

Zero Carbon Buildings: Joint Research for Impact

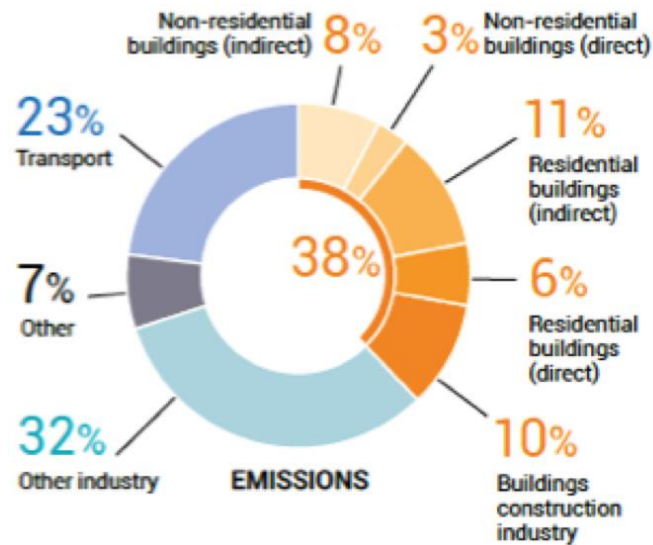
Dr. Illias Hischier

DARCH ITA, Architecture and Building
Systems, Prof. Arno Schlueter



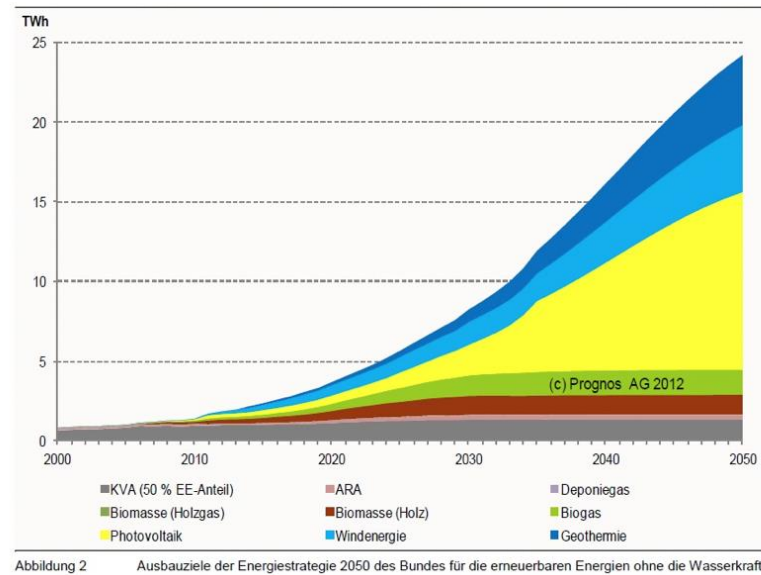
Unprecedented Challenges for Buildings and Cities

Reducing life-cycle emissions



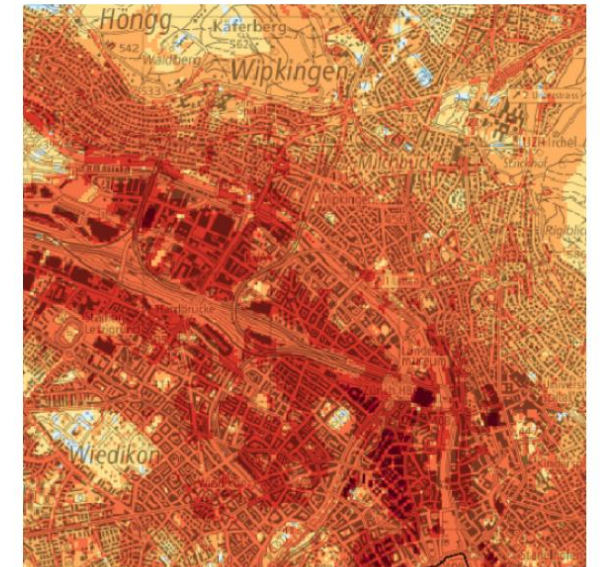
Source: IEA

Transition to renewables



Source: Prognos

Dealing with climatic extremes



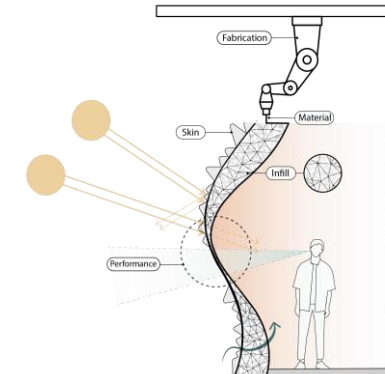
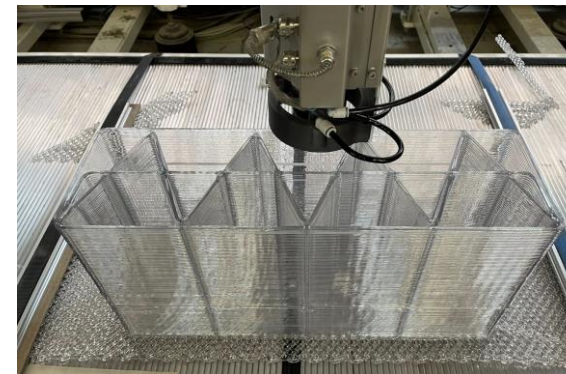
Source: GIS Kanton Zürich

Research on Integrated Systems for Zero Carbon Buildings

Integrated Floor and Solar Façade (Nest HiLo)



Integrated cooling / ventilation systems (3for2 Singapore)

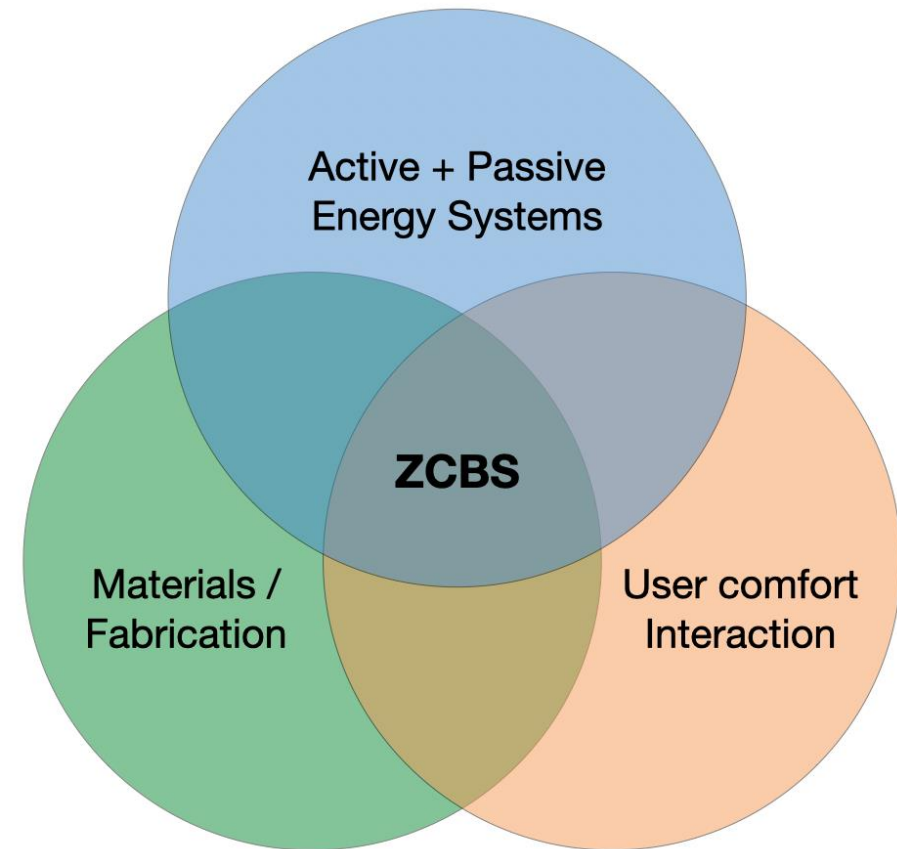


3D-Printed Facades (NCCR Digital Fabrication)

Zero Carbon Building Systems Lab (ZCBS) @ ETH Höggerberg



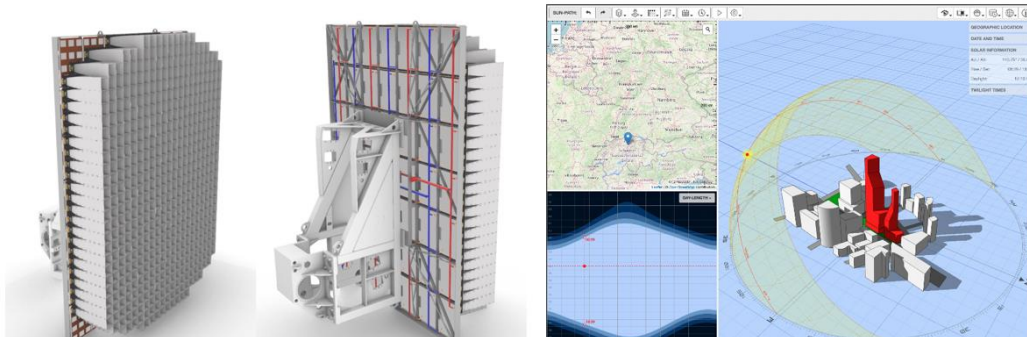
Pioneering Fundamental Research and Accelerating The Translation



Testing Environment in Artificial Climate and LED Solar Emulator



- Three modular and configurable room units
- Two climatic environments (outdoor and indoor)
- Emulate any geographic location
- First of its kind hemispherical LED Solar Engine
- Realistic solar insolation for full-scale testing:
 - Facades, shading devices
 - Building Integrated Photovoltaics
 - Heating/cooling systems
 - Visual and thermal comfort
 - Building controls and Human-Building Interface
- Accelerated testing and risk mitigation





Open lab today – visit us!

Dr. Illias Hischier
illias.hischier@arch.ethz.ch

ETH Zurich
Professorship of Architecture and Building
Systems
HIB E 36.1
Stefano-Franscini-Platz 1
8093 Zürich