Protecting the Foundation: The Growing Importance of Investing in Infrastructure Resilience

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About out Your Newest Texan

'From tiny border town; family business established in Shelby County (Joaquin).

35 years in Economic Development; years specializing in Recovery & Resilience.

Worked in 47 US states and 42 countries; 12-year tenure with the UN Economic Commission for Europe PPP Center

- Founded disaster resilience nonprofit; lost left leg during hands-on recovery efforts in Puerto Rico.

Highly respects Texas heritage-the unique historical significance of the state's autonomous roots.

International Boundary Marker Republic of Texas and US Joaquin Shelby County circa 1840

International Boundary Marker: Republic of Texas & U.S. (c. 1840) -

One of only 2 in the U.S.

UNECE Resilience Guidance

The UNECE Draft Guidelines establish a comprehensive global framework for systematically embedding climate resilience directly into PPP models and core infrastructure pipelines.

- **Full Lifecycle Integration: Incorporating robust climate adaptation checkpoints across all stages of PPP procurement.**
- **Value for People & Planet: Shifting performance standards to guarantee projects deliver genuine public and ecological value.**
- **Stronger Frameworks: Structuring contractual and legislative safeguards to enforce active climate readiness.**
- **Standardized Methodologies: Deploying industry-recognized assessment metrics for predictable risk mitigation.**
- **Supporting SDGs: Driving critical advancement on Sustainable Development Goals, specifically SDG 6, 7, 11, and 13.**

Why Resilience Matters

Escalating Hazards

Global climate developments are triggering significantly higher frequencies and extreme severities of systemic hazards, including devastating floods, category hurricanes, prolonged droughts, and critical sea-level rises.

The Resilience Functions

True operational resilience ensures that essential infrastructure maintains the targeted capacity to effectively resist, absorb, adapt, transform, and rapidly recover from catastrophic disruptions.

The Dual Challenge

Public leaders face an unprecedented convergence of liabilities: rapidly aging structural foundations alongside massive growth in urban exposure to extreme weather hazards.

Concurrently, public funding gaps continue to widen, creating a situation where traditional, output-centric procurement models can no longer protect societal assets.

The Needed Paradigm Shift

The industry must rapidly transition away from short-term cost minimization and fully adopt modern, risk-based, performance-driven, and long-term asset-management horizons.

The Screening Process

A methodical, iterative, and stakeholder-driven screening process is required to uncover hidden vulnerabilities before allocating procurement budgets.

1. Gather Climate Data: Establish reliable historical future-modeled hazard benchmarks.

2. Analyze Exposure: Determine spatial overlay of physical assets and hazard maps.

3. Vulnerability Analysis: Map structural and societal fragility factors.

4. Impact Modeling: Quantify potential fiscal, operating, and safety losses.

5. Future Scenarios: Stress-test against long-term climate trajectories.

6. Procurement Plan: Integrate parameters directly into bid documents.

Adaptation & Resilience Options

Structural Grey Measures

Conventional physical hardening such as reinforced seawalls, massive storm-drainage channels, and engineered utility backup plants.

Nature-Based Solutions

Using natural ecosystems (e.g., restored wetlands, coastal mangroves, green roofs, and urban forests) to naturally buffer climate risks.

Circular Economy

Maximizing local resource efficiency, sourcing low-carbon recycled build materials, and establishing absolute zero-waste streams.

Conce t To Contract

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Phase 1: Feasibility

Comprehensive market analysis, demand forecasting, and initial climate risk screening.

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Phase 2: Structuring

Detailed technical engineering design, legal due diligence, and financial model design.

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Phase 3: Tendering

Competitive bidding process with clear, resilience-based evaluation requirements.

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Phase 4: Close

Signing the master contract and completing financial syndication to launch construction.

Procuring For Resilience

Setting the Standard

Procurement processes must shift from rewarding the lowest bidder to selecting partners who can deliver robust, long-term performance.

By integrating clear climate parameters into early tenders, public agencies can attract experienced, highly qualified partners.

Procurement Requirements

RFQs: Require proven experience managing climate-vulnerable assets.

RFPs: Evaluate bids based on life-cycle value, eco-design, and emissions mitigation.

Governance & Contracts

The Policy Foundation

Individual project design cannot substitute for broad institutional alignment.

Sustained resilience requires integrating climate objectives directly into national PPP laws, regional environmental assessments, and local planning guidelines.

This enses all public infrastructure projects follow consistent, high standards. ur

Translating adaptation plans into binding contractual requirements, establishing independent oversight to verify ongoing operational readiness.

Digital Twins & Analytics

Advanced digital technologies allow public administrators and operators to monitor asset health and predict climate vulnerabilities in real time.

Digital Twins

Creating exact virtual replicas of physical systems to simulate storm and flood impacts before they occur.

Predictive AI

Analyzing real-time sensor data to identify and repair structural weaknesses before they fail.

Telemetry Networks

Deploying remote sensor arrays to monitor changing environmental conditions and track asset performance.

Policy Recommendations

ACTION PLAN

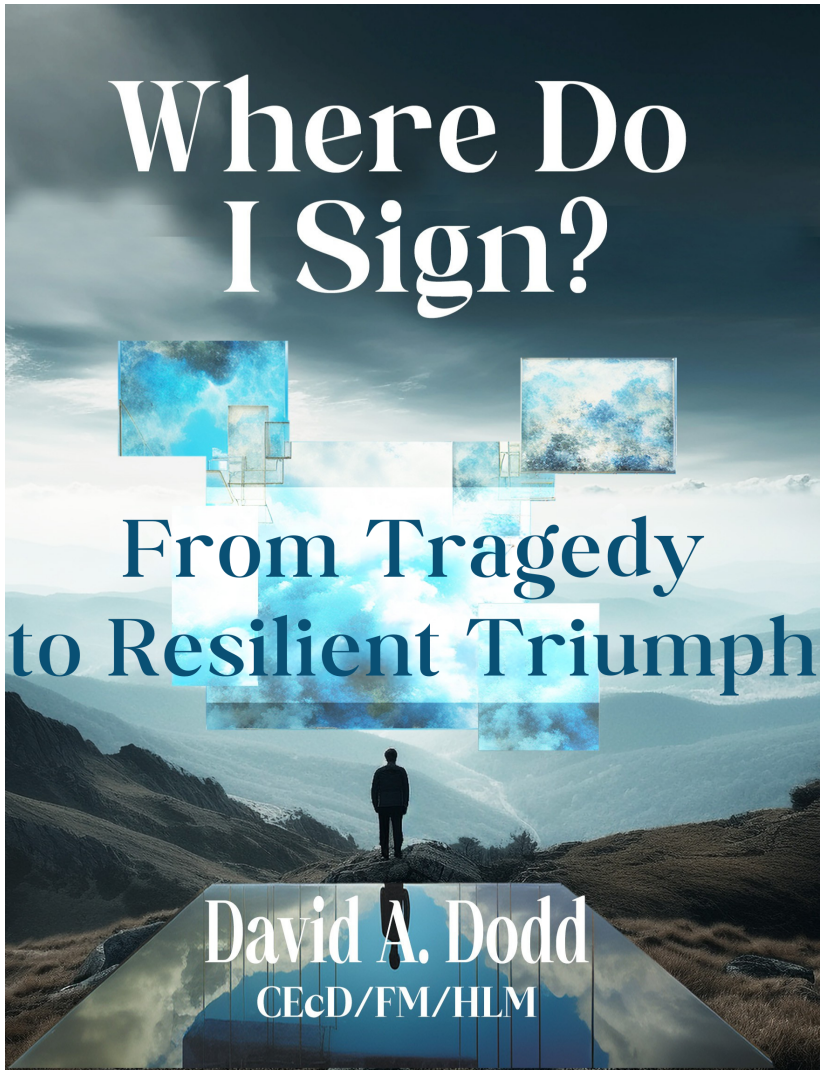
1. Align Regulations: Integrate resilience requirements directly into master PPP planning laws.
2. Standardize Screening: Mandate early-stage climate risk screenings for all public projects.
3. Share Data: Build open-access, regional weather and hazard modeling databases.
4. Prioritize Nature-Based Solutions: Incentivize NbS alongside traditional grey infrastructure.
5. Build Capacity: Train public administrators in modern risk screening and procurement.
6. Mobilize Finance: Create blended finance structures to attract private adaptation capital.

“NOT JUST THE TALK”

Two life-changing events 25 years apart—

1. **Horrific car accident 1994**
2. **Leg amputation in 2019**

Coming Back from Both Instilled Principles for Overcoming Any Setback



Five Principles of Personal Resilience

The foundational principles that protect physical infrastructure also support personal recovery and growth through life's disruptions:

1. Learn Something—learning takes focus off your suffering

2. Find your passion—dedicating yourself to something greater

3, Nurture connections: Building strong, supportive networks with peers, family, and community groups.

4. Turn Passion Into Action: Create Your Own set off actions to achieve your new vision

5. Renewal and Recognition: Creating space for rest, reflection, and physical and mental recovery, and to celebrate success

THANK YOU!!

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