Deployment of thermal retrofit innovations:
Energy efficiency strategy in housing and action on fuel poverty in France

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10 mai 2016
Energy Retrofit needs dialogue among three world views

- **First view**: current paradigm, a trend to maximise energy performance
  - It has been supported by engineering societies such as Negawatt members
  - this approach supports the idea that
    - all possible technical solutions should be implemented
    - building energy consumption has to and may be cut by 3/4 from now on

- **Second view**: Industrial strategies – can they produce a suitable response?
  - Energy operators or utility companies try to promote corporate networking among craftsmen and contractors
  - Industry has experienced strong development with vertical integration
  - It seems to be more difficult to develop horizontal Integration

- **Third view**: Does development of local economic sectors offer an effective entry?
  - Four territorial levels in France, Région, Département, Intercommunalités and Communes
  - Promotion of local jobs becomes a more and more important aim
  - This includes promotion of bio-based materials
What have we learned about energy efficiency demand in existing housing since 1973?

- Private housing (unprofessional decision-makers) constitute 90% of energy retrofit demand
- Public housing institutions represent about 10% of the market demand
- Key factors of retrofit energy demand are not technical
  - Among household budget, energy retrofit has to face severe competition from mass market motor industry, audiovisual, leisure, health …
    - Mass marketing enables greater sales effectiveness
  - A lot of concerns may incorporate high impacts on thermal performance: repairs, embellishment, cosiness, thermal confort, decoration
    - Energy efficiency constitute less than half of energy retrofit motivating factors
    - Home Improvement (e.g. decorating) when buying house reduce the cost of wall insulation to a small amount
Methodology of Diagnosis of Energy Performance-DEP-(Home Energy Certificate in France) allows our approach of energy performance

- DEP are mandatory since July 2007 over real estate transactions
- The DEP scale (from A to G) might usefully be completed by H > 600 et I > 800

Main lessons about energy performance

- Energy performance is very uneven (from 50 to 800 kWh/sq m/y ~1 to 16)
- Single family houses are the worst performing
- Class F or G dwellings should be renovated first
  - Benefit four times greater for F or G dwellings
    - 500 kWh/sq m/year → 150 kWh/sq m/year = 350 kWh/sq m/year benefit
    - 240 kWh/sq m/year → 150 kWh/sq m/year = 90 kWh/sq m/year benefit
Incremental costs of retrofit and energy performances for a typical single-family house

Amount of retrofit work between 0 and 10 000 euros/house → Household’s purchasing power increases significantly, even with the current energy prices.

Amount of retrofit work more than 15 000 euros/house → Incremental amount of refund may be equal or higher than energy savings.

Energy prices will have to grow at a much higher level to make profitable energy consumption cut by 3/4.

But reduced incremental costs and higher returns:
- When people buy an old or unsafe house, wall inside repairs may be needed and incremental cost of wall insulation are very low.
- When old windows or boilers have to be replaced.
Strengths and weaknesses of industry and trade:

- Increase in insulating materials and heating systems technical performances

- Retrofit market increase slower than GDP increase in France (source CAH)
  - plentiful sales forces (several ten thousands self employed craftsmen) have to be used by materials and systems industries
  - the relationship with the final customer remains poorly controlled

- Vertical integration strategies
  - They may improve the relationships between industry and craftsmen and between craftsmen and final customers
    - Best known are –Lapeyre, K par K – windows, Engie Home services- Heating
  - They maintain disconnection between business areas such as insulation and heating systems

- Horizontal integration strategies
  - Seems to be more efficient from a civil engineering technical point of view
  - Few companies have been experiencing these strategies and their growth seems to be slow
Operating results achievements and limitations

- Global retrofit growth is not established
  - 100,000 global retrofits per year (one shot)
  - Plus 200,000 global retrofits per year undertaken over several years
  - Average amount of retrofit remains lower than expected

- Partial retrofits (heating only, insulation only)
  - They are very common: 2,000,000 dwellings per year

- Inside walls retrofit activity remains very low
  - Difficult except when buying an old house
  - Good situation of real estate may help energy retrofit activity

- External thermal insulation as an emerging sector
  - But not in old districts

- Several sectors might remain sidelined
  - Dwellings where poor people are living
  - Dwellings which remain out of the market (unsafe, with older persons living, ..)
  - Collective private building because energy retrofits would require collective decisions
Habiter Mieux Anah Program

- Anah seeks partnership with local authorities in order to
  - Identify households subject to fuel poverty
  - Provide technical and social advice towards operations with tangible results
    - Performance improvement must be 25% minimum and average is 40% improvement

- Learning curve between 5 and 10 years
  - We have experimented our knowledge since 2008
  - Difficult starting phase in 2011 – 2012 has been slow (with 20% to 40% of the objectives achieved)
  - The programm was boosted in 2013, with greater support and expanding of the target population
  - We have achieved the 50 000 target since 2014
  - 2016 target increased to 70 000, 2017 target should be increased to 100 000
    - We are now learning how to improve energy efficiency in private collective buildings

- HM program helps to achieve more efficient commercial relationships
  - Craftsmen have to speak with social and technical advisers
  - Heating and Insulation Craftsmen have to work together
Developing synergies requires dialogue, among industry and trade, craftsmen, architects, local authorities and private persons.

- It seems difficult to avoid long training periods
  - Public programs for residential renovation may take several years before being efficient:
    - five years (national policy)
    - two years (local policy)
  - Vertical integration learning period could be around fifteen to twenty years
  - Horizontal integration seems to be very difficult to reach

- There is little chance of damaging competition between diverse strategies
  - Because potential markets are very important

- Technical and social support by local authorities and Anah
  - May help to stimulate and boost market participants

- There is a large potential for cross fertilization
  - This requires to learn how to work together
  - In order to offer a better answer to final customers