## Conclusions

*EFI Chair, Prof. Marco Marchetti*

Dear ladies and gentlemen, colleagues and especially dear young people, I think that today we have put the right basis for "Placing nature and people at the center of the urban environment". First of all, I have to thank all speakers and participants for making this event a very special meeting point for forest scientists, architects and practitioners to debate the future of our cities.

We have seen the possibility of an actual transition towards Biocities (!), the importance of bringing back nature to cities and the benefit of using wood. It has been one of the most visionary, special, and multidisciplinary events among our copious scientific seminars along our 30-year history. We have probably brought our forest community to a border, rather a frontier. Today´s event is the best example of the approach that our new EFI Biocities Facility will follow! We want to work across disciplines and sectors to transform the urban environment and make it sustainable.

Biocities: it is a new vision that EFI wants to guide, in order to support urban areas to lead the transformation from the existing linear and fossil based economy to a circular bioeconomy. A new economy based on a new and synergistic relationship between nature and society, economy and ecology, rural and urban areas.

Biocities are urban socio-ecological environments that enhance human health and support sustainable wellbeing while being regenerative, climate-neutral and nature-positive. To achieve that, and based on today´s discussions, Biocities should rely on three principles that could form the *Manifesto* of the Facility, to be joined to the research agenda that has already been prepared.

**First, create an Urban-Nature symbiosis**

- Promoting and integrating more nature, trees and forests as the backbone of city landscapes can substantially reduce energy consumption in buildings for cooling or heating and minimise the urban heat island effect. Urban forests and trees are essential for the physical as well as mental health and sustainable wellbeing of urban populations. An increasing amount of research demonstrates that access and exposure to urban green spaces such as street trees, parks, gardens and forests, improves human mental, physical, and social health. Findings from across the world suggest a relation between urban forests and a number of health outcomes, many have been mentioned today. Therefore, the future requires not only a restorative relationship between cities, nature and the ecosystems from which they draw resources for their sustenance but rather a symbiotic one where natural systems become the basis for the urban fabric and the urban metabolism of the 21st century. In this context, we need quantifiable indicators to guide strategies and actions by the city councils. For instance, the 3m - 30% canopy cover - 300m distance rule mentioned today could be a simple and clear approach to monitor progress towards this principle.

**Second, an urban transition to bio-materials**

- We have to overcome and go beyond smart concepts, running towards bio and eco approaches: cities consume most of the energy and materials we use, while also being the source of two-thirds of the world's greenhouse gas emissions. Around 30% of all greenhouse gas emissions arise from the production of bulk materials like cement, metals, chemicals and petrochemical products, primarily consumed in urban areas. Non-metallic minerals such as sand, gravel and clay account for about 50% (44 billion tonnes) of all resources that we extract from the Earth with great negative implications for nature and biodiversity. Those non-renewable resources are the basis for the carbon-intense materials, such as concrete, that have been used as the basis for our built environment since the industrial era started. Producing the volume of new housing required by 2050 could claim up to 20% of the remaining carbon budget for 2020-2050 if mineral-based construction materials such as steel and concrete were used. But wood has never left mankind and nowadays, when a system change is urgently needed to decarbonise the build environment, it is still here with innovation and traditions at our disposal. This requires the deployment of scalable renewable energy solutions within and around cities and accelerating the transition to regenerative biobased (timber, bamboo and other biomaterials) construction, which stores rather than emits atmospheric carbon while creating the market signals to incentivize the expansion of global forests. A shift to biomaterials, based on engineering wood, would transform the urban metabolism - while reducing the amount of materials used and creating durable carbon pools. In this context, we need new approaches and certification schemes to account for the carbon emissions and storage link to different type of buildings and clear incentives, via public procurement or carbon credits to scale up action.

**Third, aim for self-sufficiency and synergies within surrounding bioregions**

- Cities need to maximise their ability to meet their own demand for biodiversity and wellbeing with renewable energy, food, water and relevant goods and services from ecosystems and infrastructures within the city's boundaries or from the surrounding areas while minimizing the inputs needed. Biocities could help in social innovation to avoid land take and soil sealing, to limit gentrification and to reconcile town and countryside, urban and rural, plains and mountains…, with their own values. Long-term regenerative strategies to develop synergistic relationships between cities, their surrounding bioregions should be mandatory to operationalize the offsetting-insetting of urban-driven value chains. With the growing consumer preference for local, organic foods, cities can combine solar energy and urban farming within their green infrastructure strategies. Urban farming will not only build resilience in the local food chain, but also contribute to food security. Biocities should work with their bioregions to create networks of farms and demonstration forests sponsored by cities that can strengthen the local economy, provide nutrition, increase urban access to nature, support social

cohesion and contribute to people´s health and wellbeing. Water is another crucial resource to address, minimizing impermeable surfaces, maximizing natural recharge, and utilizing rainwater as a resource. Additionally, buildings must become themselves infrastructure for water recycling and regeneration. Water is a key blue infrastructure in urban planning to bring us closer to nature. Green and blue infrastructures should be planned holistically within the Biocities and the surrounding bioregions.

Finally, in addition to these three principles, transitioning to Biocities is a challenge for truly transdisciplinary research and for transformative approaches that combine urban and landscape planning, medical science, architecture, forestry, ecology, biology, chemistry, sociology, agriculture, landscape architecture, industrial design, engineering, economics, governance, and social sciences. It also requires political leadership, and the active participation of urban and rural citizens. The EFI Biocities Facility will work to connect the dots between the different actors having science at its centre. There is the need to take action to transform to transform all these ideas into action plans for the cities and the regions, starting also to transform urban regulations to make all of these happening in short time. Never like now we need to reaffirm the role of scientific-based ecological approaches to planning and design, ecology is a primary form of peace! And if we will succeed, it would be easier to inform people about the importance of forests and trees, existing and new ones. *From cities back to forest* will therefore be another opportunity in this crucial time of cultural and educational transition. Conflicts and trade-offs among ecosystem services should address the importance of land sharing vs. sparing, as we know very well in sustainable forestry. It’s time for urgent action. Biocities has been born to drive and push such collaborative initiatives in the ecological functioning of urban systems.