World Engineering Day – ASCE's Thursdays @ 3 – Developing and Delivering Sustainable Solutions for Global Engineering Challenges

Event Link to Register: https://collaborate.asce.org/careerbydesign/events/simple-registration?CalendarEventKey=846ab823-b3f1-4aa8-9c89-0fda35363477

Agenda Outline:

1. Panelist introductions.
2. Panelists Q&A.
3. Audience questions and answers.

Speakers:

- Pallavi K. Gunalan, Biomedical Engineer; Medical Research Lead, RespiraWorks - Biomedical, developing low-cost ventilators for countries
- Jimmy Ho, MTA C&D VP & Program Chief Executive Officer - resiliency developments to New York City Subway station after Sandy
- Jeremy Hung, WSP – NY MTA Resilience Plan/ Program
- Nelson Perez-Jacome, P.E., City Engineer, City of Miami Beach - resilience efforts
- Tiffany Reed-Villarreal, P.E., ENV SP, M. ASCE, President Sustainable Infrastructure, InfraTex Consulting - plastic waste/recycling, waterways/oceans

General Questions:

1. World Engineering Day is celebrated on March 4 every year as a UNESCO international day of celebration of engineers and engineering and offers an opportunity to highlight engineers and engineering achievements in our modern world. It is also an opportunity to improve public understanding of how engineering and technology are central to modern life and for sustainable development. Each of you were invited to speak on this panel because of the innovative things you are doing in your respective disciplines. In 2-3 minutes, can you please describe the highlighted project you are working on and how it advances the United Nations Sustainable Development Goals.Which of the UN Sustainable Development goals does this project advance?
2. In what ways are engineers well positioned to make a significant impact on modern life? What opportunities exist for students who are considering a career in engineering?
3. Thinking outside of the box, what ideas do you have for engaging future engineers in new ways than you've tried before?

Questions Specific to UN Goals:

Goal 1 is to end poverty in all its forms everywhere. More than 700 million people, or 10 percent of the world population, still live in extreme poverty today, struggling to fulfil the most basic needs like health, education, and access to water and sanitation, to name a few. According to the most recent estimates, in 2015, 10 percent of the world's population or 734 million people lived on less than $1.90 a day. Worldwide, the poverty rate in rural areas is 17.2 percent—more than three times higher than in urban areas. One way organizations can help advance this goal is to donate materials they don't use. t

What steps has your organization done to end poverty in your local communities and how have you established those symbiotic relationships? What advice would you give engineers who are looking to develop those relationships within their own communities?

Goal 3 is to ensure healthy lives and promote well-being for all at all ages. Ensuring healthy lives and promoting well-being at all ages is essential to sustainable development. Currently, the world is facing a global health crisis unlike any other — COVID-19 is spreading human suffering, destabilizing the global economy and upending the lives of billions of people around the globe.

How is your organization addressing the emerging health issues caused by COVID-19? How can engineers support COVID-19 efforts in their own communities?

Goal 5 is to achieve gender equality and empower all women and girls. Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world. There has been progress over the last decades, but many challenges remain in regards to discriminatory laws and social norms. Women continue to be underrepresented at all levels of decision-making in political, economic and public life.

Has your organization made a commitment to address gender equality in the workplace such as ensuring equal access to advancement opportunities and leadership. In what ways does your organization make this a priority and how are these priorities executed? What can be done at the individual level to improve gender equality?

Goal 6 is to ensure access to water and sanitation for all. Worldwide, one in three people do not have access to safe drinking water and two out of five people do not have a basic hand-washing facility with soap and water. The COVID-19 pandemic has demonstrated the critical importance of sanitation, hygiene and adequate access to clean water for preventing and containing diseases, yet billions of people still lack safe water sanitation, and funding is inadequate.

What ways can the engineering community contribute to the improvement of water quality and equitable access to safe and affordable drinking water. What practices can engineers do on a daily basis to improve sanitation and hygiene and help prevent and contain diseases such as COVID-19?

Goal 7 is to ensure access to affordable, reliable, sustainable and modern energy. There are encouraging signs that energy is becoming more sustainable and widely available, access to electricity in poorer countries has begun to accelerate, energy efficiency continues to improve, and renewable energy is making impressive gains in the electricity sector. Yet, 13 percent of the global population still lacks access to modern electricity.

What can be done to expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries. How does the work you do impact developing countries's access to affordable and clean energy? What can engineering organizations do to increase access to affordable and clean energy?

Goal 9 is to build resilient infrastructure, promote sustainable industrialization and foster innovation. In terms of communications infrastructure, more than half of the world's population is now online and almost the entire world population lives in an area covered by a mobile network, yet 16 percent of the global population still does not have access to mobile broadband networks. Information and communication technologies have been on the frontlines of the COVID-19 response and once the acute phase of the COVID-19 crisis is over, governments will need investments in infrastructure more than ever to accelerate economic recovery, create jobs, reduce poverty, and stimulate productive investment. **How are you advocating for the required infrastructure investments needed to build resilient infrastructure, promote sustainable industrialization and foster innovation? How can engineers influence public policy and infrastructure investment decisions in their communities?**

Goal 11 is to make cities inclusive, safe, resilient and sustainable. The world is becoming increasingly urbanized. Since 2007, more than half the world's population has been living in cities, and that share is projected to rise to 60 per cent by 2030. Cities and metropolitan areas account for about 70 percent of global carbon emissions and rapid urbanization is resulting in a growing number of slum dwellers, inadequate and overburdened infrastructure and services (such as waste collection and water and sanitation systems, roads and transport), worsening air pollution, and unplanned urban sprawl.

What can be done to provide safe, affordable, accessible and sustainable transport systems? What actions can engineers do to support this goal (e.g., bike, walk or use public transportation)?

Goal 12 is to ensure sustainable consumption and production patterns. Each year, an estimated one third of all food produced – equivalent to 1.3 billion tonnes worth around $1 trillion – ends up rotting in the bins of consumers and retailers, or spoiling due to poor transportation and harvesting practices. Should the global population reach 9.6 billion by 2050, the equivalent of almost three planets could be required to provide the natural resources needed to sustain current lifestyles.

What can engineers do to be more responsible in their consumption and efficient in the use of natural resources? For example, if people worldwide switched to energy efficient light bulbs the world would save US$120 billion annually.

Goal 13 is to take urgent action to combat climate change and its impacts. Although greenhouse gas emissions are projected to drop about 6 percent in 2020 due to travel bans and economic slowdowns resulting from the COVID-19 pandemic, this improvement is only temporary. Climate change is not on pause. Once the global economy begins to recover from the pandemic, emissions are expected to return to higher levels.

How is the engineering community investing in sustainable solutions, strengthening resilience to climate-related hazards, and mitigating the impacts of climate change? How can engineers engage in meaningful climate mitigation efforts in their communities?

Goal 14 is to conserve and sustainably use the oceans, seas and marine resources. Careful management of this essential global resource is a key feature of a sustainable future. However, at the current time, there is a continuous deterioration of coastal waters owing to pollution, and ocean acidification is having an adversarial effect on the functioning of ecosystems and biodiversity. This is also negatively impacting small scale fisheries.
Saving our ocean must remain a priority. Marine biodiversity is critical to the health of people and our planet. Marine protected areas need to be effectively managed and well-resourced and regulations need to be put in place to reduce overfishing, marine pollution and ocean acidification.

What should be done to protect marine and coastal ecosystems to avoid significant adverse impacts of your work? How can engineers get involved in conservation efforts and help protect our oceans, seas, and marinas?

Goal 17 is to revitalize the global partnership for sustainable development. The Sustainable Development goals can only be realized with inclusive partnerships — at the global, regional, national and local levels — built upon principles and values, and upon a shared vision and shared goals placing people and the planet at the center.
What kind of partnerships can be forged to advance the UN's Sustainable Development Goals? What organizations have you worked with to help achieve your goals? How would you suggest other engineer's establish similar partnerships to advance these goals within their disciplines?