DESIGNERS (ARCHITECTS, ENGINEERS, ETC.)

Who is this pathway for?

This pathway supports architects, engineers, landscape architects, urban designers, and all technical design professionals working in the planning, conception, and realization of buildings, public spaces, and infrastructure whether in private practice, public agencies, or project teams. It is also intended for professional federations, trade associations, and networks that represent these designers. These organizations play a key role in diffusing knowledge, standardizing practices, and upskilling professionals across the sector to drive climate-resilient design at scale.

Designers are on the frontlines of creating the built environment. As climate risks become more severe, their responsibility to design for safety, comfort, and resilience is more urgent than ever. Architects must integrate climate foresight into both aesthetics and function, accounting for risks like heatwaves, flooding, or material degradation. Engineers are similarly tasked with ensuring that buildings, structures, and systems function reliably under changing climate conditions. The pressure is not only technical: clients, insurers, regulators, and investors increasingly demand that design professionals anticipate future risks. This shift brings new expectations but also new opportunities for innovation. Designers can reinvent passive techniques, harness nature-based solutions, and shape spaces that anticipate future disruptions. They also act as mediators between science, regulation, and stakeholders, making their role central to both awareness and implementation. Adapting building stock and infrastructure to long-term risks while managing costs, complexity, and client expectations requires deep transformation in practice. This pathway helps ensure designers are not only compliant with evolving standards but at the forefront of resilience innovation.

Design against yesterday's climate is no longer fit for tomorrow's reality.

Design professionals are increasingly aware of climate adaptation but often lack tools, incentives, or mandates to act. In the short term, architects and engineers must integrate basic climate risk assessments and advocate resilient design. In the medium term, they should co-develop sectoral guidelines, retrofit strategies, and lead public-private collaboration. By 2050, design must be fully aligned with climate-resilient development, shaping buildings that are durable, regenerative, and climate-proofed.

DESIGNERS (ARCHITECTS, ENGINEERS, ETC.)

Short-Term Actions

Actions	Resources & case studies	KPIs
Develop Comprehensive Resilience Training Modules and Cross-Disciplinary Education	Guidance on disaster management (UIA), risk management and sustainability (FIDIC)	Number of in-house or external training sessions held per year on adaptation topics (e.g., passive design, hazard analysis)
Present the Case for Resilience to Clients in Financial, Social, and Environmental Terms	*Climate Resilience in Design* (Fosters & Partners)	% of clients who approve or fund climate adaptation measures following the presentation of resilience cases
Create and Share Resilience Case Studies	Guidance on how to write a case study from Monash University	Number of external events, journals, or online platforms featuring the firm's resilience case studies

Medium-Term Actions

Actions	Resources & case studies	KPIs
Embed Resilience in All Design Briefs and Standards	*Resilience Design Toolkit* (AIA)	% of projects where climate risk assessments were conducted during design phase
Build Capacity through Specialized Resilience and Adaptation Training	AIA Resilience & Adaptation Online Certificate Program	Number of professional certifications or credits (e.g., CPD) earned by staff through adaptation-focused programs
Co-Design and Demonstrate Locally Rooted, Climate-Resilient Solutions	*Traditional Architecture: A Natural Disaster Resilient Alternative* (Advances in Engineering Management, Innovation, and Sustainability, 2024)	Number of prototypes, pilot projects, or co-developed design tools created through these collaborations

Long-Term Actions

Actions	Resources & case studies	KPIs
Lead the Development of Resilient Design Standards	*Delivering Climate-Responsive Building Codes and Standards* (ICC)	Number of new resilient design standards or technical guidelines co-developed or endorsed by the organization
Mainstream Adaptation into Architectural and Engineering Education and Certification	*Integrating SDGs into architecture education* (City and Environment Interactions, 2024)	Number of professional training or certification programs including climate adaptation as a core competency
Showcase Resilient Design as a Cultural and Market Norm	*ROI: Codes, Standards, & Reporting on Resilient Design* (AIA)	Number of resilient design showcases, exhibitions, or competitions organized annually

Short-term actions

Develop Comprehensive Resilience Training Modules and Cross-Disciplinary Education

Action 1

Goal: Provide students and professionals with the foundational skills to integrate climate resilience into design practice.

Description: Academic institutions, professional bodies, and trade organizations should collaborate to create specialized training modules and curricula on climate adaptation and resilience. These modules should be tailored both for students in architecture and engineering programs and for practicing professionals, ensuring that knowledge reaches future and current generations alike. Courses should cover topics such as passive design, climate risk assessment, structural resilience, nature-based solutions, and material durability, complemented by cross-disciplinary workshops and exchange programs that foster collaboration between architects, engineers, and urban designers.

Resources

- Many national professional institutions are increasingly providing training modules. They are encouraged to do more and to curate more appropriately for adaptation. (AIA, Ordre des architectes, etc.)
- International associations of trades can provide resources and certification. The International Union of Architects provides guidance on disaster management and more generally on architecture education, and so does FIDIC on risk management or sustainability, and through its charter. These bodies should work to integrate more adaptation into their certifications.
- Climate Adaptation for Architects: A Design Toolkit (Routledge, 2025) offers 45 adaptation tactics (heat, water, wind, resource scarcity) with design considerations and can form the backbone of training modules.

KPIs

INPUT INDICATORS
Measure the resources required to deliver

- % of design staff who have completed formal training or certification in climate adaptation and resilience

LEADING INDICATORS
Looks forward at future outcomes and events

- Number of in-house or external training sessions held per year on adaptation topics (e.g., passive design, hazard analysis)

LAGGING INDICATORS
Looks back at whether the intended result was achieved

- Increase in proportion of projects explicitly integrating climate-resilient design strategies

Present the Case for Resilience to Clients in Financial, Social, and Environmental Terms

Action 2

Goal: Encourage clients to prioritize resilient designs by demonstrating the value of climate adaptation from various perspectives.

Description: At project inception, designers have a critical opportunity to shape decision-making by presenting a compelling, multi-dimensional case for climate resilience. This includes articulating the financial advantages not only in terms of avoided damage and insurance benefits, but also by emphasizing total cost of ownership (TCO) over initial capital costs. Demonstrating how resilient designs lead to lower operating expenses, maintenance costs, and long-term value retention can shift client priorities beyond first-cost thinking. In parallel, designers should highlight the social benefits (e.g., occupant safety, equity, continuity of service) and environmental co-benefits (e.g., nature-based cooling, water management). Referencing well-established models such as BRI, or UNDRR ARISE adds credibility. When framed effectively, resilience is no longer a premium feature but becomes a sound, future-proof investment.

Resources

- IFC's BRI can provide case studies and showcase how to bring resilience to the attention of clients and investors.
- This *Climate Resilience in Design* article by Fosters & Partnershows how leading design firms integrate resilience into projects and communicate value across design & engineering teams and clients. Useful example to mirror in client briefs.
- The *EU Technical Guidance* and its accompanying *Best Practice Guidance on Buildings' Adaptability to Climate Change* contains case-studies and design solutions; designers can extract data & metrics (e.g., avoided damage, reduced operational cost) to build a business case for resilience to clients.
- A curated *catalogue of nature-based solutions* for urban resilience by the World Bank

KPIs

INPUT INDICATORS
Measure the resources required to deliver

- Number of project proposals including a cost-benefit or total cost of ownership (TCO) analysis for resilience measures

LEADING INDICATORS
Looks forward at future outcomes and events

- % of clients who approve or fund climate adaptation measures following the presentation of resilience cases

LAGGING INDICATORS
Looks back at whether the intended result was achieved

- Long-term reduction in client-reported climate-related maintenance or repair costs

Action 3

Create and Share Resilience Case Studies

Goal: Provide practical examples to guide design and planning.

Description: Designers should document and disseminate case studies that showcase successful resilience strategies and measurable outcomes. Sharing these examples through professional networks, academic platforms, and industry associations helps inform regulations, planning processes, and best practices, while inspiring stakeholders to adopt innovative solutions to climate adaptation challenges.

Resources

- Guidance on how to write a case study from Monash University
- International professional associations like The International Union of Architects or FIDIC provide resources and case studies. (More can be done , and better curation and signposting would be helpful). Refer numerous websites.
- *Designing for Climate Adaptation: A Case Study Integrating Nature-Based Solutions with Urban Infrastructure* (Urban Science, 2025). A practice-based design methodology showing how urban interventions integrate resilience; good reference for designers documenting case studies.
- *Adaptation of buildings to climate change* (Frontiers in Built Environment 2024) presents an overview of research into climate-responsive building adaptation, identifying various factors determining a building's ability to regulate external climatic conditions in providing a habitable indoor environment.

KPIs

INPUT INDICATORS
Measure the resources required to deliver

- Number of case studies or technical sheets developed and shared publicly or within professional networks

LEADING INDICATORS
Looks forward at future outcomes and events

- Number of external events, journals, or online platforms featuring the firm's resilience case studies

LAGGING INDICATORS
Looks back at whether the intended result was achieved

- Measurable uptake of showcased design principles in new projects (internally or by peers)

Medium-term actions

Embed Resilience in All Design Briefs and Standards

Action 1

Goal: Ensure that building designs are cohesive, climate-resilient, and prepared to withstand both current and future climate risks by integrating adaptation needs early in the design phase.

Description: Establish a collaborative workflow where architects, engineers, and other disciplines incorporate climate resilience measures from the inception of projects. This involves embedding adaptation requirements across all design elements such as materials selection, structural integrity, and energy systems to withstand extreme weather and ensure long-term durability. Integrating climate and resilience considerations early in the design phase allows for harmonization of structural, mechanical, and architectural components, ensuring they are designed to handle both current and projected climate impacts. This approach not only reduces exposure to risks during the construction period but also enhances the building's ability to endure and function efficiently over its lifespan, even in adverse conditions.

Resources

- Resilience Design Toolkit (American Institute of Architects) is a step-by-step method to integrate resilience into the design process (hazard identification, team alignment, integration of resilience measures, post-occupancy evaluation).
- *Resilient Project Process Guide* (AIA): Contains sets of questions per project phase and resilience attributes to embed in design briefs and standards.
- "Resiliency Roadmap: Design Strategies for Resilient Buildings": article outlining process of starting resilience conversation early and embedding it in design.
- "Design for Climate, Design for Change" toolkit by Carol Marra giving practitioners actionable steps to strengthen designs (Global North).
- *Comparison of Building Adaptation Projects and Design for Adaptability Strategies* (Journal of Architectural Engineering, 2021). This paper show that integrating adaptability in the design makes buildings more resilient
- Chapter 14 of *Rethinking Building Skins* demonstrate that resilience is a design problem

KPIs

INPUT INDICATORS
Measure the resources required to deliver

- % of design briefs or client contracts containing explicit climate adaptation clauses

LEADING INDICATORS
Looks forward at future outcomes and events

- % of projects where climate risk assessments were conducted during design phase

LAGGING INDICATORS
Looks back at whether the intended result was achieved

- Reduction in project-level exposure or vulnerability scores post-design phase

Build Capacity through Specialized Resilience and Adaptation Training

Action 2

Goal: Equip designers with the knowledge and skills to incorporate resilience practices into their projects, keeping pace with evolving climate risks.

Description: This action calls for a broad commitment to capacity building through structured training programs, which go beyond individual initiative. Professional organizations, trade bodies, and academic institutions should actively develop and deliver dedicated curricula, workshops, and certifications focused on climate resilience. These programs should address key topics such as site-specific hazard analysis, resilient structural and passive design strategies, material selection, and nature-based solutions. By institutionalizing this knowledge across the sector, designers will be better prepared to respond to evolving risks and regulatory expectations, while also leading innovation in climate-smart construction.

- The Pan African Structural Engineering programme by the Institution of Structural Engineers is designed to share technical knowledge and training with structural engineers across Sub-Saharan Africa.
- AIA Resilience & Adaptation Online Certificate Program. Multi-course series for architects covering hazards, vulnerability, resilience strategies, design application.
- Content from the Architectural Education Commission of the international union of Architects

Resources

INPUT INDICATORS
Measure the resources required to deliver

- Partnerships formed with universities, training centers, or professional associations for joint programs

LEADING INDICATORS
Looks forward at future outcomes and events

- Number of professional certifications or credits (e.g., CPD) earned by staff through adaptation-focused programs

LAGGING INDICATORS
Looks back at whether the intended result was achieved

- Improvement in project resilience ratings (e.g., EDGE, LEED Resilience Pilot, RELi)

KPIs

Co-Design and Demonstrate Locally Rooted, Climate-Resilient Solutions

Action 3

Goal: Develop and validate climate-resilient methods adapted to local conditions.

Description: Designers should partner with material manufacturers, engineers, and local communities to co-develop climate-resilient design solutions rooted in local context, culture, and climate realities. This includes reviving and adapting vernacular architecture and traditional construction methods such as earth-based materials, passive ventilation techniques, or flood-adaptive housing forms that have long proven effective in responding to local environmental challenges. These collaborative efforts should produce prototypes or pilots tailored to specific risks (e.g., flood-resilient façades, wildfire-resistant materials, or passive cooling systems), combining modern engineering with ancestral knowledge. Pilots must be documented and monitored to generate performance data and practical insights, supporting both local ownership and broader replication. This approach not only enhances technical robustness, but also preserves cultural identity, promotes resource-efficient design, and strengthens the credibility and scalability of adaptation solutions within and beyond the community.

- The AIA Resilience Design Toolkit explicitly includes post-occupancy evaluation and iteration of resilient design strategies.
- *Traditional Architecture: A Natural Disaster Resilient Alternative in Advances* in *Engineering Management, Innovation, and Sustainability* (2024) shows how vernacular architecture proves better at resisting local hazards while discussing application of traditional construction.
- *Resilience of vernacular and modernising dwellings in three climatic zones to climate change* (Scientific Reports, 2021) discusses thermal comfort with traditional construction methods and materials.

Resources

INPUT INDICATORS
Measure the resources required to deliver

- Number of partnerships or R&D collaborations established with suppliers or developers

LEADING INDICATORS
Looks forward at future outcomes and events

- Number of prototypes, pilot projects, or co-developed design tools created through these collaborations

LAGGING INDICATORS
Looks back at whether the intended result was achieved

- Performance improvement of tested solutions (e.g., durability, energy efficiency, reduced damage in stress testing)

KPIs

Long-term actions

Lead the Development of Resilient Design Standards

Action 1

Goal: Shape the rules and norms that guide adaptation.

Description: Designers, through their professional organizations, should amend and evolve national and international standards for resilient design by incorporating latest research and best practices to ensure consistency, scalability, and credibility of adaptation in the built environment.

Resources

- *EU-level Technical Guidance on Adapting Buildings to Climate Change* (and its accompanying *Best Practice Guide*) gathers methods, specifications, case-studies and best practices for climate-resilient buildings, and how adaptation can be embedded in design and procurement. Provides a rich reference of normative and practical material designers can draw on when working with their professional bodies to evolve standards and guidelines.
- *Delivering Climate-Responsive Building Codes and Standards* (ICC) serves as an advocacy tool: showing legislators/regulators how design standards can evolve and be operationalised, giving designers leverage when collaborating with standards committees.
- FIDIC's *Infrastructure Adaptation for Emerging Economies* provides context and collective tools to develop standards and best practice.

KPIs

INPUT INDICATORS
Measure the resources required to deliver

- Existence of an internal task force or working group on climate-resilient design standards
- % of staff or professional members engaged in drafting or reviewing national/international standards

LEADING INDICATORS
Looks forward at future outcomes and events

- Number of new resilient design standards or technical guidelines co-developed or endorsed by the organization
- Frequency of updates to design specifications incorporating resilience principles

LAGGING INDICATORS
Looks back at whether the intended result was achieved

- Share of projects applying or complying with the new resilience standards
- Reduction in post-construction climate-related damages across compliant projects

Mainstream Adaptation into Architectural and Engineering Education and Certification

Action 2

Goal: Ensure future generations of designers are resilience-ready.

Description: Schools of architecture and engineering should embed resilience and climate adaptation into curricula, supported by professional accreditation bodies. This ensures that resilience is not a niche skill but a universal requirement for practice

- *Integrating SDGs into architecture education* (City and Environment Interactions, 2024) investigates how architectural curricula currently integrate climate and sustainability issues.
- Sustainability in Architectural Education Global Best Practices. Summary of how leading institutions are adapting their programs.
- Global Examples of Best Practices: UCL's Bartlett School of Architecture offers a range of sustainability-focused courses such as "Environmental Design and Engineering" and "Sustainable Urbanism." Students engage in real-world case studies and simulation tools to assess energy use and material performance; Delft University of Technology's "Architecture and the Built Environment" faculty is renowned for research in circular design and building technology. Their curriculum combines digital tools with sustainable materials, systems thinking, and urban climate design ; National University of Singapore (NUS) offers a Master in Integrated Sustainable Design, focused on tropical and urban sustainability challenges. Emphasis is placed on net-zero energy buildings and resilient urban systems, critical for fast-growing Asian cities.

Resources

KPIs

INPUT INDICATORS
Measure the resources required to deliver

- Existence of dedicated modules or courses on climate resilience and adaptation in design curricula
- % of faculty trained in climate-responsive design and adaptation

LEADING INDICATORS
Looks forward at future outcomes and events

- % of students completing resilience-focused coursework or projects before graduation
- Number of professional training or certification programs including climate adaptation as a core competency

LAGGING INDICATORS
Looks back at whether the intended result was achieved

- % of new licensed professionals demonstrating competence in climate-responsive design
- Increase in demand for resilience training and certification among practitioners

Showcase Resilient Design as a Cultural and Market Norm

Action 3

Goal: Position resilience as central to the professions' identity and market value.

Description: Designers should lead public campaigns, exhibitions, and professional showcases demonstrating resilient projects. By making adaptation visible and aspirational, the sector can influence public perception, client demand, and ultimately the culture of construction.

Resources

- *ROI: Codes, Standards, & Reporting on Resilient Design*. AIA resource emphasising that designing beyond codes yields resilience benefits and value to clients.
- *Resilience in the Built Environment: Key characteristics for solutions* (Sustainable Cities and Society 2022) identifies what resilient design looks like and how to evaluate it.
- *Moving toward resilience and sustainability in the built environment* (Structural Safety, 2025). A conceptual discussion on how design and operation must shift to resilience-first.

KPIs

INPUT INDICATORS
Measure the resources required to deliver

- Number of partnerships with cultural institutions, media, or industry associations to promote resilience
- Budget or resources allocated for resilience communication or showcase initiatives

LEADING INDICATORS
Looks forward at future outcomes and events

- Number of resilient design showcases, exhibitions, or competitions organized annually
- Number of awards or recognitions given to projects demonstrating outstanding adaptation strategies

LAGGING INDICATORS
Looks back at whether the intended result was achieved

- Change in client demand for resilient or adaptive design elements
- Increased inclusion of resilience language in tenders, RFPs, and client briefs