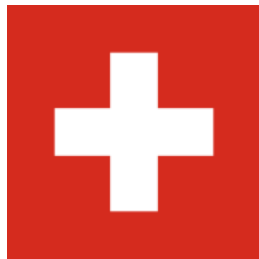


INDO - SWISS SMART GRID ROUNDTABLE

*Dr. Christian Schaffner
Executive Director Energy Science Center
ETH Zurich*

- India and Switzerland, very different, yet similar challenges!



Pop.: 8.6 Billions
4 official languages

Energy:

- ~70 % imported and fossil
- Electricity: Hydro and Nuclear, ...

Pop.: 1'352 Billions
2 official languages

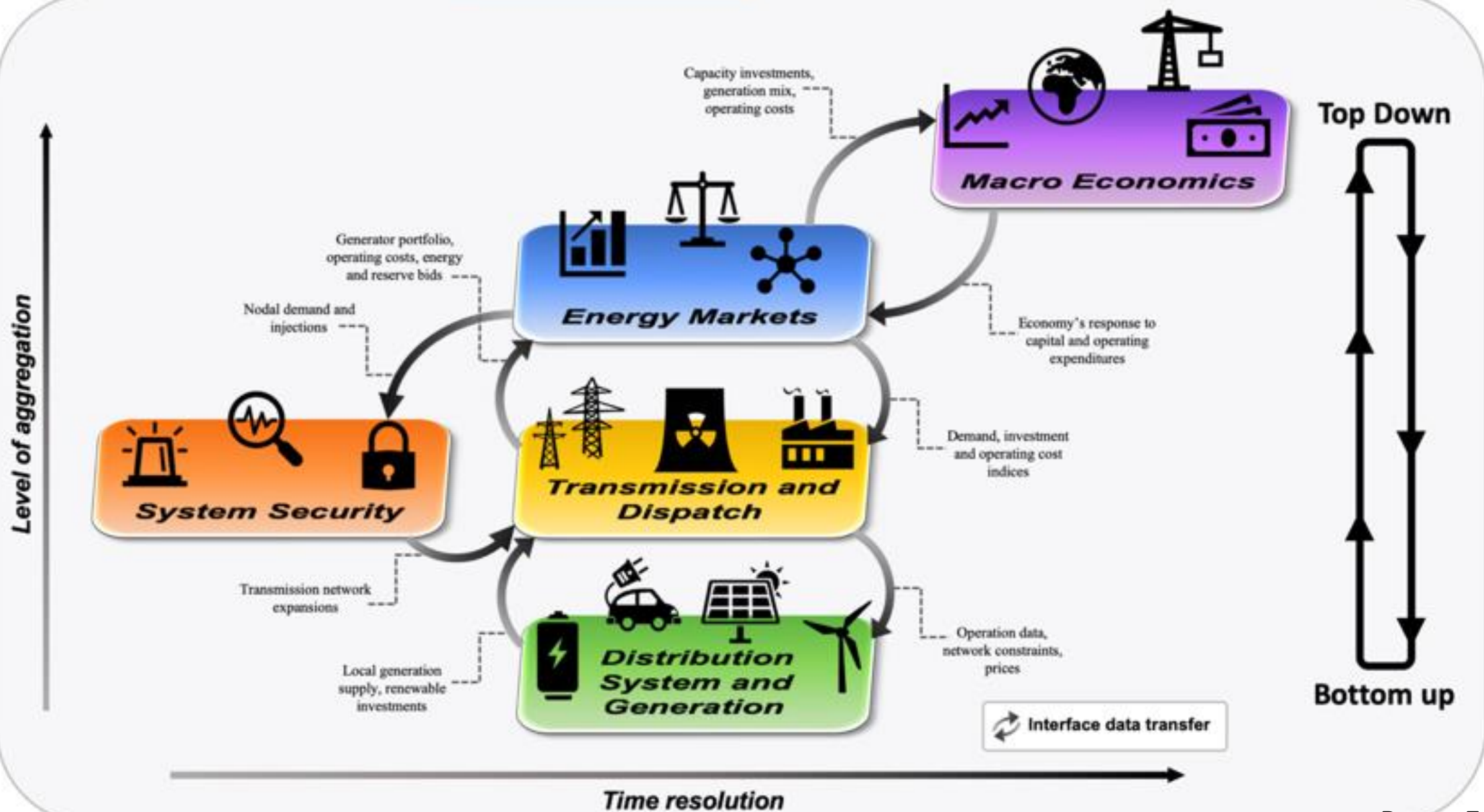
Energy:

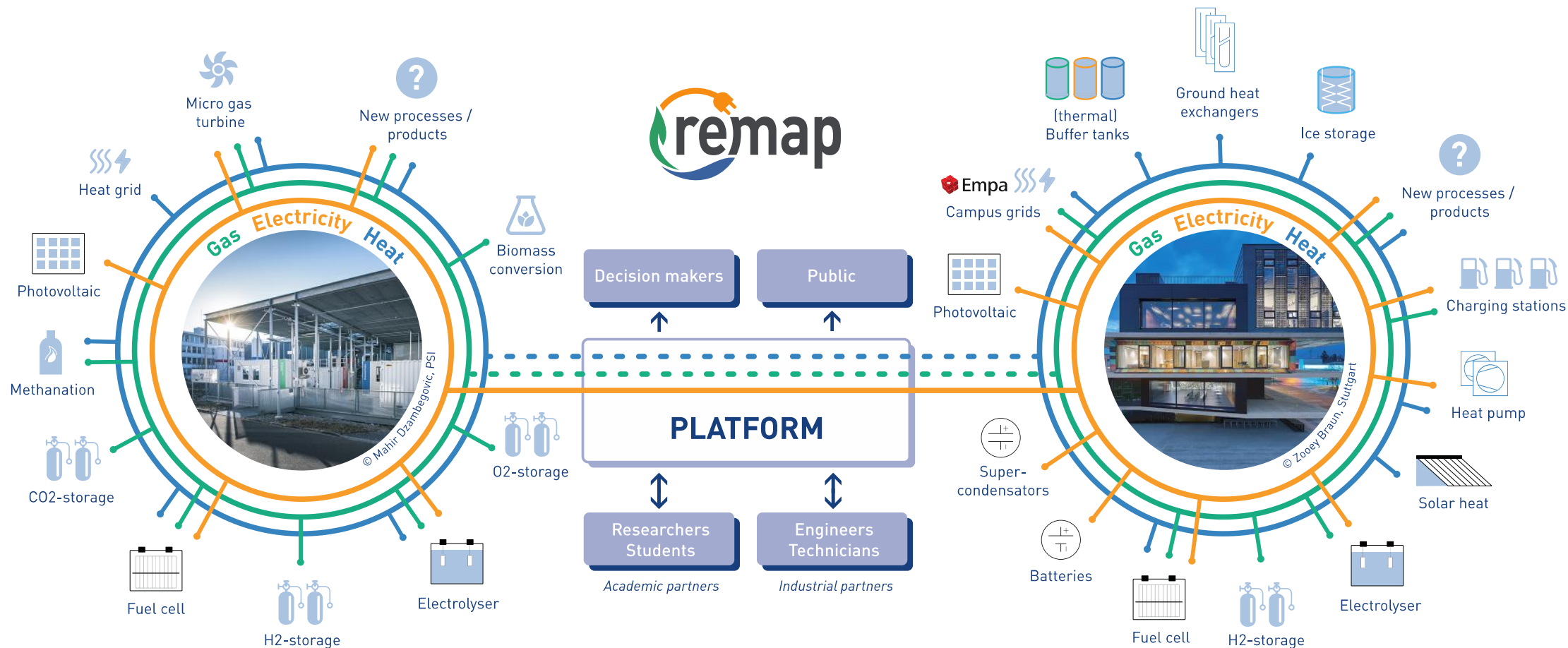
- ~37% imported and fossil
- Electricity: Fossils, Hydro, ...

- Common Challenges:
 - Net-zero by 2050+ (or earlier)
 - Energy responsible in large part for CO₂ emissions
 - Electricity demand increasing (vs. efficiency, sufficiency)
 - Electricity production needs to move to net-zero emissions
- How?
 - More renewable energy resources
 - Electrification (Transportation, Buildings)
 - Combination of central (hydro, nuclear, wind, PV) and decentral (mainly PV)
 - “Smartness”
 - Storage (short-term, long-term/seasonal)

- What do we need?
 - Smart integration of:
 - Renewable energy sources like wind, PV
 - E-Mobility
 - Multi-Energy systems (MES)
 - Storage
 - Technology:
 - Everything that is here already, plus:
 - Seasonal Storage
 - Synthetic fuels (cargo, aviation)
 - Negative Emissions
 - Tools:
 - Integrated Modelling (bottom-up vs. top-down), also with Climate Models)

Nexus-G core modules





ETH zürich



smart grid solutions



- Technology is there, needs to be applied, integrated
- Some missing dots, especially seasonal storage
- Strong collaboration across disciplines and industries needed, e.g.
 - Engineering and Economics
 - Utilities and Building Sector
 - City Planning and Energy System Planning
- Tools and Demonstrators needed

Thank You

*For discussions/suggestions/queries email: www.indiasmartgrid.org
www.isgw.in*

www.esc.ethz.ch

[Dr. Christian Schaffner](mailto:schaffner@esc.ethz.ch)
schaffner@esc.ethz.ch

India Smart Grid Forum
CBIP Building, Malcha Marg,
Chanakyapuri,
Delhi-110021
Website: www.indiasmartgrid.org