

GLOBAL ENGINEERING CONGRESS

22 to 26 October 2018

INFRASTRUCTURE REPORT CARDS AS
AIDS TO ACHIEVE THE SDGS.

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Contents

- ▶ SDGs
- ▶ Indicators
- ▶ Infrastructure Report Cards
- ▶ Way forward

2



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2018



Sustainable Development Goals

There are 17 Sustainable Development Goals and 169 Targets

- ▶ 1 No Poverty
- ▶ 2 Zero Hunger
- ▶ 3 Good health and well-being
- ▶ 4 Quality education
- ▶ 5 Gender equality
- ▶ 6 Clean water and sanitation
- ▶ 7 Affordable and clean energy
- ▶ 8 Decent work and economic growth
- ▶ 9 Industry, innovation and infrastructure
- ▶ 10 Reduced inequalities
- ▶ 11 Sustainable cities and communities
- ▶ 12 Responsible consumption and production
- ▶ 13 Climate action
- ▶ 14 Life below water
- ▶ 15 Life on land
- ▶ 16 Peace, justice and strong institutions
- ▶ 17 Partnerships for the Goals
- ▶ Leaving No-One Behind

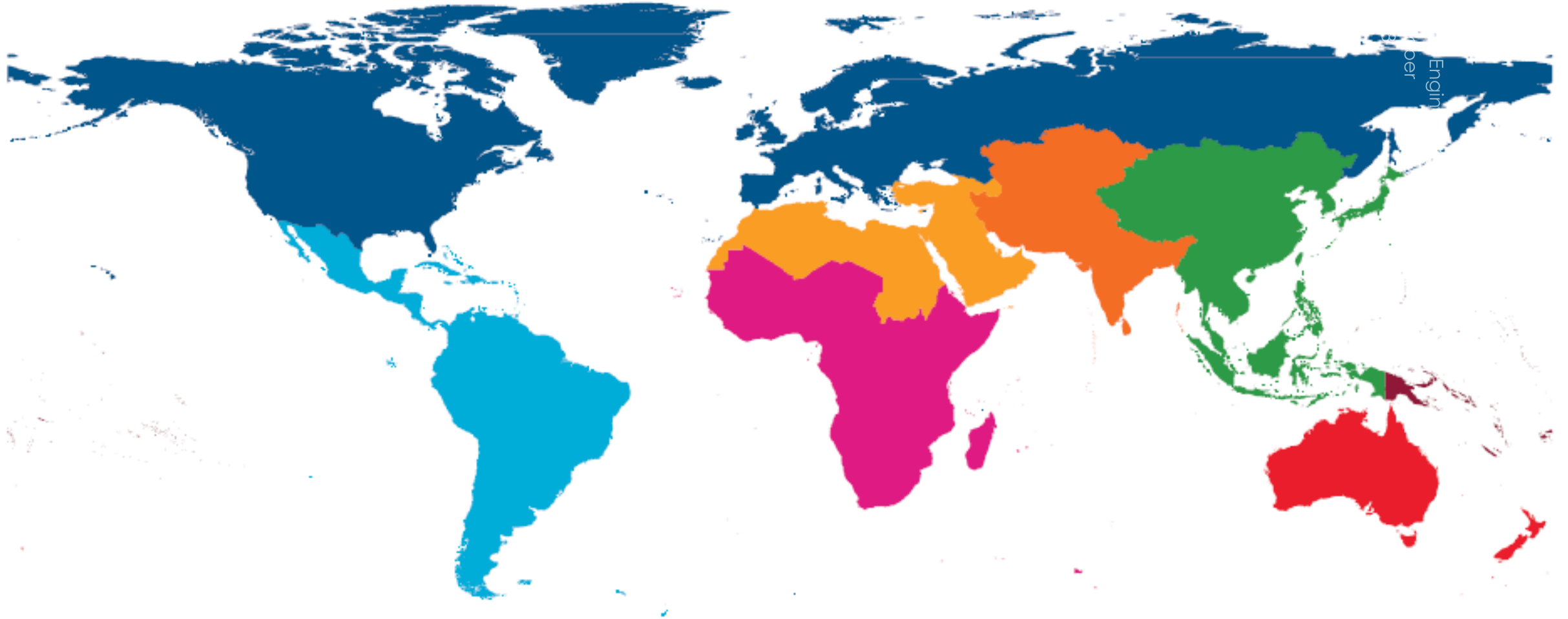
Indicators

- ▶ On 6 July 2017, the United Nations General Assembly adopted a global indicator framework to monitor the 2030 Agenda for Sustainable Development as a voluntary and country-led endeavour.
- ▶ The 232 global indicators are complemented by indicators at the regional and national levels developed by United Nations Member States. Data from national statistical and data systems are the basis for the compilation of global indicators.



Regional Groupings

5



- Sub-Saharan Africa
- Northern Africa and Western Asia
- Central and Southern Asia
- Eastern and South-Eastern Asia
- Latin America and the Caribbean
- Australia and New Zealand
- Oceania*
- Europe and Northern America

English
Speaker

Caveat



- ▶ Very few of the indicators refer to the adequacy and/or condition of infrastructure
- ▶ They refer to condition, not the cause

Goal 6: Ensure availability and sustainable management of water and sanitation for all



663 million still use unimproved water sources



2.4 billion are without improved sanitation



2 billion worldwide affected by water stress



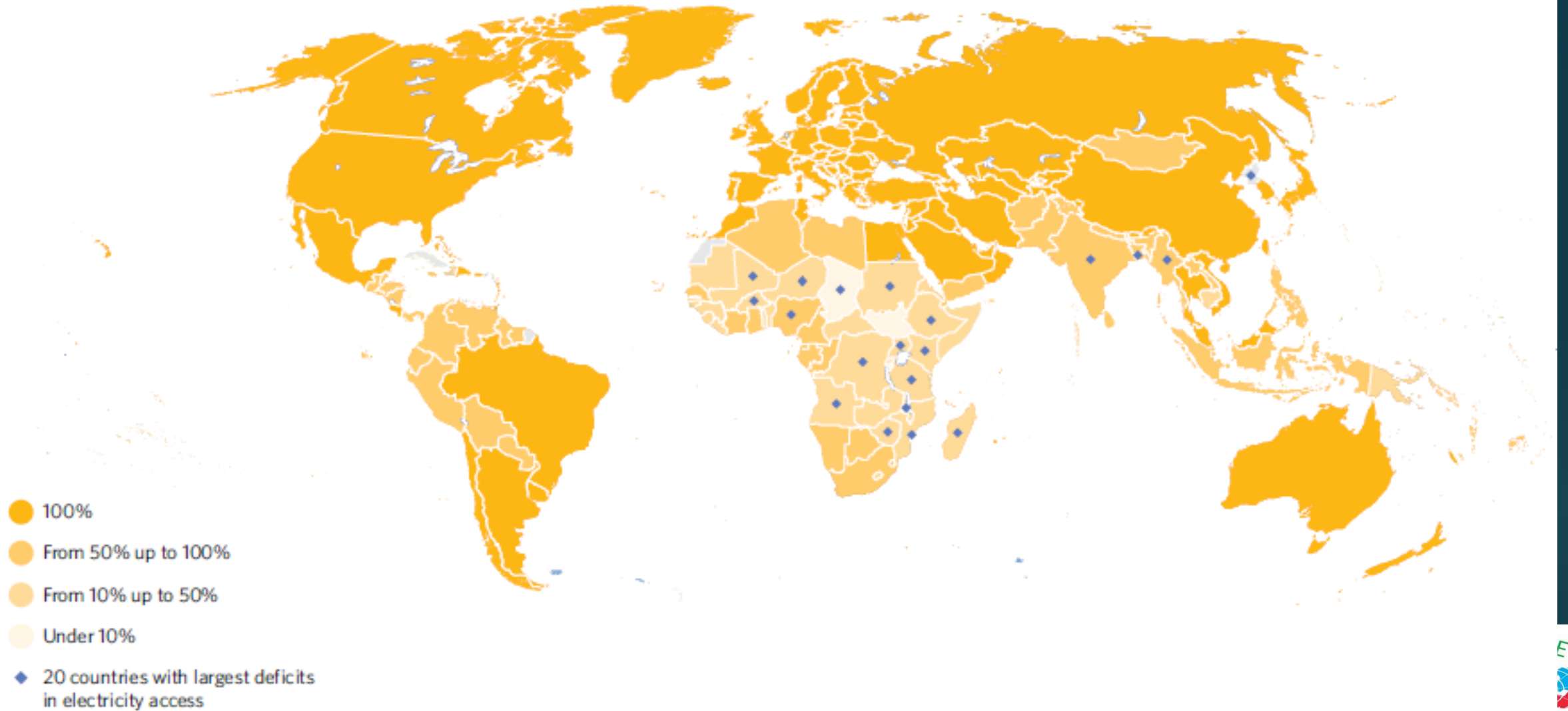
Integrated Water Resources Management plans in **every region** of the world

Goal 6 goes beyond drinking water, sanitation and hygiene to also address the quality and sustainability of water resources. Achieving this Goal, which is critical to the survival of people and the planet, means expanding international co-operation and garnering the support of local communities in improving water and sanitation management.

- ▶ In 2015, 6.6 billion people, or 91 per cent of the global population, used an improved drinking water source, compared with 82 per cent in 2000. However, in 2015 an estimated 663 million people were still using unimproved sources or surface water.
- ▶ Between 2000 and 2015, the proportion of the global population using improved sanitation increased from 59 per cent to 68 per cent. However, 2.4 billion were left behind. Among them were 946 million people without any facilities at all who continue to practise open defecation.
- ▶ Water stress affects more than 2 billion people around the globe, a figure that is projected to rise.
- ▶ Integrated Water Resources Management plans are under way in every region of the world.



Access to Electricity (2016)





INFRASTRUCTURE REPORT CARDS



Infrastructure Report Cards

10



- ▶ The American Society of Civil Engineers (ASCE) and the Institution of Civil Engineers (ICE) of the United Kingdom (UK) were among the first to develop report cards in the late 1990s.
- ▶ Similar report cards have been developed in Canada and Australia.
- ▶ In Africa: South Africa, Zambia, Nigeria and Ghana.
- ▶ IRCs have proven very effective in focusing attention on what is wrong.
- ▶ Has led to action to improve and repair.
- ▶ Minimum sectors to consider are Transportation, Water Supply and Sanitation, Energy and Buildings.

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Main Objectives

Promotion and recognition of the current condition and capacity of the nation's infrastructure in terms of:

- ▶ ■ Quality, performance, fitness for purpose
- ▶ ■ Health and safety performance
- ▶ ■ Social, economic or environmental impact
- ▶ ■ Policy imperatives that have influence

Identification of activities and actions to elevate the nation's infrastructure to acceptable standards, such as:

- ▶ ■ Improved procurement systems and processes
- ▶ ■ Investment in appropriate professions, skills and competencies
- ▶ ■ Examination and improvement of maintenance and upgrading programmes.





D-
for bulk water
resources



The unchanged low grade belies the further deterioration in the ageing bulk water infrastructure portfolio as a result of insufficient maintenance and neglect of renewal, partly due to funding shortfalls. A serious depletion of skilled personnel and officials at senior levels in the DWS (Department of Water and Sanitation) – and generally in the water sector – hinders decisive planning and development to avoid shortages. Systems are in general operated too close to failure.

C+
supply in major
urban areas



Major projects are critically behind schedule, notably Phase II of the Lesotho Highlands Water Project. In most major systems even small drought perturbations are already creating substantial service disruptions. Growing water shortages mean that alternative sources, such as water re-use, aquifer exploration and desalination, some of which are energy-intensive and expensive, must enter the water mix.

D-
supply for all other
areas



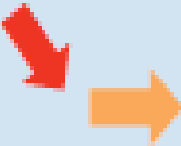


Budgeting and spending on maintenance, rehabilitation and expansion remain inadequate for water supply in all areas. Damage caused by increased service delivery protests in urban and rural areas diverts funding from maintenance and expansion budgets. Consequently, given continually growing demands, communities face increasing risk of supply failures.

Water leakage and other contributors to non-revenue water remain unacceptably high (losses of up to 40%). Demand management requires concerted attention to be effective.

The quality and the reliability of water supply have decreased in small towns and rural systems. Incentives resulting from 'Blue' and 'No Drop' quality monitoring have assisted in improving municipal management of drinking water quality and water loss control. Regrettably, the 'Blue Drop' report is no longer available in a format which allows comparison between water services authorities.



	<p>C- for major urban areas</p> 	<p>The condition and functionality of sanitation infrastructure is of grave concern, especially outside the major urban areas. Although the unserved-households percentage has decreased significantly since 1994, due to growth in population and households, the actual number unserved remains at about 4 million.</p> <p>'Green Drop' performance scores are generally in the "good" to "excellent" range around major urban areas. However, many urban facilities are unable to cope with increased demand. Many (up to 30% of all) WWTWs are in critical condition, discharging increasing quantities of untreated waste into streams.</p>
<p>SANITATION (INCLUDING WASTEWATER)</p>	<p>E for all other areas</p> 	<p>The skills required to operate and manage sophisticated sanitation and WWTW technologies are often scarce outside of major urban centres; consequently downstream users and ecosystems are subjected to high pathogen loads and eutrophication, and endure higher treatment costs to achieve potable water standards.</p> <p>Inhabitants in some rural areas still do not have access to safe sanitation. Pit toilets in rural and informal areas are frequently under-serviced, exposing residents to disease.</p> <p><i>(Note: The grading for "all other areas" in 2011 ought to have been an E, and that grade remains.)</i></p>

Minimum Format Transportation



Sector	Sub-Sector	Aspect
Transportation	Rail	<ul style="list-style-type: none"> • Heavy haul • General freight • Passenger lines
	Roads	<ul style="list-style-type: none"> • National roads • All other roads
	Airports	<ul style="list-style-type: none"> • International • All others
	Other sub-sectors	<ul style="list-style-type: none"> • National Ports • Fishing and small craft harbors
		Public transport

Minimum Format Water and Sanitation



Sector	Sub-Sector	Aspect	
Water and Sanitation	Water supply	<ul style="list-style-type: none"> • Bulk infrastructure • Major urban areas • All other areas 	
	Solid waste	<ul style="list-style-type: none"> • Major urban areas • All other areas 	
	Sanitation and wastewater	<ul style="list-style-type: none"> • Major urban areas • All other areas 	
	Other sub-sectors	Natural water courses	
		Environment	

Marrying SDGs and the IRC



Sustainable Development Goal		UN Measurable Indicator	IRC Sector	IRC Sub-Sector	IRC Aspect
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
		Proportion of population using improved sanitation facilities			Major urban areas
					All other areas
		Proportion of countries in various stages of implementing national Integrated Water Resources Management plans or equivalent		Other Subsectors	Major urban areas
Natural Water Courses					

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Quo Vadis

- ▶ Combine individual IRCs into Regional IRCs
- ▶ Combine Regional IRCs into Global IRC
- ▶ This requires coordination between engineering organisations
- ▶ A WFEO Working Group has been established to produce a Global Infrastructure Report
- ▶ A Guide has been prepared and is available
- ▶ A project sponsored by the GCRF and supervised by the Royal Academy of Engineering to produce an Africa Infrastructure Report as a prototype has commenced in October 2019.



Challenges

- ▶ Maintaining independence from external and internal influences
- ▶ Getting the baseline report correct
- ▶ Budget constraints – primary research can be costly and dependent on the extent of in-depth analysis to be carried out
- ▶ Time and human resource to develop, conduct, draft, review and deliver the report card
- ▶ Accessibility to information
- ▶ Scope creep.



Conclusion



- ▶ Engineering organizations have a distinct advantage in that they have access to research and a large body of knowledgeable experts.
- ▶ The development of an infrastructure report has therefore two objectives:
 - ▶ to increase awareness of the importance of economic and social infrastructure and the associated role of engineering and built environment professionals, and
 - ▶ to promote the professions and built environment as a career destination.
- ▶ Lastly the Infrastructure Report should provide assistance to decision makers and their support teams in the built and natural environments on where and how to apply the always limited resources.



20



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THANK YOU

