



A research project funded by SIG Fonds Vitale Innovation

Mapping Urban Facade Solar Potential: multicriteria analysis for BIPV implementation

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**Brenet Status Seminar –
20th August 2026**

Renovated Firmenich tower (Geneva) with BIPV
(photo credit: Batimag)

Opportunities exist... but few are implemented

BIPV

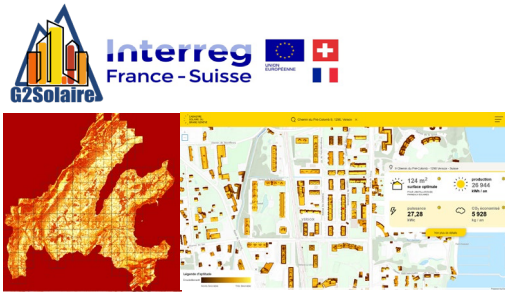


Building integrated PV (BIPV) on facades is a key way of:

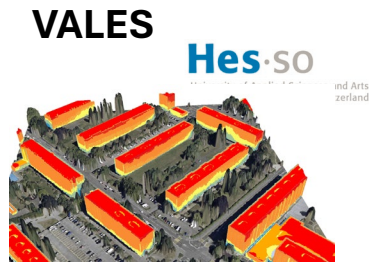
- improving **winter energy autonomy** in urban environments,
- **balancing solar peak** production in mid-season and summer.

Rue Pedro-Meylan, Genève (photo credit: Desthieux)

HEPIA's background in R&D for urban solar modelling



Solar Cadaster – Greater Geneva



Urban scale solar modelling on facades

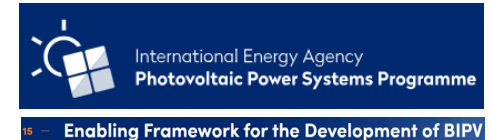


Solar potential in the nordic cities with NTNU



Advice for property owners

Task 63 | Solar Neighborhood Planning



Swiss expert in IEA Tasks (63 & 15)

Gaps and objectives

Gaps

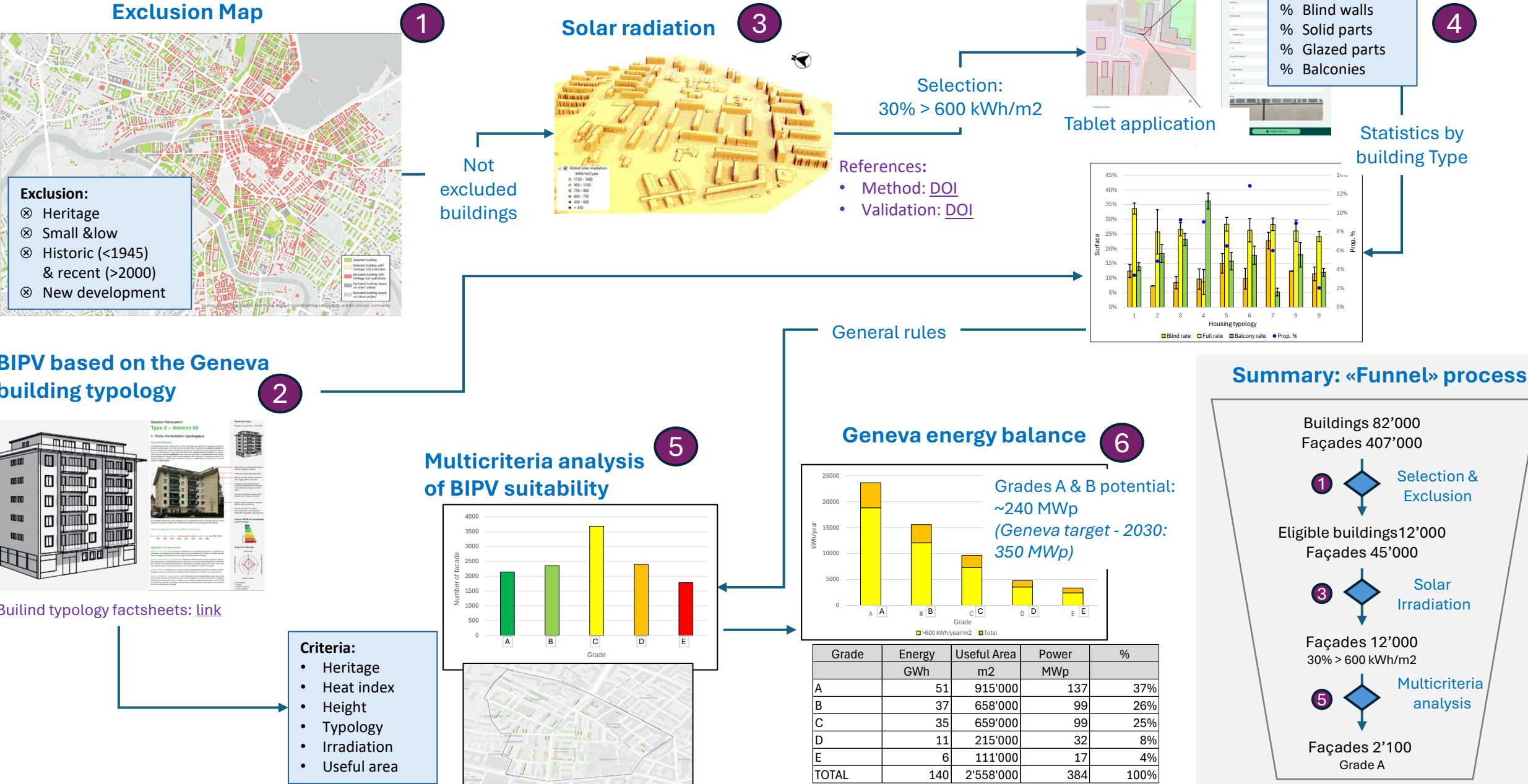
- Solar cadasters generally only consider **rooftop potential**.
- Potential analysis generally **focuses on irradiation**, with no consideration of other criteria (heritage, **architecture**, constructability and aesthetics).
- The **level of detail** (LOD) of façades is low, no information on glazing ratios or suitable surfaces for installation.
- Approaches for **high detailed modelling** (e.g. drones, terrestrial lidar) are not adapted to a large urban scale.

Objectives

To develop a **multi-criteria approach to map facade solar potential and adaptability at the scale of the Canton of Geneva:**

- Focusing on **BIPV installations** combined with **building renovation projects**,
- Based on solar modelling, GIS, building morphology analysis and architectural typology.

BIPV Suitability Analysis – Process overview



Conclusion and perspectives

Outcomes

- **Decision-support** framework for scaling up BIPV in dense urban contexts and identifying where façade solar deployment is **both technically feasible and contextually appropriate**
- **Realistic assessments** of exploitable surfaces avoiding overestimations based on purely irradiation-based analyses.
- Guidance for urban planning, renovation strategies, and **investment prioritization**.

Perspectives

- Complete the **renovation factsheets by building type** with technical detail on BIPV integration and (over)costs.
- Conduct **feasibility analysis of BIPV integration in Avanchets, Geneva**.



Avanchet district, Vernier (GE) ©Google map