



Framing Tools for Future Cross-Border Collaboration

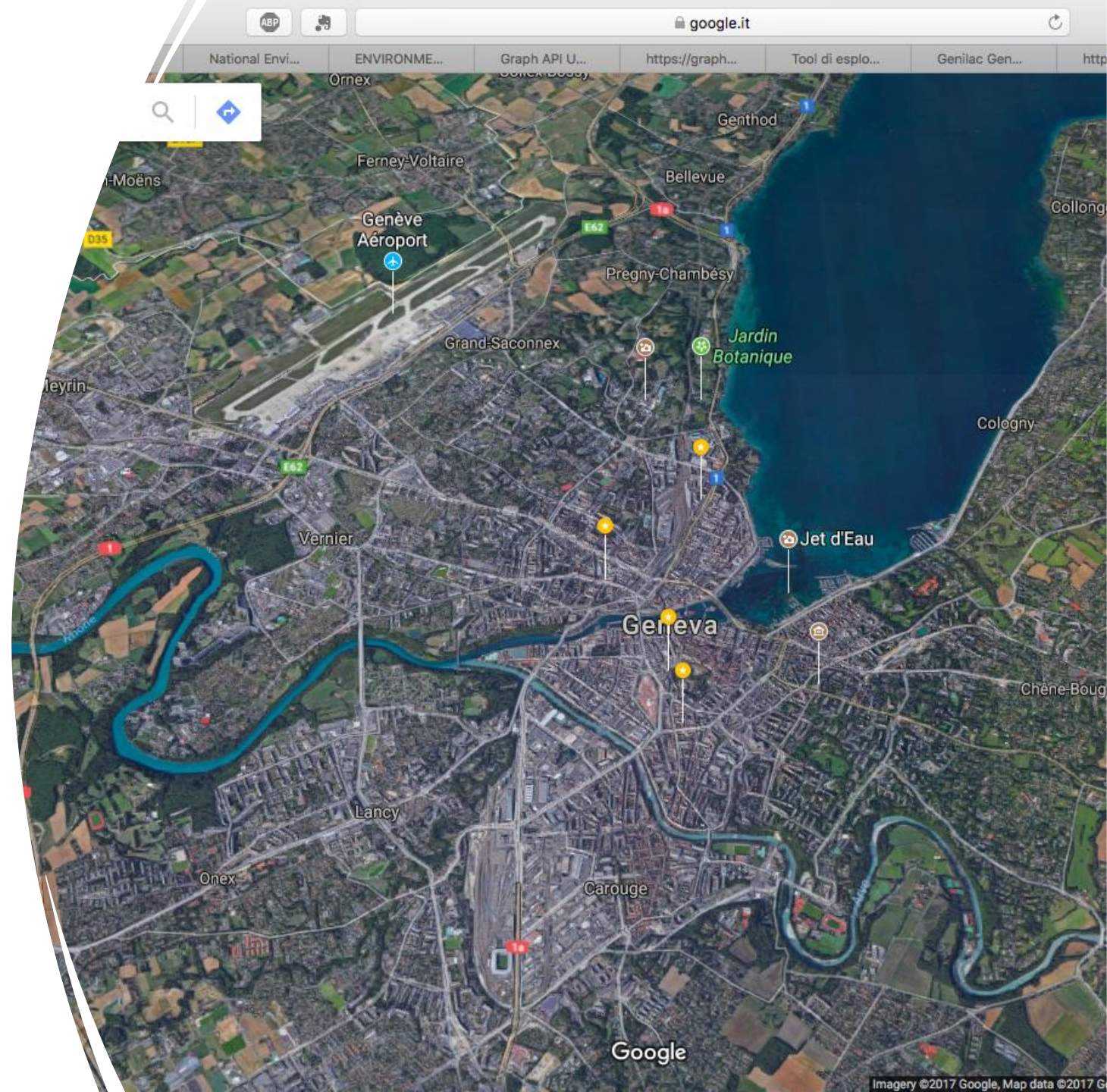
Infrastructure integration as Cross-boundary

Alexandre Hedjazi, Phd
University of Geneva

UN-ECE Center on Smart Sustainable Cities

Value Creation through energy and transportation infrasystem integration

- Landlocked border city between two countries (France and Switzerland), defining a cross-country metropolitan area of 1mil.
- A city of 300,000 with the target of being 100% renewable energy-based by 2050.
- Historically very localized and distributed decision-making process.
- Home of a lot of IOs, one of the seats of global governance.



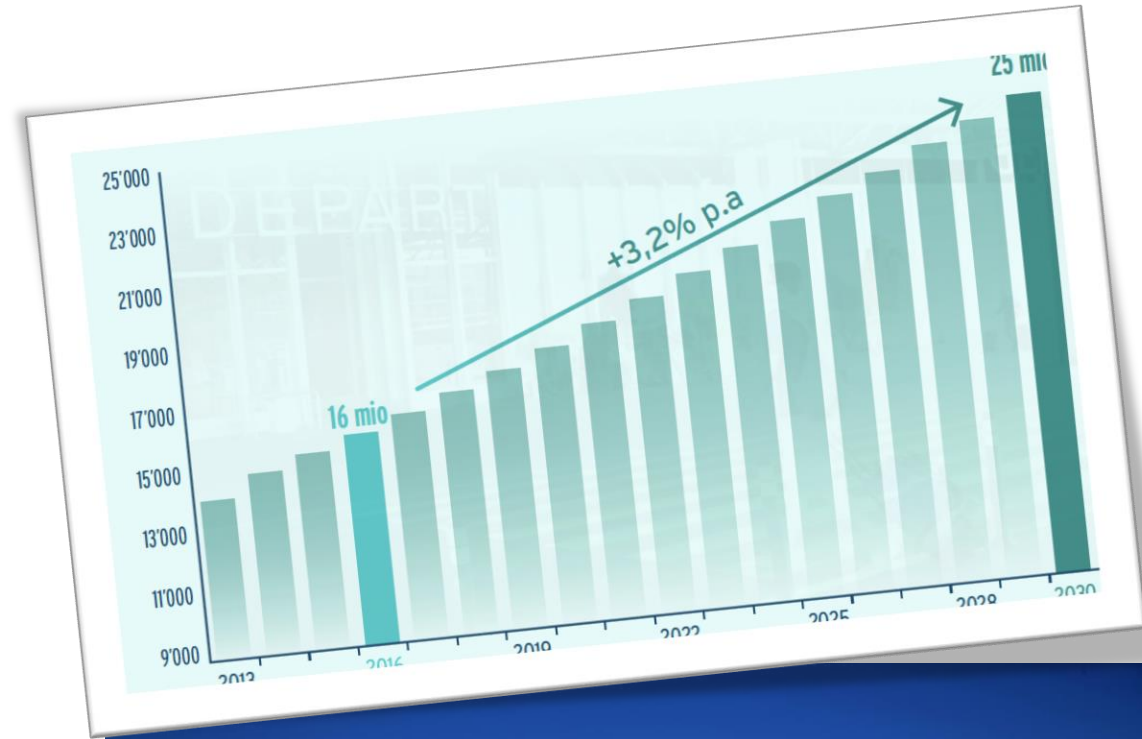
...rapid growth of air traffic

Geneva Airport: 17.35 mil passengers (+4.8% YoY)

427 mil US\$ revenue; 11,000 employees (1,000 direct).

Extremely close to the city center and right on the border with France.

Controversial: friction with powerful and vocal citizen groups & municipalities around the airport in both Switzerland and France because of noise and pollution.



EAST WING PROJECT

Response to expected increase is infrastructural addition: a new East wing (2014- 2020.)

Advanced sustainability parameters:

- 5000m² of solar panels
- Rainwater recovery
- Thermal insulation
- Etc.

- Increase in controversy with neighboring municipalities.
 - Citizens groups managed to impose restriction on concurrent gate use from down to 6 from 9.

- But how ROBUST is this infrastructural addition? Can it ADAPT to the different scenarios?



Genilac distance / remote heating project for the UN buildings



Circular heat-sinking system based on lake water at 45m maintains 7°C stable temperature throughout the year.



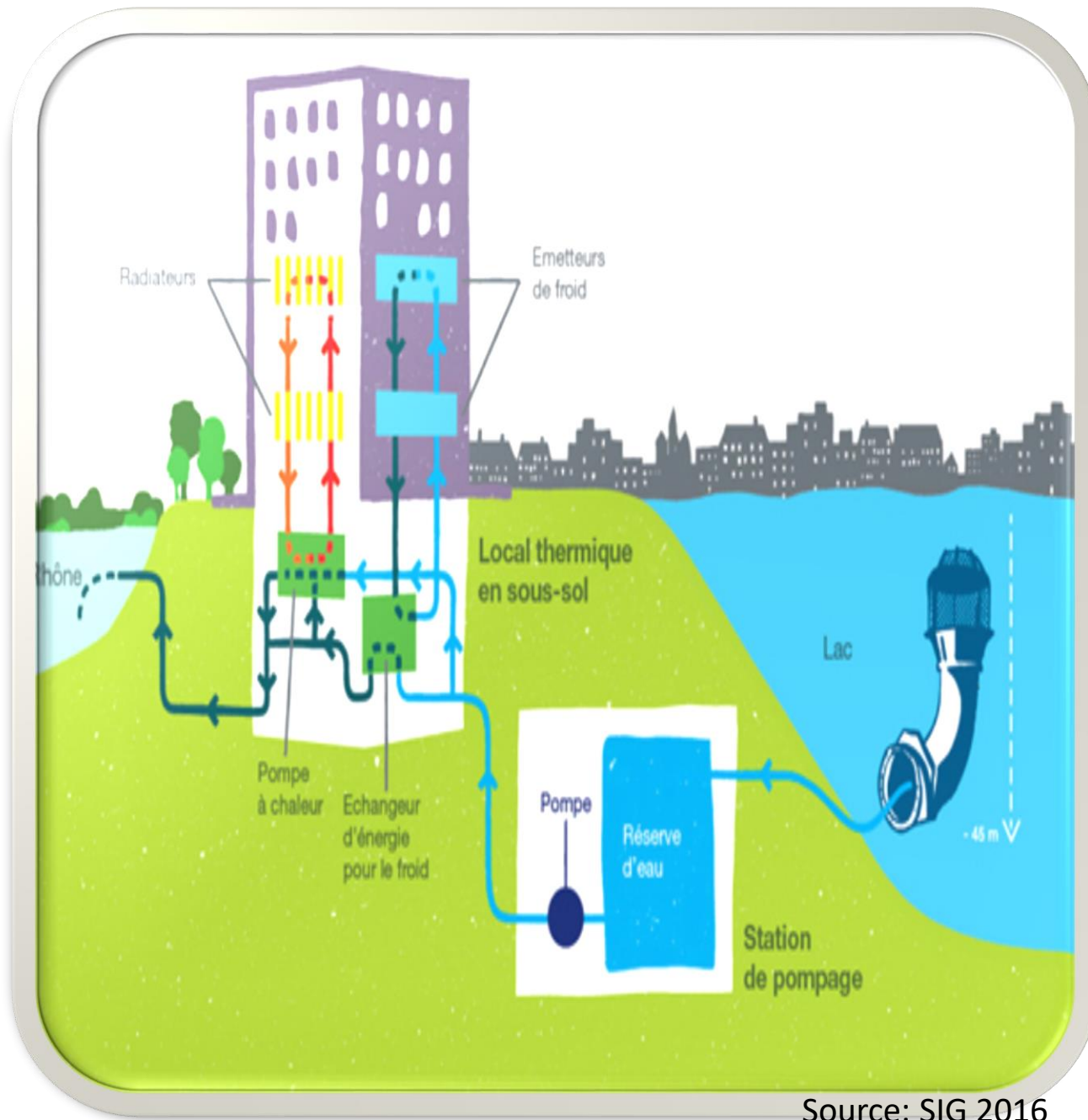
Originated by State of Geneva, City of Geneva, FIPOI and SIG as a proof-of-concept GLN system serving the UN buildings (2008).



In 2016 evolved to GENILAC and scaled up 10x energy-wise.



Aims at providing 140MW by 2022, CO2 reductions by 80%



INTERCONNECTION

GENILAC connects the airport in 2022, serving the entire new west wing.

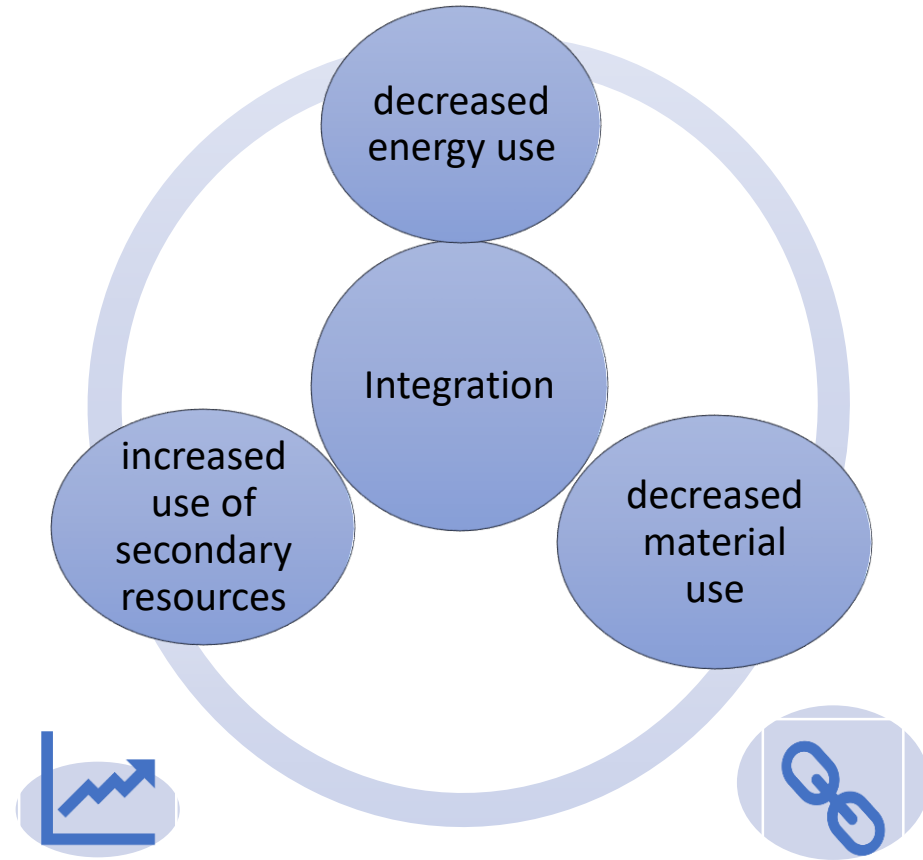
The airport becomes the hub for connecting to GENILAC the surrounding municipalities, whose sustainability agendas get a boost.

The airport creates momentum local for sustainability agendas.

Genilac adds to the robustness of infrastructural addition: the East Wing investment becomes more easily recoupable by sharing benefits -- even should the traffic scenario change.

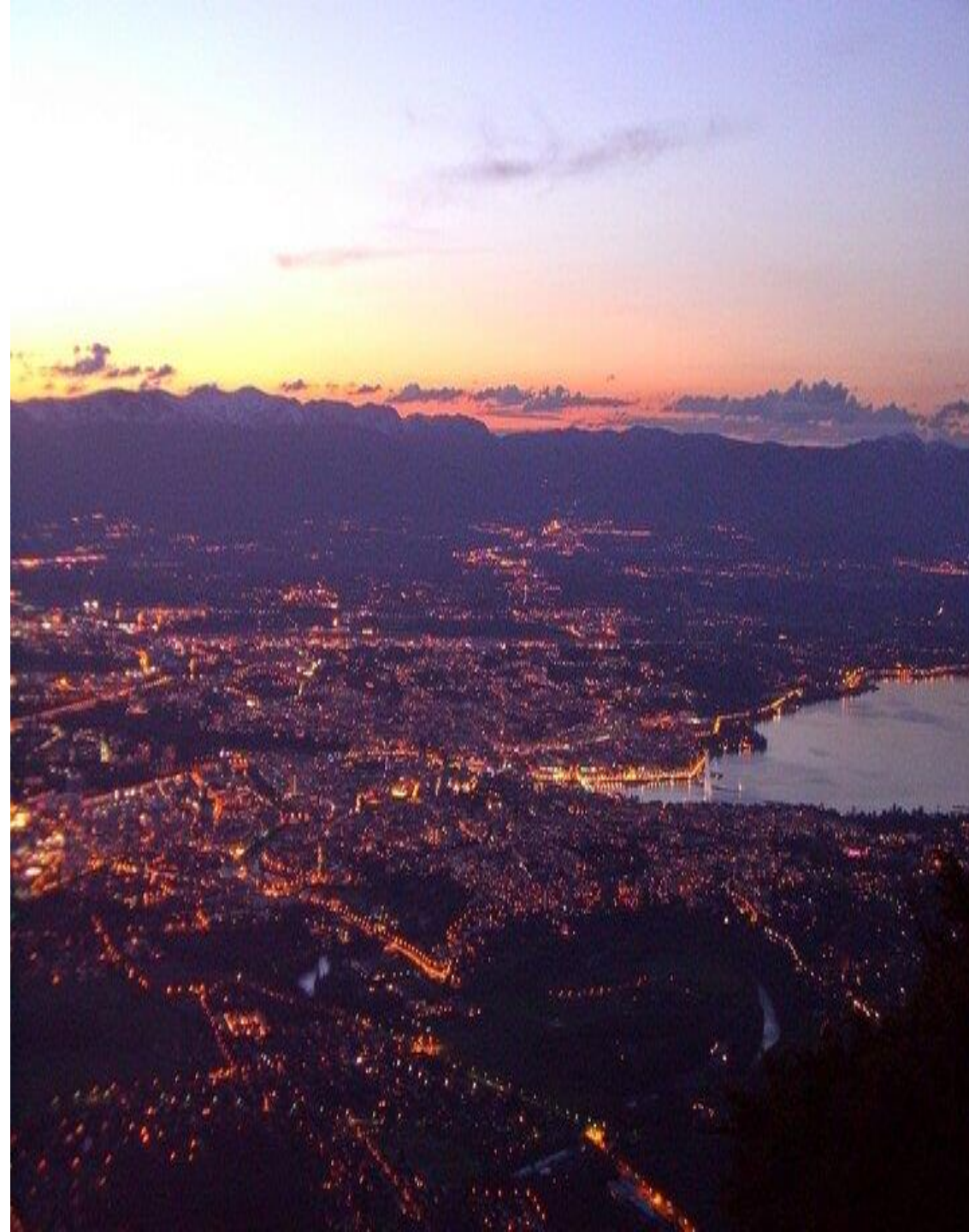


Benefits of Integration: Savings

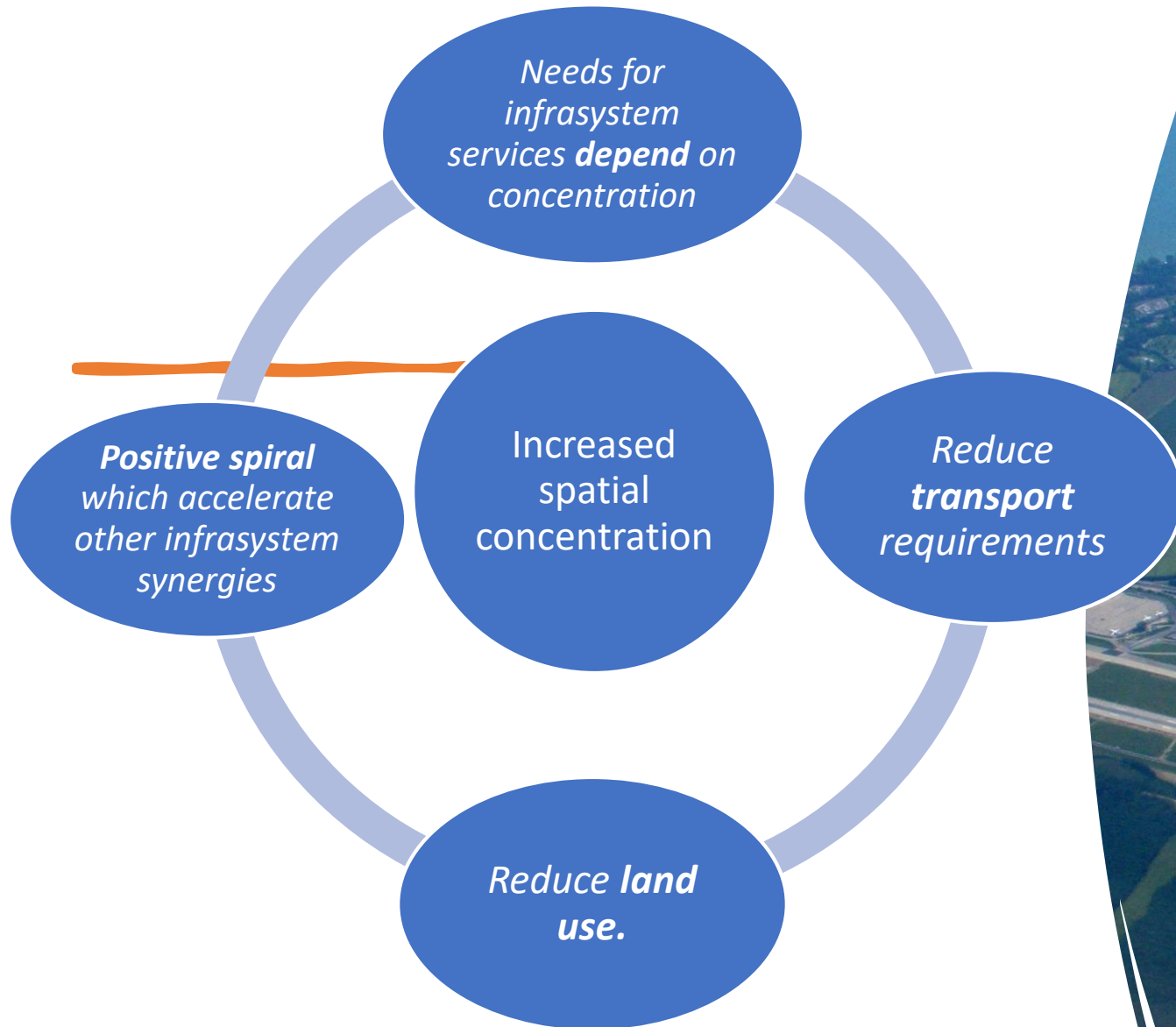


SAVINGS REGARD ALL SYNERGY CATEGORIES WHILE THE POTENTIAL OF DECREASED MATERIAL USE IS GREATEST WHEN IT COMES TO SHARED LINKS.

ENERGY RESOURCES ARE MOST LIKELY ASSOCIATED WITH GREATER BENEFITS



Benefits of Integration: Space



Understanding infrasystem integration

System
Components:

- *Nodes*
- *Links*

Proximity:

- *Co-Location*
- *Coordination*
- *Sharing*

Basic
Function

- *Similar*
- *Different*

Scale matters ..to jumpstart a project

Mid-scale (Midsize cities , neighborhoods) work better

Jump-start projects with less constituents and less dispersion of authority.

Easier to show results a pilot project → Use as a paradigmatic example to trigger further integrations

Where to Begin & What to Deliver?

- Start from the particular
- Consider social , financial & environmental benefits of **specific forms** of integration
- Identify **process nodes** in non-exclusive networks.

- Start from the global agenda (eg SDGs)
- Align global and local strategies through integration.
- Apply Reflexive Leadership for consensus-building.