



# International Energy



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## UN Sustainable Development Goal : an engineering perspective

Although sustainable development has had different interpretations over the years, most countries agree that it promotes prosperity and economic opportunity, greater social well-being and protection of the environment. It is also commonly understood that the realisation of these benefits can only be achieved through holistic international co-operation. The United Nations (UN) has been working to define goals for such global co-operation in solving problems of an economic, social, cultural or humanitarian nature since its formation in 1945.

On 25 September 2015, the UN General Assembly adopted resolution 70/1, outlined in a document entitled ‘Transforming our world: the 2030 Agenda for Sustainable Development’ (2016).

This document presents the agenda for post-2015 development, progressing from the 8 Millennium Development Goals (MDGs) set in 2000. The 2030 Agenda encompasses 17 broad and inter-related Sustainable Development Goals (SDGs), as depicted in Figure 1. Unlike the research, including:

- (1) The complex nature of such SDGs often necessitates solutions based on complex systems that will require wide-ranging skills, lateral thinking and knowledge transfer between various social, life and physical sciences as well as engineering disciplines.
- (2) Such unique modern challenges oblige and encourage the engineering community to work closely with experts from fields that they may not have interacted with previously, and to overcome inherent and
- (4) In achieving the SDGs, engineers will be challenged to meet the needs of a growing global population while minimising the pressure on our planet’s resources, and will need to focus on resource consumption in a way that does not exceed ecological limits. Efficiency improvements are insufficient to achieve this. Only a transition away from economic growth as the chief indicator of human progress will facilitate global scale decent livelihoods.
- (5) Engineering-based net positive and regenerative approaches (Rahimifard and Trollman 2017) will enable manufacturers to advance beyond incremental efficiencies and create resilient platforms for sustainable growth. Poverty may be overcome through technological leapfrogging as it will enable countries to avoid traditional growth patterns. Laying these new industrial foundations based on the use of both the existing and emerging technologies will be a major engineering challenge.
- (6) The social and societal dimension of SDGs demand a deeper understanding of the specific needs of people, consumers and general users of engineering solutions, and where possible the adoption of a user-centric approach to innovation and development.
- (7) A fundamental SDG challenge will be to engineer the infrastructure for universal access to green sources of energy, clean water, sanitation and public services in a

of sustainable development at the heart of engineering education.

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