WFEO – World Federation of Engineering Organizations

WGoW -Working Group on Water

Achieving SDG 6 on Water: Engineers' contribution

MAIN GOAL

To describe the best practices to achieve the SDG6 objectives, highlighting the engineers' contribution and taking into account environmental, economical, social and political factors, namely, poverty, international solidarity, technological developments and climate change.

Features of this WFEO work:

- Effective participation of member countries
- Quantification and valuation of the actions required/proposed
- Giving clear guidance for action to decision-makers
- Presentation of new technologies and examples of international best practices

DEADLINES

- First draft by April 30
- Second draft by July 31
- Third draft by September 30
- Presentation/approval in the Executive Council meeting in Rwanda, October 25-30, 2020
- Final document, with the amendments of the Executive Council, by December 2020
- Presentation in a Global SDG6 Water Summit in Porto, Portugal, on March 4, 2021 (Engineering day)

METHODOLOGY

- A micro site (similar in format to the WFEO's Engineering Day) will be created to facilitate participation of WorkingGroup members and atracting contributions of other organizations and individual participants.
- Each WFEO country and regional association is invited to create a working group to contribute to the main document in two ways:
    - adding/commenting the document drafts
    - identifying and presenting successful case studies in each country
- A WhatsApp group will be created and continually updated to facilitate communication

LIST OF CONTENTS

1. INTRODUCTION

- The UN SDG
- The SDG 6 and its 8 goals
- Previous attempts to set similar goals and their results
- Synthesis of the current situation
- Nexus water/poverty/climate change
- Critical issues
    - Abundance is to be monitored and enjoyed, scarcity has to be managed, and the levels of monitoring, planning and management required are related to scarcity.
    - Reuse and desalination are becoming cheaper, more extensively affordable as new water sources, changing water scarcity paradigms: money "can buy" water in more and more situations and these new water sources will be increasingly part of the solution to water problems.
    - We are not treating wastewater as much as we could and perhaps should, externalizing costs and pollution. If we closed water cycles in industries and in cities (here up to potable water standards, as they are doing in Namibia for more than 50 years and more recently at large scale in Singapore), using available technologies, there would be much less water scarcity and pollution.
    - Desalination and pumping sea water with cheaper solar energy will make it possible to produce food in the deserts (nexus water/energy/food).
    - We use and waste too much water, even where and when it is scarce, because it is too cheap, we do not value it enough.
    - We use water to carry solids in conventional sewerage systems, but we could be using more extensively dry toilets, a solution to informal settlements such conventional systems are not feasible.
    - Water utilities have water losses up to 80%. Water is too cheap to economically justify reducing leakage, and because of the high levels of water loss, existing water sources and infrastructure are not serving more people. But, of course, even cheap water is too expensive for people living on less than a dollar a day.
    - There are many examples of inefficient irrigation and uneconomic agricultural only possible with underpriced water.
    - Integrated Water Resources Management will remain crucial to solving water problems and engineers play a major role on it.
    - Waste Water Treatment Plant will be considered as Biofactories.
    - Investing in water cannot be considered a cost, indeed it is very profitable.
    - Each country has its own water history: i tis important to highlight the importance of maintaining and properly managing this heritage and the role of engineers on it.
    - It is also needed to adjust the scheduled deadlines in the concept paper

2. OBJECTIVES (OF THIS WFEO REPORT)

- Quantification, valuation and location of the critical problems for each goal
- Guide for action to political and other decision makers
- Highligth the engineers´ role to new solutions

3. CURRENT SITUATION

- 1 in 4 health care facilities lacks basic water services
- 3 in 10 people lack access to safely managed drinking water services and 6 in 10 people lack access to safely managed sanitation facilities.
- At least 892 million people continue to practice open defecation.
- Women and girls are responsible for water collection in 80 per cent of households without access to water on premises.
- Between 1990 and 2015, the proportion of the global population using an improved drinking water source has increased from 76 per cent to 90 per cent
- Water scarcity affects more than 40 per cent of the global population and is projected to rise. Over 1.7 billion people are currently living in river basins where water use exceeds recharge.
- 2.4 billion people lack access to basic sanitation services, such as toilets or latrines
- More than 80 per cent of wastewater resulting from human activities is discharged into rivers or sea without any pollution removal
- Each day, nearly 1,000 children die due to preventable water and sanitation-related diarrheal diseases
- Approximately 70 per cent of all water abstracted from rivers, lakes and aquifers is used for irrigation
- Floods and other water-related disasters account for 70 per cent of all deaths related to natural disasters

4. ENGINEERING SOLUTIONS

- Existing, new and emerging technologies, processes, methodologies, models, institutional change, technology transfer, training,public participation
- A region or nation must live with the rain water, imported water from other regions or nations, reused water, desalinated water and indirectly imported water (products). We will present a decision making regional cost model for the five above mentioned "taps".

5. FINANCING

- International/national/local/micro credit/public/private

6. INTERNATIONAL EXPERIENCES AND BEST PRACTICES

- Case studies from WFEO members and other organizations

11. GUIDE FOR ACTION

- Synthesis and priorities

12. CONCLUSIONS AND RECOMMENDATIONS

METHODOLOGY

- Inviting the member organizations to create a national working group on SDG6
- These national reports should include current and 2030 estimates on:
    - Indicators and costs to reach the SDG6 objetives
    - Relevant experiences and best practices

Targets	Indicators	Engineering contribution
6.1. By 2030, achieve universal and equitable access to safe and accessible drinking water for all	**6.1.1. Proportion of population using safe-managed drinking water services**	• **Improved management of public water supply systems** • **Water loss reduction** • **Small potabilization systems (low cost/affordable solutions)** • **Best practices**
6.2. By 2030, obtain access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and vulnerable people	6.2.1. Proportion of the population using safely managed sanitation services, including a hand washing facility with soap and water	• Improved management of public sanitation systems • Small sanitation systems (low cost / affordable solutions) • Dry toilets • Best practices
6.3. By 2030, improve water quality by reducing pollution, eliminating waste and minimizing the release of chemicals and hazardous materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.	6.3.1. Proportion of wastewater safely treated 6.3.2. Proportion of water bodies with good ambient water quality	• Waste water treatment • Recycling • Reuse • Best practices
6.4. By 2030, substantially increase water use efficiency in all sectors and ensure sustainable withdrawal and supply of fresh water to combat water scarcity and substantially reduce the number of people suffering from water scarcity	6.4.1. Change in efficiency of water use over time 6.4.2. Water stress level: withdrawal of fresh water as a proportion of available fresh water resources	• Reduction of losses in water supply systems • Precision agriculture • 5T model of the costs of providing the necessary water in each country or region • Reuse • Best practices
6.5. By 2030, implement integrated water resources management at all levels, including through cross-border cooperation, as appropriate	6.5.1. Degree of integrated implementation of water resources management (0-100) 6.5.2. Proportion of the transboundary basin area with an operational arrangement for water cooperation	• Management and governance models • Water resources planning and management • International Rivers • Best practices

Targets	Indicators	Engineering contribution
6.6. By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	6.6.1. Change in the extent of water-related ecosystems over time	• Ecosystems in water bodies and hydrographic basins • Biodiversity • Indicators • Best practices
6.A. By 2030, expand international cooperation and support for capacity-building in developing countries in activities and programs related to water and sanitation, including abstraction, desalination, water efficiency, wastewater treatment, recycling and reuse technologies	6.B.1. Proportion of local administrative units with established and operational policies and procedures for the participation of local communities in water and sanitation management.	• Water loss reduction • Desalination • Reuse • Treatment • Best practices
6.B. Support and strengthen the participation of local communities in improving water and sanitation management	6.B.1. Proportion of local administrative units with established and operational policies and procedures for the participation of local communities in water and sanitation management.	• Public participationsdg go • Best practices