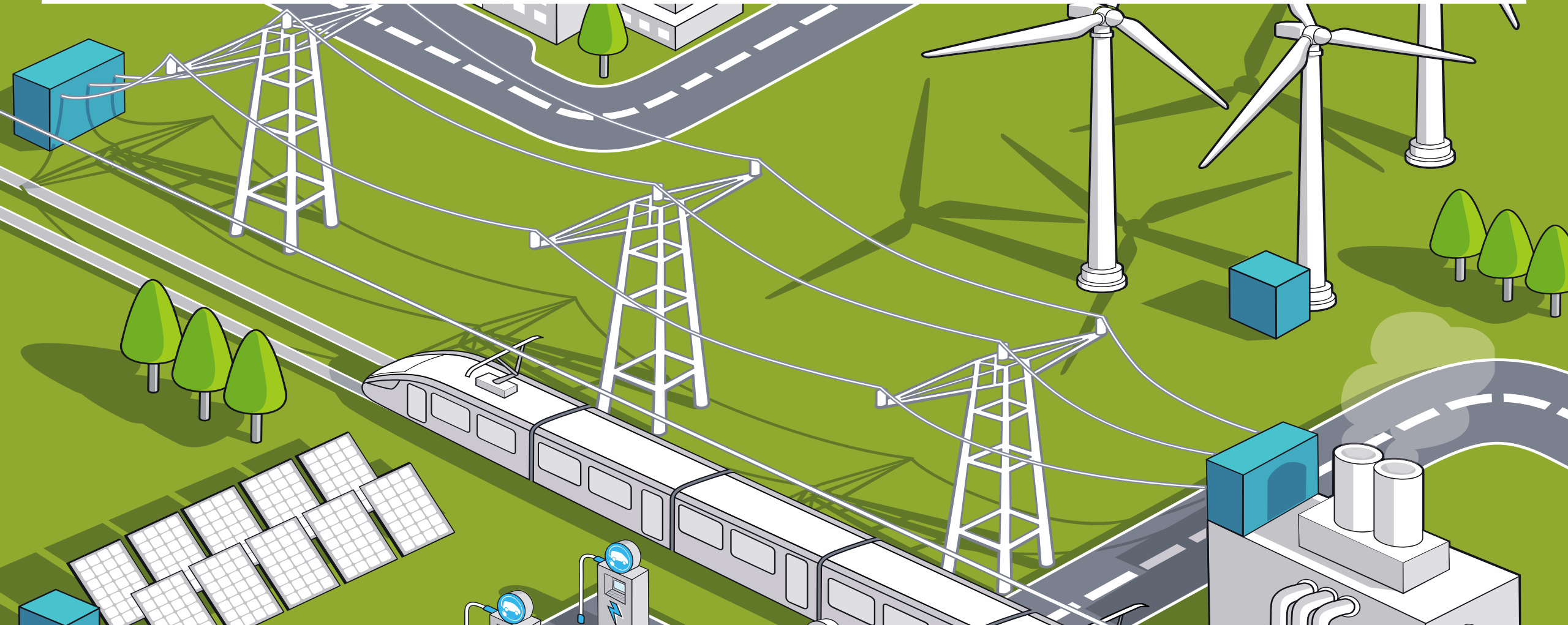


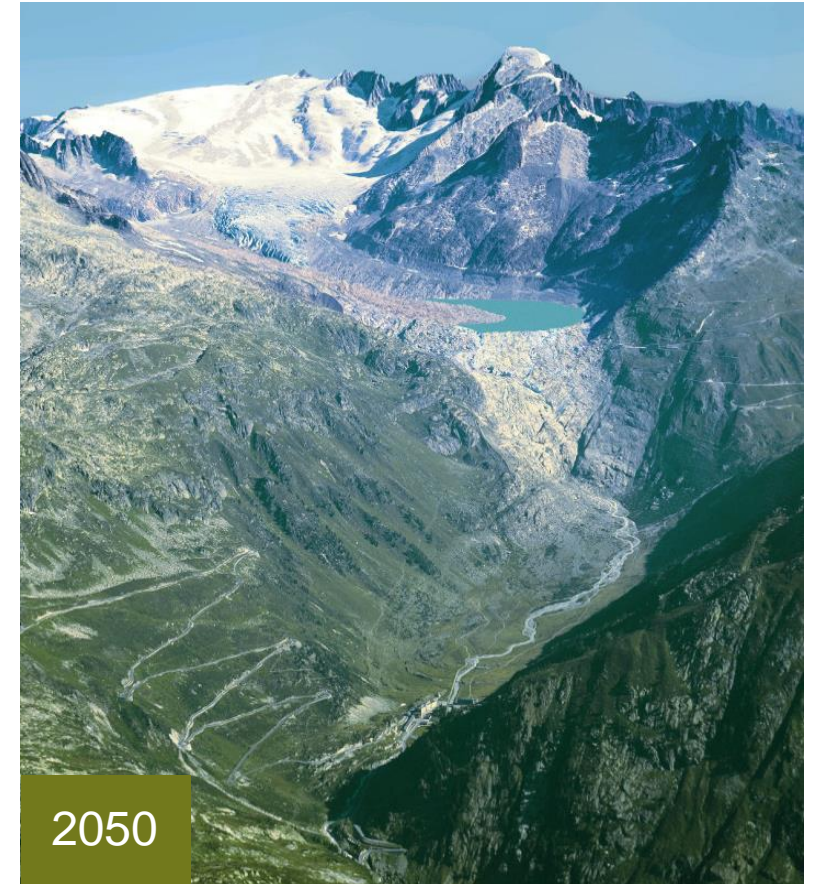
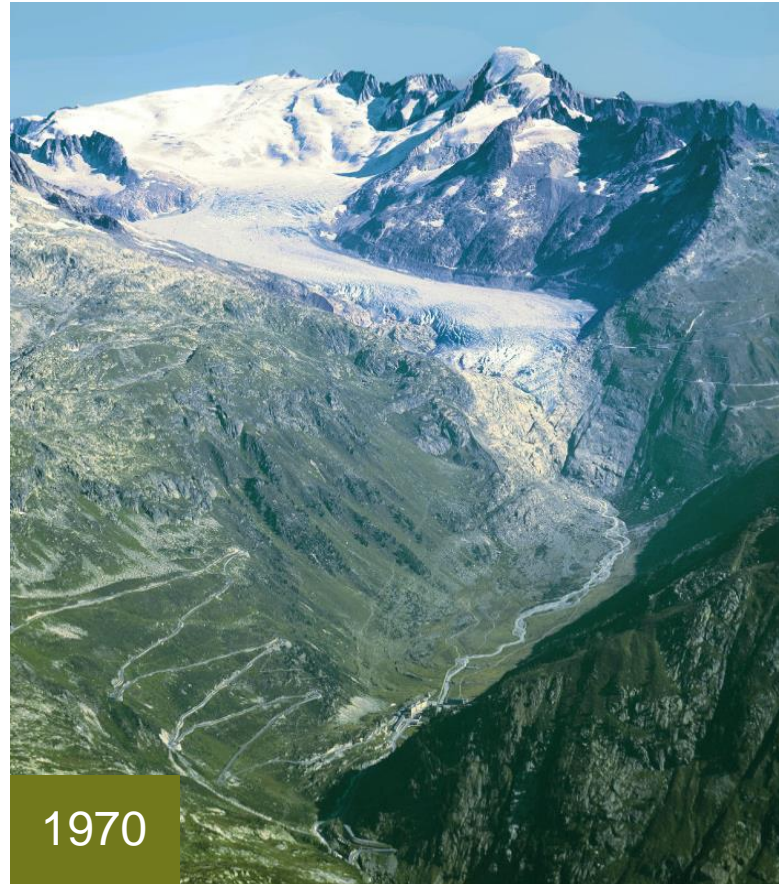
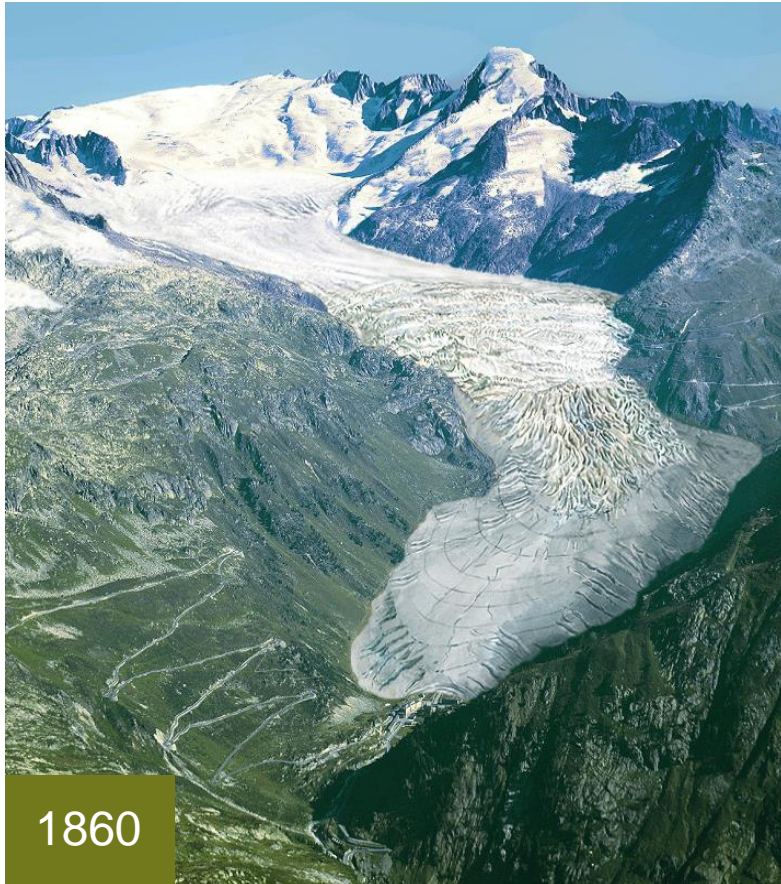
Zürich, 21.08. 2015 / Swiss-US Energy Innovation Days

Zero Emissions Society: Potential, Limits and Opportunities

Lino Guzzella, President ETH Zurich

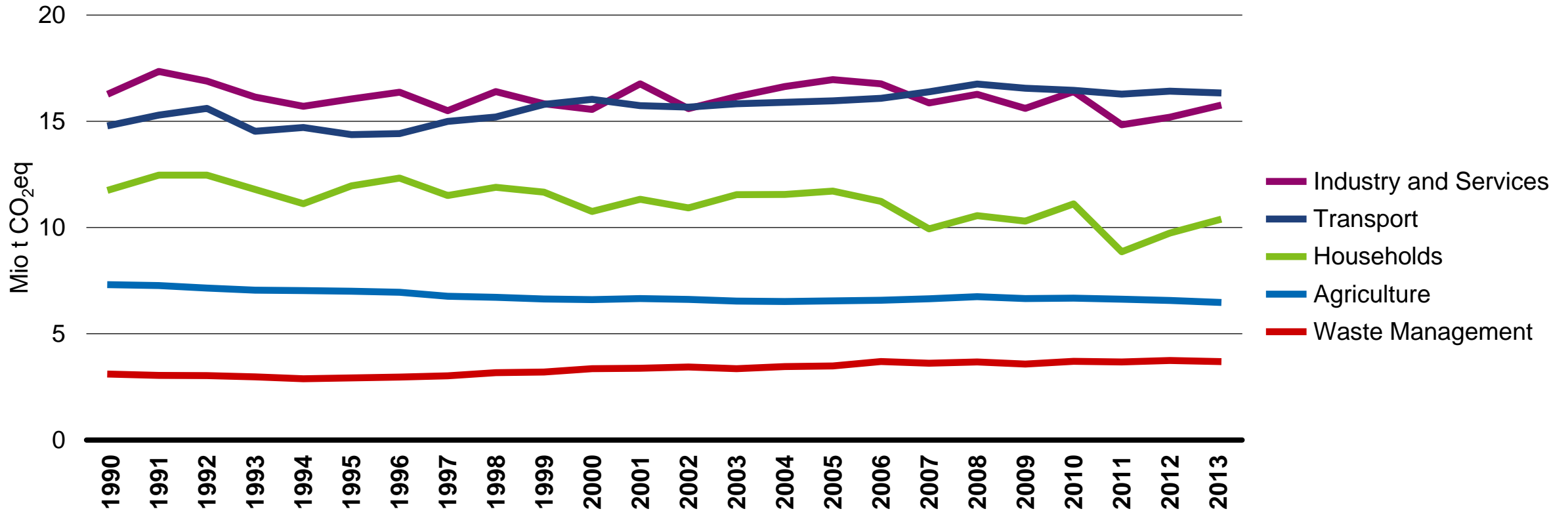


Climate Change and the Need for a Decarbonized Energy System



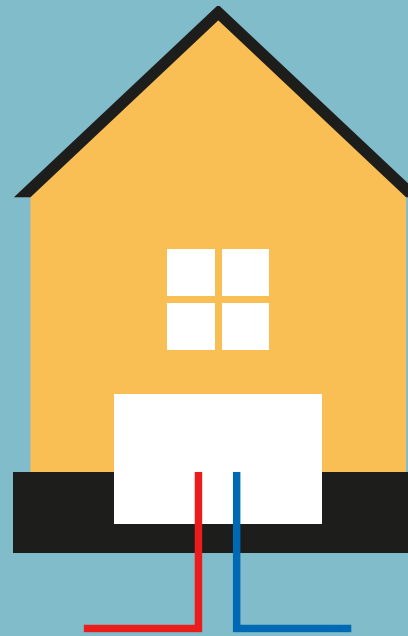
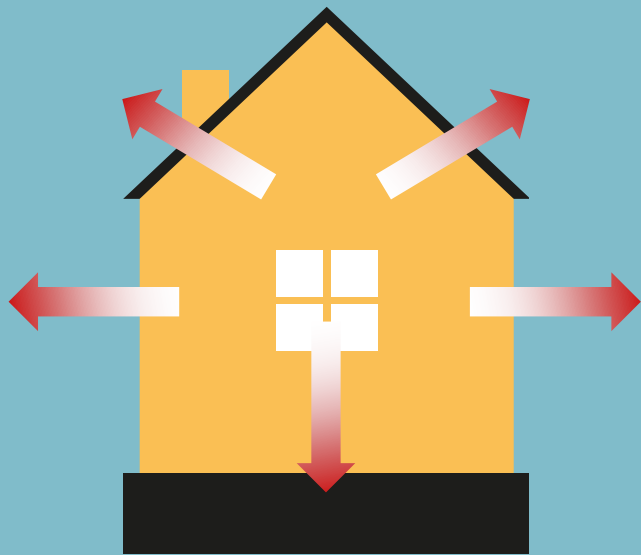
Greenhouse Gas Emission in Switzerland

GHG Emissionen in Mio t CO₂eq



The Factors that Influence the CO₂ Equation

$$\text{CO}_2 = \text{Final Energy Demand} \times \text{Efficiency} \times \text{CO}_2 \text{ Intensity of Energy}$$



Driving Energy Research in Switzerland



Energy Research @ ETH Zurich – Fields of Expertise



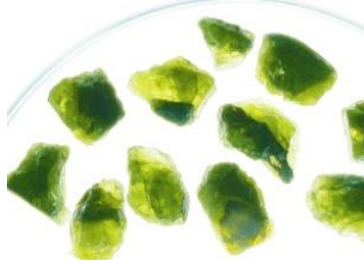
Renewable energies and hydropower

Prof. Abhari
Prof. Boes
Prof. Raubal
Prof. Steinfeld
Prof. Wokaun



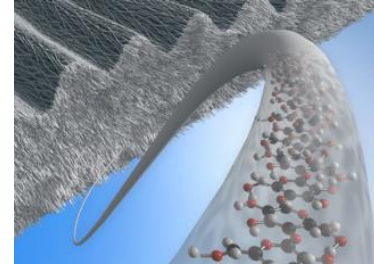
Energy-efficient chemical products and processes

Prof. Hungerbühler
Prof. Philip von Rohr
Prof. Schmidt
Prof. Poulikakos
Prof. Mazzotti



CO₂ mitigation technologies

Prof. Mazzotti
Prof. Steinfeld
Prof. Saar
Prof. Müller



Energy conversion technologies

Prof. Alonso
Prof. Boulouchos
Prof. Koumoutsakos
Prof. Mazza
Prof. Poulikakos
Prof. Noiray



Power electronics

Prof. Biela
Prof. Kolar
Prof. Grossner



Energy for personal and freight transportation

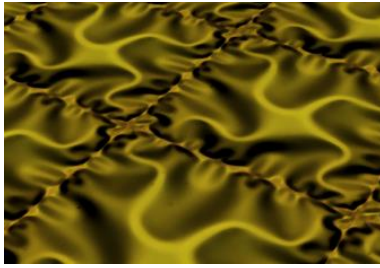
Prof. Abhari
Prof. Boulouchos
Prof. Onder

Energy Research @ ETH Zurich – Fields of Expertise



Power generation and distribution

Prof. Andersson
Prof. Dörfler
Prof. Franck
Prof. Giardini
Prof. Hug
Prof. Lygeros
Prof. Prasser



Material science and technology

Prof. Chatzi
Prof. Copéret
Prof. Daraio
Prof. Norris
Prof. Park
Prof. Rupp
Prof. Wood



Energy economics and policies

Prof. Bretschger
Prof. Filippini
Prof. Hellweg
Prof. Hoffmann
Prof. Patt
Prof. Rausch
Prof. Schubert
Prof. Schmidt



Energy in domestic and industrial applications

Prof. Christiaanse
Prof. Carmeliet
Prof. Deplazes
Prof. Schlüter



Sustainability and risk assessment

Prof. Burlando
Prof. Heinrich
Prof. Knutti
Prof. Sansavini
Prof. Wehrli
Prof. Wiemer



Thermal power plants

Prof. Abhari
Prof. Boulouchos
Prof. Müller

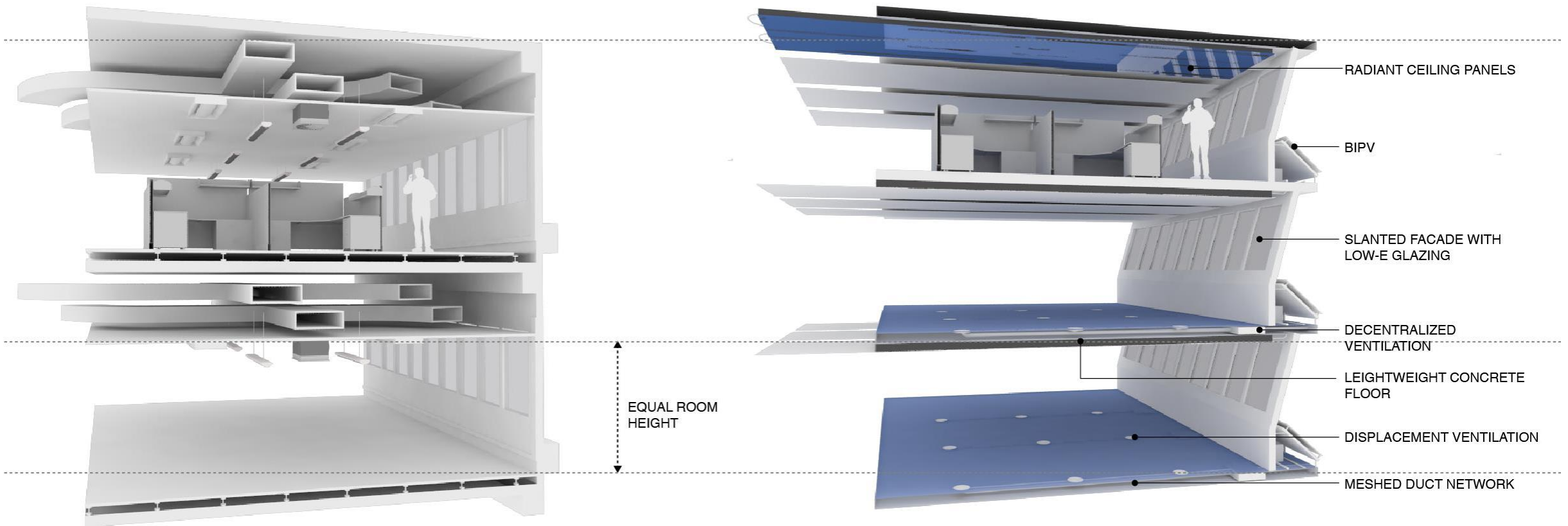
Research Hub on Sustainable Cities in Singapore



Future Cities Laboratory – The “3-for-2” Building



More Office Space – less Energy and Construction Materials



House of Natural Resources – Living Lab on Campus



Zero Emission Office through Adaptive Solar Facade



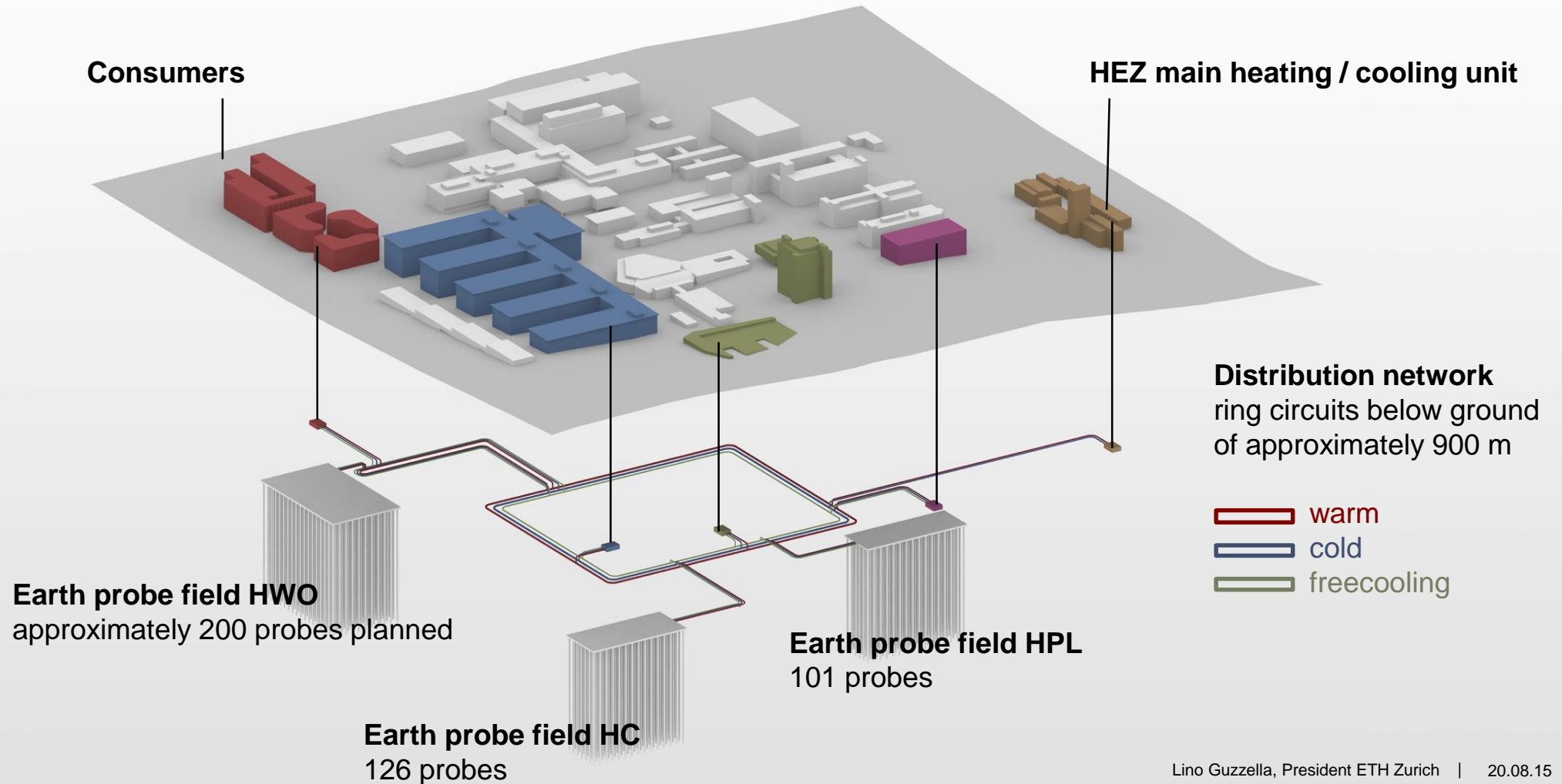
Zero Emission Office through Adaptive Solar Facade



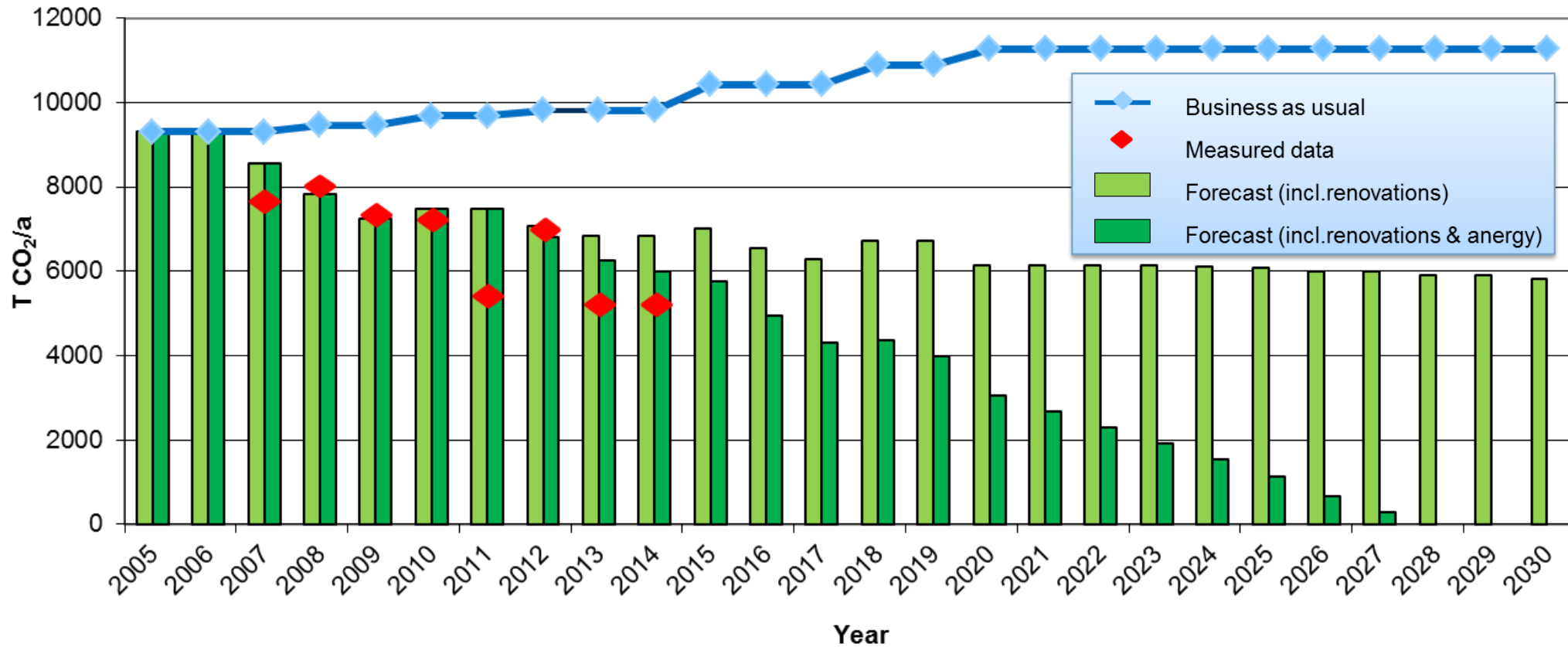
Moving toward a Carbon Neutral Campus – The Anenergy Grid



Moving toward a Carbon Neutral Campus – The Anergy Grid



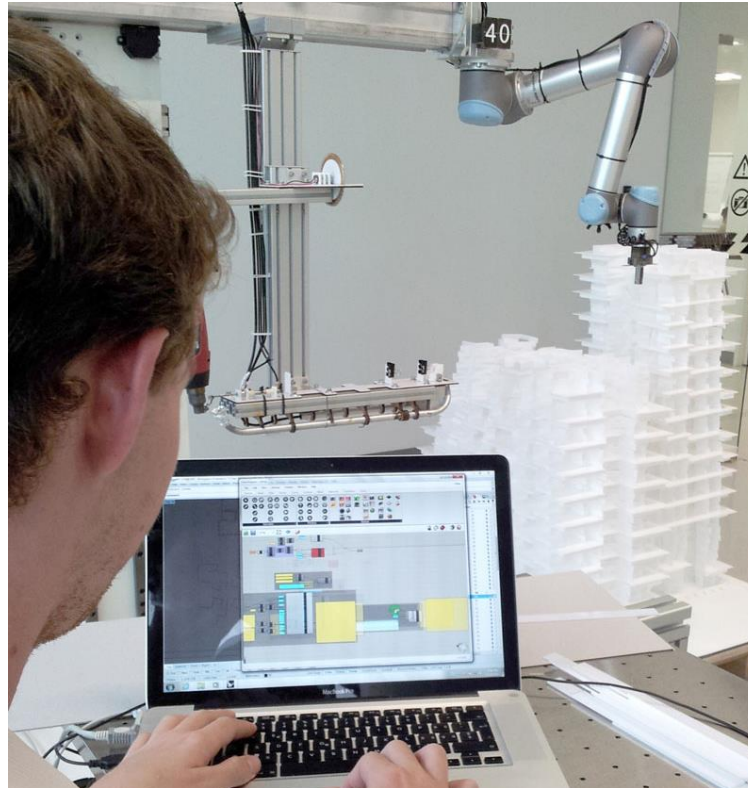
Trend of Total CO₂ Emissions (ETH Campus Hönggerberg)



Broad Energy-Related Education @ ETH Zurich



MSc Integrated Building Systems



MAS in Architecture & Digital Fabrication



MSc Science, Technology and Policy

Thank you for your attention!

