

Press Release

## DIGITAL & CIRCULAR Towards a Circular Society

A MAK exhibition

Opening	Tuesday, 22 June 2021, 6 p.m.
Exhibition Venue	MAK Works on Paper Room and MAK Columned Main Hall (1st floor) MAK, Stubenring 5, 1010 Vienna
Exhibition Dates	23 June – 3 October 2021
Opening Hours	Tue 10 a.m.–9 p.m. Wed–Sun 10 a.m.–6 p.m.

The exhibition *DIGITAL & CIRCULAR: Towards a Circular Society* impressively demonstrates how digital innovations can help advance the ideal of a circular society. At the heart of the exhibition is a spectacular research project initiated by the internationally renowned social ecologist Assoc. Prof. Helmut Haberl (Institute of Social Ecology, BOKU–University of Natural Resources and Life Sciences, Vienna) that analyzes the material stocks in Austria with unprecedented accuracy. EOOS NEXT and Process Studio have made the results of this research accessible to the general public in an expansive installation in the MAK's Works on Paper Room. In doing so, they are also drawing attention to a new role for designers in the future: to bring about social change on the basis of scientific findings.

Among the material stocks accumulated by the Austrian society, the materials used in the construction industry weigh the most. In order to measure them, a research group around Helmut Haberl evaluated remote sensing data from two satellites belonging to the European space program Copernicus with the aid of a machine learning computer algorithm in cooperation with colleagues at the Humboldt-Universität zu Berlin. Using a combination of big data and approaches from industrial ecology, every house, every building, every street, and every other piece of infrastructure in Austria was recorded in three dimensions and its type, mass, and material composition mapped.

EOOS NEXT became aware of this research group. In the context of the Biennale, the major project *Über Bäume und Beton. Flächenversiegelung in Österreich* [On Trees and Concrete: Impervious Surface Expansion in Austria] was developed, which condenses numerous aspects of the research into an interdisciplinary design project and draws visitors' attention to the big picture.

For Change

28.5.–3.10.2021

viennabiennale.org

"Whereas nature does not produce any waste but has a circular life cycle, fossil fuel-based industrialization developed the destructive counter model of a linear economy and society, the 'take-make-waste' approach in which resources are extracted, used in manufacturing, and after use the products are disposed of as waste. A forward-looking mindset based on the Biennale's motto PLANET LOVE internalizes the natural cycle. This important exhibition contribution in the MAK's Works on Paper Room highlights the importance of a sustainable circular economy as a central principle of CLIMATE CARE," according to Christoph Thun-Hohenstein, Head of the VIENNA BIENNALE and General Director of the MAK.

For the exhibition *DIGITAL & CIRCULAR: Towards a Circular Society*, EOOS NEXT and Process Studio developed four installations, each of which focuses on an important aspect of the circular society:

#### DATA GENERATION

A projection shows the elaborate process of digitalizing Austria's material stocks by means of remote sensing, crowdsourcing, industrial ecology, and autodidactic computer programs in an unprecedented resolution of 10 x 10 meters.

#### NEW MAPS

Large-format maps (1.5 x 3 m) show the distribution of the mass of trees, buildings, streets, and infrastructure on the surface area of Austria. The data were visualized using an elaborate graphic method by Process Studio and realized as a digital print. One map shows the stocks of living plants, another map Austria's already very extensive impervious surfaces. The two maps also represent the two fundamental principles of the circular economy: the biological and the technical cycle.

#### MASS RATIOS

One of the aims of the BOKU's research project was to estimate and map the material masses of Austria's infrastructure and buildings. For the MAK exhibition, these data were combined with information on the country's biological stocks (trees). The material stocks accumulated by humans around the world in buildings and infrastructure roughly correspond to the biomass of every single terrestrial plant on Earth combined. The major mass flows that are constantly necessary to build and reproduce these stocks have a direct and indirect influence on the climate crisis. A recent article in the well-respected scientific journal *Nature* ("Global human-made mass exceeds all living biomass," Elhacham et. al., 2020) revealed that there is twice the amount of plastic in the world as there is animals, and that the mass of buildings and infrastructure has already surpassed the total biomass. Austria exceeds these already alarming numbers. Here there is already double the amount of mass in buildings and infrastructure as there is biomass. This critical situation is demonstrated impressively in

the exhibition by three hanging Sonnenglas lanterns that weigh the same and represent buildings, streets, and trees—a fragile mobile hanging in the space.

### LINEAR ECONOMY MARBLE RUN

Maps only visualize one aspect of the environmental problem we face: land consumption. For a better understanding of our linear economy, EOOS NEXT translated the data about all material flows in Austria into a marble run. In this dynamic model, the moving material flows are systematically connected to the already accumulated material stocks. The largest material flow neither ends up as waste nor is it recycled; instead, it ends up as stocks. Every year, incredible amounts of materials are added to the existing stocks. Almost a thousand steel and wooden balls illustrate this problem in the exhibition. The data again come from the BOKU's research group and were specially prepared for this MAK project. The marble run as a medium makes it easy for everyone to understand the problematic structure of our current economic system. At the same time, the model invites visitors to reimagine and rebuild this structure as a circular society. It is as easy as child's play: keep the balls in motion for longer, use fewer balls, and bring the enormous stocks of balls back into play. Nature shows us how: there, the biomass has hardly changed since industrialization, and nature obviously does not produce mountains of waste. The only energy needed comes from the sun.

The Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) came on board as a supporter of this Biennale project. "Digital technologies make an important contribution to tackling the climate crisis. They stimulate numerous technical and social innovations and thereby put us on the path towards a circular society," according to Federal Minister for Climate Action Leonore Gewessler.

### DIGITAL POTENTIALS FOR A CIRCULAR SOCIETY

Alongside this major project, Christoph Thun-Hohenstein, Head of the VIENNA BIENNALE and General Director of the MAK, invited selected experts from a wide range of disciplines to brainstorm which approaches can be used to expedite the establishment of the circular society. Several online panels identified promising digital innovations but did not consider their detailed elaboration. In particular, the panel discussions revolved around the following questions: What motivations are needed for fundamental behavioral change towards a circular mindset/circular society? What role can be played by digital transparency? How can digital innovations in general convey circular thinking as key educational content and how can they help to shift moral values in politics towards a circular mindset? Furthermore, the topics of dematerialized consumption and digital proof of circularity were discussed, as well as ideas for digital marketplaces and standards for data exchange between companies in order to save resources.

28.5.–3.10.2021

The results of this brainstorming can be read on nine charts in the exhibition, which were designed by the graphic designer and author Christian Schienerl. This clear overview aims to inspire visitors to become an active part of an effective circular society themselves.

### MAK FUTURE LAB

As the supporting program on this topic, the MAK is organizing a MAK FUTURE LAB to mark the opening of the exhibition on 22 June 2021 where a selection of ideas for a digitally supported transformation towards a circular society will be discussed.

Coordinating Curator: Christoph Thun-Hohenstein, Head of the VIENNA BIENNALE and General Director of the MAK

Concept, Research, Exhibition Design, Exhibits: EOOS NEXT (Harald Gründl, Lotte Kristoferitsch)

Graphic Design, Data Evaluation, Animation, Maps: Process Studio (Martin Grödl, Moritz Resl)

Expert Advisers from the BOKU: Helmut Haberl, Willi Haas, Fridolin Krausmann, Dominik Wiedenhofer

Photo material on the exhibition available at [MAK.at/en/press](https://mak.at/en/press) and [viennabiennale.org/en](https://viennabiennale.org/en)

Sponsor

 **Bundesministerium**  
Klimaschutz, Umwelt,  
Energie, Mobilität,  
Innovation und Technologie

Cooperation Partners

**Verbund**

**wienerberger**

28.5.–3.10.2021

# Vienna Biennale 2021

For Change

Press Contact

MAK Press and PR  
Judith Anna Schwarz-Jungmann (Head)  
Cäcilia Barani, Sandra Hell-Ghignone  
MAK, Stubenring 5, 1010 Vienna  
T +43 1 711 36-233, -212, -229  
[presse@MAK.at](mailto:presse@MAK.at), [www.MAK.at/en](http://www.MAK.at/en)  
[press@viennabiennale.org](mailto:press@viennabiennale.org), [www.viennabiennale.org/en](http://www.viennabiennale.org/en)

Vienna, 27 May 2021

28.5.–3.10.2021

[viennabiennale.org](http://viennabiennale.org)