Collaborative Project for Achieving the UN SDGs through Engineering

Proposal from the Federation of African Engineering Organizations to the World Federation of Engineering Organizations

Proposal

Proposal to initiate a project to produce a report on the state of infrastructure to the UN that can be submitted via the High Level Political Forum to the UN general Assembly. WFEO will produce this as a member of the STI Major Group. It will be possible, through this project, for various WFEO National and International members to provide extracts of the Report to various National Governments and Regional Economic Institutions

1. Sustainable Goal that is Addressed

The proposed project is a cross-cutting project that addresses all of the SDGs, as the success of achieving the SDGs is dependent on appropriate and well-functioning infrastructure to serve society. However, the Sustainable Development Goals that will be specifically addressed are SDGs 3, 4, 6, 7, 8, 10, 12, 16 and 17. In addition the aim of "Leave no-one Behind" will also be addressed.

2. Project details

Project Name: The Global State of Infrastructure Report

Objective: To produce a report on the state of infrastructure to be submitted to the UN via the High Level political Forum.

Description: Infrastructure report cards have been used in various countries to report on the state of infrastructure. As long as this is done unemotionally, objectively and based on solid data, it serves the purpose of informing society whether or not they have the necessary infrastructure to achieve their aspirations. Engineering organizations are in the perfect position to produce infrastructure report cards, as they have access to a vast pool of knowledge and expertise, and can play the role of an honest broker between civil society and government. A guide has been produced as a guideline for individual engineering organizations to produce their own infrastructure report cards. It is a guideline with suggested minimum requirements, but is not intended to be prescriptive. At the same time, if the minimum requirements are adhered to, it becomes possible to combine

individual scorecards into a regional, continental and even global scorecard that can be submitted to the UN General Assembly through the High Level Political Forum. In this way engineering organizations can make a real contribution in achieving the SDGs by focusing attention on where infrastructure is lacking or dysfunctional.

A preliminary report format is presented below.

Sustainable Development Goal	Measurable Indicator	IRC Sector	IRC Sub-Sector	IRC Aspect
1 No Poverty	Proportion of the population living below 1.90 US dollars a day			
	Proportion of employed population living below 1.90 US dollars a day, total, youth and adults			
	Proportion of the population receiving social protection benefits			
2 Zero Hunger	Number and proportion of undernourished people			
	Proportion of children under age 5 with stunted growth			
	Proportion of children under age 5 who are overweight			
	Agriculture share of government expenditure, agriculture share of GDP			
3 Good health and well-being	Maternal mortality ratio worldwide	Buildings	Hospitals and Clinics	Urban
	Neonatal and under-5 mortality rates worldwide			
	Global HIV, malaria and tuberculosis incidence rates			
	Share of premature deaths* due to non-communicable diseases			Rural
	Number of road traffic deaths (thousands) and vehicles (millions)	Transportation	Roads	All Roads
4 Quality education	Proportion of out-of-school children of primary school age	Buildings	Institutions of Learning	Schools
	Proportion of young people at the end of lower secondary education achieving at least minimum levels of proficiency in reading and mathematics			
	Proportion of children aged 36-59 months who are developmentally on track in at least three of the following domains: literacy-numeracy, physical development, social-emotional development and learning			
	TVET enrolment at the upper secondary level			Higher Education
	The share of TVET of all enrolments in secondary education			
5 Gender equality	Proportion of women aged 20 to 24 years who were married or in a union before ages 15 and 18			
	Proportion of girls aged 15 to 19 who have undergone female genital mutilation in 30 countries where the practice is concentrated			
	Proportion of time spent on unpaid and paid work in selected countries, women and men			
	Proportion of seats held by women in single or lower houses of national parliament			
6 Clean water and sanitation	Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	Water and Sanitation	Other Subsectors	Natural Water Courses
	Proportion of population using improved drinking water sources		Water Supply	Bulk infrastructure
				Major urban areas
				All other areas
	Proportion of population using improved sanitation facilities		Sanitation	Major urban areas
				All other areas
	Proportion of countries in various stages of implementing national Integrated Water Resources Management plans or equivalent		Other Subsectors	Natural Water Courses
7 Affordable and clean energy	Proportion of the population with access to electricity	Energy	Electricity	Bulk generation and transmission
				Local distribution
				Municipal distribution networks in other areas
	Proportion of the population with primary reliance on clean fuels and technologies for cooking		Other Subsectors	Alternative Energy
	Renewable energy share in total final energy consumption			
	Energy intensity measured in terms of primary energy and gross domestic product		Other Subsectors	Demand Management
8 Decent work and economic growth	Average annual growth rate of real GDP per capita	Transportaton	All Sectors	All Aspects
	Labour productivity (GDP per worker) in constant 2005 US dollars			
	Unemployment rates by sex			
	Proportion of the world's adult population that has an account at a financial institution			
10 Reduced inequalities	Proportion of countries in each region where the average annual growth rates of real income per capita were greater in the bottom 40 per cent of the population than the national average	Transportaton	All Sectors	All Aspects
	Labour share of GDP (PPP), comprising wages and social protection transfers			
	Proportion of imports (excluding arms and oil) from least developed countries and developing countries entering developed countries duty free			
	World average cost of sending the equivalent of 200 US dollars in remittances as a proportion of amount remitted			
11 Sustainable cities and communities	Proportion of urban population living in slums			
	Average ratio of land consumption rate to population growth rate			
	Average annual mean of particulate matter of 2.5 microns in diameter or smaller (PM2.5) concentration levels in urban areas (g/m3)			
	Proportion and number of countries that are implementing national urban policies by stage of implementation			
12 Responsible consumption and production	Material footprint per GDP by type of raw material			
	Domestic material consumption per capita	Water and Sanitation	Solid Waste	Major urban areas
				All other areas
	Proportion of parties to international multilateral environmental agreements on hazardous wastes and other chemicals			
13 Climate action	Comparison of global greenhouse gas emission levels in 2025 and 2030 resulting from the implementation of the intended nationally determined contributions (INDCs) and under other scenarios			
	Number of parties that referred to an area or sector as a priority, as communicated in the adaptation component of the INDCs			
	Total number of deaths and affected persons resulting from natural disasters worldwide			
	Number of countries with legislative and/or regulatory provisions for managing disaster risk			
14 Life below water	Proportion of fish stocks within biologically sustainable limits			
	Proportion of coastal and marine areas protected			
	Nutrient risk indicator categories of large marine ecosystems			
15 Life on land	Annual net change in forest area			
	Proportion of key biodiversity areas that are completely covered by protected areas, by ecosystem type (terrestrial, inland freshwater and mountain)			
	Red List Index* of species survival			
	Share of seizure incidents by taxonomic class			
16 Peace, justice and strong institutions	Number of victims of intentional homicide	Buildings	Prisons and Law Enforcen	
	Proportion of children among detected victims of trafficking in persons worldwide			
	Unsentenced prisoners as a percentage of total prisoners			
	Estimated proportion of children under 5 whose births were registered			
17 Partnerships for the Goals	Net official development assistance from OECD-DAC countries			
	Debt service as a proportion of total exports of goods and services			
	Fixed-broadband Internet subscriptions per 100 inhabitants			
	Share of global merchandise and service exports for developing regions and the least developed countries	Transportation	All Sub-Sectors	All Aspects
	Average tariffs levied by developed countries on key products exported by the least developed countries			
	Number of countries with a national statistical plan			
	Total official development assistance dedicated to statistical capacity-building activities in developing regions			
	Proportion of countries that conducted at least one population and housing census over the period 2006-2015			
	Number of countries with death registration data that are at least 75 per cent complete			
Leaving No-One Behind	Homicide victims and perpetrators per 100,000 people	Buildings	Prisons and Law Enforcement	
	Proportion of births attended by skilled health personnel in the poorest 20 per cent and richest 20 per cent of households	Buildings	Hospitals and Clinics	Urban Centres
	Skilled birth attendance, demand for family planning satisfied with modern methods, population using an improved drinking water source and population using improved sanitation facilities			Rural Facilities
	Prevalence of undernourishment for selected groups of countries			

The blue shaded areas represent measurable indicators that are used by the UN that are not directly infrastructure related.

The report will consider 9 regions, namely:
Southern Asia
Sub-Saharan Africa
Eastern Asia
South-Eastern Asia
Latin America and the
Caribbean
Western Asia
Oceania
Caucasus and Central
Asia
Northern Africa

3. Project Leader and Team

The Project leader will be **Eng. Dr Martin van Veelen** from **South Africa.**

He will be assisted from the Federation of African Engineering Organization by:-

Eng. Julius Riungu: FAEO President
Eng. Martin Manuhwa: FAEO President Elect
Engr. Mustafa Shehu: FAEO Immediate Past President
Eng. Yashin Brijmohan: FAEO Capacity Building
Eng. Marcus Quashie   WAFEO Representative
Eng. Dr.Ignasio Ngoma   SAFEO Representative
Eng. Ngwisa Mpembe   EAFEO Representative:

To give the Project the international participation, FAEO is recommending that the following be included in the project team:-

Ashok Basa   India
Samuel Grossman   United States
Darrel DANYLUK   Canada
Ruomei Li   China
Jowitt, Paul W   United Kingdom,
David Lapp   Canada
Seng Chuan Tan   Singapore

The team can be expanded as the project continues and the need arises.

4. Scope of Project. Mode of Collaboration with WFEO

The scope of work is global. The mode of collaboration with WFEO is to be determined by the WFEO Executive Board.

5. Project Schedule

The Infrastructure Report Card Guide has been finalized and is ready for distribution and use. Training courses will be held in conjunction with regional conferences, and this will start in 2018 and continue for as long as the need and demand exists.

The development of the format of the State of Infrastructure Report will commence during the third quarter of 2018, and will be completed within one year. There are already sufficient infrastructure report cards available to produce a starter report that can be used to introduce the concept to potential funders.

Realistically it can be expected that it will take some years for member countries to produce the first Infrastructure Report Cards. Full implementation is expected to take about five years.

The following is a short summary of the proposed way forward:

Phase 1: Finalize the Infrastructure Report Card Guide

- A deadline for submitting comments was set for the end of February 2018, and the Guide can now be finalized.
- Make the Guide available on the WFEO website and as many other websites as feasible.
- See if we can find volunteers to translate the Guide into other languages.
- Consider finding sponsorship for the Guide Project.

Phase 2: Roll out Report Card Project

- Provide training in the form of work sessions on a regional basis. Merely making the Guide available will not be enough to trigger member organizations to produce infrastructure report cards. The intention is to hold some 'train the trainer' work sessions at central locations. For Africa, for instance, there can be three: Western Africa, Eastern Africa and Southern Africa. The project team will discuss how the other parts of the World will be divided and the funding model to achieve this.
- Provide support to first time report card teams. The kind of support can vary from long distance advice, to more hands-on involvement. In some cases the organization producing the report card may be able to carry the cost for providing the support, but in other cases some form of sponsorship or funding may be required.

Phase 3: Develop the format for the report to be submitted to the UN

- Gather information on how reporting on indicators for achieving the SDGs is done / should be done. We can then choose a few key indicators to use as comparison for the Infrastructure State as derived from the report cards.
- Develop a format in which the information can be presented. This should be fairly simple so that a lay person can understand the message at a glance. GIS maps can be a good tool in this instance.
- Once we have a concept ready, we can use the existing report cards to test it. We can produce a draft report and distribute it to various stakeholders for comment.
- Develop a web-based repository for report cards. The intention would be for individual organizations to upload their report cards, and that integration of the information is automated as far as is possible.

Phase 4: Implement the project

- Once we have sorted out all the above elements we can start to produce the reports, say at a bi-annual frequency. Infrastructure does not change rapidly, and even bi-annually may be too frequent. On the other hand we wish to retain visibility. One option would be to rotate continents/regions and so retain momentum without becoming repetitive.
- The project will need an owner. If done properly, it will be a full-time job to keep everything going.

6. Project Outcomes

The project outcome will be a report on the State of Infrastructure that can be submitted to the UN, but at the same time can be published in the International media.

7. Funding

No funding is requested from WFEO, although any help that can be offered would be greatly appreciated.

The Guide as it stands has been developed and produced by the South African Institution of Civil Engineering at its own cost.

The biggest challenge will be to find funding. If we cannot solve the funding problem, there is not much point in taking this much further than to produce the Guide. We need:

- Once-off funding to roll out the report card,
- More sustained funding over the medium term (five years?) to provide support for first timers,
- Long term funding for sustained reporting to the UN.

Professor Paul Jowitt of the CEC is in the process of obtaining some funding for the further development and implementation of the infrastructure report card. Discussions are in an early stage and there has been no firm commitment for funding.

First prize for the long term funding would be to become a line item on the budget of for instance the UN Economic Council for Africa to fund African operations, or the World Bank. To achieve this we will need strong endorsement and support to open doors. Short term support could be in the form of once-off sponsorships or applications for funding.

If the project is accepted in by WFEO, a business plan that is based on the availability of funding can be developed. The support of WFEO is required in order to approach funding organizations.

8. Project Summary

The United Nations' Sustainable Development Goals (SDGs) are international development goals that all 193 member states have adopted at the UN Sustainable Development Summit September 25–27, 2015, in New York, USA, and agreed to achieve by the year 2030. 17 Sustainable Development Goals with 169 associated targets are integrated and indivisible, global in nature and universally applicable, taking into account different national realities, capacities and levels of development, and respecting national policies and priorities. Targets are defined as aspirational and global, with each government setting its own national targets guided by the global level of ambition, but taking into account national circumstances. Each government will also decide how these aspirational and global targets should be incorporated in national planning processes, policies and strategies.

Achieving the SDGs is almost entirely dependent on the presence of effective and fully operational infrastructure. Infrastructure is the assets that society develops, owns and utilizes in order to improve the standard of living and the quality of life. It enables economic development and keeps society healthy. Infrastructure can only be an asset if it is maintained in optimum working condition. Governments have to report to what degree they achieve their set goals in terms of the SDGs, but they seldom report on the state of the infrastructure that is required to achieve these goals.

Infrastructure report cards have been used in various countries to report on the state of infrastructure. As long as this is done unemotionally, objectively and based on solid data, it serves the purpose of informing society whether or not they have the necessary infrastructure to achieve their aspirations. Engineering organizations are in the perfect position to produce infrastructure report cards, as they have access to a vast pool of knowledge and expertise, and can play the role of an honest broker between civil society and government.

At the WFEO UN Relations Committee (WURC) meeting in Kyoto in 2015, the idea of producing a comprehensive global infrastructure overview report that can be submitted to the UN via the High Level Political Forum was discussed. The first step would be to

produce a guide on how to prepare an infrastructure report card at national level, and Dr Martin van Veelen volunteered and was tasked to do this. The manual was prepared and tabled at the WURC meeting in Rome in November 2017.

The guide was produced as a guideline for individual engineering organizations to produce their own infrastructure report cards. It is a guideline with suggested minimum requirements, but is not intended to be prescriptive. At the same time, if the minimum requirements are adhered to, it becomes possible to combine individual scorecards into a regional, continental and even global scorecard that can be submitted to the UN General Assembly through the High Level Political Forum. In this way engineering organizations can make a real contribution in achieving the SDGs by focusing attention on where infrastructure is lacking or dysfunctional.

9. Executing Agency

The project will be executed by the Federation of African Engineering Organizations on behalf of the World Federation of Engineering Organizations.

10. Conclusion

The project was conceived within WFEO itself, but the Federation of African Engineering Organizations is willing to accept the responsibility to take the project further. The project has already progressed by producing the Infrastructure Report Card Guide, the challenge is now to take it to its logical conclusion. WFEO should be known for and branded as the owner of Global Infrastructure Report Card (GIRC).

It is recommended that WFEO adopt the project formally.

ENG.JULIUS M. RIUNGU

PRESIDENT