

Young Water Professionals: Making a Difference in Global Water Management Challenges

Oliver Männicke

Secretary, Specialist Group Sustainability in the Water Sector

Rianna Gonzales



- COUNTRY: Trinidad and Tobago
- IWA MEMBERSHIP: 3 years
- ROLES :
 - Strategic Council
 - YWP Steering Committee
 - Member of the Sustainability in the Water Sector Specialist Group
 - IWA Young Leadership Award Recipient 2016

"I have been involved in youth advocacy for over 10 years and being from a small island developing state in a region that is usually under represented I believe that it is an opportune time to build the LAC Region presence in IWA and make it stronger. We have much to gain but also a lot to offer."

Oliver Männicke

- Engineer for Water Management (Dipl.-Ing.), Dresden University of Technology, Germany
 - Okayama University, Okayama, Japan
 - Flinders University, Adelaide, Australia
- Water Stewardship Specialist
 - WWF (based in Switzerland and Australia)
 - Independent, Vienna, Austria
- Active IWA Member
 - Since 2018 IWA Member, YWP Austria Chapter Member
 - Secretary, IWA Specialist Group Sustainability in the Water Sector (50% Management Committee are YWP)
 - Committee YWP Austria
 - Member IWA Task Group Sustainable Use of Water by Industry
- I love water and related processes
 - I brew beer at home

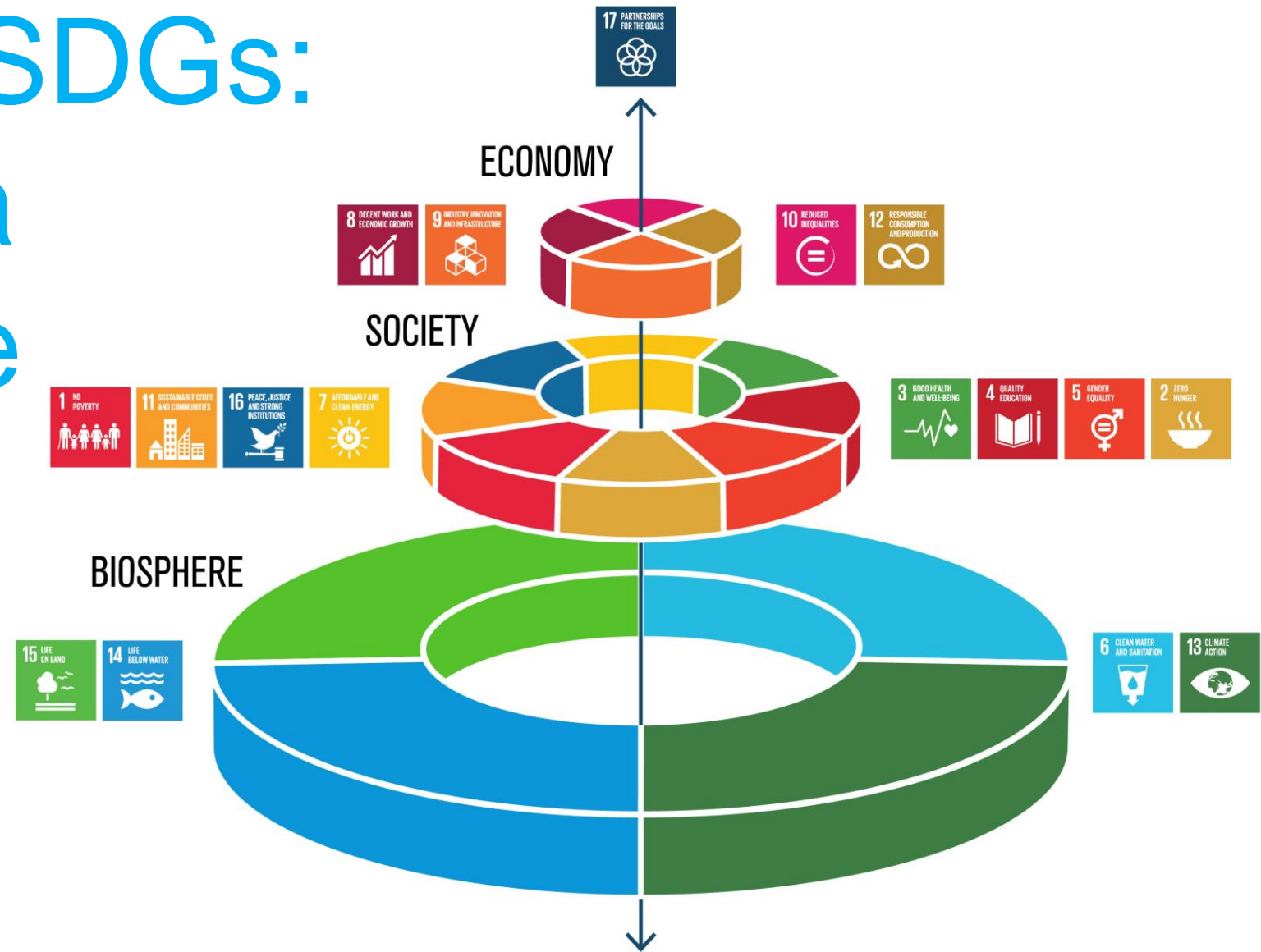
YWP life is complex

Baby boomers: born between 1946 and 1964
Gen X: born between 1965 and 1980
Millennials or Gen Y: born between 1981 and 1996
Gen Z: born mid-1990's to mid-2000's



<https://www.economist.com/business/2013/09/26/winning-the-generation-game>

Achieving SDGs: Fostering a sustainable workforce

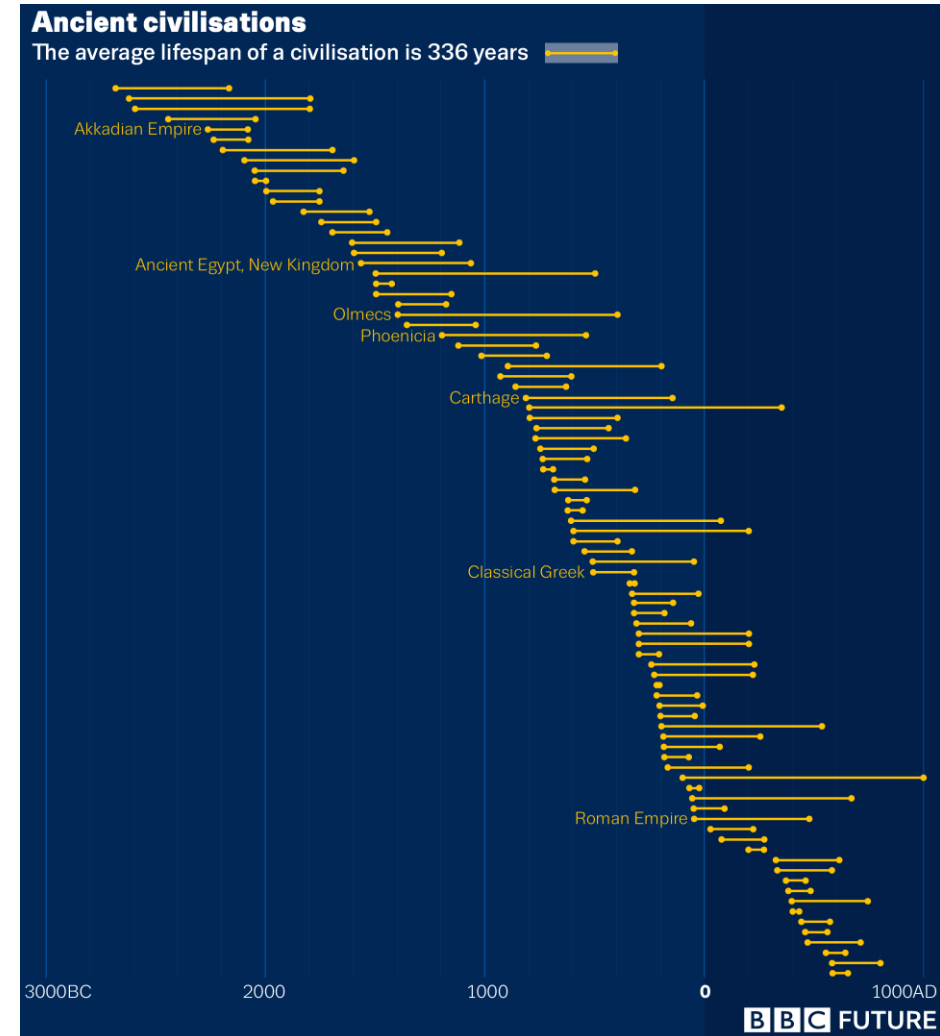




The

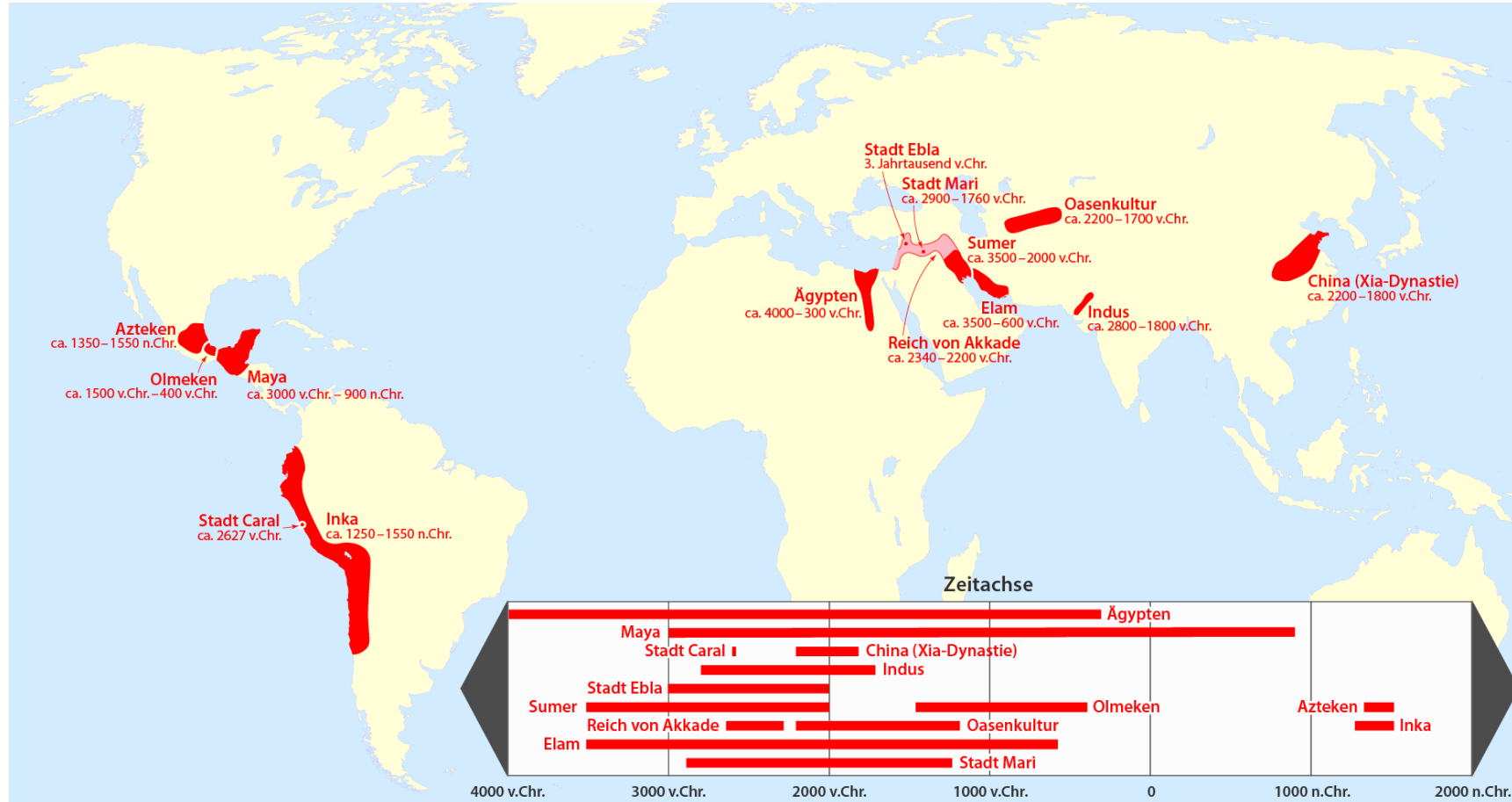
The Anthropocene defines Earth's most recent geologic time period as being human-influenced, or anthropogenic, based on overwhelming global evidence that atmospheric, geologic, hydrologic, biospheric and other earth system processes are now altered by humans. The Anthropocene is distinguished as a new period either after or within the Holocene, the current epoch, which began approximately 10,000 years ago (about 8000 BC) with the end of the last glacial period.

<http://www.anthropocene.info/>



<http://www.bbc.com/future/story/20190218-the-lifespans-of-ancient-civilisations-compared>

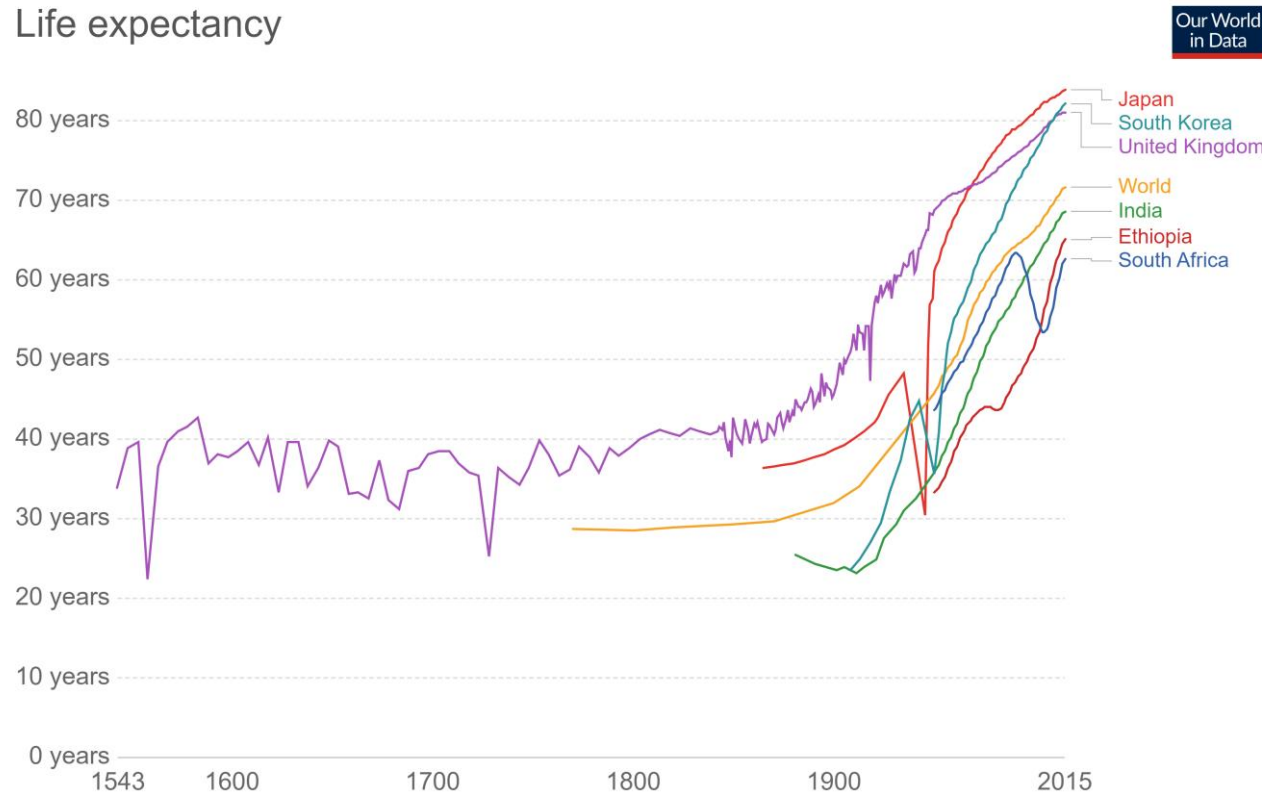
The classic ancient civilizations



https://de.wikipedia.org/wiki/Zeittafel_der_Menschheitsgeschichte#/media/Datei:Karte_Hochkulturen.png

Life expectancy – we were all YWP!

Life expectancy



Source: Riley (2005), Clio Infra (2015), and UN Population Division (2019)
Note: Shown is period life expectancy at birth, the average number of years a newborn would live if the pattern of mortality in the given year were to stay the same throughout its life.

<https://ourworldindata.org/life-expectancy>

Young Water Professionals

- Archimedes 288-212 BC he reported the principles of the screw which is believed to be already in use in Egypt for some time before – This is still used today.
- Archimedes Principles on floating bodies, ca. 240 BC
- The Quadrature of the Parabola
 - Important for construction – calculating areas of parabolic structures



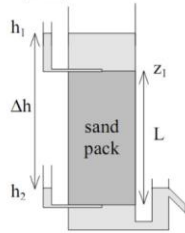
https://en.wikipedia.org/wiki/Archimedes%27_screw#/media/File:IMG_1729_Gemaal_met_schroef_van_Archimedes_bij_Kinderdijk.JPG

Influencers past and today



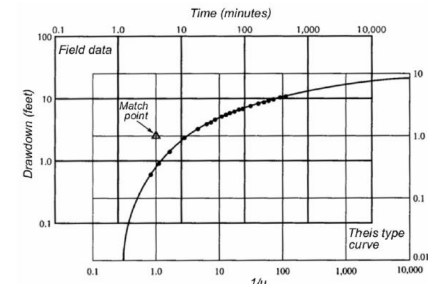
Permeability (Darcy's Law)

Darcy's experiment was performed to design a filter large enough to ensure the daily requirement of water for the city of Dijon (1856).



$$q = KA \frac{(h_1 - h_2)}{L}$$

q : volumetric rate [m^3/s]
 K : hydraulic conductivity [m/s]
 A : Cross-sectional area of sand pack [m^2]
 h : piezometric head [m]
 L : length of sand pack [m]



Sea water intrusion

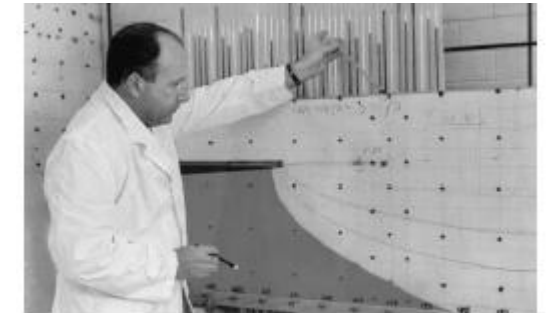


Figure 1. Investigations of seawater intrusion using a Hele-Shaw model, 1963.

Greta Thunberg



https://de.m.wikipedia.org/wiki/Datei:Greta_Thunberg_sp119.jpg

GUAYAQUIL, ECUADOR | 30.9. –
3.10.2019

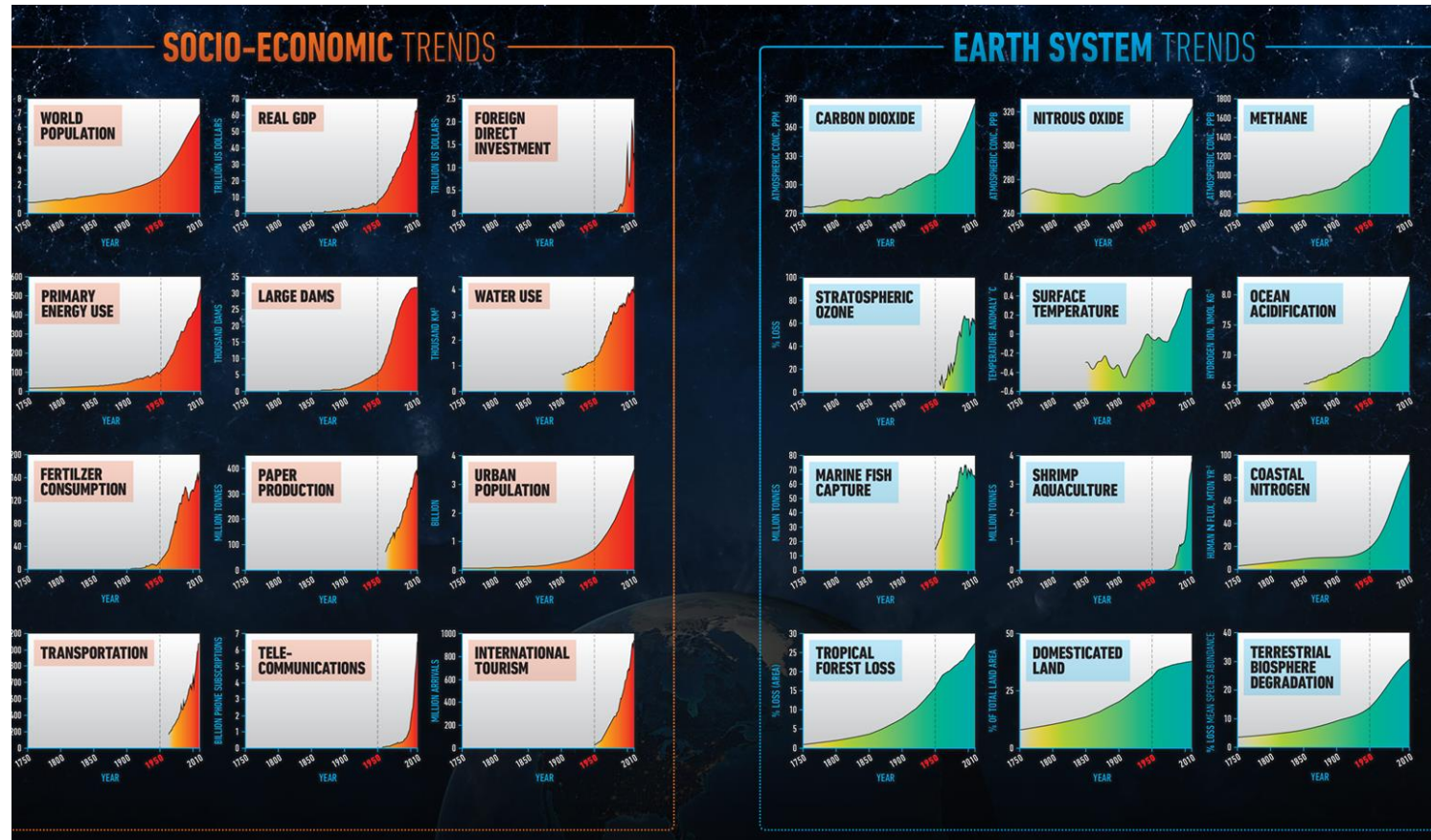
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BY



CO-ORGANIZED
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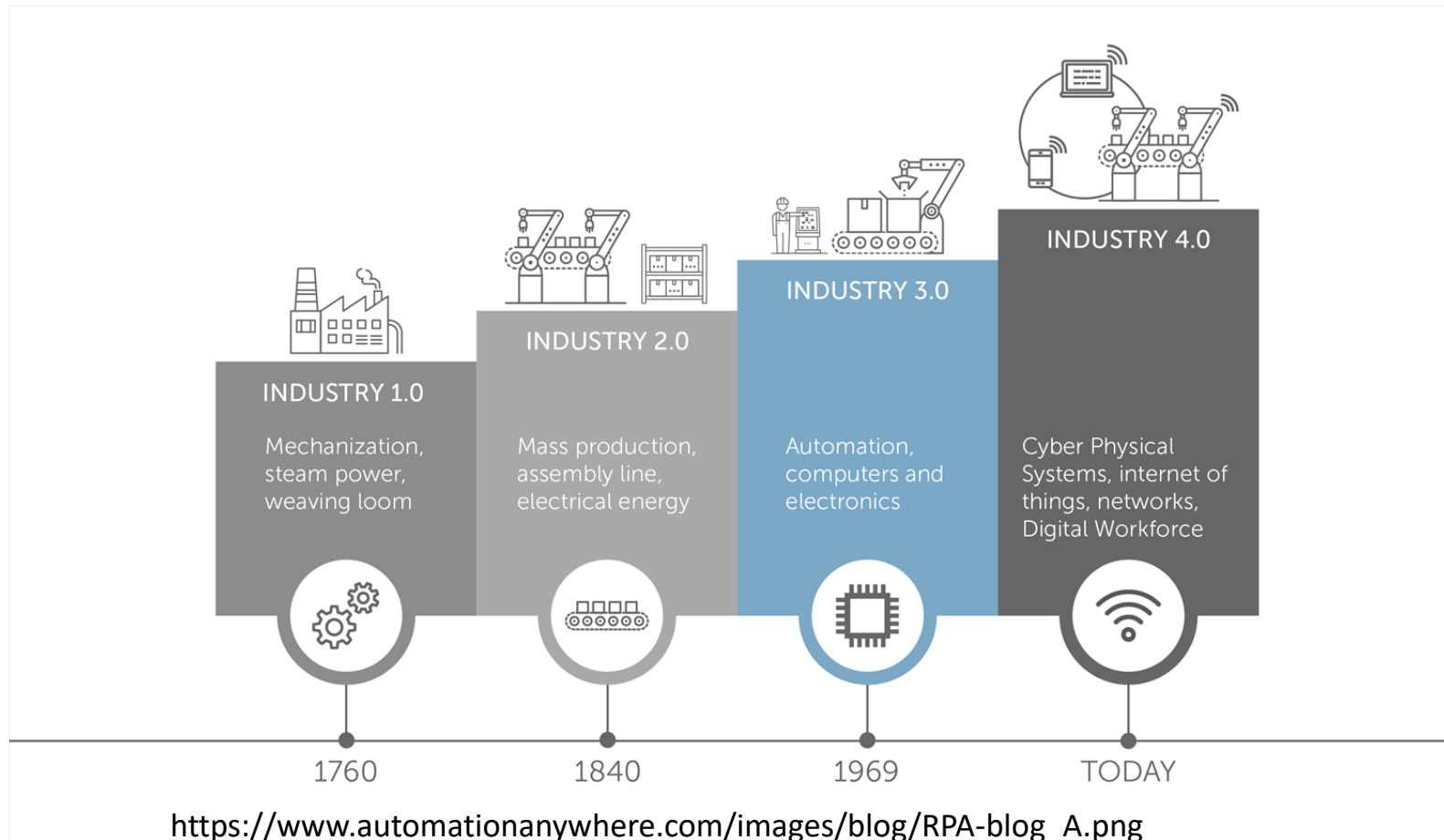


The great acceleration

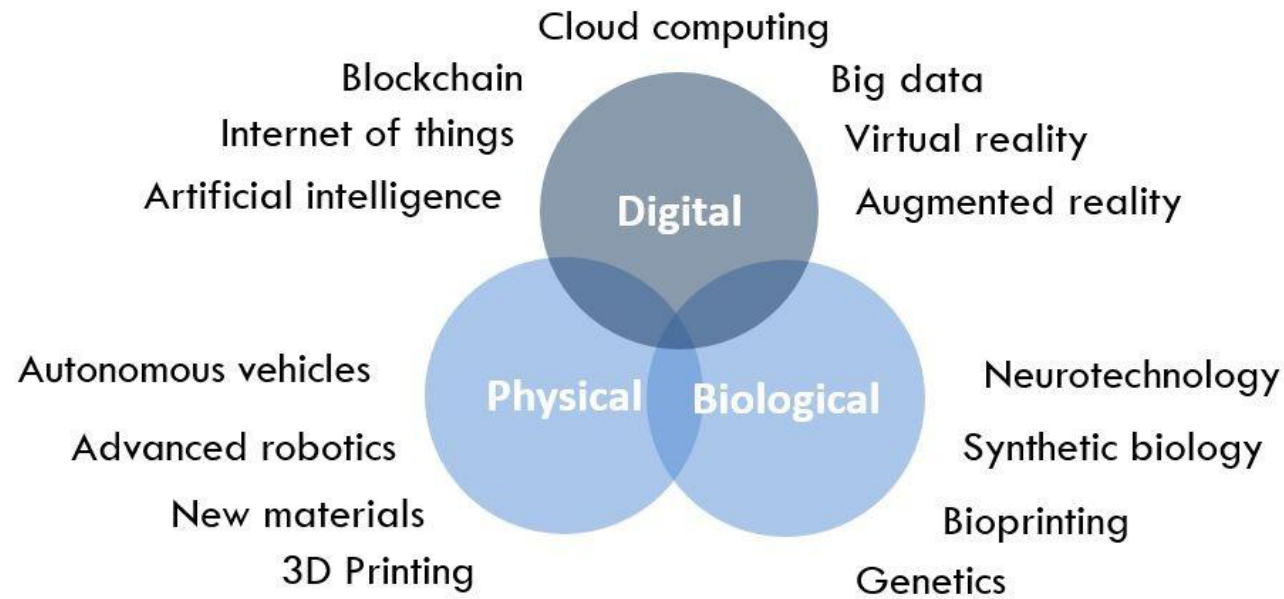


Source: [Anthropocene Review, 2015.](#)

The fourth industrial revolution



The cyber-physical world



Source: John Grill Centre for Project Leadership and Silicon Valley Innovation Center

<https://sydney.edu.au/john-grill-centre/our-research/technology-transformations/kick-start-your-transformational-project/ch1-the-fourth-industrial-revolution.html>

Wicket problems

Rittel and Webber's 1973 formulation of wicked problems in social policy planning specified ten characteristics.

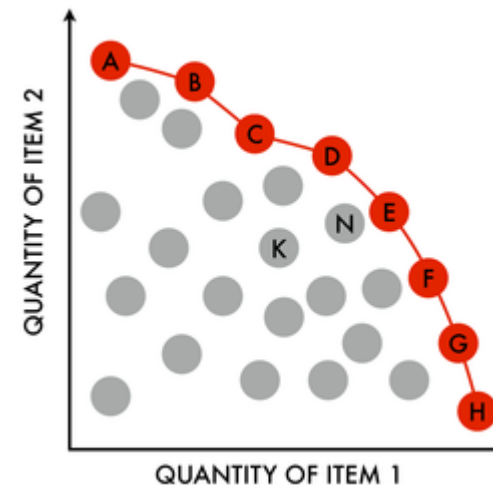
Conklin later generalized the concept of problem wickedness to areas other than planning and policy:

1. The problem is not understood until after the formulation of a solution.
2. Wicked problems have no stopping rule
3. Solutions to wicked problems are not right or wrong
4. Every wicked problem is essentially novel and unique.
5. Every solution to a wicked problem is a 'one shot operation.'
6. Wicked problems have no given alternative solutions.

https://en.wikipedia.org/wiki/Wicked_problem

- **Pareto efficiency** or **Pareto optimality** is a state of allocation of resources from which it is impossible to reallocate so as to make any one individual or preference criterion better off without making at least one individual or preference criterion worse off. Vilfredo Pareto (1848–1923), Italian engineer and economist, who used the concept in his studies of economic efficiency and income distribution.

https://en.wikipedia.org/wiki/Pareto_efficiency



Decision support systems
Optimization

Wicket problems and less wicked problems: typology and contingency framework

Traditional approach

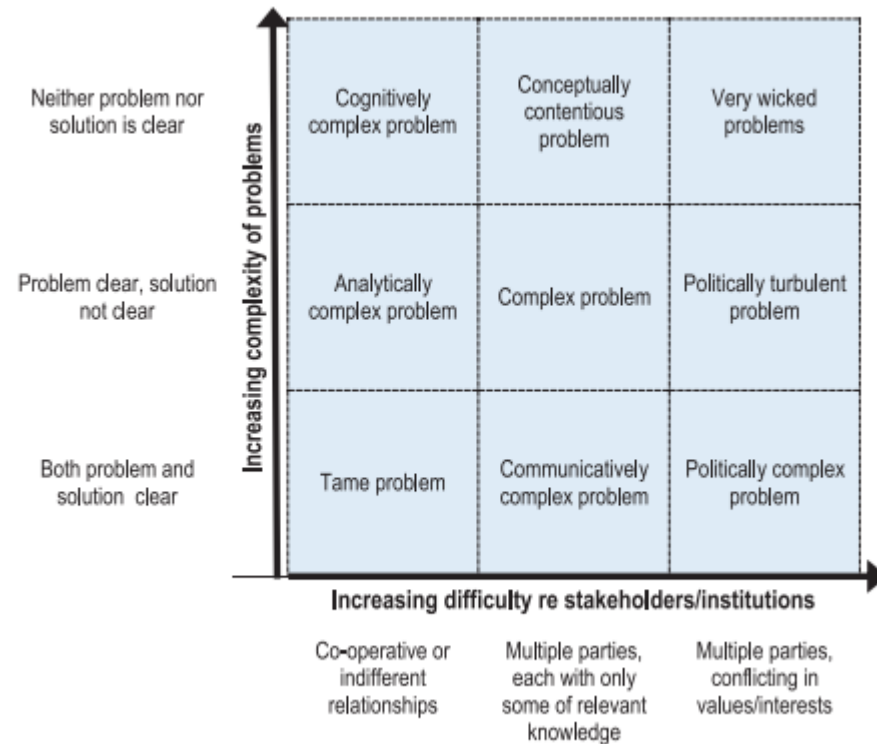
Define – Analyse- Solve in sequential steps

Nancy Roberts (2000)

Authorative

Competitive

Collaborative



John Alford & Brian W Head 2017

<https://www.tandfonline.com/doi/pdf/10.1080/14494035.2017.1361634?needAccess=true>

Young Water Professionals: We are making a Difference in Global Water Management Challenges

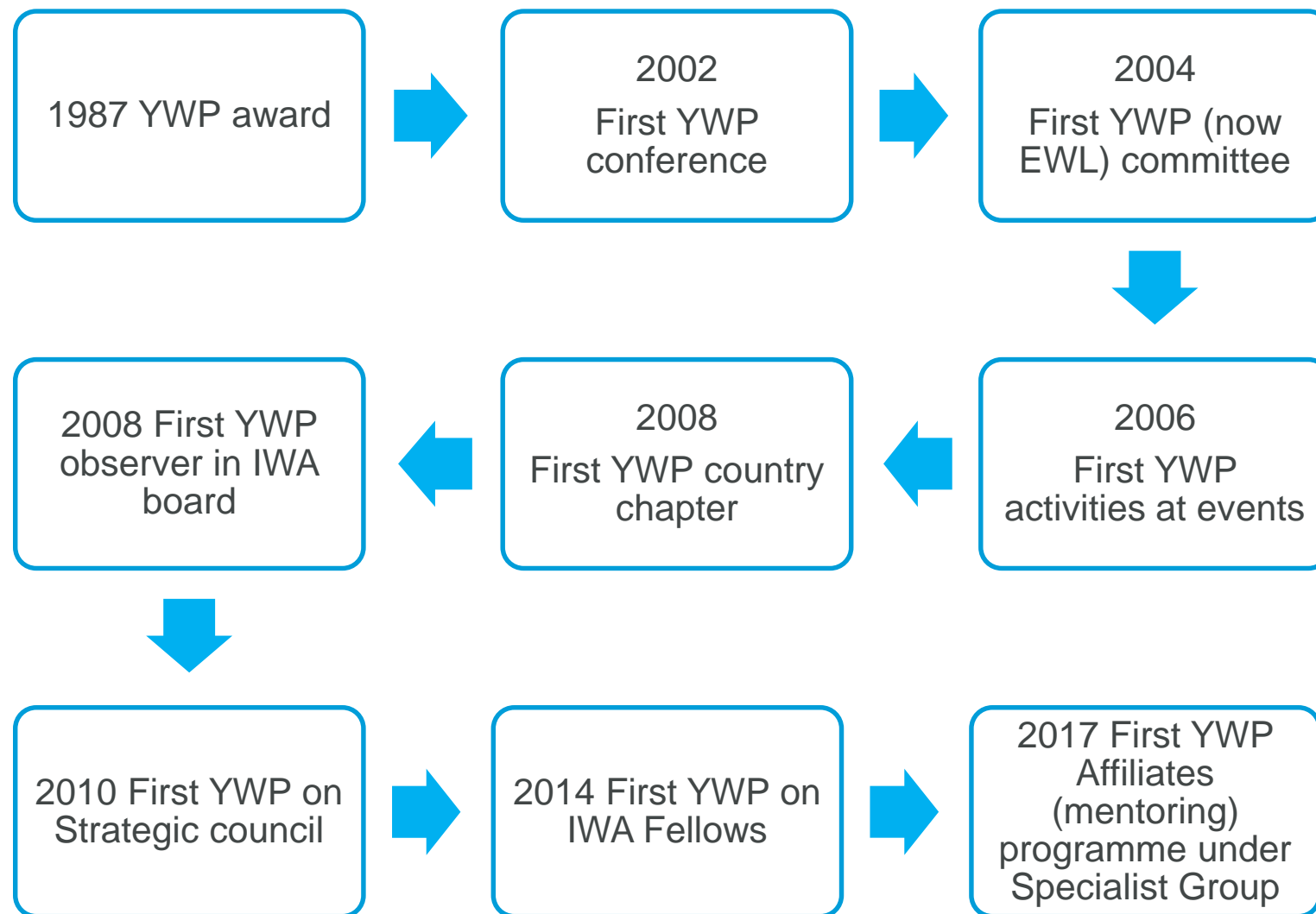
WHO ARE IWA YOUNG WATER PROFESSIONALS (IWA YWP)



Mission: Empowerment of Young Water Professionals to contribute to **sustainable water management** (IWA's vision), by **connecting** them, providing them with **professional development opportunities**, and **engagement and recognition**.

Vision: To develop a strong brand and network, that is highly valued and rated by the wider water sector. One that is actively engaged and empowered to contribute to the water sector's solutions.

THE BACKGROUND: FIRST ACHIEVEMENTS



Rianna Gonzales



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Experiences



EWL Steering Committee



Great Friendships



Programme Committee Member



Keynote Speaker

GUAYAQUIL, ECUADOR| 30.9. –
3.10.2019



Regulators Forum, Argentina



Rapporteurs

COORDINATED
BY



CO-ORGANIZED
BY

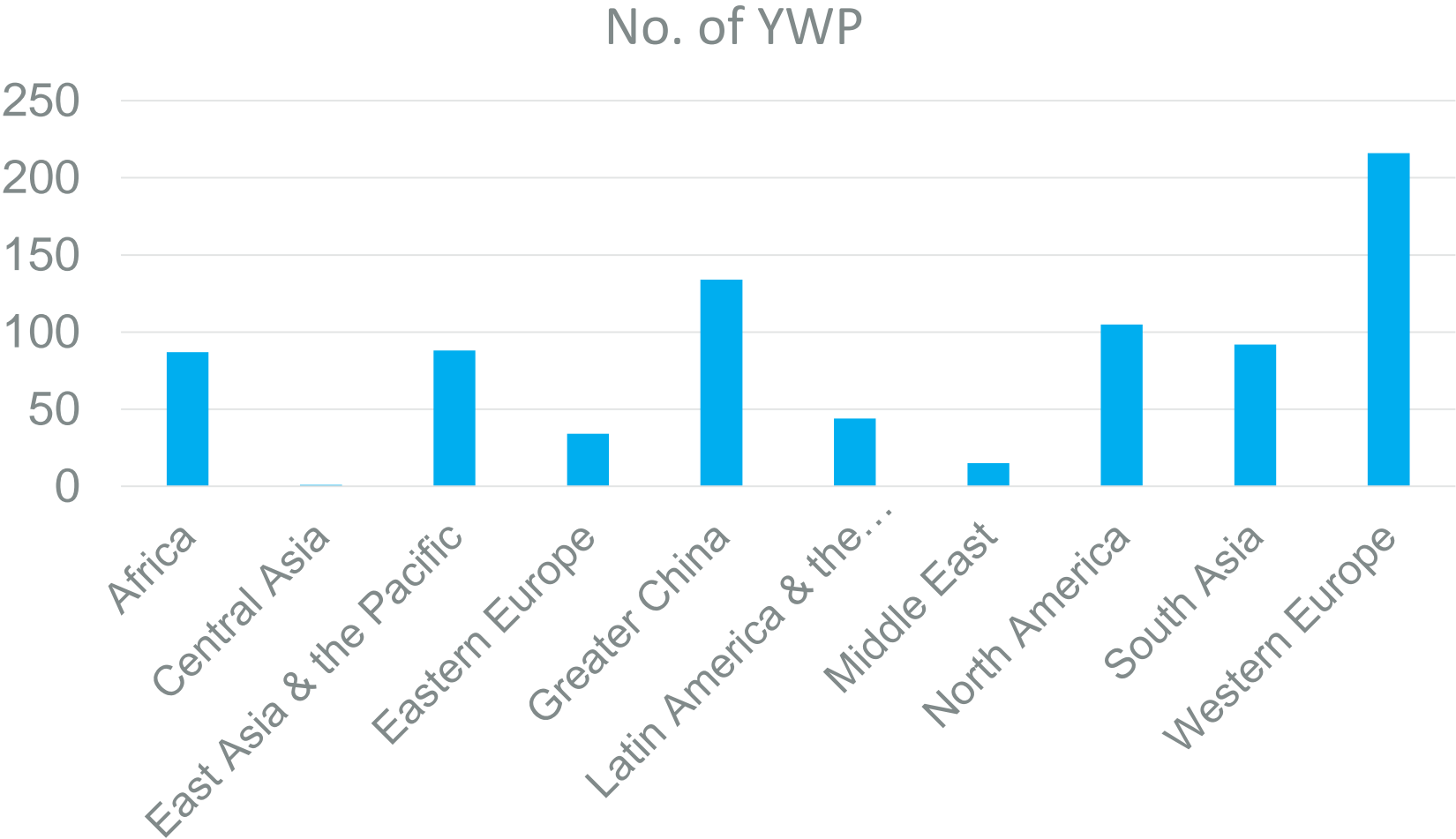


Message from Rianna

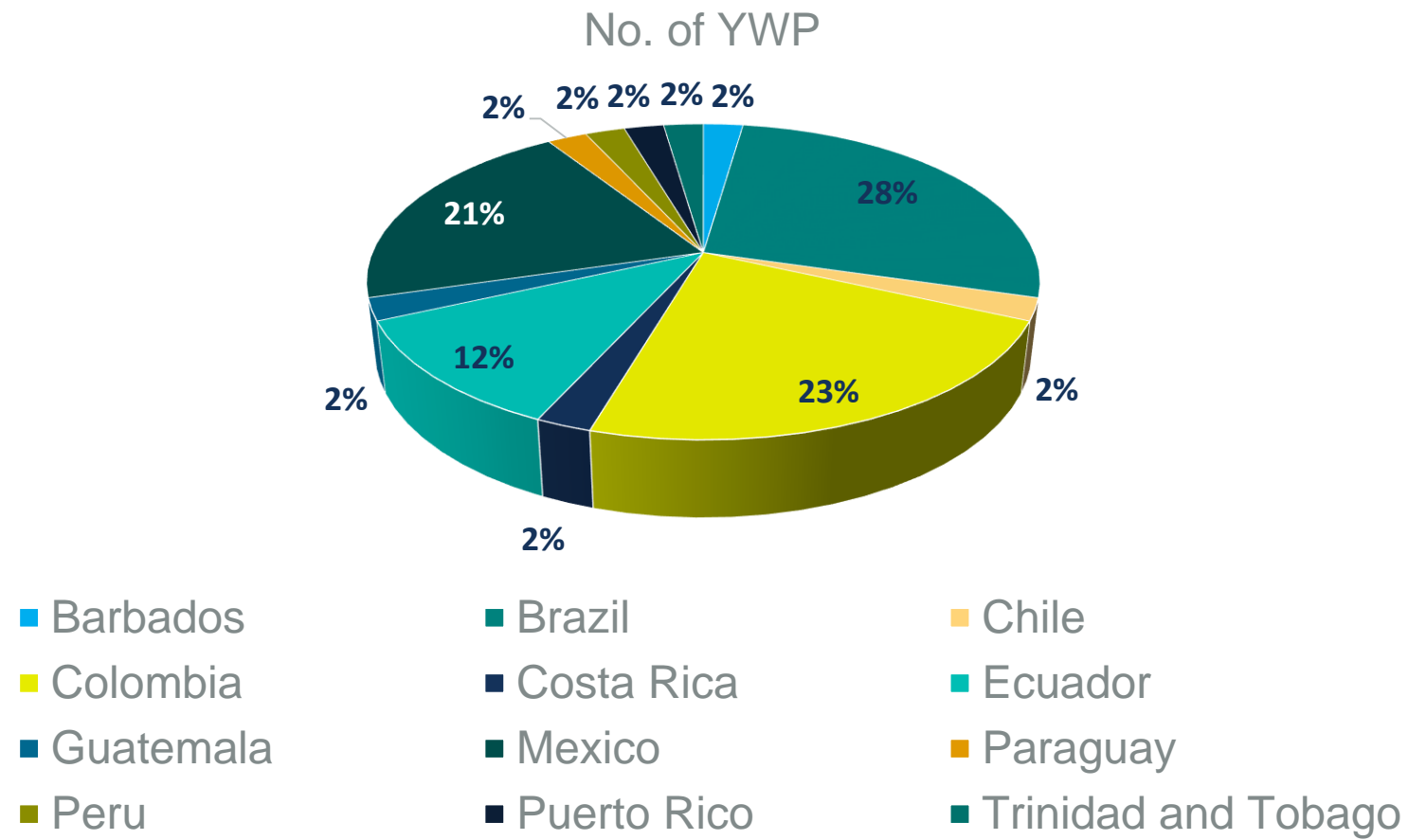
Message: *To make the most out of being an IWA member is to take initiative and be active. Ask questions, apply for opportunities, take part in the webinars and online platforms. The door is open - it is just for you to walk through it.*

Back to the LAC region and Ecuador

YWP MEMBERS ACROSS REGIONS



YWP MEMBERS IN LAC



IWA STRATEGY FOR LAC REGION

Increase the number of IWA members from under-represented regions, including from Asia, Africa and Latin America, by offering bespoke membership services and opportunities relevant to their regions and interests.



Through:

- IWA supported events
- IWA presence at regional events
- Spanish translations of Knowledge Products

YWP WORKSHOP ESPOL



Thank you.

Oliver@maennicke.com