



THE PONTIFICAL
ACADEMY OF SCIENCES

BAUHAUS DER ERDE

WORKING GROUP ON

RECONSTRUCTING THE FUTURE FOR PEOPLE AND PLANET



9-10 JUNE 2022 | VATICAN CITY



Many of those who possess more resources and economic or political power seem mostly to be concerned with masking the problems or concealing their symptoms, simply making efforts to reduce some of the negative impacts of climate change. However, many of these symptoms indicate that such effects will continue to worsen if we continue with current models of production and consumption. There is an urgent need to develop policies so that, in the next few years, the emission of carbon dioxide and other highly polluting gases can be drastically reduced, for example, substituting for fossil fuels and developing sources of renewable energy. Worldwide there is minimal access to clean and renewable energy. There is still a need to develop adequate storage technologies. Some countries have made considerable progress, although it is far from constituting a significant proportion. Investments have also been made in means of production and transportation which consume less energy and require fewer raw materials, as well as in methods of construction and renovating buildings which improve their energy efficiency. But these good practices are still far from widespread.

Pope Francis, *Laudato Si'*, N. 26.

CONCEPT

The Pontifical Academy of Sciences (PAS) has a track record of eminent events addressing anthropogenic global warming, biodiversity loss, social inequality, forced migration and other burning issues related to the imminent sustainability crisis of our civilization. PAS also supports the worldwide discourse initiated by *Laudato si'*, Pope Francis' game-changing encyclical on the "care for our common home". In that document, the Holy Father addresses, *inter alia*, the deplorable state of the contemporary built environment: "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. Neighbourhoods, 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)

The built environment is also a crucial factor in the climate equation: Buildings 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 dysfunctional distribution of cities and villages in space causes significant further emissions, especially by forcing people to commute over long distances using vehicles powered by fossil fuels. Beyond the environmental dimensions, contemporary settlements often divide, rather than unite, social strata and leave the "bottom billions" of human beings behind in slums and favelas.

In spite of these disturbing facts and the decisive role cities and villages will play in the global transition to a sustainable near-circular bioeconomy, insufficient attention is being paid to this critical Anthropocene challenge. Recently, in her state-of-the-European-Union speech held on 16 September 2020, Commission President Ursula von der Leyen announced an exciting initiative entitled "New European Bauhaus" (NEB). 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 time that also required deep socioeconomic and technological transformations.

The proposed conference intends to pick up and amplify that momentum by

- (i) reviewing the scientific evidence and the emerging concepts for sustainable construction, urban design and spatial planning;
- (ii) assessing what has been accomplished so far with NEB-type initiatives internationally; and
- (iii) outlining the agenda for research, innovation and implementation in the relevant fields during the next decade.

This shall be achieved by bringing together cultural leaders, decision makers, scientists, architects, designers, experts and practitioners at the highest possible level.

AIMS & SCOPE

Similar to the intentions of NEB and related recent initiatives (such as the "Bauhaus der Erde"), the conference will take an *integrated approach* towards the built environment, guided by the key criteria *sustainable, inclusive and beautiful*. Moreover, it will explicitly adopt an *international perspective* that respects the rich *cultural diversity of settlement planning & construction* around the world. Last, but not least, it will address the predicament of *informal urbanization* that calls for novel attitudes and practices.

Constructing – in the true sense of the word – a future within the planetary boundaries for some 10 billion people is a breathtaking challenge. Fortunately, many novel options for "building better" are becoming available now, such as timber-based high-rise construction, AI-assisted design, serial pre-fabrication of components, smart recycling technology, multi-functional land use, integrated regional resource management, community-based urban development, and so on. From the climate point of view, a thoroughly concerted forestry-construction strategy could stop the degradation of natural ecosystems worldwide, while turning cities into major carbon sinks.

The first part of the conference will focus on the built environment as a critical part of the anthroposphere to be transformed. Scientist, architects, planners and decision makers will present the most advanced thinking in their respective fields and remits.

The second part of the conference will widen the lens to address the whole-systems context in which the settlements of the post-fossil era shall develop. Humankind has finally 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. This means, in particular, that our economic system should not only be decarbonized, but largely *demineralized* too. The resulting bioeconomy, characterized by region-specific value chains, almost-closed material cycles and completely-renewable energy sources, must also capitalize on neglected traditional and indigenous knowledge.

This does in no way exclude to harness 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 "digitalization", although the incipient rise of quantum computing may render this label obsolete. The meeting should at least touch upon the successful marriage of disruptive innovations with evolutionary solutions: hi-tech meets no-tech!

PROGRAM

9 JUNE 2022

TIME	SESSION	SPEAKER	
09:00	Session 1 - Opening		
-	Chair:	Prof. Dr. Joachim von Braun	
10:40	Words of Welcome	Prof. Dr. Joachim von Braun	09:00 – 09:05
		Card. Peter Turkson, PAS Chancellor	09:05 – 09:10
	Saving the World by Construction	Prof. Dr. Hans Joachim Schellnhuber	09:10 – 09:40
	The New European Bauhaus Vision	President Dr. Ursula von der Leyen	09:40 – 10:10
	Sustainable Architecture	Diébédo Francis Kéré	10:10 – 10:40
10:40	BREAK		
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11:00	Session 2 – Construction Challenges and Solutions Across the Globe		
-	Chair:	Bishop Marcelo Sánchez Sorondo	
12:50	Critical Appraisal of Building Materials	Prof. Dr. Andreja Kutnar	11:00 – 11:20
	African Context	Wanjira Mathai 	11:20 – 11:40
	Asian Context	Xu Tianfan 	11:40 – 12:00
	Latin-American Context	Ana María Durán Calisto	12:00 – 12:20
	MENA Context	Wael Al Awar	12:20 – 12:40
	Discussion	Everyone	12:40 - 12:50
12:50	LUNCH		
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13:50	Session 3 – Meeting the Bauhaus Earth Challenges - Sustainable, Inclusive, Beautiful		
-	Chair:	Prof. Dr. Philipp Misselwitz	
15:00	Climate-Smart Construction and Urbanization	Prof. Bjarke Ingels	13:50 – 14:10
	Sustainable digitization and data democracy for urban transformation	Prof. Dr. Francesca Bria	14:10 – 14:30
	How to “Build” Equity	Prof. Edgar Pieterse	14:30 – 14:50
	Discussion	Everyone	14:50 – 15:00
15:00	BREAK		
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15:20	Life, growth, death, and sustainability from organisms to cities and society	Prof. Dr. Geoffrey West	15:20 – 15:40
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16:30	The Popularity of Beauty	Prof. Lesley Lokko	15:40 – 16:00
	Regulations 4 Future	Klaus Mindrup	16:00 – 16:20
	Discussion	Everyone	16:20 – 16:30

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16:30 - 17:45	Panel Discussion and Conclusions from Day 1	Chair: Prof. Dr. Veerabhadran Ramanathan 
		Federal Minister Klara Geywitz
		Vicente Guallart
		Prof. Alan Organschi
		Monica Tanuhandaru

10 JUNE 2022

TIME	SESSION	SPEAKER
09:00 -	Session 4 – From Mining to Gardening	
10:20	Chair:	Sandrine Dixson-Declève 09:00 – 09:10
	Mauritanga: activating transformations for an ecological urbanism	Prof. Dr. Amanda Yates  09:10 – 09:30
	Towards a Circular Bioeconomy	Dr. Elspeth MacRae  09:30 – 09:50
	Paradise Found	Andrea Gebhard 09:50 – 10:10
	Discussion	Everyone 10:10 – 10:20
10:20 -	COFFEE BREAK	
10:40 -	Session 5 – Natural and Digital Resources	
11:50	Chair:	Prof. Edgar Pieterse
	Farmer-led Fight against Desertification	Tony Rinaudo  10:40 – 11:00
	Sustainable Forest Management	Dr. Marc Palahí 11:00 – 11:20
	The Power of Digitalization	Prof. Dr. Carlo Ratti  11:20 – 11:40
	Discussion	Everyone 11:40 – 11:50
11:50 -	STRETCH BREAK	
12:00 -	Session 6 – Settling the Unsettled	
13:10	Chair:	Prof. Dr. Vyjayanthi Rao
	The Challenge of Informality	Sheela Patel 12:00 – 12:20
	Emergency Architecture	Prof. Dr. Shigeru Ban 12:20 – 12:40
	Rebuilding Ukraine	Olena Vozniak  12:40 – 13:00
	Discussion	Everyone 13:00 – 13:10
13:10 -	LUNCH	
14:10 -	Session 7 - Conclusion	
15:30	Chair:	Prof. Dr. Joachim von Braun and Prof. Dr. Hans Joachim Schellhuber
	The Christian Perspective	Archbishop Paul Gallagher 14:20 – 14:50
	Discussion of Conference Statement	Everybody 14:50 – 15:30

LIST OF PARTICIPANTS

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DnA_Design and Architecture

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Chiesa di Santo Stefano degli Abissini
St Stephen of the Abyssinians Church

Sede della Pontificia Accademia delle Scienze
Seat of the Pontifical Academy of Sciences
(Casina Pio IV)

Ingresso del Perugino
The 'Perugino' gate

Ingresso Musei Vaticani
Entrance gate to the Vatican Museum

Domus Sanctae Marthae

Altare Tomba S. Pietro
Altar of St Peter's Tomb

Ingresso Sant'Uffizio
The 'Sant'Uffizio' gate

Ingresso Sant'Anna
The 'Sant'Anna' gate



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