



Reconstructing the Future for People and Planet

Final Statement of the Workshop



The Pontifical Academy of Sciences (PAS) has a track record of organizing eminent events addressing anthropogenic global warming, biodiversity loss, social inequality, forced displacement, migration and other burning issues related to the imminent sustainability crisis of the planet, our *common home*. On 9-10 June 2022, the PAS extended its topical reach and convened a symposium dedicated to the scientific, socioeconomic, political, ethical and aesthetical challenges associated with the contemporary built environment. The meeting brought together cultural leaders, decision makers, scientists, architects, designers, experts and practitioners for an unprecedented transdisciplinary discourse at the highest possible level (see [Program and List of Participants](#)).

The Habitability Challenge

The conference reflected the deep concerns expressed by the Holy Father in his ground-breaking 2015 encyclical *Laudato si'*: “Nowadays, (...) we are conscious of the disproportionate and unruly growth of many cities, which have become unhealthy to live in (...), huge, inefficient structures, excessively wasteful of energy and water. Neighborhoods, even those recently built, are congested, chaotic and lacking in sufficient green space. We were not meant to be inundated by cement, asphalt, glass and metal, and deprived of physical contact with nature” (44).

As a matter of fact, human activities have already replaced more than half the planet’s biomass with materials of mineral origin, industrially extracted from deep seams in our lithosphere and processed, with immense input of fossil-fuel energy, into an array of consumer products. Yet,

despite such massive physical investment and environmental impact, settlements do not meet the basic needs of much of the world's population, who lacks dignified and safe dwelling spaces, economic opportunities, and cohesive communities.

The built environment is arguably also a most important factor in the climate equation: supra-structures and infrastructures are directly responsible for roughly 40% of the global greenhouse gas emissions, if one adds up the effects of construction, operation, and demolition. The informal sprawl and dysfunctional distribution of cities and villages causes significant further emissions, especially by forcing people to commute over long distances using vehicles powered by fossil fuels. In the next three decades, the urban building stock is projected to double in order to meet the demands of 10 billion people on Earth.

The bitter irony is that all these activities, meant to create good new habitats for people worldwide, are likely to reduce the overall habitability of our planet in dramatic ways: The combined effects of sea-level rise, increasing temperature and humidity, modified extreme-weather patterns and direct ecosystems degradation by land-use change would destroy the living space for *3-4 billion people* in a business-as-usual scenario for the next few centuries – thereby ruining much of humanity's *common home* (Pope Francis). This is not the future we want for the generations to come, so let us reconstruct it!

The New Bauhaus Movement

One of the keynote speakers of the PAS conference, the European Commission President Ursula von der Leyen, launched an exciting initiative entitled “New European Bauhaus” (NEB) in 2020. She referred explicitly to the legendary *Bauhaus* design school, which was founded by Walter Gropius in Weimar in 1919, i.e. in the post-World War I period that required deep socioeconomic and technological transformations. “Bauhaus Earth” (BE), a not-for-profit organization based in Berlin & Potsdam, which co-organized the Vatican event, was created a bit earlier (2019) – precisely one hundred years after the historic Bauhaus.

Both entities are spearheading an emerging global movement that takes an *integrated approach* towards the built environment, guided by the key criteria of *sustainability, inclusiveness and beauty*. However, while the whole-systems' perspective is adopted from Gropius et al., the New Bauhaus communities need to operate in the 21st-century setting. This means that construction, urbanization and rural planning have to be pursued:

- (i) Within the safe operating space for humanity as defined by the planetary boundaries;
- (ii) As a vital part of the overall socioeconomic transition to a smart circular bio-economy; and
- (iii) From an explicitly non-colonial perspective that respects the rich cultural diversity of settlement

planning & construction around the world.

The Re-Entanglement Vision

The first Bauhaus movement revolutionized the conventional ways of constructing and dwelling. This transformation brought about many benefits for the rapidly growing populations of the industrialized countries. However, it also triggered maldevelopments like the “functional disentanglement” within settlements – as cautiously discussed in the “Charter of Athens” (1933) and brutally executed in many parts of the globe after World War II. This “modern” approach, which all too often destroys our relationships with each other and with nature, needs to be redesigned to create a better modernity. Humankind has now recognized that its long-term future will not be secured by the total enslavement of the biosphere, but rather by coexistence and collaboration with other life forms on Earth.

All this means that the 21st century must be the century of re-entanglement, where *quintessential functions are integrated within urban space again* and where *socioeconomic and ecological systems form an interpenetrating, mutually supportive network of networks*. This return to the appreciation of nature in the built environment does in no way exclude the harnessing of the most advanced cognitive tools currently developed by our civilization, ranging from genome editing to artificial intelligence. Most of this is subsumed under the notion of “digitalization”, although the incipient rise of quantum computing may render this label obsolete. If there is a benign long-term future for the human project on Earth, it will be secured by the successful marriage of disruptive innovations with evolutionary nature-based solutions: *hi-tech meets no-tech*.

An Agenda for Deep Transformation

During the preparation, execution and evaluation of the conference, twelve propositions were identified that should guide and concretize our response to the Habitability Challenge as described above.

1. Invest in nature

Nature is the existential infrastructure of life on Earth – including human life. The only solution to heal the planetary crisis is to strengthen the covenant between human beings and the environment.[1]

2. Expand the systems boundaries of design & governance and the temporal & spatial scales of our agency

We must marshal human experimentation and innovation to drastically limit negative impacts and embrace systemic, trans-scalar, and cross-sector environmental benefit.

3. Enhance rather than deplete biodiversity

By valuing all species as well as our own and recognizing the range, complexity, and potential of our natural landscapes, we can supply renewable materials and services for our cities, while improving the health, diversity, and distribution of those same natural systems.

4. Sink carbon by construction

We can transform settlements from climate culprits into carbon banks by prioritizing organic building materials such as timber and bamboo, offsetting or even overcompensating their lifecycle greenhouse gas emissions.

5. Capture natural energy rather than extracting fossil fuels

We must take full advantage of the potential active and passive thermodynamic exchanges and energy generation associated with the vast surfaces we have arrayed across our constructed landscapes.

6. Question why we build and what we build with, and prioritize the reuse of existing buildings and materials

When we promote circularity through multiple material reuse and embrace the repair, maintenance, and upgrade of our current building stock, we avoid a whole new set of environmental burdens. Our critical assessment of the very premise of new building must accompany a rigorous analysis of the substances and spaces we truly need.

7. Build dense and polycentric cities to restore urban community and regional wildlands

Cities, when convivially organized and clearly bounded, are inherently efficient organisms. By reigning in their spatial extents, we avoid the conversion of biologically productive land into sprawling, infrastructurally attenuated, automobile-oriented hardscapes.

8. Provide secure and dignified homes for all people to build social equity, economic livelihood, and shared respect for our common resources

Housing is not merely a means of survival, a commercial product, or an investment instrument. If better understood as a dwelling, the city provides homes where individuals and families can grow and evolve comfortably, within well-considered, functional, healthy, and spiritually restorative spaces.

9. Make public space the essential infrastructure of cities and the site of socio-political discourse

and innovation

Our species can only mobilize its innovative capacities, determination, and solidarity to address the contemporary existential crisis if we form strong and cohesive societies. Rather than retreating into segregated islands of difference, we should focus on strengthening and expanding the fabric of public space. Let us create, for instance, outdoor paradises that also mitigate extreme climatic conditions.

10. Empower rural communities and engage the traditional knowledge and practice of indigenous peoples and non-Western cultures

The inextricable relationship between dense, vibrant cities, and the ecosystems and human settlements of their hinterlands depends on the sustaining and rewarding livelihood and cultural practices of the individuals and communities who dwell there.

11. Welcome new urban citizens

The unfolding climate emergency has compounded ongoing political conflict and economic inequity to displace hundreds of millions worldwide. Settlements must offer the necessary elasticity to absorb the natural transiency of people, ideas, and materials that will be necessary to cope with the dire challenges our civilization faces.

12. Redefine beauty by building with love and compassion for humans and non-humans alike

Regenerative building is an opportunity to redefine and entrench a new sense of beauty and joy in the making and experience of construction – for the people and non-people who inhabit our Earth.

Our Shared Commitment

In summary, we must turn the production and operation of our built environment into a force for the preservation and even restoration of nature by:

- Converting our cities from CO₂ sources into durable carbon sinks by substituting mineral-based building materials with sustainably harvested bio-resources;
- Upgrading and retrofitting our existing building stock;
- Redirecting material recovered from industrial, agricultural, and consumer waste streams towards reuse in new buildings; and
- Turning sealed surfaces (e.g., facades and rooftops) into living membranes.

The systemic re-formation of design and building practices at all scales will entail novel realms of governance, interdisciplinary thinking and making, radical experimentation, innovative educational initiatives and learning networks, crosscutting knowledge management, purposeful communication

and participatory action. In addition to new materials, means, and methods, we seek new conceptual approaches with which we will transform the *Anthropocene City*.

[1] Pope Francis, [*Address to the Participants in the Meeting “Faith and Science: Towards COP26”*](#), 4 October 2021. The “Faith and Science: Towards COP26” meeting brought together Christian leaders – Catholic, Lutheran, Orthodox – as well as representatives of Islam, Judaism, Hinduism, Sikhism, Buddhism, Confucianism, Taoism, Zoroastrianism and Jainism. Concluding, the Holy Father pointed out: “*Openness to interdependence and sharing, the dynamism of love and a call to respect*. These are, I believe, three interpretative keys that can shed light on our efforts to care for our common home. COP26 in Glasgow represents an urgent summons to provide effective responses to the unprecedented ecological crisis and the crisis of values that we are presently experiencing, and in this way to offer concrete hope to future generations. We want to accompany it with our commitment and our spiritual closeness”.