PANAMÁ DECLARATION 2025

A CALL TO ACTION TO WORLD LEADERS TO ADVANCE ENGINEERING EDUCATION AND SUSTAINABLE AND RESILIENT INFRASTRUCTURE FOR THE BENEFIT OF HUMANITY, BY LEVERAGING THE POWER AND POTENTIAL OF ARTIFICIAL INTELLIGENCE, OF INTEGRATION OF GLOBAL INITIATIVES, AND OF INCREASED COLLABORATION.

Academicians from the Americas and the World, together with the leadership of national engineering academies, universities, societies, and institutions representing engineering scholars and practitioners, agree to present and share their findings with practitioners and authorities in all countries of the hemisphere and the world.

Engineers assembled in Panama City, Panama, September 17-20, 2025, on the occasion of the joint celebration of the ***Silver Jubilee of the Pan-American Academy of Engineering*** (**PAAE**) and the ***XVI International Congress of Civil Engineering***, organized by the ***College of Civil Engineers*** (**COICI**) and the ***Panamanian Society of Engineers and Architects*** (**SPIA**)

This gathering in Panama City joined the COICI congress "***Technological Transformation in Civil Engineering: Building Sustainable Infrastructures***" and the theme of the ***Pan-American Academy of Engineering*** of "***Artificial Intelligence and Engineering for Socioeconomic Development and Well-being of Humanity***." Engineers celebrated **API's 25th Anniversary and Silver Jubilee** with professionals, academics, Artificial Intelligence experts, and leaders to address global challenges – sustainability, resilience, and artificial intelligence to foster innovation and celebrate the legacy of the **PAEE** and the global presence of **COICE**.

A GLOBAL PRIORITY

The PAAE recognizes that **Artificial Intelligence** offers unprecedented opportunities to address human challenges. Despite widespread information dissemination and concerted efforts across the globe, greenhouse gas emissions have not been reduced. Their impact on climate change affects the frequency and magnitude of disasters caused by extreme weather events, and their consequences: the loss of human life, wildlife, and flora; the destruction of ecosystems and human livelihoods; and the destruction of homes, schools, hospitals, and infrastructure. This impact falls most heavily on the most vulnerable populations, marginalized communities, small islands, and developing countries.

THE ROLE OF NATIONAL ACADEMIES OF ENGINEERING

The PAAE recognizes that, in this global endeavor, national academies of engineering, as technical bodies with in-depth knowledge of the local context, play a crucial role. They are responsible for translating global principles into policies, practices, and innovations that are adapted to the environmental, social, institutional, and regulatory conditions of each country. Their ethical and technical leadership must guide the implementation of sustainable solutions that address local realities, particularly in developing countries.

MITIGATING THE IMPACT OF CLIMATE-RELATED DISASTERS

The PAAE acknowledges that to achieve the ***Sustainable Development Goals*** set for 2030 and ***Net-Zero Emissions*** by 2050, approximately seven trillion dollars (US) will need to be invested annually in infrastructure to enable a low-carbon and climate-resilient future. Effectively investing such a large number of resources requires concerted action by those responsible for the planning, development, design, construction, and operation of each project.

Since CO2 emissions, along 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 types of projects to integrate measures into all processes to reduce, minimize, and mitigate carbon emissions and adapt to climate change. Sustainable and climate-resilient construction represents the path forward to achieving resilience, achieving Net Zero, and ensuring the well-being of all ecosystems and humanity.

FAILURE IS NOT AN OPTION, AND IT IS UP TO ENGINEERS TO TAKE RESPONSIBILITY

The PAAE is fully aware that the conventional approach to implementing infrastructure projects does not meet contemporary needs, and that the lack of adequate technical and institutional action has significant consequences for societies. Therefore, the development and construction of resilient, equitable, and low-carbon infrastructure is essential to ensuring a better quality of life for all people, especially those in more vulnerable situations.

To achieve the goals of the ***Paris Agreement*** and ***Sustainable Development***, it is essential to incorporate engineers into the planning of all projects from conception to operation, integrating knowledge of human behavior, knowledge management, and media and communications into all phases of project execution.

This leadership role requires integrating managerial knowledge into the technical training of engineers. To achieve this, university-industry partnerships must be developed that enable young engineers to contribute their creativity and enterprising spirit early in their professional careers.

THE IMPACT OF CLIMATE CHANGE ON THE LEGAL SYSTEM

The PAAE supports the imperative to recognize the consequences of climate change impacts on the Earth's surface, coasts, glaciers, oceans, seas, lakes, river basins, mangroves, and wetlands. This reality, in particular, impacts coastal and riverside lands, where the right to private property conflicts with the rights to recreational areas and the exploitation of common heritage. Consequently, without further delay, the legal system must be strengthened to ensure the resolution of conflicts that may arise in each country, as well as internationally.

MOVING FROM WORDS TO ACTION

To move from words to action, **the PAAE proposes**:

- Leverage the use of AI technologies to efficiently plan, design, and build resilient and effective infrastructure.
- To apply AI to spark a new global movement to transform the $13 trillion construction industry to improve safety, increase productivity, and address waste and acute labor shortages.
- To integrate existing tools and resources to ensure efficient water use, an adequate supply and distribution of clean energy to support AI expansion, and to engineer a better and more equitable future, such as the ones developed by (1) the ***Institute for Sustainable Infrastructure*** (**ISI**) ***Envision***; (2) the ***Climate Risk Institute/Public Infrastructure Engineering Vulnerability Committee*** (**CRI/PIEVC**); and (3) the ***ASCE Standard 73-23***).
- To promote research leveraging the potential for AI to support sustainable and lasting enduring development.
- To foster the use of AI: to improve the decarbonization of industry; to increase the efficiency of transmission and distribution of electricity; to optimize the reduction in energy demand, and to improve effectiveness.
- To disseminate the impact of climate change and how it can be mitigated through public education, starting at the primary level.
- To ensure that in all decision-making, special consideration is given to the needs of people in the most vulnerable countries and communities.
- To integrate green building and nature-friendly solutions into all developments.
- To promote and implement fair, inclusive, and sustainable financing.

- To strengthen critical infrastructure to achieve climate change resilience.
- To mitigate the vulnerability of all projects to disasters caused by extreme weather events, to ensure the availability of affordable insurance and reinsurance, mitigate disruptions, and ensure rapid recovery.
- To promote and implement transparent and sustainable procurement practices.
- To promote, in coordination with national authorities and multilateral organizations, public policies that include tax incentives and sustainable financing mechanisms for the construction of renewable energy systems, water collection and recycling systems, the use of recyclable materials, and safe, accessible, and affordable infrastructure, while fully respecting the legal and tax regulations of each country.
- To implement codes and practices that ensure carbon footprint and water use reduction.

INTEGRATING INITIATIVES AND INCREASING COLLABORATION

Finally, **the PAAE supports** initiatives from regional and international organizations and the importance of integration with those that share a common vision, the Academy supports key elements of the **Global Renewables Alliance**, the **G-20 T-20 Policy Brief**, the **ASCE Stimson Declaratio**n, and the **Atlas Initiative for Critical Infrastructure**, which include:

International exchanges to promote collaboration among all engineers in the planning, design, construction, and operation of quality, sustainable, and resilient projects.
Infrastructure report cards for preparing benchmark reports to promote optimal quality in the development, design, financing, and construction of projects.

Ensure the development, design, construction, and operation of quality projects with the highest standards 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 corners of the world. Attract more investment and better insurance coverage by integrating total quality processes that reduce risks to life and property, thus preserving lives and resources.

Signed in **Panama City**, **Panama**, during the **25th Anniversary and Silver Jubilee** of the **Pan American Academy of Engineering**, today, **September 19, 2025**.

Pan American Academy of Engineering – (Countries across the Americas)

National Academy of Engineering – (Brazil)

Mexican Academy of Engineering – (México)

Bolivian Academy of Engineering – (Bolivia)

Puerto Rican Academy of Engineering – (Puerto Rico)

Note: The institutions signing this Declaration do so within a framework of non-binding international cooperation, respecting the autonomy of each participating academy or entity. The actions suggested herein will be implemented in accordance with the principles, regulations, and technical capabilities of each organization, without implying any financial, legal, or automatic implementation obligation.