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CONSUMPTION, EFFICIENCY & LiM!TS

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Paper **3-21**

(Khoury et al.

Learning from the field: analysing foreign experience feedbacks to enrich the development of a programme for the renovation of multifamily housing in Geneva

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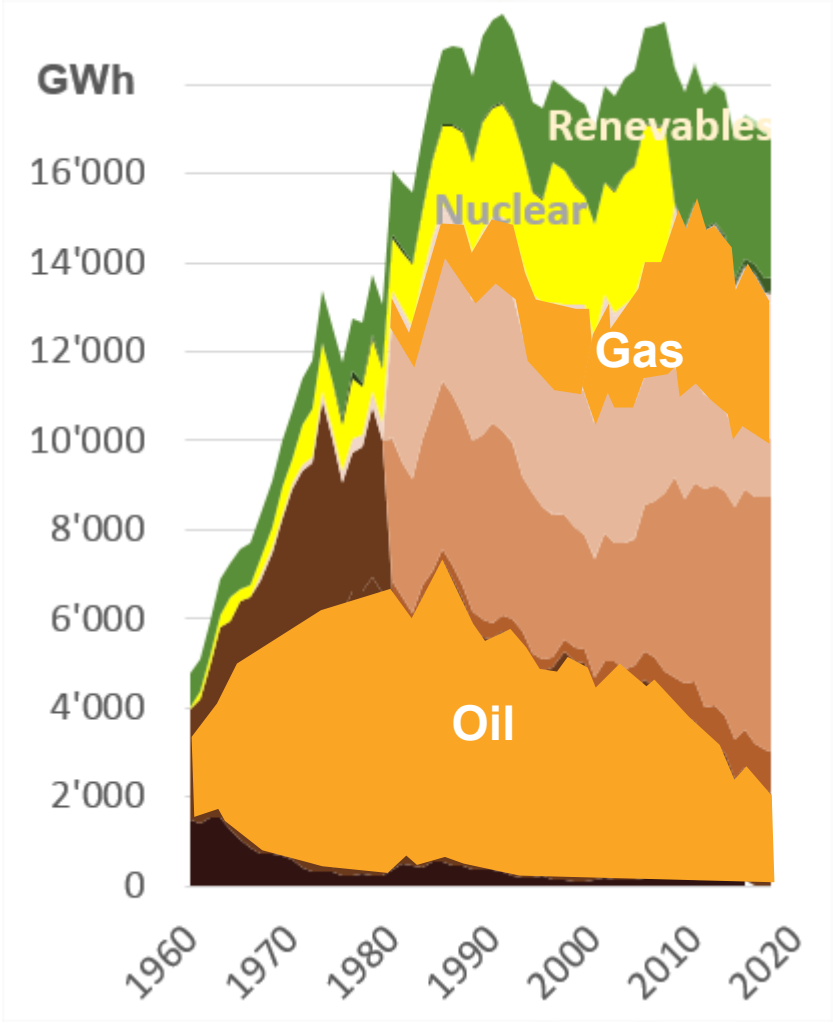
Outline

- Background of the study
- Overview of the case studies
- Lessons from their comparison

Background: primary energy in Geneva



- Photovoltaïque & Thermique
- Éolien
- Hydroélectrique
- Chaleur de l'envionnement (air, eau, géothermie)
- Biomasse (bois, charbon de bois, déchets ménagers)
- Uranium
- Gaz
- Essence
- Kérosène
- Diesel
- Produits pétrolier
- Mazout
- Charbon & coke

Sources: OFS, OCSTAT, SIG, AIG

Background: Geneva energy policy

- Long term vision for Geneva: the **2000 Watts society without nuclear**
  - dividing by 3 the energy consumption
  - reducing CO2 emissions by a factor of 7
  - multiplying by 3 the share of renewable energy sources

- Geneva energy strategy founded on **three pillars**:
  - management and reduction of energy demand;
  - for energy generation, priority to using local and renewable energy resources;
  - Involvement of all public and private stakeholders

- **Mid-term** milestone for buildings (buildings = 50% of current final energy consumption): reduction thermal energy consumption per capita (fuel and heat) by **37% in 2035 compared to the 2000** consumption level

Background: key stakeholders in Geneva

[for local energy efficiency programmes for buildings]

- **Cantonal Energy Office**:
  - Setting the local legal framework (Switzerland = Federal State)
  - Designing and implementing programmes (information, incentives, capacity building, …)
- **SIG (Public Energy Utility of Geneva)**:
  - Runs a Demand-Side Management program « éco21» aimed at reducing electricity consumption and CO2 emissions
  - Provides Energy Performance Contracting (EPC)
- Other key stakeholders (more specifically for building renovation): building owners, building companies

Background: the TEPI project

TEPI = "Energy Transition of the Geneva Building Stock": enabling to speed up the energy renovation of buildings

- **Objectives**:
  - Launching by 2017 a programme for the energy renovation of buildings;
  - **Increasing the number and quality of energy renovations** done each year;
  - Contributing significantly to the reduction of thermal energy consumption per capita

- **Scope**:
  - **Priority = reduction in energy demand**, by renovating the building envelopes and replacing and optimising the heating systems
  - Integration of **local renewable energy resources** (solar, geothermal, biomass, waste heat) **also in the scope**

Objectives of the study

- Analysing programmes that can be sources of inspiration for TEPI
- Comparing these programmes to **identify key lessons learnt**
- **10 cases selected according to the following criteria**:
  - ✓ **target**: priority on existing multifamily buildings
  - ✓ **similarities** with the Geneva context (neighbouring countries, local scale)
  - ✓ programmes known to be « **reference** » or **innovative** cases
  - ✓ **diversity in their modalities** (to cover the whole process of renovation projects)
  - ✓ **availability of documentation**: enough for a detailed analysis
  - ✓ **state of progress**: programme already started and still in operation

Overview of the case studies

ame and *location*	Period and maturity	Targeted type(s) of buildings
urMur (*Grenoble Alpes étropole*)	MurMur I: 2010-2014 ; MurMur II: 2016-2020 (+ previous pilot projects) → **mature**	Co-owned buildings built over 1945-1975 (+ other co-owned buildings and individual houses for MurMur II)
orénovons *Paris*	May 2016 - 2021 (+ previous pilot projects) → **full-size roll-out on-going**	Private dwellings (with a priority on co-owned buildings)
oreno'v (*Greater Lyon*)	Launched at the end of 2015 after a pilot phase → **full-size roll-out on-going**	Private dwellings (with a priority on co-owned buildings) built before 1990
cardie Pass Rénovation	Experimentation over 2014-2017 → **progressive roll-out on-going**	Private dwellings (with an initial priority on individual houses, then extended to co-owned buildings)
ergies Posit'IF (*Ile de ance* Region)	Launched early 2013 → **full-size roll-out on-going**	Multifamily buildings built before 1990

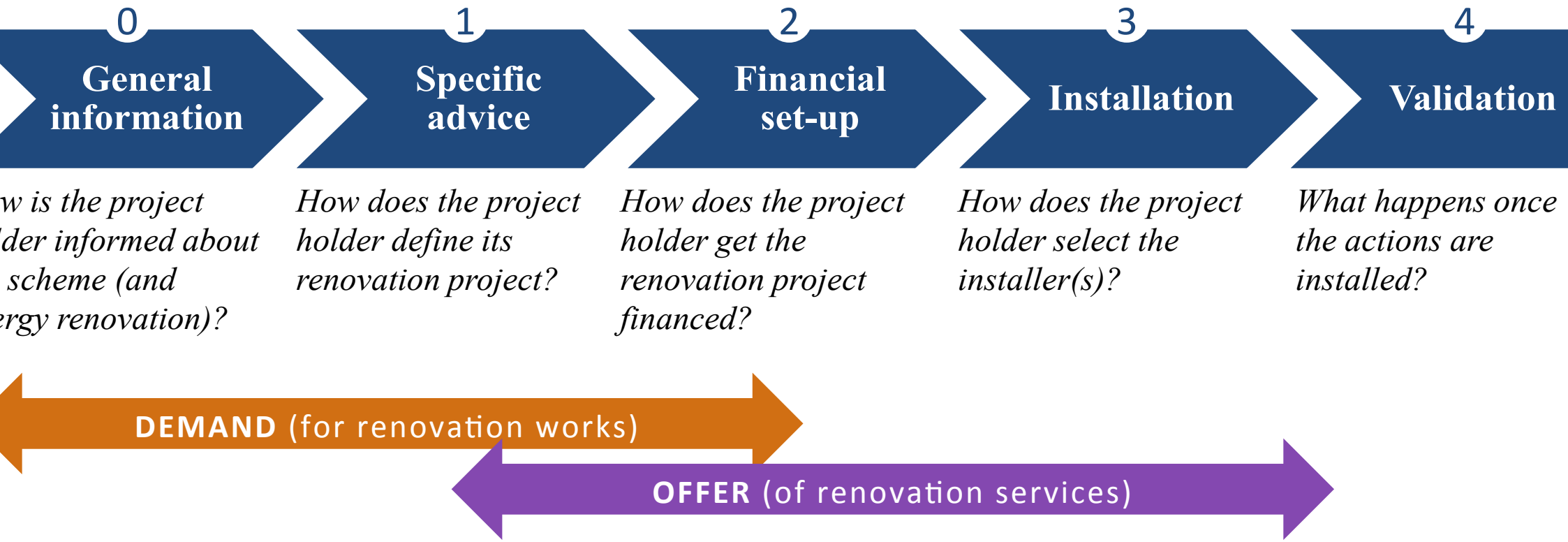
Overview of the case studies (2)

ame and *location*	Period and maturity	Targeted type(s) of buildings
nex Renov (Onex unicipality, Switzerland)	Launched early 2016 → **pilot project**	Large multifamily buildings built over 1960-1980
ergieSprong (the etherlands)	Experimental programme launched in 2010 → **full-size roll-out on-going**	First projects with housing associations, then open to all buildings
ermoprofit (Styria gion, Austria)	Launched in 2001 → **mature**	All buildings (programme mostly used for big renovation projects)
PAC 38 (social housing dy for the Isere partment, France)	Energy issues integrated in the assett management strategy since early 1990's → **mature**	Social housing (all types of dwellings)
N urban energy novation programme (all rman municipalities)	Experimental programme launched in 2011, with an increasing number of municipalities involved → **pilot projects**	All buildings (including public buildings)

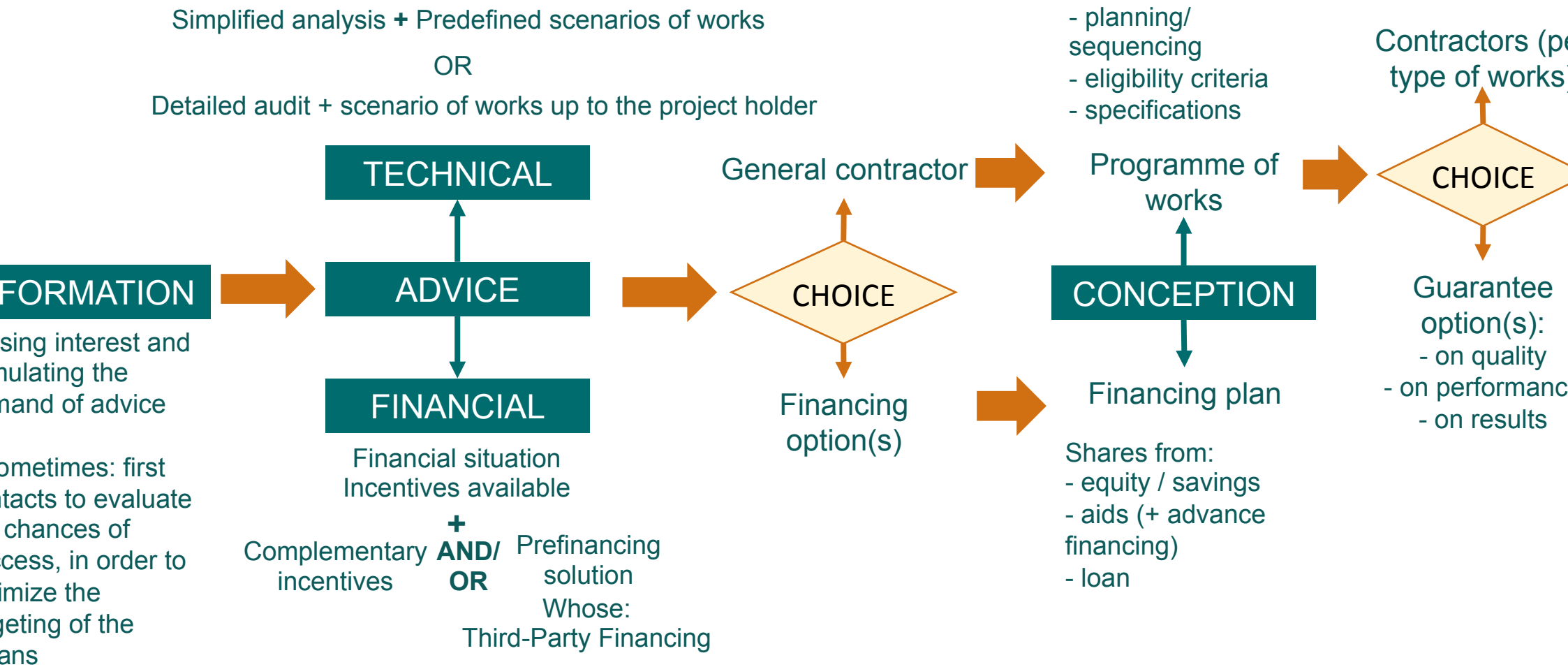
Overview of the case studies (3)

Means	Targets	Achievements
udget for financial ncentives between **5 to 10 M€/year** **Initial investment** all the more important since the service offered is comprehensive (e.g., capital needs for third-party financing) ikewise, **teams** from **3 to 30 ersons**, depending on the bjectives and services ffered	Most often **about 1 000 dwellings renovated/year** **Except EnergieSprong** (national programme) with **exponential objectives** (1000 > 10 000 > 100 000) *(+ pilot programmes do not have always quantitative targets)*	**MurMur achieved its target**. **Energie Posit'IF and Picardi Pass Rénovation** in the way to d i But **EnergieSprong** still far from its initial ambitions (253 dwellings renovated over 2013-2015). **Thermoprofit** didn't succeed i scaling up neithe

Comparison (1): initial analysis framework

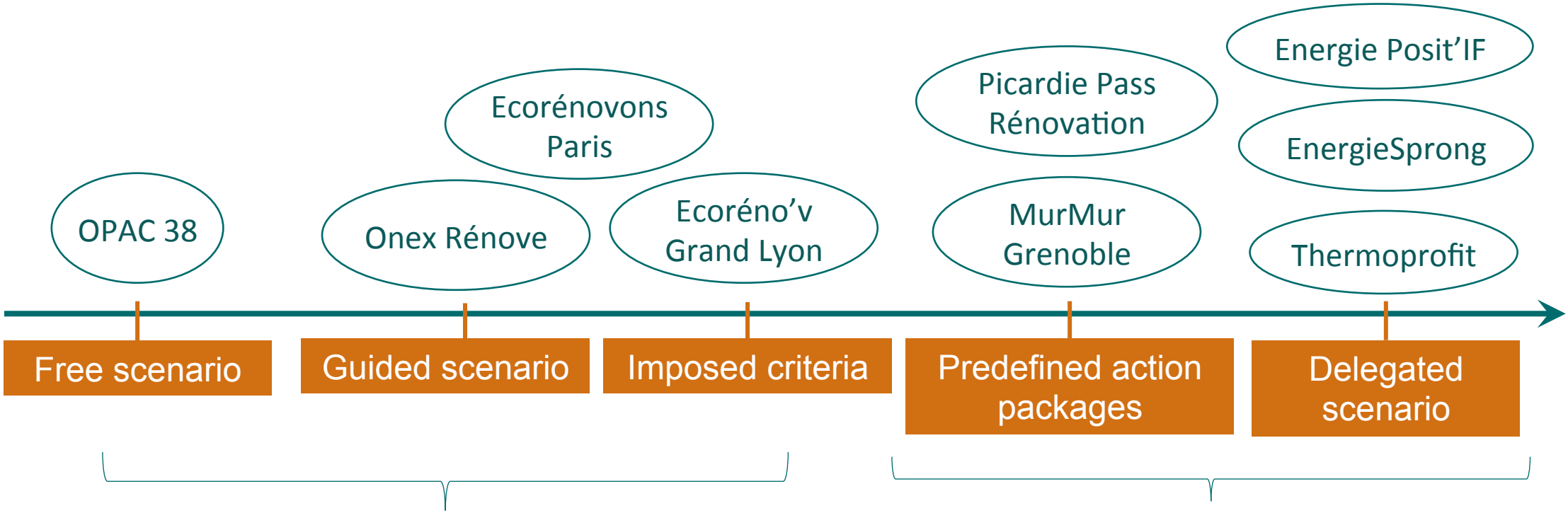


Comparison (2): updated analysis framework



Comparison (3): technical advice

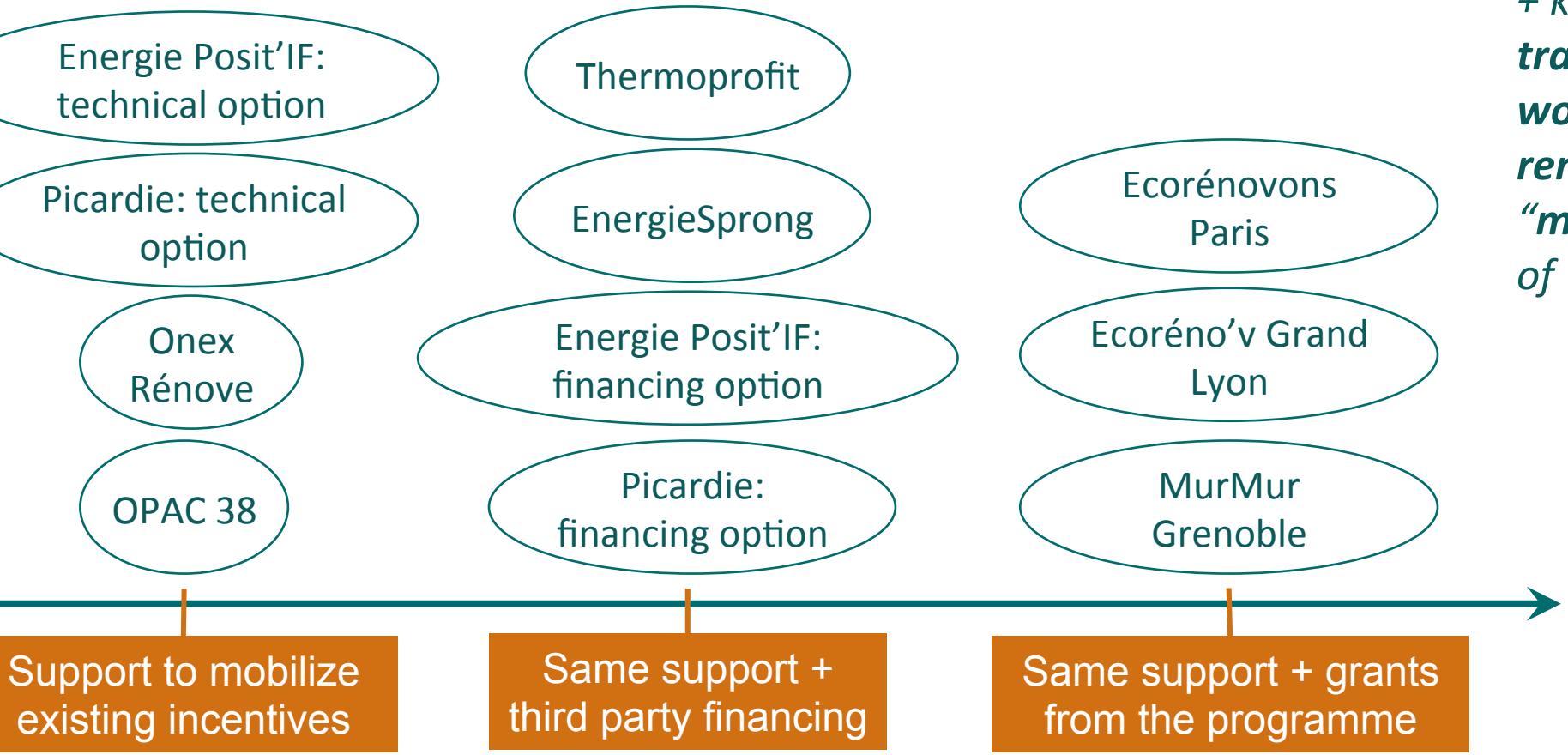
Defining the scenario of works



More flexible:
makes possible "step-by-step" works

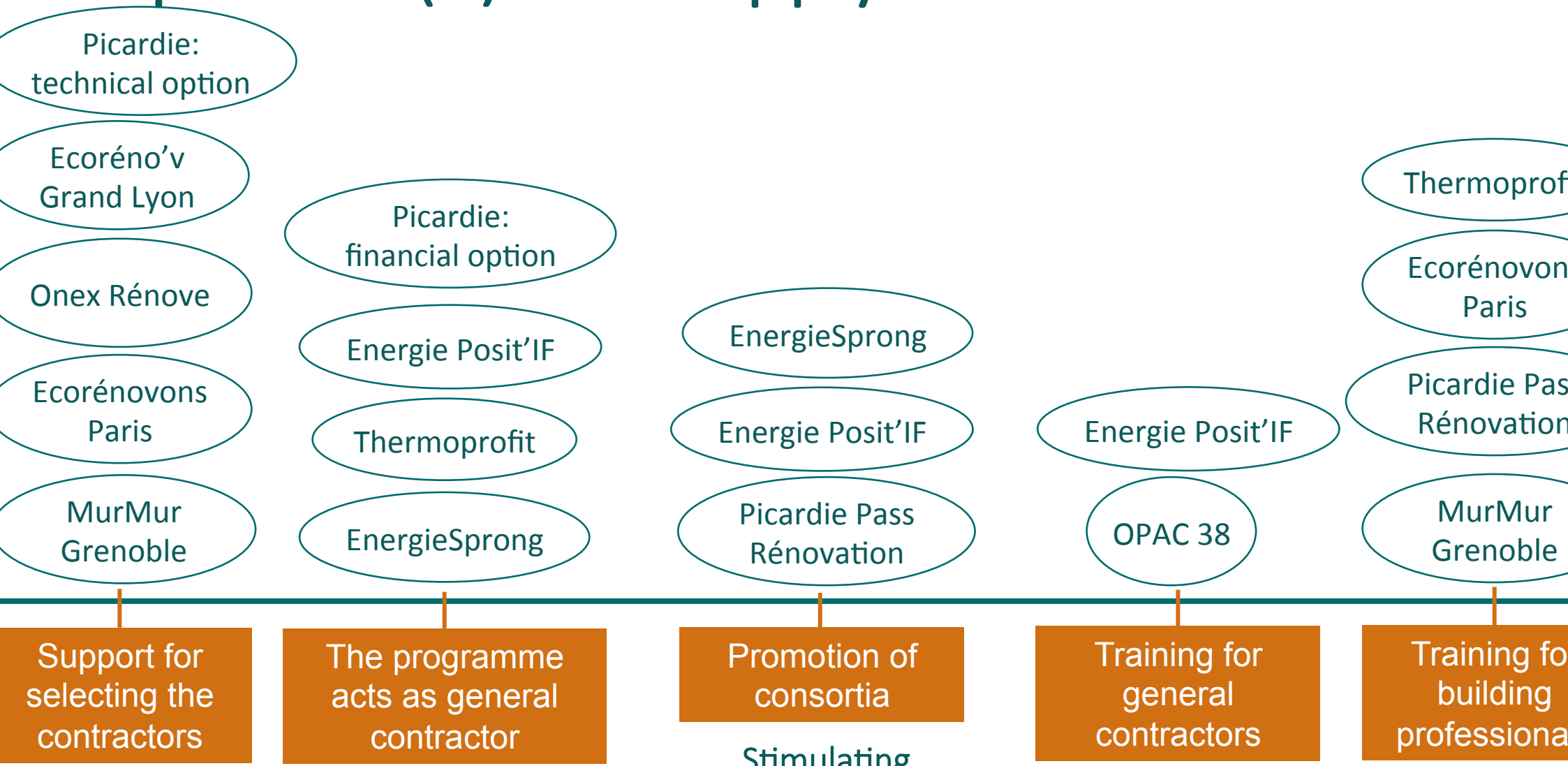
More prescribing:
brings more guarantee
(quality, performance or results)

Comparison (4): financial advice and support



+ key concept: ***transforming « regula works into energy renovations****: thinking* ***"marginal costs"*** *inste of "total costs"*

Comparison (5): the supply side (of renovation services)



olvement of the uilding owners vs. Full delegation

Stimulating comprehensive offers

Ensuring quality of service

Comparison (6): other aspects

fees for the services offered: for 3 out 8 programmes

- Picardie Pass Rénovation : 1860 € TTC per dwelling (5-year service)
- Onex Rénove : 450 € per building (+ decreasing tariff)
- Energie Posit'IF : depending on the size of the projects
- EnergieSprong and Thermoprofit: turnkey solutions (fees included in total cost)

support for the inhabitants (before, during and after the works)

monitoring and validation of works → ensuring quality and satisfaction (and avoiding negative references !)

monitoring energy bills: are savings actually achieved?

technical issues related **operation & maintenance**

observatory of renovation costs → tracking inflation and improving cost estimates (for financial advice)

Lessons learnt for TEPI

taking into account the **different steps** of a renovation project and how the programme can help for each of this step

analysing what options are possible and how to combine them → "**suggestion box**"

identifying what can drive or hinder renovation projects → **points of vigilance** to anticipate problems

new ideas:

building passport or record to monitor the changes in the building over its lifetime;

tools or services to help project owners in **selecting contractors**;

encouraging **consortia** or networks of professionals

- ✓ contracts for a **whole service** or solution, and not separate lots or packages;
- ✓ **internal energy commissions** within t buildings to involve the occupants and the different owners;
- ✓ making incentives **conditional** upon th achievement of energy performance criteria

Perspectives

- **Do you think that professional support to homeowners to facilitate their buildings refurbishment and tenants' management are more valuable than grants?**
- **What role for a energy utility in the renovation market?**
- **Is there an optimal size for a renovation programme? (adaption to local specificities vs. reaching a critical mass)**

Thanks!

Questions

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