MYANMAR CLIMATE ACTION WEEK 2025 – 15-20 Sept 2025

“Water Stewardship for Climate Change Resilience” Training Session

Certificate Will be Awarded after the completion of all 4 Lectures)
Organized by the Transformative Water Learning Partnership Consortium and the Myanmar Water Academy

LECTURE 4

"Career Path for Young Water Professionals in Water Stewardship"

by Prof. Dr. Khin Ni Ni Thein, Founder and Chair of the Myanmar Water Academy,
Co-founder and Co-lead of the Transformative Water Learning Partnership Consortium,
Ecocivilisation Myanmar Country Chair

Friday, 19 Sept 2025
1:00 pm to 4:00 pm (GMT+6:30) Myanmar Local Time
Virtual Classes via ZOOM Platform

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1. An overview of the profession of water engineers (1900 – 2005)
2. MDG (2000 – 2015) vs SDG (2015 – 2030) career evolutions in Water Professions
3. New Thinking
4. Water Stewardship
5. Career Opportunities in the area of Water Stewardship

1. An overview of the profession of water engineers (1900 – 2005)

An overview of the profession of water engineers (1900 – 2005)

- An overview of how the profession of **water engineers** (those working in water supply, wastewater, irrigation, and hydrology) evolved across three distinct periods: **1900–1950; 1951–2000; 2000–2005**

1900–1950: Foundations and Public Health Focus

- **Urbanization and sanitation:** Rapid urban growth in Europe and North America led to massive investments in water supply and sewerage systems to fight cholera, typhoid, and other waterborne diseases.
- **Engineering emphasis:** Civil engineers dominated water engineering, focusing on hydraulics, gravity-fed waterworks, reservoirs, and early pumping stations.
- **Major achievements:**
  - Large-scale dam construction for municipal supply, flood control, and hydroelectricity (e.g., Hoover Dam, 1936).
  - Expansion of sewer networks and the introduction of rudimentary wastewater treatment (primarily sedimentation and trickling filters).
- **Institutions:** Professional societies (e.g., American Society of Civil Engineers, Institution of Civil Engineers in the UK) began formalizing water engineering as a specialization within civil engineering.

1951–2000: Expansion, Technology, and Environmental Awareness

- **Post-war infrastructure boom (1950s–1970s):**
  - Massive water infrastructure projects (multipurpose dams, irrigation canals, regional water supply networks).
  - Advances in **pumping technology** and **pressurized systems** improved distribution.
- **Rise of environmental concerns (1970s onward):**
  - Growth of environmental engineering as a discipline separate from civil engineering.
  - New regulations (e.g., U.S. Clean Water Act, 1972) drove improvements in wastewater treatment (activated sludge, nutrient removal, sludge management).
- **Computerization and modeling (1980s–1990s):**
  - Widespread use of computational hydraulics, groundwater models, and GIS for water resources planning.
- **Global dimension:**
  - Focus on large water transfer projects in developing countries.
  - International agencies (World Bank, WHO, UN) promoted water supply and sanitation in low-income regions.

2000–2005: Transition to Sustainability and Risk Management

- **Shift to integrated approaches:**
  - Growth of **Integrated Water Resources Management (IWRM)**, considering water, environment, and society together.
- **New challenges:**
  - Climate change impacts began influencing water engineering discourse (floods, droughts, sea-level rise).
  - Aging infrastructure in developed countries required rehabilitation and modernization.
- **Technological innovation:**
  - Early adoption of smart monitoring systems, GIS-based planning, and advanced treatment (membrane filtration, UV disinfection) – Isotope technology (nuclear related)
- **Policy and sustainability:**
  - Global push toward the **Millennium Development Goals (2000)** emphasized expanding safe water access and basic sanitation in the developing world.
- **Professional identity:**
  - Water engineering increasingly became an interdisciplinary field, blending civil, environmental, and chemical engineering with ecological and social sciences.

The progression from 1900 to 2005

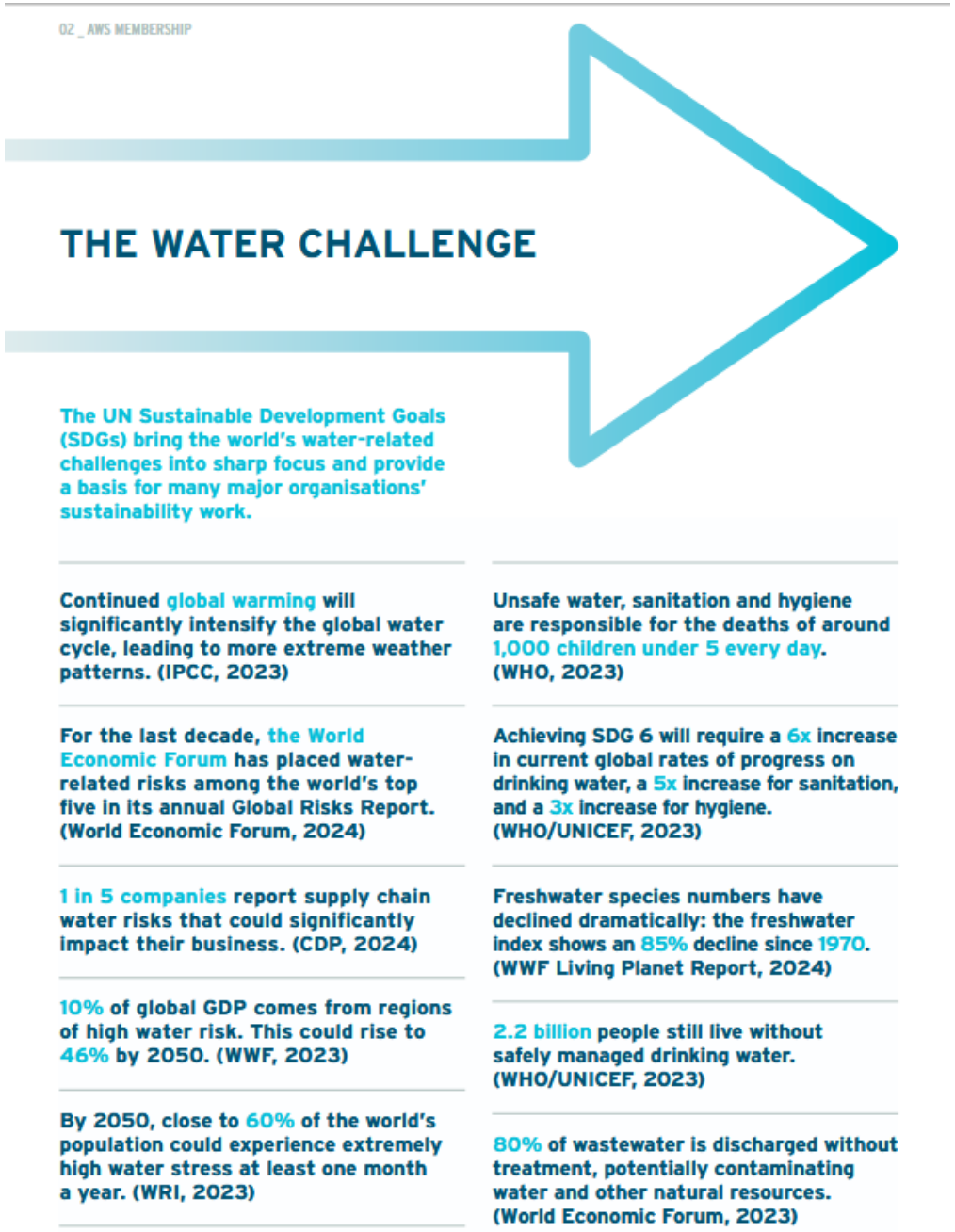
The progression shows a shift from

(a) basic public health infrastructure (1900–1950)

(a) large-scale systems and environmental regulation (1951–2000)

(a) sustainability and risk-aware, technology-driven water management (2000–2005)

2. MDG (2000 – 2015) vs SDG (2015 – 2030) career evolutions in Water Professions



- The global sustainable water supply is estimated to be 4,200 km3 per year. In 2000, global water use stood at 3,950 km3.
- For 2030, global water demand is projected to be 6,900 km3, exceeding the sustainable supply by 40 per cent.
- Under a business as usual scenario, the Organisation for Economic Co-operation and Development (OECD) forecasts that global water demand for manufacturing industries will increase by **400 per cent from 2000 to 2050**.

(Ref. UNIDO)

Visual Comparison Matrix:
MDGs vs SDGs Career Evolution in Water Professions

Dimension	MDGs Era (2000–2015)	SDGs Era (2015–2030)
Core Focus	Access to safe drinking water and basic sanitation (Goal 7, Target 10).	Integrated water management, sustainability, resilience (Goal 6, with links to 11, 13, 15, 17).
Primary Roles	- Water supply engineers - Sanitation engineers - NGO/aid-sector water specialists - Public health engineers	- Water stewardship managers - Climate & resilience specialists - Circular economy & reuse engineers - IWRM planners - Digital water experts - Governance & equity advisors
Approach	Service provision, cost-effective solutions, rapid scaling for underserved populations.	Systems thinking, cross-sectoral integration, climate adaptation, long-term resilience, sustainability.
Technology Use	Low-cost boreholes, handpumps, pit latrines, decentralized treatment.	Smart monitoring (IoT, AI), membrane filtration, advanced reuse, digital twins, nature-based solutions.
Institutional Setting	Development agencies, NGOs, public utilities, donor-funded programs.	Multistakeholder platforms: governments, private sector, ESG frameworks, corporate water stewardship, UN partnerships.
Skills Needed	- Community engagement - Practical field design - Monitoring & evaluation	- Systems analysis - Data science, GIS, remote sensing - Climate risk modeling - Negotiation & governance skills
Identity of Professionals	Service providers & public health engineers.	Stewards, integrators, and sustainability leaders in global water governance.

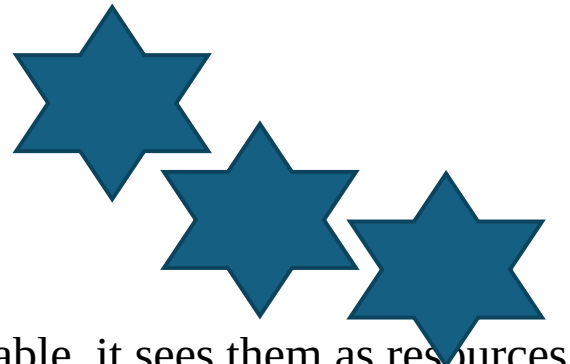
3. New Thinking

Principles of Circularity & Water Stewardship

- **In a world of polycrises, diplomacy can no longer be about protecting narrow interests.**
- The principles of circularity transcend borders and national agendas, offering new systems of value and urging us to broaden our vision toward the common good. This call feels especially urgent in today's world, marked by geopolitical upheavals, shifting power dynamics, the dominance of capital, and investments in confrontation rather than in peaceful solutions that foster shared prosperity.
- **Circularity and water stewardship are deeply connected**: circularity provides the mindset of regenerating resources and eliminating waste, while water stewardship applies these principles to one of our most vital systems—ensuring water is used efficiently, reused wherever possible, and managed collectively to sustain ecosystems, communities, and economies for the long term.
- Moreover, Water Stewardship is an INNOVATION!

Water Circular Economy helps Water Security

The linear economic model → TAKE → MAKE → Waste →



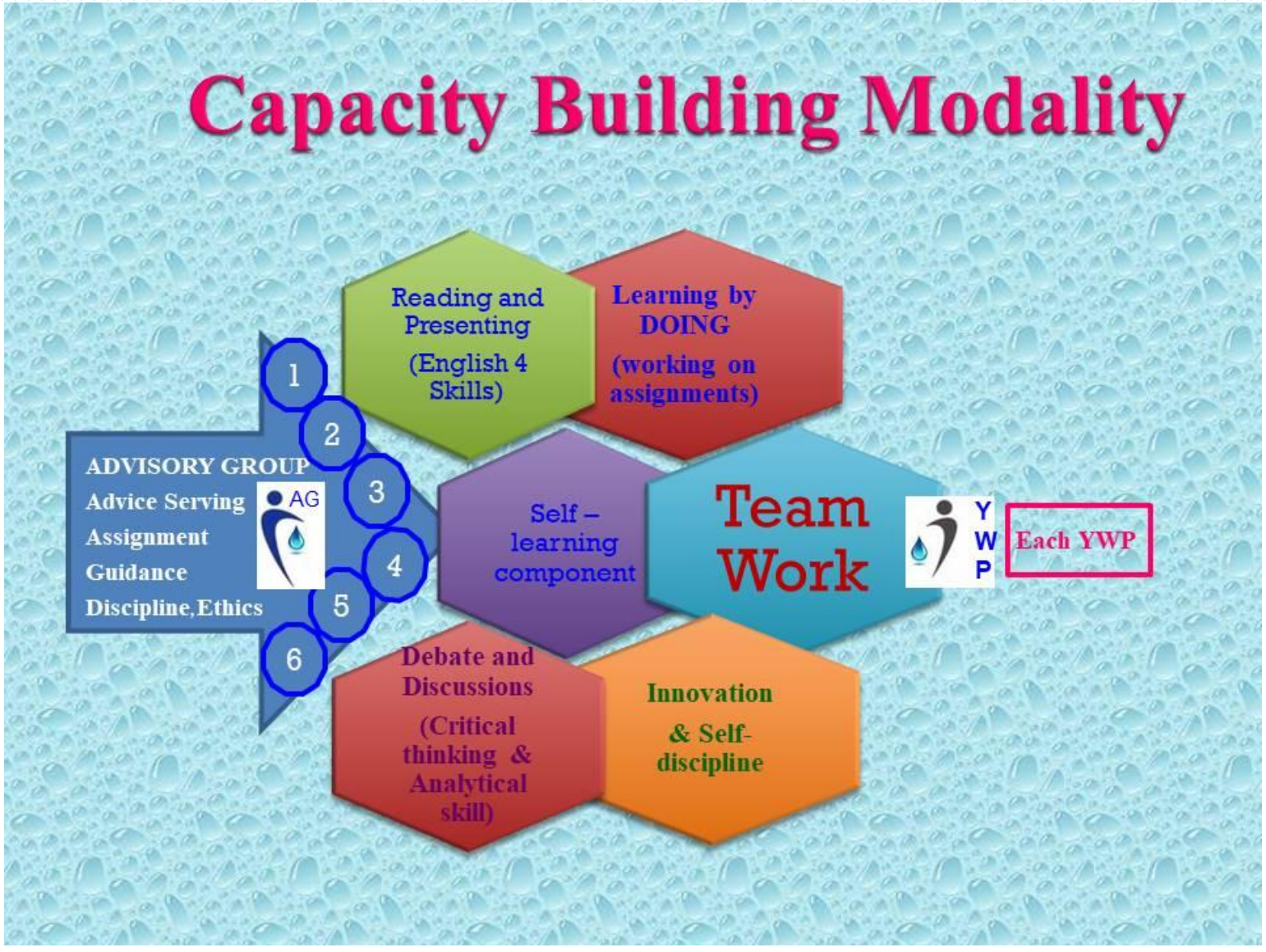
The circular economy flips that model. Instead of seeing products as disposable, it sees them as resources that can live many lives.

- 👉 Refuse – say no to unnecessary consumption.
- 👉 Rethink – design smarter and consume wisely.
- 👉 Reduce – cut waste before it starts.
- 👉 Reuse – give products a second chance.
- 👉 Repair – fix instead of replacing.
- 👉 Refurbish – restore items to like-new condition.
- 👉 Remanufacture – rebuild products with existing parts.
- 👉 Repurpose – find new uses for old things.
- 👉 Recycle – turn waste into raw materials.
- 👉 Recovery – extract value from what's left.

Photo Source: LimnoTech

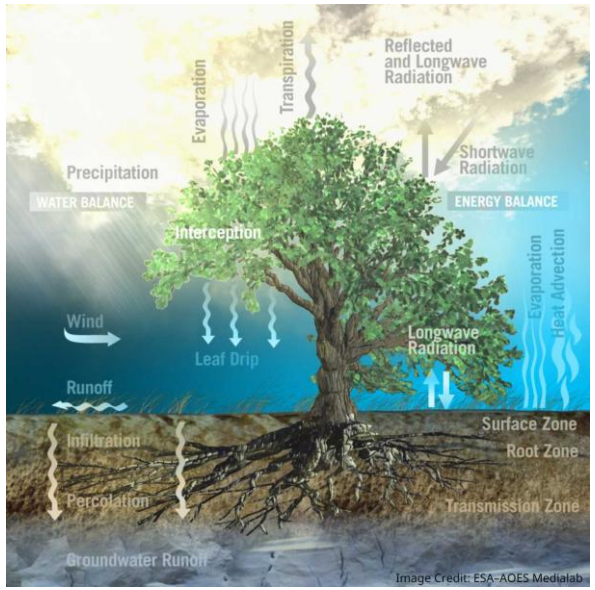
Each step increases circularity, creating smarter use of products, longer lifespans, and less strain on the planet.
The future belongs to companies and individuals who embrace this mindset—not just because it's ethical, but because it's sustainable, profitable, and resilient. **YWPS . . . .Would you rather be part of the problem or the solution?**

Young Water Professionals Training (Batch 1 to 6) from 2014 to 2020



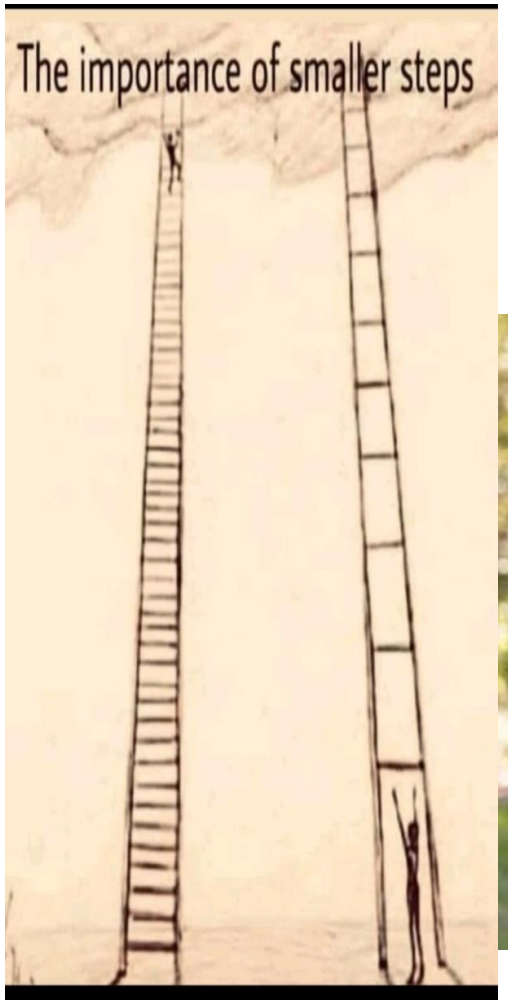
Choice of Career Path - အလုပ်ကိုဘယ်လိုရွေးမလဲ

မိမိ ရဲ့ပကတိ အခြေအနေ နဲ့ ကိုက်ညီတဲ့ ဖြစ်နိုင်ခြေတွေအားလုံးကို သိအောင်ကျိုးစားမယ်။

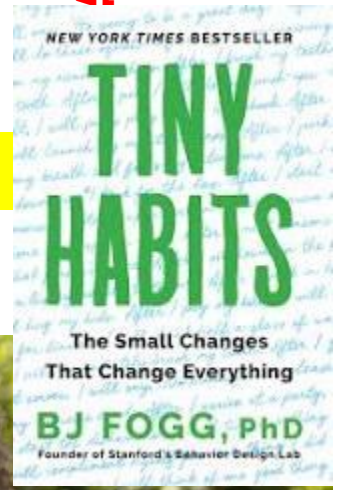


Green Water - WB twitter post image

Local Public Health Engineer



မဟာဗျူဟာမြောက် ဝမ်းစာဖြည့်မယ်။



Career - **အသက်မွေးမှု တစ်ခုပညာ ကိုယ်စီပါ**

- **အသက်မွေးမှု တစ်ခုပညာ ကိုယ်စီပါ** သည် မြန်မာဆိုရိုးစကား ဖြစ်သည်။

- **အဓိပ္ပာယ် မှာ -** လူတိုင်းသည် မိမိကိုယ်ကို ထောက်ပံ့နိုင်ရန်နှင့် အသက်မွေးဝမ်းကျောင်း ပြုနိုင်ရန်အတွက် အတတ်ပညာတစ်ခုခုကို တတ်မြောက်ထားသင့်သည်။

- လူတစ်ဦးသည် မိမိဘဝကို ရပ်တည်နိုင်ရန်အတွက် အလုပ်အကိုင်တစ်ခုခု ရရှိရန် လိုအပ်ကြောင်းကို ဖော်ပြသည်။ အတတ်ပညာတစ်ခု တတ်မြောက်ထားခြင်းဖြင့် အလုပ်အကိုင် အခွင့်အလမ်းများ ပိုမိုရရှိနိုင်ပြီး ဘဝကို အဆင်ပြေချောမွေ့စွာ ဖြတ်သန်းနိုင်မည်ဖြစ်သည်။ ဤဆိုရိုးစကားသည် မိမိကိုယ်ကို အားကိုးနိုင်ရန်နှင့် စီးပွားရေးအရ တောင့်တင်းခိုင်မာစေရန်အတွက် အတတ်ပညာ သင်ယူခြင်း၏ အရေးပါမှုကို အလေးပေးဖော်ပြသည်။ "သုသိက္ခိတ သိပ္ပ မင်္ဂလာတရားတော်" နှင့်လည်း ဆက်စပ်မှုရှိသည်။

(Source: ဝီကီပီးဒီးယား မှရယူပါသည်။)

4. Water Stewardship

Water Stewardship

Definition of Water Stewardship:-

Water stewardship is the responsible management of shared freshwater resources that is socially equitable, environmentally sustainable, and economically beneficial, achieved through stakeholder-inclusive processes that address both site-specific and watershed-wide actions.

It involves businesses, communities, and governments working together to ensure water is available and of good quality for present and future generations, recognizing water as a vital resource for all.

UNIDO's Definition:-

Stewardship means the responsible planning and management of resources. *Water stewardship* is defined as using water in a way that is socially equitable, environmentally sustainable and economically beneficial. This is achieved through a stakeholder inclusive process that involves site and catchment based actions. Good water stewards understand their own water use, catchment context and shared risk in terms of water governance, water balance, water quality and important water related areas. With this understanding, water stewards engage in meaningful individual and collective actions that benefit people and nature.

Key Aspects of Water Stewardship

- **Social Equity**

Ensures all users, including vulnerable communities, have access to water and sanitation, promoting equitable distribution and benefit sharing.

- **Environmental Sustainability**

Protects aquatic ecosystems and water quality by reducing pollution and ensuring water use doesn't degrade water resources.

- **Economic Benefit**

Contributes to the sustainable economic viability of communities and businesses by ensuring long-term water availability and quality.

- **Stakeholder Inclusion**

Involves collaboration between businesses, governments, NGOs, and local communities in decision-making processes to find shared solutions.

- **Site and Catchment-Based Actions**

Addresses water issues at both the individual operational level (site) and within the broader geographic area where a business operates (watershed or catchment).

- **Data-Driven Targets**

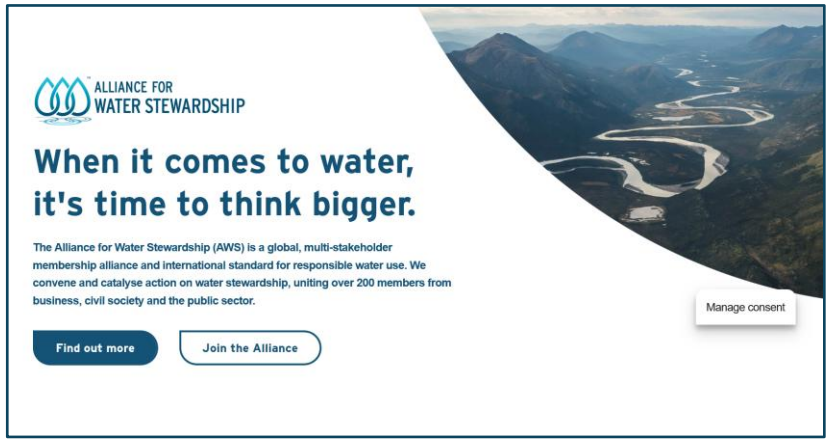
Uses water data and science-based approaches, like Context-Based Water Targets (CBWTs), to set ambitious goals that reflect the specific water risks and societal needs of a watershed.

Water Stewardship Frontrunners

1. The Alliance for Water Stewardship (AWS) https://www.a4ws.org
   (The Alliance for Water Stewardship (AWS) is a global, multi-stakeholder membership alliance and international standard for responsible water use.)
2. UN Global Compact - https://unglobalcompact.org
3. The CEO Water Mandate https://ceowatermandate.org and the Water Resilience Coalition (WRC)
   (WRC is The Water Resilience Coalition is an industry-driven, CEO-led initiative to address the global water crisis. https://ceowatermandate.org/resilience/)
4. UN agencies like UNIDO, UNEP, UN-Water, FAO, WHO, UNU-INWEH, etc.
5. International NGOs like IUCN, WWF, TNC, WIN, GWP, End Water Poverty, Safe Water Network, etc., tools such as the WWF Water Risk Filter and the WWF Biodiversity Risk Filter are helpful.
6. A target has been set for **Finnish companies** to become leaders in water stewardship by 2030 as a part of the national implementation of the UN Sustainable Development Goals.
7. Above is not an exhausted list, there are many more, scholars should explore more.

. . .

Contribution to the Sustainable Development Goals 6, 11, 13, 15, 17 (Goal 6, with links to 11, 13, 15, 17)



A4WS https://www.a4ws.org

MyanWA is Member of A4WS
https://www.myanmarwatersacademy.com

AWS is recognised as a global leader in championing credible water stewardship as a collective, inclusive approach to protecting a resource that we do not own but that we all depend on.

OUR MISSION

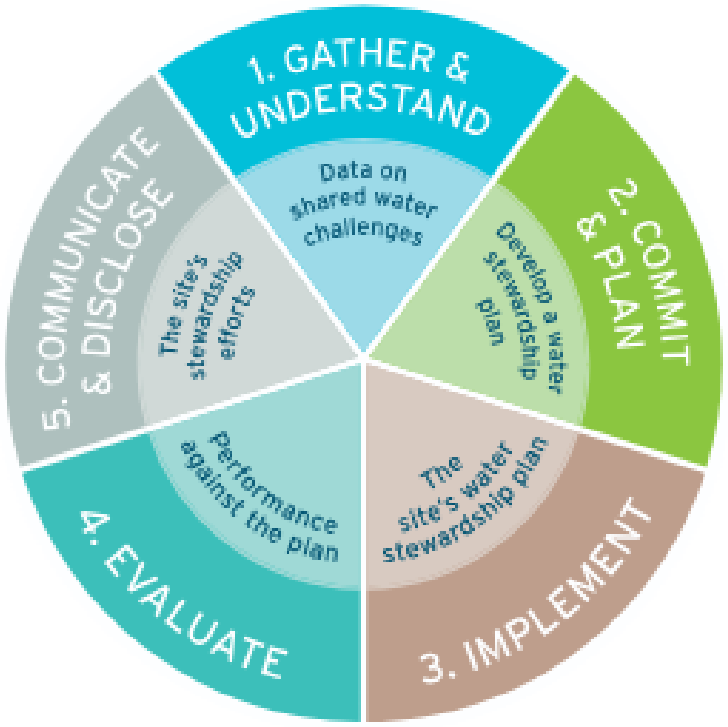
WE IGNITE AND NURTURE GLOBAL AND LOCAL LEADERSHIP IN CREDIBLE WATER STEWARDSHIP THAT RECOGNISES AND SECURES THE SOCIAL, CULTURAL, ENVIRONMENTAL AND ECONOMIC VALUE OF FRESHWATER

THE AWS STANDARD

An accessible 'how to' framework for sites to implement water stewardship.

THE AWS STANDARD FRAMEWORK IS BUILT AROUND FIVE STEPS:

1. GATHER AND UNDERSTAND
2. COMMIT AND PLAN
3. IMPLEMENT
4. EVALUATE
5. COMMUNICATE AND DISCLOSE



Water Stewardship Career Path

"*ကုသိုလ်လည်းရ၊ ဝမ်းလည်းဝ*" ဟူသော ဆောင်ပုဒ်နှင့် ညီပါသည်။

Join the Alliance

AWS Members come from far and wide. They range from businesses facing water risks to public sector organisations working in water policy; from investors and financial service providers to development agencies and NGOs; from sustainability service providers to Environmental, Social and Governance programmes.

Membership is open to organisations – of any size or location – wanting to work collectively to tackle water challenges. Our strength lies in the diversity of our members and the experience they bring with them to our network.

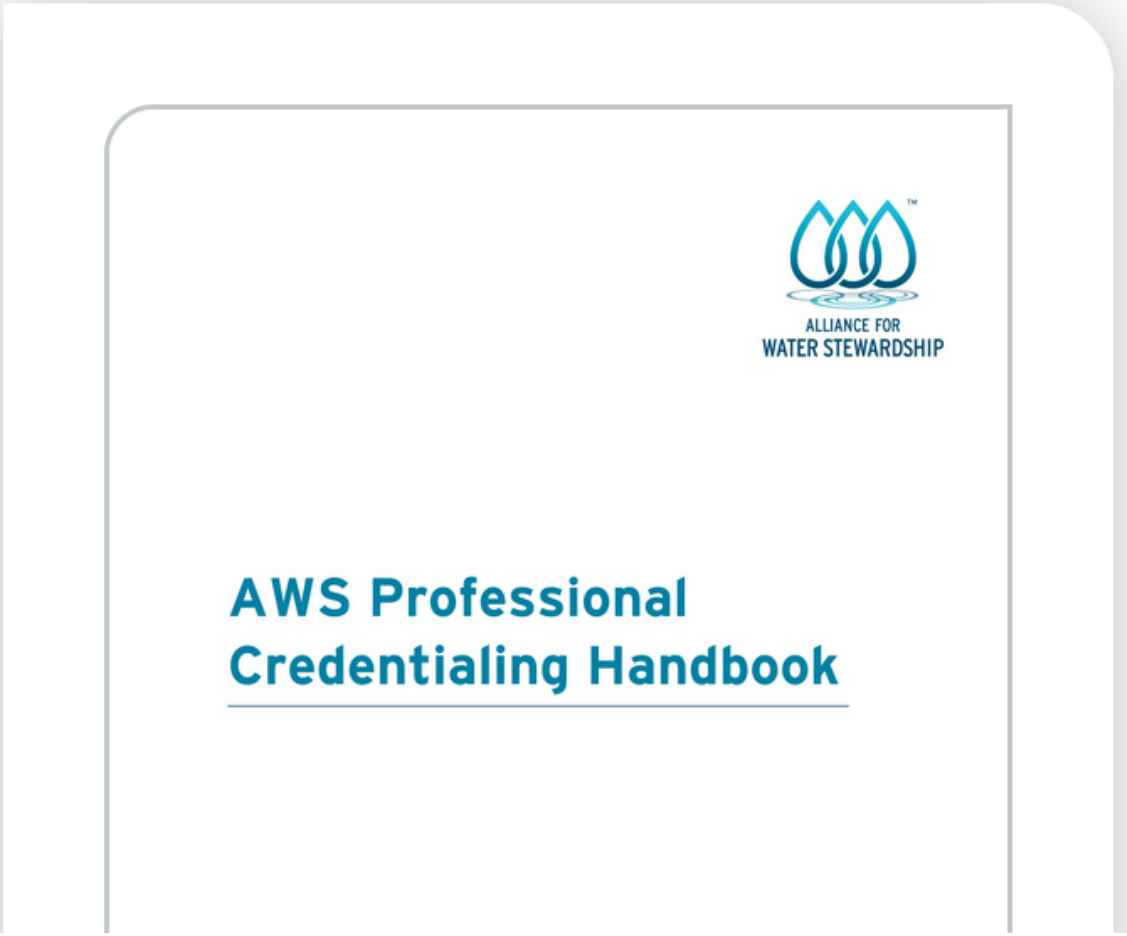
Join AWS and become part of a community that is shaping the future of our precious shared water resources.

Apply for membership

AWS Professional Credentialing Handbook

December 15, 2020

An overview of the AWS Professional Credentialing (PC) Programme, including the requirements and responsibilities of credentialled individuals. The PC Handook is an AWS normative document.



5. Career Opportunities in the area of Water Stewardship

Introduction to Water Stewardship

Gain a foundational understanding of water stewardship.

Learn more

AWS Standard System Training

Take a deep dive into understanding the AWS Standard.

Learn more

Relevant areas

Internal Auditor Training

Professional Credentialing

Professional Credentialing Directory

AWS Tools Hub

https://greenjobs.net/

Green Jobs Network | Home | Environmental Jobs | Climate Jobs | Social Impact Jobs | Connect + Learn | Enter Keyword | Search Jobs

Our Services

Green Jobs List Newsletter
Environmental Job Board
Climate Jobs Board
Social Impact Job Board
Green Career First Aid (New!)
ClimateJobs.AI
Remote Climate Jobs
Climate Fellowships
Climate Internships
Climate Leadership Jobs
Climate Law Jobs
Climate Career Services
Climate Job Training & Education
Climate Apprenticeships
Green Jobs on LinkedIn (Group)
Green Jobs on LinkedIn (Page)
Green Jobs Podcast
Green Jobs on YouTube

Green Jobs Blog

Jobs by Category

Climate Change Jobs
Conservation Jobs
Ecology Jobs
EHS Jobs
Energy Efficiency Jobs
Environmental Jobs
Farming Jobs
Geologist Jobs
HVAC Jobs
LEED Jobs
Naturalist Jobs
Recycling Jobs
Renewable Energy Jobs
Smart Grid Jobs
Solar Jobs
Sustainability Jobs
Sustainable Ag. Jobs
Water Jobs
Weatherization Jobs
Wildlife Jobs

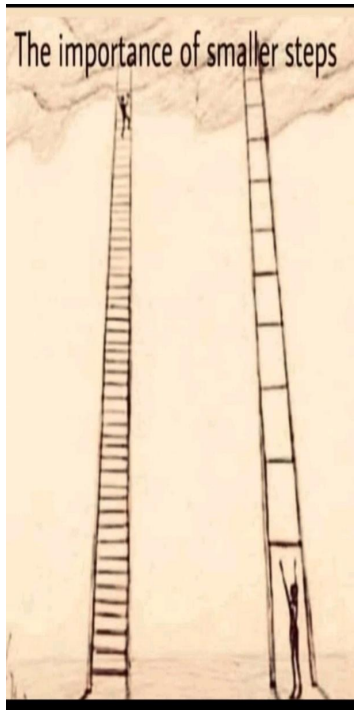
Jobs by Location

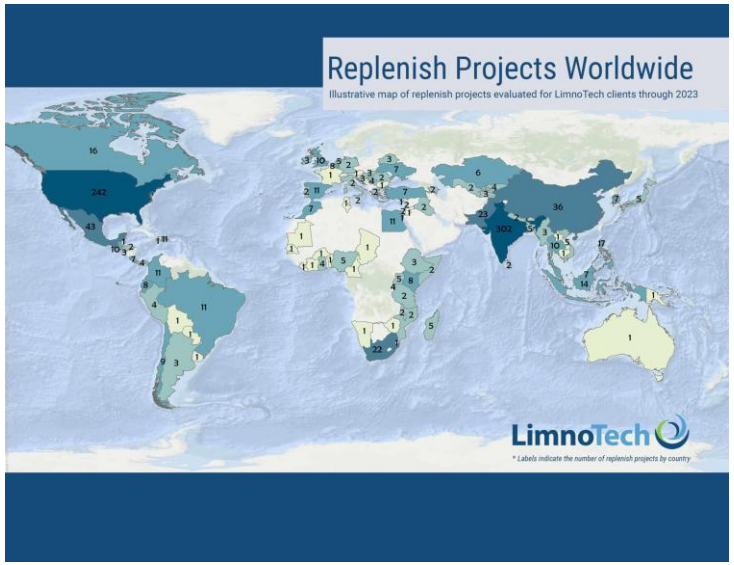
California Green Jobs
Colorado Green Jobs
Florida Green Jobs
Illinois Green Jobs
Massachusetts Green Jobs
New York Green Jobs
Pennsylvania Green Jobs
Texas Green Jobs
Washington Green Jobs
More states

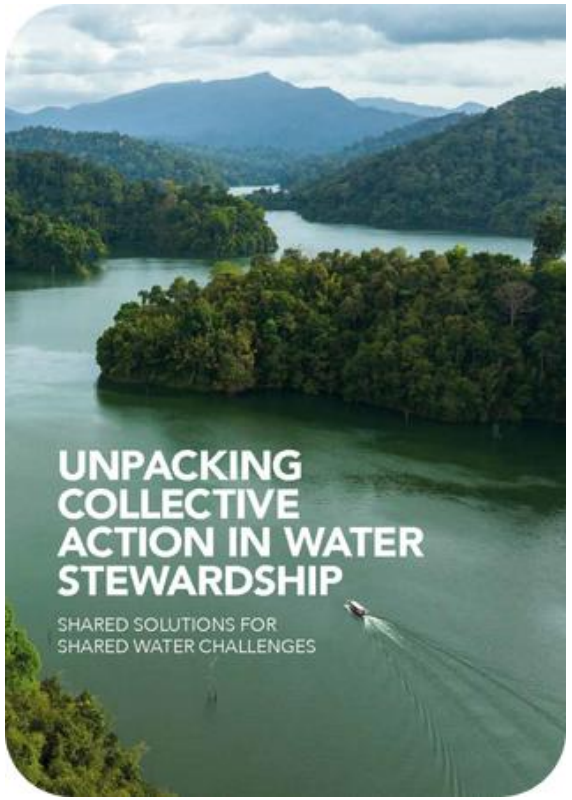
Atlanta Green Jobs
Boston Green Jobs
Chicago Green Jobs
Cincinnati Green Jobs
Dallas Green Jobs
Denver Green Jobs
Detroit Green Jobs
Houston Green Jobs
Indianapolis Green Jobs

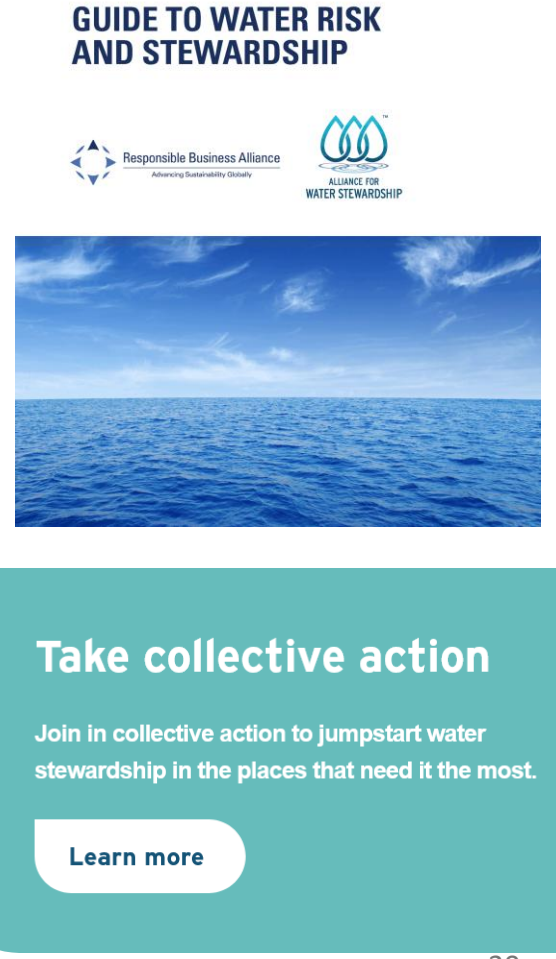
Where to find Jobs – or Dare to make a MSME Start Up!

All You Need is Your Own Will! ဆန္ဒရှိတဲ့ပုဂ္ဂိုလ်မှာမအောင်မြင်နိုင်တဲ့အရာဆိုတာမရှိဘူး။



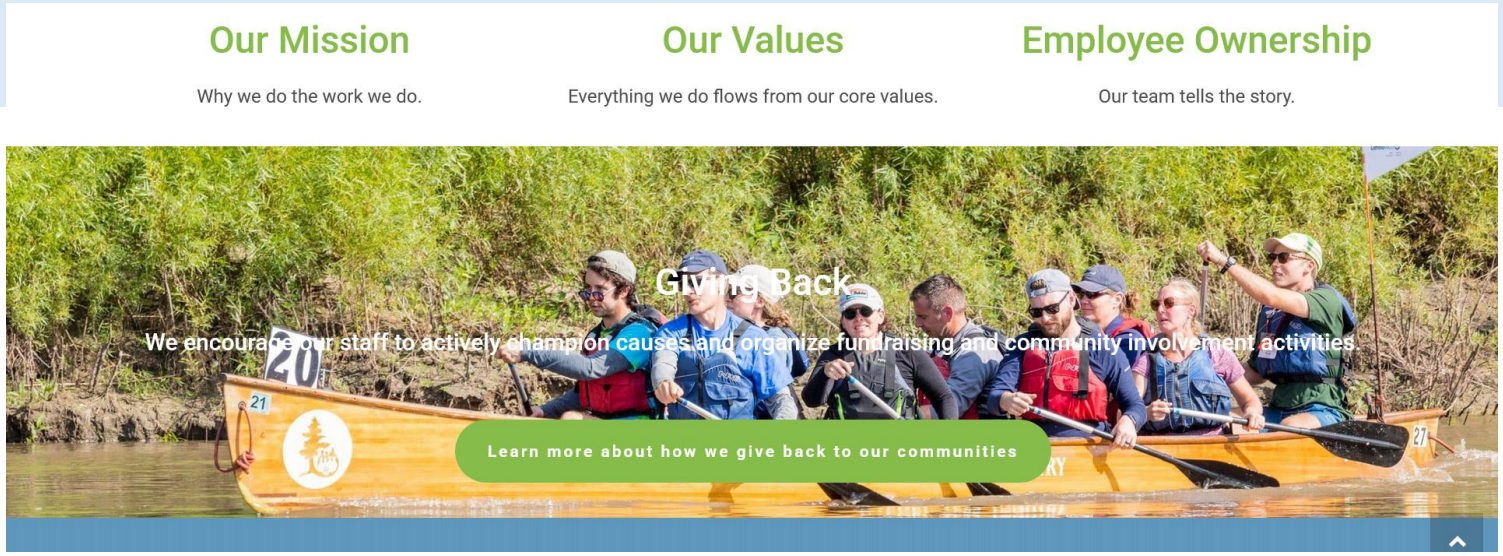


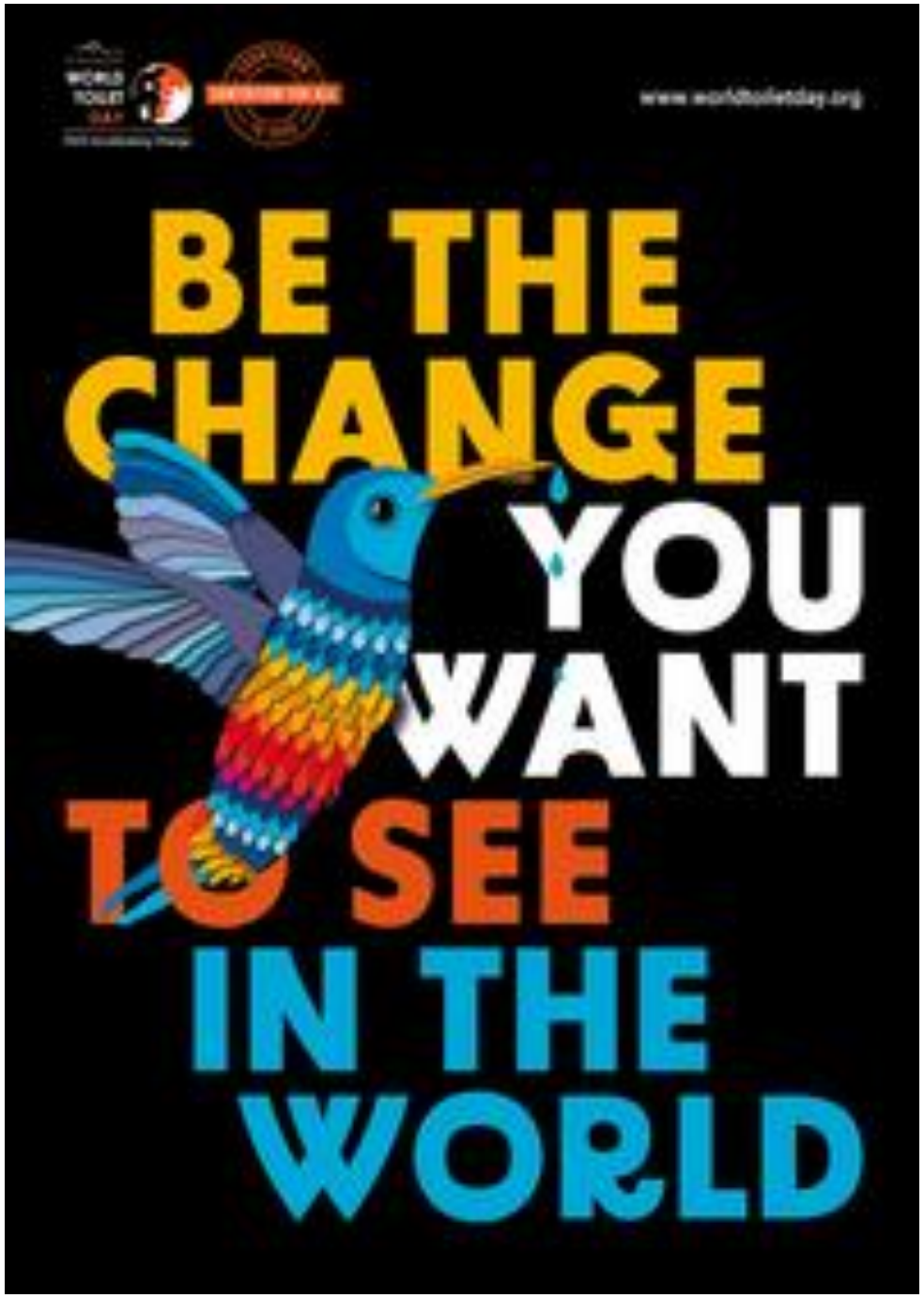




LimnoTech: limno.com as a good example

- **About LimnoTech**
- We are a water science and engineering firm working with clients in the United States and internationally. Our company was founded almost 50 years ago with a simple mission: work with great people, do innovative and impactful work, and help restore and protect our water environment.
- These ideals have guided our culture, allowing us to create an outstanding team of talented people who use their work to build thriving ecosystems and better places to live. We act as partners with our clients, who trust our ingenuity, expertise, and passion for clean, sustainable water.





Boost your skills

Develop your water stewardship skills – register for one of our upcoming training courses.

Book a course

Thank You!