SAN JUAN DECLARATION 2022

A Call to Action for World Leaders to

Foster Engineering Education and Development.

Mitigate Damages due to Natural Disasters,

Design and Construct Climate Resilient Infrastructure

and

Commit to Mitigate and Adapt to Climate Change

Members and Associate Academicians from all regions of the Americas and Europe met during the Biennial Conference of the Pan American Academy of Engineering (API) held from November 7 to 8, 2022, with Academicians of the Puerto *Rican Academy of Engineering*, and with Members of the *College of Engineers and Surveyors of Puerto Rico*, of the *International Association* of Engineering and Architecture, national engineering academies and of the societies and institutions that represent academics and engineering professionals to evaluate and propose public policies on "*Education and Development of Engineering to Mitigate Damage from Natural Disasters, Design and Build Climate Resilient Infrastructure, and Commit to Mitigate and Adapt to Climate Change*" agree to share their findings with the professionals and policy makers of all countries of the hemisphere and the world.

A global priority

Despite widespread dissemination of information and concerted efforts across the globe, greenhouse gas emissions have failed to reduce. Its impact on Climate Change affects the frequency and magnitude of natural disasters and their consequences; the loss of human lives, fauna and flora, the destruction of ecosystems and livelihoods for humanity and the destruction of homes, schools, hospitals and infrastructure. This impact is most acute for the most vulnerable populations, marginalized communities, small islands and developing countries.

Mitigating the Impact of Climate-Related Disasters

To achieve the Sustainable Development Goals set for 2030 and Net Zero Emissions for 2050, it is estimated that some Seven Trillion US dollars will be invested in annual infrastructure that enables a low-carbon and climate-resilient future. The effective investment of such an amount of resources requires concerted actions by those responsible for the planning, development, design, construction, and operation of each work.

The planning, design, construction, and operation of all infrastructure to support human activity must reduce CO2 emissions and ensure works are resilient and can adapt to the changing climate. Sustainable and climate-resilient construction represents the path forward to achieve Resilience, achieve the Net Zero goal, and ensure the well-being of all ecosystems and humanity.

Failure Is Not an Option and It's Up to Engineers to Take Responsibility

Conventional infrastructure project design does not adequately address these risks, consequences of failure are unacceptable. It is essential to develop and build infrastructure works that enable a low-carbon and climate-resilient future to mitigate the impact of climate change and ensure the best quality of life for all.

To achieve the objectives of the Paris Agreement and Sustainable Development, it is essential to include engineers in the planning of all projects from conception, planning to operation, integrating knowledge of human behavior, knowledge management and media and communications in all phases of project management.

This requires that managerial knowledge be integrated into the technical training of engineers. University/Industry alliances must be developed that enable young engineers to contribute their creativity and entrepreneurial spirit early in their professional careers and thus achieve sustainable, climate resilient works that last.

The Impact of Climate Change on the Legal System

It is imperative to recognize the consequences of climate impact on land surfaces, coasts, glaciers, oceans, seas, lakes, river basins, mangroves, and wetlands. This reality already affects coastlines where the right to private property conflicts with the right to use recreational areas and the exploitation of the common heritage. Consequently, without further delay, the legal system must be strengthened to ensure the resolution of conflicts that are anticipated nationally, as well internationally.

To flow from Words to Action we specifically propose;

1. **First and, above all, incorporate the knowledge of scientists, engineers, and professionals in the design standards, building codes, modernization, construction and operation of all public and private works, as well as in the management of risks inherent to each work.**
2. **Disseminate the knowledge of the impacts of Climate Change and how it can be mitigated through public education at primary levels.**
3. **Ensure that special consideration is given in all decision-making to populations of the most vulnerable countries and communities.**
4. **Integrate green building and solutions complimentary with nature in all development**
5. **Promote and implement fair, inclusive, and sustainable financing in all construction**
6. **Strengthen infrastructure, ensuring resilience to climate change**
7. **Mitigate the vulnerability of any construction site to natural disasters to ensure the availability of affordable insurance and reinsurance, mitigate disruptions and ensure rapid recovery.**
8. **Encourage and implement transparent and sustainable procurement practices.**
9. **Incentivize the financing and construction of renewable energy, water harvesting and recycling systems, the use of recyclable materials and safe, accessible and affordable infrastructure**
10. **Implement codes and practices that encourage and ensure the reduction of the carbon footprint.**
11. **Promote research for innovative technologies that support sustainable and resilient development.**
12. **Promote the planning, design, construction, and operation of sustainable and resilient works to the impact of climate change.**

Integration of Initiatives and Collaboration

Being aware of initiatives of regional and international organizations and the importance of leveraging those with a common vision The Academy supports the fundamental elements of the ASCE *Stimson Declaration* and those of the *Atlas Partnership for Climate Resilient Infrastructure*, such as:

1. **International exchanges to promote the collaboration of all engineers in the planning, design, construction and operation of quality, sustainable and resilient works**
2. **Infrastructure report cards to prepare reference reports to provide optimal quality in the development, design, financing, and construction of works.**
3. **Ensure the development, design, construction, and operation of quality works with the highest standards and guidelines to promote a better quality of life, sustainability, mitigation, adaptation, and resilience to protect the environment and ensure well-being of humanity in all corners of the world.**
4. **Attract more investment and better insurance coverage by integrating total quality processes that reduce risks to life and property, thereby preserving lives and resources.**

Signed in San Juan, Puerto Rico during the Biennial Meeting of the Pan-American Academy of Engineering, today November 8, 2022.

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