



Global Alliance
for Buildings and
Construction

Buildings and Climate Change Adaptation

ADAPTATION OF THE BUILDING SECTOR TO CLIMATE CHANGE: 10 PRINCIPLES FOR EFFECTIVE ACTION




Under the coordination of



RESALLIANCE

October 2021



UN Secretary-General calls latest IPCC WG1 Climate Report a 'Code Red for Humanity', stressing 'irrefutable' evidence of human influence, and that "climate impacts will undoubtedly worsen".

Data collected over the recent decades shows that the climate is currently changing at an unprecedented pace due to increasing concentrations of greenhouse gases in the atmosphere. Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Evidence of observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened since 2007, as shown in the latest IPCC report¹. Climate change will have especially severe consequences all over the world for a built environment designed for steady conditions and for the communities that inhabit them. Understanding these consequences will require the use of projected climate data from RCP models on different spatial scales and several time horizons.

Therefore, GlobalABC is proposing "10 Principles for Effective Action" to policy ² makers and practitioners to join forces and spread climate change adaptation actions in the building sector and willing to track annual progress.

To support these 10 Principles please contact the GlobalABC Adaptation Working Group at globalabc.adaptationwg@o-immobilierdurable.fr.

The building sector faces both transition and physical risks³. In particular, the increasing prevalence of both chronic physical risk factors – like heatwaves or sea-level rise – and acute physical risk factors – like intense precipitation and fires can:

- 🏠 reveal a lack of protection of people and their livelihoods, which represents a key risk in most vulnerable areas;
- 🏠 reduce attractiveness and insurability of assets that have not incorporated climate adaptation measures in the long run;
- 🏠 change the availability of key resources, increasing building operating costs and reducing net operating income;
- 🏠 increase the building sector's exposure to potential damages and financial losses.

The building sector's stakeholders (public and private sectors) need to coordinate and pool their expertise and resources to develop innovative solutions dedicated to resilience and adaptation.

- 🏠 A building should not be understood as a stand-alone system; it is highly dependent on the infrastructures and networks services that enable it to meet the needs of its occupants. Adapting buildings to climate change requires a holistic approach to anticipate the cascading effects that could result from direct and indirect damage.
- 🏠 A building is the result across a close collaboration of numerous stakeholders. Better coordination of the value chain is needed to structure a global climate adaptation strategy in the building sector. A 'radical collaboration' is needed to move the needle.
- 🏠 Implementation of adaptation measures is carried out at different time scales and requires different technical, financial and legal means. In general, developing and disseminating knowledge is a prerequisite for structuring systemic adaptation strategies. Furthermore, while the empowerment of project owners appears to be very important, the entire chain of actors needs to be made aware of and integrated into an adaptive dynamic.
- 🏠 A building is mostly a private investment. However while governments establish an enabling regulatory framework and rely on the power of public procurement to trigger change and lead market transformation, increased dialogue between all buildings value chain actors is required. Finance and insurance actors like investment banks, private banks, rating agencies and insurers play a key role in leading market transformation by requiring all new and refurbished buildings to comply and align with climate change adaptation criteria and targets.



© NOBATECK
© Léo Surgical Clinic and Health Center (Kéré Architecture)

The implementation of these 10 essentials is the key to a common and transversal adaptation strategy for the building sector.

10 PRINCIPLES FOR EFFECTIVE ACTION

FOR THE ADAPTATION OF THE BUILDING SECTOR TO CLIMATE CHANGE

1. **Urgency/ Act now.**
2. **Stakeholders/ Consider a systemic integration of measures for adaptation across the entire value chain.**
3. **Process/ Consider adaptation along the entire lifecycle of an asset.**
4. **Mitigation/ Implement adaptation and mitigation in tandem.**
5. **Data/ Understand climate risk data and accept uncertainty.**
6. **Scale/ Think beyond asset-level.**
7. **Green/ Consider nature-based solutions.**
8. **People/ Promote a “just adaptation” of the building sector.**
9. **Finance/ Enable adaptation of the building sector.**
10. **Local/ Fit adaptation measures to the local context.**

Organisations listed below are member of GlobalABC Adaptation Working Group and initial supporters of the 10 Principles for Effective Action, for Adaptation of the Building sector to climate change.



1. Urgency/ Act now.

BACKGROUND: Buildings host almost all social and economic activities. Impacts of climate change are already felt, particularly by developing countries in the global south, and will continue to increase. Safety and continuity of service in a context of climate change are essential. A strategy addressing priority premises and critical services like hospitals and energy supply is necessary.

RECOMMENDED ACTION: Define a climate adaptation action plan for buildings owned or used by your organisation as soon as possible and implement first actions in the upcoming 3 years, as buildings are long-term physical assets.

2. Stakeholders/ Consider a systemic integration of measures for adaptation across the entire value chain.

BACKGROUND: Many and diverse actors have impact on the buildings value chain. A common adaptation vision, as well as the mobilisation and training of all stakeholders, is essential.

National governments / local authorities / academic actors / investors & asset managers / insurers and re-insurers / property and project developers / architects / engineering companies / material and equipment producers and utility companies / regulation and normalisation actors / building owners and occupants... all should take coordinated actions.

RECOMMENDED ACTION: Engage all stakeholders in a long-term vision that fosters inter-disciplinary and cross-sector collaboration.

3. Process/ Consider adaptation along the entire lifecycle of an asset.

BACKGROUND: Adapting buildings to climate change requires developing an understanding of risk and a commitment to continually improve resilience, beyond that which is required by regulation. It needs to be interconnected with disaster management, whether or not these events are climate-related. Integrating climate change adaptation in buildings requires a systemic approach using comprehensive life-cycle assessment processes.

RECOMMENDED ACTION: Fully integrate adaptation at all stages of the building lifecycle, from planning, design and construction; to ownership and operation / sale and transfer; through to periodic renovation and end of life decisions.

4. Mitigation/ Implement adaptation and mitigation in tandem.

BACKGROUND: Building sector is a major player contributor to greenhouse gas emission that is driving climate change and increasing physical risks – globally buildings generate 39 per cent of world's greenhouse gas emissions⁴. Regardless of how resilient a particular asset is, if it contributes to the climate problem, it hampers the solution. Adaptation needs to always consider its other half of the equation. In a sense, more mitigation means less adaptation.

RECOMMENDED ACTION: Adaptation and mitigation need to be pursued actively and simultaneously to address the current climate threats and avoid the worst future impacts. Integrating adaptation policies in mitigation and development policies is crucial. Action in buildings sector must be a center-piece for both improving resilience and reducing GHG emissions.

5. Data/ Understand climate risk data and accept uncertainty.

BACKGROUND: The rapidly increasing interest from many stakeholders along the value chain for physical climate risk analyses is driving a market for geo-specific physical climate risk data. Physical climate risk data providers often draw upon modelled scenarios such as those used by the IPCC, including the representative concentration pathways (RCPs) used to forecast outcomes under a particular set of assumptions. However, there are limits to the modelling employed in those studies for producing the type of decadal-style variance driven output that can support adaptive planning, particularly relating to the downscaling of model outcomes to the very local environments and asset locations relevant to building owners and stakeholders.

RECOMMENDED ACTION: Those seeking to employ forward-looking climate risk data in the service of adaptive planning need to learn about, understand, and critically use such data taking into account uncertainty. Tools to make climate risk data more understandable and accessible to stakeholders across the whole value chain need to be developed.

6. Scale/ *Think beyond asset-level.*

BACKGROUND: Buildings and urban services are interdependent, and improving the resilience of both is essential. Building resilience is highly related to full integration to city- and community-level resilience.

RECOMMENDED ACTION: Each adaptation action should be designed at the most suitable scale (building, bloc, city). Collaboration is needed between property owners and developers, city management, and community or services providers.

7.Green/ *Consider nature-based solutions.*

BACKGROUND: Many design and development practices are exacerbating climate risk rather than minimising it, and new tools and approaches are required. Nature-based solutions can help address most of upcoming climate impacts. Nature-based solutions leverage the resilience potential of nature to provide significant co-benefits, particularly for improvement of the quality of life, and are often no-regret solutions.

RECOMMENDED ACTION: Work across partners and agencies to promote nature-based solutions from building to city scale (revegetation, natural water management, preservation and restoration of biodiversity, green roofing, sustainable bio-sourced materials...)

8. People/ *Promote a “just adaptation” of the building sector.*

BACKGROUND: Over 1 billion people currently live in informal settlements – a number set to rise to 3 billion by 2030⁶. These populations are predominantly located in areas of the global south that are most vulnerable to the risks of climate change.

A more resilient built environment must address this deficit of quality, resilient and affordable housing, in particular through tackling the systemic economic, financial and regulatory barriers that are inhibiting growth of the affordable housing sector in these markets.

In particular, given the scale of the affordable housing deficit, solutions must be aligned with net-zero mitigation pathways, e.g. low-carbon building materials and energy efficient designs.

RECOMMENDED ACTION: Just as the concept of a ‘just transition’ is gaining currency to protect workers and communities most affected by a shift from fossil to renewable energy stakeholders need to advocate for and align actions with a ‘just adaptation’ to support and protect populations and workers of the building sector that are most vulnerable to physical climate change impacts.

9. Finance/ *Enable adaptation of the building sector.*

BACKGROUND: The focus on short-term payback periods in real estate markets works against anticipating and addressing long-term climate risks, and in so doing negatively affects the resilience of local populations. Now, the growing threat of extreme weather events and the cost of retrofitting may cause asset values to drop and investors to avoid risk prone areas. This hinders effective building sector adaptation, especially in emerging economies. Despite growing awareness, public and private building sector financiers face difficulties addressing increasingly unpredictable climate risks at scale.

RECOMMENDED ACTION: The approach to building sector finance needs to change. Public sector financing, international funds but also private sector financing and private finance initiatives should promptly only be allocated to buildings projects integrating adaptation measures. Investors and financiers should develop their skill set to analyse localised climate risk data in their portfolios and improve their approach to financing adaptation. Synergies with development objectives and mitigation targets, which investors have growing experience with can help promote climate adaptation.


10. Local/ *Fit adaptation measures to the local context.*


BACKGROUND: Adaptation measures are by nature location specific and should be designed locally to guaranty effectiveness. Adaptation to climate change should be considered at a building’s inception and choice of location, as buildings are geo-specifically fixed and are assets of high capital value.


RECOMMENDED ACTION: Systematic preliminary diagnosis should be conducted before starting any new building project to identify future vulnerabilities. An adaptation plan developed at local scale based on local knowledge and building practices should be implemented at the first stage of the project and followed and adapted during the whole life cycle of the building. Anticipating and engineering flexible systems that allow for current and future adaptation should be prioritized.

FOR MORE INFORMATION AND EXAMPLES


More specific actions addressed to each stakeholder group of the building value chain (governments, local authorities, property developers, investors and asset managers, insurers, architects, engineering companies, material, equipment and construction firms, property and facility managers) can be found in the report [Buildings and Climate Change Adaptation, A call for action](#) (GlobalABC, 2021). More specific recommendations from this GlobalABC report as well as other resources freely available include:

 **Urgency.** [BCCA, 2021](#): AEW's adaptation plan p83, Climate Resilient Buildings and Core Public Infrastructure Initiative (CRBCPI) and National Research Council Canada and Infrastructure Canada, p73 [A Practical Guide to Climate-resilient Buildings & Communities](#) (UNEP, 2021)


 **Stakeholders.** [BCCA, 2021](#): Resilient infrastructure committee, Private Sector Alliance for Disaster Resilient Societies (ARISE) in the UAE p83.
[ULI 10 principles for building resilience](#)


 **Process.** [Coalition for Climate Resilient Investment \(CCRI\)](#).
[BCCA, 2021](#): Developing a Lifecycle Approach in the Building Fabric p50.

 **Integration.** [BCCA, 2021](#): Synergies with Mitigation, Adaptation, and Disaster Risk Reduction p21, upcoming PEEB Briefing on integrated climate action for development banks.
[DECARBONIZING THE BUILDING SECTOR - 10 KEY MEASURES](#) (GlobalABC, 2021)

 **Data.** UNEP FI Changing Course: [Climate Risk and Commercial Property Values](#).
[BCCA, 2021](#): Heitman collaboration with Four Twenty Seven to map physical risks p40, OI cartography of climate risk p83;
[Cambridge Institute for Sustainability Leadership](#)
<https://firststreet.org/>

 **Scale.** [Gebiedsontwikkeling.nu](#)
[Gebiedsontwikkeling.nu](#)
[Brochure on cities solutions for resilience to urban heat waves](#). (ADEME, AFD, 2021)

 **Green.** [BCCA, 2021](#): City of Toronto Green Roof bylaw (2009), Canada, p79
<https://waterfrontalliance.org/>
<https://wedg.waterfrontalliance.org/>
[Smart, sustainable and Resilient cities: the power of nature based solutions](#) (G20 Italy – UNEP 2021)

 **Finance.** CCRI Financial Innovation
[GRESB Climate Risk Platform](#)
[MDB and IDFC Common Principles for Climate Change Adaptation Finance Tracking](#)
[Brochure on cities solutions for resilience to urban heat waves](#)



¹ Climate Change 2021: The Physical Science Basis (IPCC Working Group 1, 2021)

² This proposal is based on the outcome of the GlobalABC Report « Buildings and Climate Change Adaptation, a call to action » listing specific actions addressed each stakeholder of the whole building value chain – governments; local authorities; property developers; investors and asset managers; (re)insurers; architects; engineering companies; material, equipment and construction firms; property and facility managers.

³ Buildings and Climate Change Adaptation, A call for action (BCCA, 2021)

⁴ 2019 Global Status Report for Buildings and Construction

⁵ The Representative Concentration Pathways (RCPs) describe scenarios corresponding to specific trajectories of greenhouse gas concentrations in the atmosphere and their corresponding levels of radiative forcing. The RCPs are used to project various consequences of climate change.

⁶ <https://unstats.un.org/sdgs/report/2019/goal-11/>

ACKNOWLEDGEMENT

This publication was coordinated by
Marie-Pierre Meillan - ADEME
Régis Meyer – Ministère de la Transition Ecologique – France
Karim Selouane – RESALLIENCE
with the support of all members from GlobalABC Adaptation
Working Group.

Karine Dari - AFNOR
Stéphane Pouffary – Energies 2050
Idriss Kathrada - FIDIC
Erik Landry – GRESB
Laura Georgelin – Observatoire de l'Immobilier Durable
Donovan Storey – REALL
Tom Woodward – REALL
Jonathan Duwyn – UNEP
Matthew Ulterino – UNEP FI
Roland Hunziker - WBCSD

Photo credits
© NOBATECK
© Léo Surgical Clinic and Health Center (Kéré Architecture)

