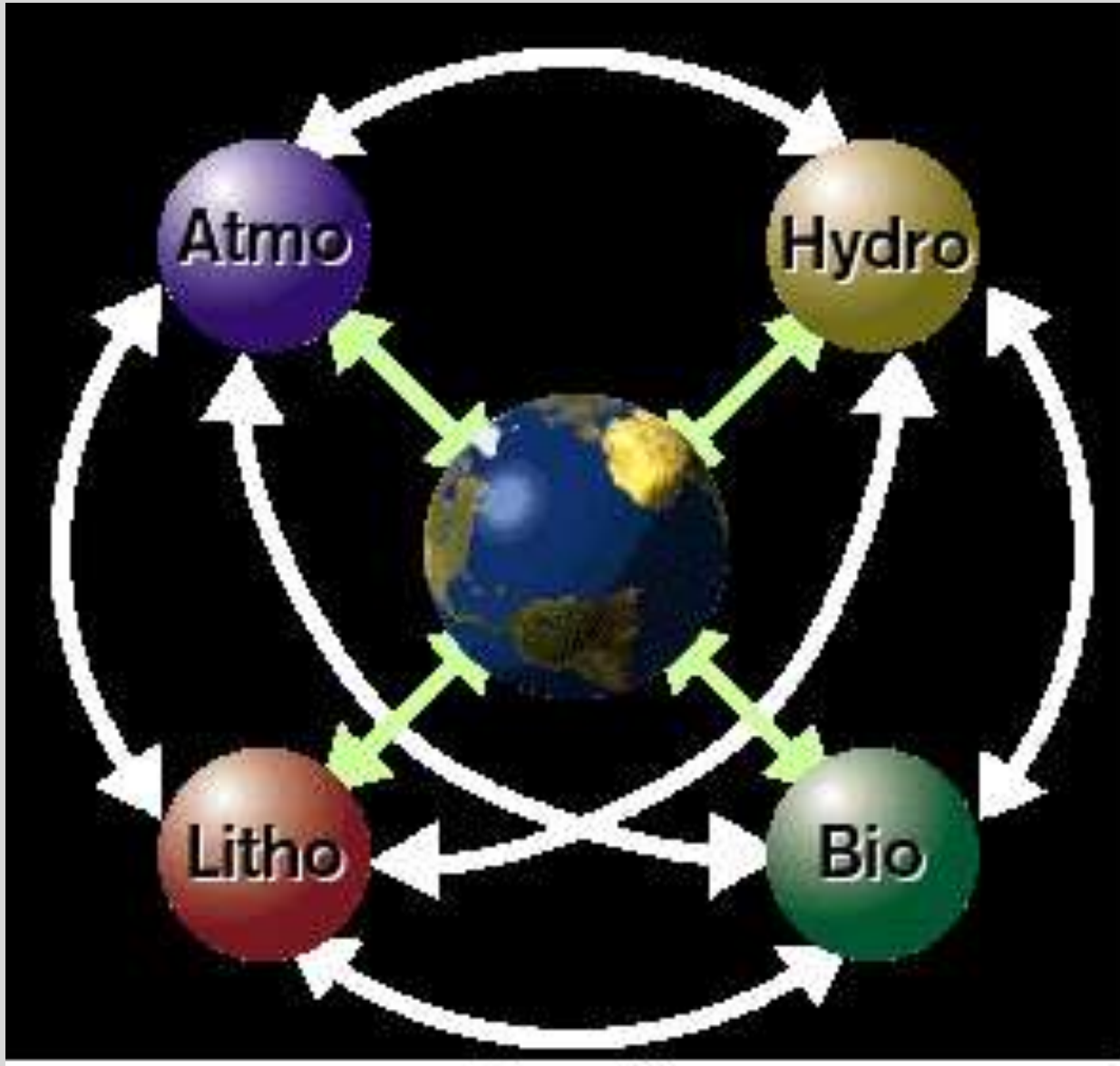


Source: Sharon Gal-Or, 2022

**ALL THE LIFE IS BERATHING TOGETHER**







# Earth Systems Science

1. Atmo
2. Hydro
3. Bio
4. Litho

**Complex interrelationships between materials and energy and the living Earth in the solid, fluid, and vapor forms.**

**Systems Science also involves the study of **human interactions** with these natural systems.**

Paddy Plantation (manually)



Flash Drought Sufferers



Gold Mining (Manually)



Ground Water extraction



# Climate Change Impacts to Poorest of the Poor



**26 Apr 2023 News**

## Recent, rapid ocean warming ahead of El Niño alarms scientists

🕒 1 day ago · 💬 Comments



COP28



**By Matt McGrath and Mark Poynting**  
BBC Climate and Science team

# Recognizing Water as a circular system of Life!

<https://www.youtube.com/watch?v=hPM1l93mGZw> “The bridge between Water and Life”

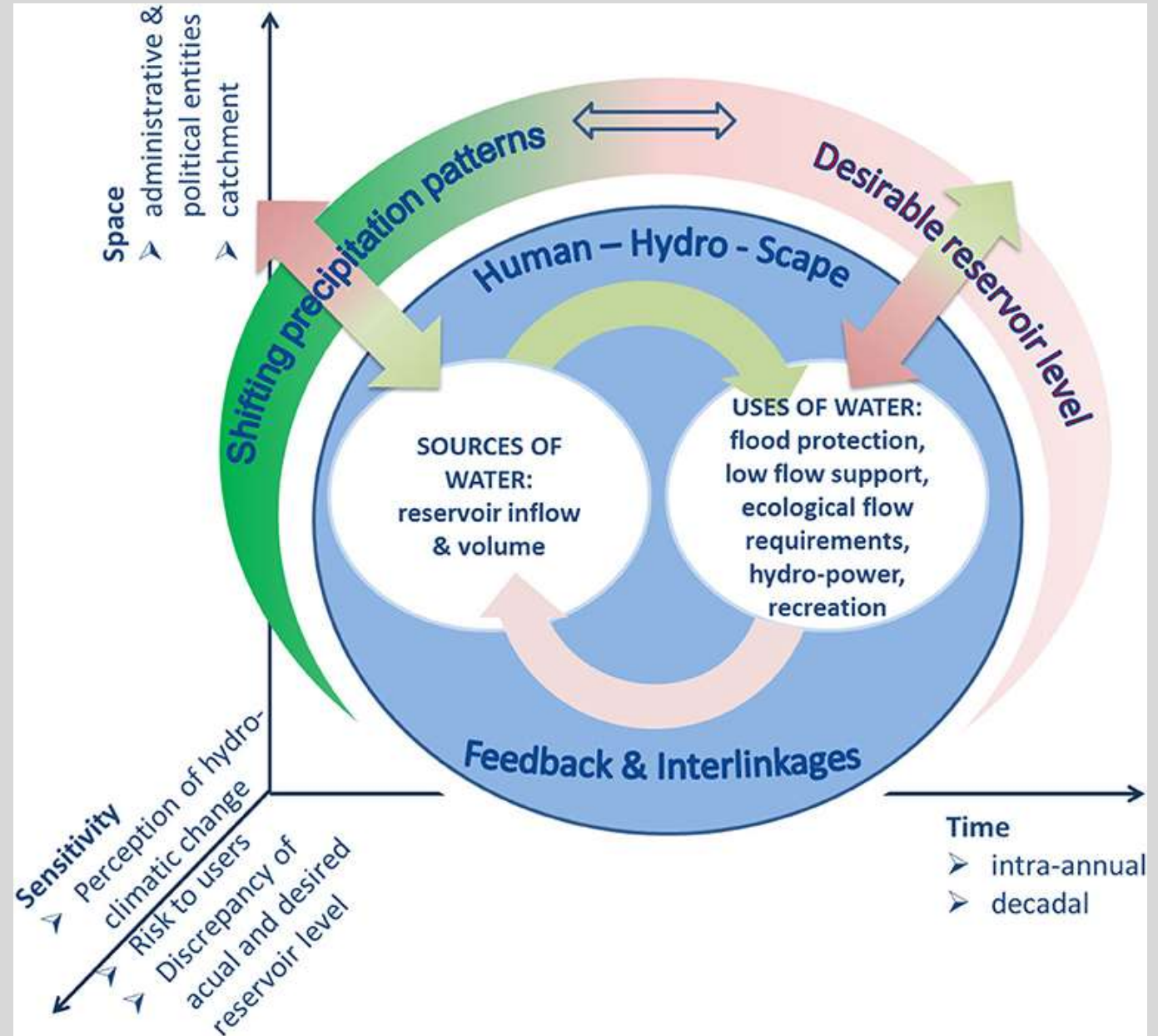
- Water is Life, Life is Water
- When Technology and Nature resonate, we have enough water
- In fact, we always have enough water if we can ignore our greed
- That's why we need to promote water, happiness and conscious cooperation
- Peace and prosperity will follow



# Human-Water Systems

## Three Dimensional Model

- Time
- Space
- Sensitivity



Source: <https://www.frontiersin.org/articles/10.3389/frwa.2020.00025/full>

# New Water Resources Management/ Governance Paradigm 2021-2022-2023

Community AquaVoices to Local to Regional to International returned to Local: A complete Circle of Globalisation!

**UNWC 2023 VIRTUAL SIDE EVENT V-213**  
**CO-CREATION: NEW WATER GOVERNANCE PARADIGM**

• 24 Mar 2023, 8:00am New York Time, Global Virtual Event

Presentation Title:-  
**New Water Management/Governance Paradigm**

Presented by Prof. Dr. Khin Ni Ni Thein, Founder, Myanmar Water Academy, Ecocivilisation Wing Myanmar Country Chair, and Advisor to IRRI

**PRESENTATIONS OF THE PROPOSED  
'NEW WATER MANAGEMENT PARADIGM'  
AROUND THE WORLD IN 2022**

**SLOVENIA, Asia, Europe, Global**

**Hong Kong, Switzerland, Asia, Europe, Global**

**Mekong Basin**

International Event, Connection

**ASEAN Hydroinformatics Data Center (AHC)**  
**3<sup>rd</sup> Workshop**  
**Invited Lecture via Zoom**  
Tuesday, 11<sup>th</sup> Oct. 2022, AHC Secretariat in Singapore

**A New Water Management Paradigm:  
proposed by Ecocivilisation Myanmar Wing**

Presented by Prof. Dr. Khin Ni Ni Thein, Founder, Myanmar Water Academy, Ecocivilisation Wing Myanmar Country Chair, and Advisor to IRRI

**EVOLUTION OF CONSCIOUSNESS  
AND FUTURE OF HUMANITY**

**Evolution of Consciousness**

Environment  
Technology  
(Extension of consciousness)

Modality Values  
SN Stories  
Social Needs  
(Share, Belong, Meaning)

From  
EGO  
TO  
ECO

Water is the driving force of all waters

Source: Sharon Gal-On, 2022

WE ARE NATURE

**WATER CIRCULAR ECONOMY (OR) CE OF WATER**

**WATER IN CIRCULAR ECONOMY AND RESILIENCE (WICER)**

- The initiative "Water in Circular Economy and Resilience" (WICER) aims to promote a paradigm shift in the water sector.
- Current resource linear model goes with "take, make, consume, waste" – but WICER model is "WICER".
- The shift involves moving away from linear thinking in the way we plan, design, and operate water infrastructure in urban settings towards a circular and resilience approach. (Source: [www.watalliance.com/wicer](https://www.watalliance.com/wicer))

**Resources: Reuse**

- Treated wastewater for irrigation
- Nutrients (N and P) from water as fertilizer
- P from sludge as fertilizer
- Biogas for energy
- Recyclable
- Re-use energy in wastewater treatment

**"Tackling COVID-19 and Climate  
Security Challenges in the Greater  
Mekong Region"**  
Organized by IHD in collaboration with AHC and ISC  
Tuesday, 27<sup>th</sup> Sept. 2022  
Online Zoom

**A New Water Management Paradigm:  
human's adaptation to challenges**

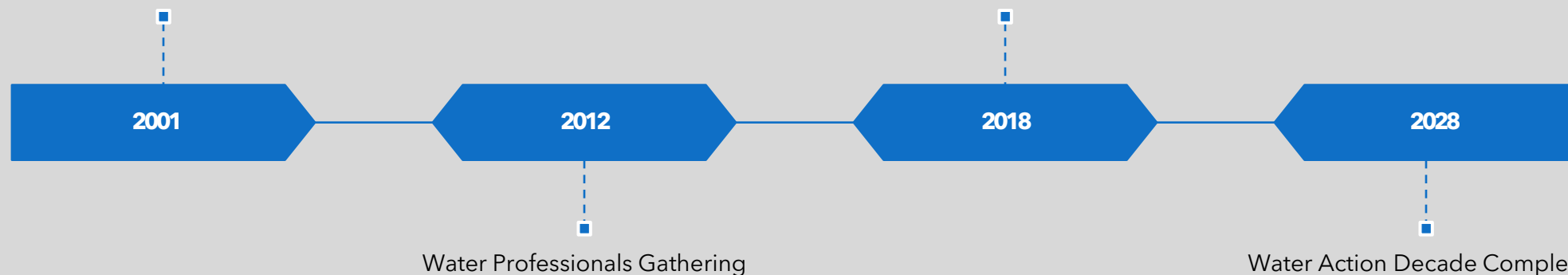
Presented by Prof. Dr. Khin Ni Ni Thein, Founder, Myanmar Water Academy, Ecocivilisation Wing Myanmar Country Chair, and Advisor to IRRI



# Our (Myanmar) Journey of Water Diplomacy

Water and Peace Documentary

Water Action Decade Began



IWRM = Integrated Water resources Management

**WASH**

WASH = Water, Sanitation  
and Hygiene

**IWRM**

**DRR**

DRR = Disaster  
Risk Reduction

**PEACE**

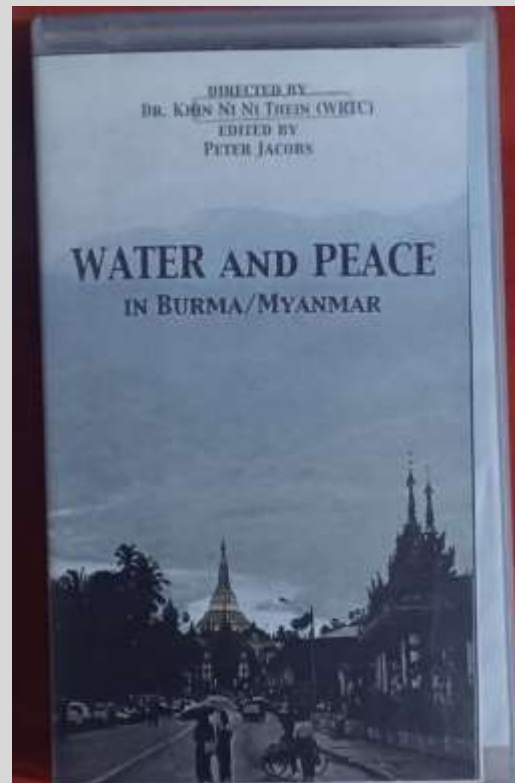
**WASH & DRR**

# UNICEF's Peace effort with (then NGO) WRTC in 2001

- UNICEF representative to Myanmar supported the Water and Peace initiative in April 2001
- The first part of the documentary was finished in Nov 2001.
- No chance to produce the second part.

**What we do Today is the  
Children's Future.**

(Future vessel)





# What is Peace?

- **Emotional Peace** (deep understanding of own inner-self)
- **Spiritual Peace** (peace with God for some; Peace with Dhamma for others) – Thought, Speech and Deed always consistent regardless of the religion one holds.
- **Relational Peace** (peace with others) – non-violence – no one left behind but Dhamma, fairness, moral and ethics guide the society

Ecocivilisation means သုစရိတရပ်ဝန်း

Rule of Law exists with right of self determination guided by self-discipline, fairness, moral, ethical, and empathy

# WASH and DRR are waterways to PEACE

1. Ensuring access to clean water, sanitation, and hygiene (for all, leaving no one behind), and by “promoting peace before, during, and after water related disasters” (Ref. <https://www.wateranddisaster.org> ), these initiatives pave the way for meaningful dialogue to promote peace in a people-centered approach.
2. Humanitarian assistance will be the first pilot project area to begin with.
3. This approach offers tangible solutions to the most pressing challenges facing humanity globally at present.

# WASH for PEACE

Creating ~~Maintaining~~ Peace? Any innovation? Expansion from the current mandate?

- Linking humanitarian and development work is an important part of how we help **maintain** peace in conflict-prone settings. UNICEF provides water and sanitation services to both refugee and host communities.
- We also work to strengthen the WASH sector overall. By advocating for tariffs that help recover the costs of infrastructure, or by implementing public-private partnerships, we are fortifying communities to respond faster to crisis. We also work with governments and other humanitarian agencies to train the private sector, utility operators and communities in building and maintaining resilient WASH infrastructure during and before emergencies.
- WASH for PEACE?
- [https://clearinghouse.unicef.org/sites/ch/files/ch/sites-PD-WASH-WASH%20Knowledge%20unicef-ENGLISH\\_WASH%20for%20Peace\\_final%2013.3.2024-2.0.pdf](https://clearinghouse.unicef.org/sites/ch/files/ch/sites-PD-WASH-WASH%20Knowledge%20unicef-ENGLISH_WASH%20for%20Peace_final%2013.3.2024-2.0.pdf)



# WASH and DRR: technical or more ?

- These seemingly technical domains hold the key to fostering peace and stability in societies across the globe
  - WASH initiatives ensure access to clean water, proper sanitation facilities, and hygiene practices
  - DRR strategies aim to mitigate the impact of disasters and build resilience within communities
  - Together, they form powerful tools for promoting peace and prosperity
- 

More - in the domains of both natural science and social science

# WASH: Water, Sanitation and Hygiene

- WASH services, including safe hygiene behaviours, are vital for everyone.
- WASH is indispensable to economic development, as well as health, tackling gender inequality and building resilience to climate change.
- WASH interventions address fundamental human needs, laying the foundation for peaceful coexistence.
- Access to clean water is a basic human right, yet millions around the world still lack this necessity.
- By ensuring equitable access to safe drinking water and sanitation facilities, WASH initiatives alleviate suffering and reduce tensions arising from disputes over scarce resources.
- Moreover, promoting proper hygiene practices not only improves public health but also fosters a culture of respect and cooperation within communities.
- Investment in universal basic drinking water can yield up to US \$32 billion annually and investment in basic hygiene can yield US \$45 billion annually. Increasing investment in safely managed sanitation can yield US \$86 billion annually. (WaterAid/Vivid Economics (2021))
- Yet, we are mid-way through the Sustainable Development Goals (SDGs) and progress is still unacceptably slow and uneven, especially among the poorest and most vulnerable populations in the least developed countries (LDCs) (Water Aid Report, Mar 2023)

# DRR: Disaster Risk Reduction

- DRR measures contribute significantly to conflict prevention and peacebuilding efforts.
- Disasters, whether natural or human-induced, often exacerbate existing vulnerabilities and social tensions, leading to conflicts over resources and aid distribution.
- By investing in preparedness, early warning systems, and infrastructure resilience, communities can reduce the likelihood of disasters and minimize their impact.
- In doing so, they create a sense of security and stability, mitigating the potential for conflict and promoting peaceful coexistence.
- [HELP Policy Recommendation](#)



# When they play together: WASH + DRR

- WASH and DRR initiatives play a crucial role in post-conflict reconstruction and peacebuilding. In conflict-affected regions, infrastructure is often destroyed, and essential services, including water and sanitation facilities, are disrupted. By prioritizing WASH and DRR interventions in post-conflict recovery efforts, communities can rebuild stronger, more resilient societies. Providing access to clean water and sanitation not only improves public health but also restores dignity and stability, laying the groundwork for sustainable peace.
- Moreover, WASH and DRR strategies foster cooperation and collaboration among diverse stakeholders, transcending political, social, and cultural divides. These initiatives require collective action and partnership between governments, civil society organizations, international agencies, and local communities.
- By working together to address common challenges, stakeholders build **trust**, solidarity, and resilience, fostering peaceful relationships and promoting sustainable development.

# Impacts of the waterways (WASH & DRR) to Peace

- *WASH and DRR are indeed waterways to peace*, offering tangible solutions to some of the most pressing challenges globally facing humanity.
- By ensuring access to clean water, sanitation, and hygiene, and by reducing disaster risks and building resilience, these initiatives promote peace, stability, and prosperity.
- Investing in WASH and DRR is not only a matter of humanitarian imperative but also a pathway to a more peaceful and sustainable future for all.
- The interconnectedness of WASH and DRR with peacebuilding efforts, emphasizing their critical role in addressing conflicts and promoting stability and prosperity worldwide.

# Sustainable Water Management Systems

- Sustainable water management systems aim at keeping the integrity of water-related ecosystems while at the same time meeting the needs and demands of the society over multiple generations ([Wiek and Larson, 2012](#); [Schneider et al., 2015](#); [Poff et al., 2016](#)).
- IWRM
- Source to Sea
- Water as a circular system of life

IWRM has been a predominant management framework from 1990s to date, however, since 2010 UNGA Human Rights-based Approach (HRBA) emerged.

Proposed Paradigm: A New Paradigm (3-Ply): (Socio-technology + Systems Science + Spiritual transformation - begin with conscious leadership principles)

**Note =>**

**(Hydroinformatics Tools + Systems Science + AEIOU Leadership)**

**To revive Human Greatness and Nature together!**

Reason: to dissolve potential paradigm clashes over the tensions and promote synergies between IWRM and the Human Rights-Based Approach. Problems were found in implementation!



# What, How and When?

- What?
- How?
- When?

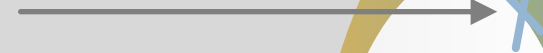
Water for Peace

**Collective Wisdom and Co-creation**

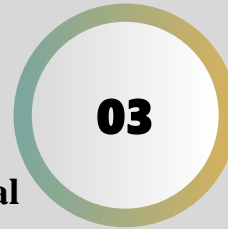
Now!

# Practical Steps

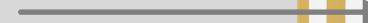
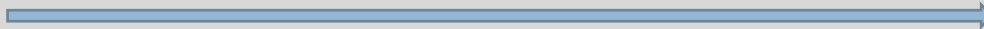
**01 - informal idea**  
Idea generation, sharing, co-creation



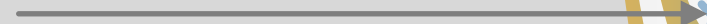
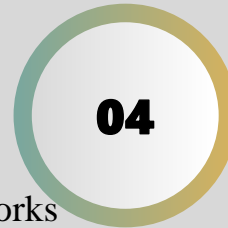
**03 - Scientific Seminars**  
Workshops, white paper,  
blue paper, social media  
write up, blog, vlog, journal  
articles, etc.



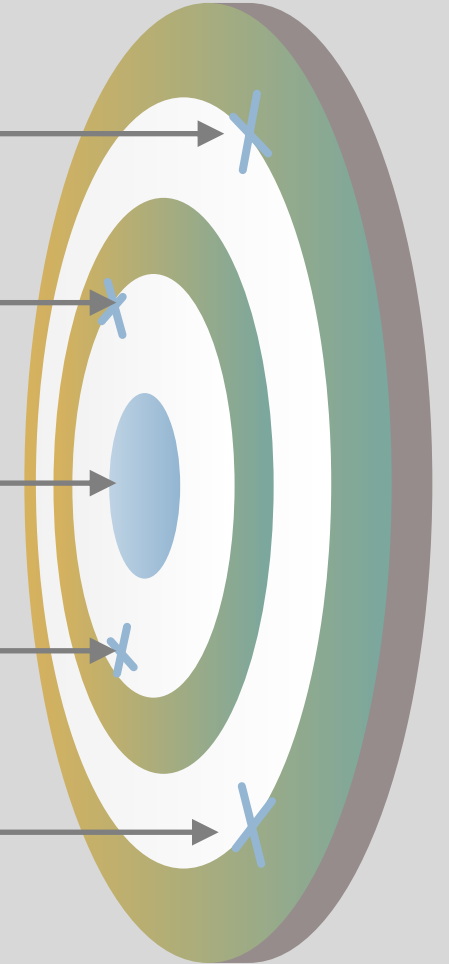
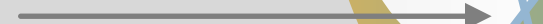
**The Goal is Peace**  
Conflict prevention,  
mitigation, and negotiation



**04 - Regional and Global Fora**  
For example, World Water Forum, IWA  
Congress, IWRA GA, other Water Networks



**02 - Networking**  
Informal talks



# Conclusion

- Implementing these practical steps will require **sustained commitment**, collaboration, and resources from both national and international stakeholders.
- It's essential to recognize the complexity of the situation in Myanmar and **adopt a comprehensive approach that addresses the underlying causes of conflict** while promoting sustainable peace, stability, and development.



# Thank you for your Time and Attention!



<https://www.myanmarwatersacademy.com>