

DECLARATION of SAN JUAN 2022

A Call to Action for World Leaders to

The Education and Development of Engineering. The Mitigation of Damages for Natural Disasters, The Design and Construction of Resilient Works and

Affirmative Actions to Alleviate the Impact of Climate Change

Full Academicians and Associates from all latitudes of the hemisphere and Europe gathered during the Biennial Meeting of the Pan-American Academy of Engineering (API), held from November 7 to 8, 2022, with Full Academicians of the Puerto Rican Academy of Engineering, and with Members of the College of Engineers and Surveyors of Puerto Rico, the International Association of Engineering and Architecture, the national engineering academies and the societies and institutions that bring together engineering academics and professionals from the Americas and Europe to evaluate and propose public policies on "Education and Development of Engineering to Mitigate Damages from Natural Disasters, Design and Build Resilient Works, and Alleviate the Impact of Climate Change" agree to expose and share their conclusions with professionals and authorities from all countries of the hemisphere and world relevant to it;

Declaration of San Juan 2022 of the Pan American Academy of Engineering

A Global Priority

Despite widespread dissemination of information and concerted efforts across the globe, greenhouse gas emissions have not been reduced. 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 hangs with greater intensity on the most vulnerable populations, marginalized communities, small islands and developing countries.

Mitigating the Impact of Weather-Related Disasters

To achieve the Sustainable Development goals set for the year 2030 and Net Zero Emissions for the year 2050, it is estimated that it is necessary to invest some Seven Trillion dollars (US) per year in infrastructure that allows a future with low carbon emissions and resilient to the weather. 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 project.

Since CO2 emissions, together with other factors, are the result of human activities such as development and construction, it is up to those responsible for the planning, design, construction and operation of all kinds of works, to integrate measures to reduce, minimize and mitigate carbon emissions and adapt to climate change. Sustainable construction resistant to the ravages of the climate represents the path to follow to achieve Resilience, achieve the Net Zero objective and ensure the well-being of all ecosystems and humanity.

Failure Is Not An Option And It's Up To Engineers To Take Responsibility

The conventional undertaking of infrastructure projects does not allow the stated objectives to be achieved and the moral consequences of failure are unacceptable. The development and construction of works that allow a future with low carbon emissions and climate resilient is essential to alleviate the impact of climate change and guarantee the best quality of life for all.

In order to achieve the objectives of the Paris Agreement and Sustainable Development, it is unavoidable to incorporate engineers in the planning of all projects from their conception to operation, integrating knowledge of human behavior, knowledge management, and media and communications management in all the phases of project management.

This role requires that managerial knowledge be integrated into the technical training of engineers, for which University/Industry alliances must be developed that allow young engineers to contribute their creativity and entrepreneurial spirit early in their professional performance and thus achieve sustainable, resilient works that endure.

The Impact of Climate Change on the Legal System

It is imperative to recognize the consequences of climate impact on the earth's surface, coasts, glaciers, oceans, seas, lakes, river basins, mangroves and wetlands. This reality already affects coastal and riverside land where the right to private property already conflicts with the right to use recreational areas and the exploitation of common heritage. Consequently, without further delay, the legal system must be tempered to ensure the resolution of conflicts that can be glimpsed in each country, as well as in the international arena.

In order to move from Words to Action, it is specifically proposed:

1. First and, above all, incorporate the knowledge of scientists, engineers and professionals in design standards, construction 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 impact of Climate Change and how it can contribute to alleviate the impact through public education from the primary levels.
3. It must be ensured that in all decision-making, special consideration is given to the circumstances of the populations of the most vulnerable countries and communities
4. Integrate green construction and solutions in harmony with nature in all developments
5. Promote and implement fair, inclusive and sustainable financing in all construction
6. Strengthen essential infrastructure to achieve its resilience to climate change
7. Mitigate the vulnerability of all works to natural disasters to ensure the availability of affordable insurance and reinsurance, mitigate interruptions, and ensure rapid recovery.
8. Promote and implement transparent and sustainable recruitment practices
9. Fiscally encourage the financing and construction of renewable energy systems, water harvesting and recycling, the use of recyclable materials and safe, accessible and affordable infrastructure
10. Implement codes and practices that promote and ensure the reduction of the carbon footprint.

11. Promote research and innovation of innovative technologies that promote sustainable and resilient development.
12. Promote the planning, design, construction and operation of works that are sustainable and resilient to the impact of climate change.

Integration of Initiatives and Collaboration

Aware of the initiatives of regional and international organizations and the relevance of integration with those with which a common vision is maintained, the Academy supports 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 promote optimum quality in the development, design, financing and construction of works.
3. Guarantee the development, design, construction and operation of quality works with the highest regulations and guidelines to promote a better quality of life, sustainability, mitigation, adaptation and resilience to protect the environment and ensure the well-being of humanity in all the ends of the world.
4. Attract more investment and better insurance coverage by integrating total quality processes that reduce risks to life and property, thus preserving lives and resources:

Signatures

Nombre	Afiliación	Correo Electrónico	Firma
José Domingo Pérez	Presidente	pres.academiaingenieriapr@gmail.com	<u>221118-JDP</u>
Luis Humberto Hernández	1 ^{er} Vice-Presidente	luishuherandez@hotmail.com	
Zulma Pardo	2 ^{do} Vice-Presidente	zspardo@hotmail.com	
Benjamin Colucci	Secretario	benjamin.colucci1@upr.edu	
Michael Sanio	Tesorero	michael.r.sanio@gmail.com	
Paulo Alcántara Gomes	Tesorero Adjunto	pagomes98@gmail.com	
Guillermo Casar Marcos	Director	gmocasarm@gmail.com	
D. Yogi Goswami	Director	goswami@usf.edu	
Rafael Antonio Ramírez	Director	rafael.ramirez@cfe.mx	
Aldo Steinfeld	Director	aldo.steinfeld@ethz.ch	
Jorge Alberto Vanegas	Pasado Presidente	jvanegas@tamu.edu	<u>221119-JAV</u>