Territorial planning and fuel poverty: strategies requiring systemic and dynamic approach

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Context

Depending on how you define fuel poverty, the numbers of affected households varies considerably: between 2.4 and 3.8 million households in fuel poverty in the habitat (10 to 15 % of the metropolitan population) , to intersect with the estimated 20 % of households who also spend more than 10 % of their income for their daily mobility costs.

These estimates far exceed the number of households assisted by national and local programs against this phenomenon; which explores the meaning to be given to the diagnosis, the choice of indicators and the presentation of results: the characterization of fuel poverty should include indicators to assess impacts of actions.

The study directed by BURGEAP under the research project *Global Energy Vulnerability: location, characterization and resilience factors*, Anah 2014, invite to consider five main areas of actions which interfere into strategies against energy insecurity:

- aid for improving the energy performance of the building stock ;
- personal assistance policies;
- political support in the adaptation between a housing and its occupant ;
- reflections related to planning for shorter length of forced and necessary displacements ;
- actions to support the provision of efficient vehicles when the use of public transport is inadequate.

These studies also highlight the need to adopt a dynamic approach in the treatment of these vulnerabilities, to reflect the rhythms of rotation of the housing , migration and residential mobility.

Methodology

Diagnostics and prospective were conducted from Equitee software developed by BURGEAP and Business Geografic. This tool allows to extract detailed files from INSEE census (individuals, housing, mobility, migration), the investigation of fiscal and social income, the permanent base of equipment, the survey budget of family, and database developed by BURGEAP. It rebuild balance sheets and energy bills on the basis of bottom-up analysis of the needs and behavior of households: in their homes, for travel, or consumption of goods or services. The calculations are made at the level of each household, and the results presented at the level of IRIS. The analyzes are designed to segment populations according to their socio-economic profiles, type of habitat, mobility needs, eligibility for current aid programs ("Habiter Mieux", PSLA).

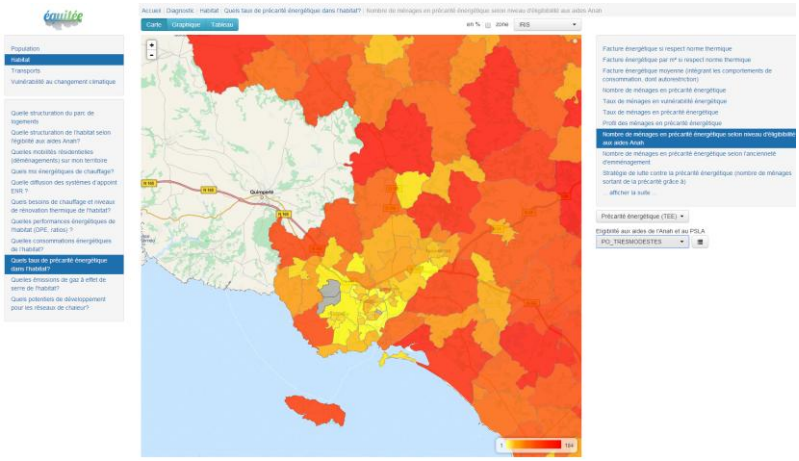
The development of the tool is operated in partnership with the urban community of Mulhouse and Lorient to validate the choice of segmentation and the results compared with existing data from their services, their planning agencies and their energy agencies. The results were also validated, particularly for the residential sector, in the context of the work undertaken for Anah.

Results

Taking the example of the urban community of Lorient, diagnosis evaluates nearly 8,400 the number of households in fuel poverty, nearly 10% of the territory's population.

Among these households living in fuel poverty, the impact of a major renovation program was modeled with the objective of reducing the energy bill below 10 €/m² (related energy savings of 35% in the context of Lorient). This type of program implemented in the private park would get out of fuel poverty 65% of households (5,400 households). Applying it in the public sector, it is 10% more households lifted out of fuel poverty.

25% of households in fuel poverty remain so, despite the major renovation of their homes, either because of inadequate surface of the housing relative to the size of the occupant households (1,500 households), or because of too few resources (900 households).



Iris localization of households living in fuel poverty eligible for "Habiter Mieux" program as homeowner very modest

These strategic directions in terms of action levers were then faced with eligibility and feasibility of programs, which are described here some lessons:

• For about 8,400 households in fuel poverty, the implementation of standard program Habiter Mieux, whose effectiveness has been proven in the individual park, would be effective for only 3,800 households. Among these "targets", over two-thirds of these households have a reference person over 65 years, and may in fact be reluctant to make major renovation work. This consideration of the sociological profile of the occupant would lead to major renovations of 1200 housing, and first substitutions heating equipment for 2,600 dwellings.

• The diffusion of Habiter Mieux program within the private park, which would leave 1,600 households in fuel poverty, is strongly constrained by (i) the technical difficulty to act in collective buildings , (ii) the difficulty of convince condominiums to initiate proceedings, and (iii) acceptance of lessor to regulated rents to receive aid of Anah. But, more than half of households in fuel poverty in the private public park have moved within the last 5 years, which would justify a reflection on the strong incentive renovation at the time of change of occupant in urban areas with conditioning rents.

• Among households living in detached houses, residential mobility is lower: the vast majority of households in fuel poverty in the park having moved for over 10 years. This finding penalizes work commitment following the arrival, and exacerbates mismatches between the surface of the housing and the size/resources of a household due to aging or departures from spouses or children. Thus, with housing of about 130m², the size of the accommodation generate fuel poverty for more than 1,100 households under 65, and nearly 300 households over 65 years. For these households, it seems pertinent to consider programs acting on the adaptation of housing to the actual needs of occupants: temporary isolation rooms, Housing Division, collocation, or relocation assistance (in possible contradiction with strategies of home support for seniors).

• Residential migration show a large share of households moving to the city of Lorient, either towards the "hinterland" along the lines of main communication road (national road). An analysis of the profiles of households who moved in the last five years in these hinterland towns highlights the high proportion of households with very low and modest resources, especially in old houses: 30 to 60% newcomers.

• This finding emphasizes the energy vulnerability of populations of these territories for housing and transport. While nearly 50 % of households in multi-polarized territory already spend more than 10%

of their disposable income at the expense of everyday mobility, against nearly 10% in the major urban center.

• Thanks to theoretical simulation conducted at the national level, a limitation to a range of 10km for commuting would not get out of energy vulnerability transportation more than 30% of vulnerable households (other purpose constituting the majority of trips). The "provision" of efficient vehicles (consumption of around 4L/100km) would be the most effective path to treat approximately 80% of transport vulnerabilities.

Conclusion

Analyzes conducted as part of the research for Anah following the call for proposals PUCA - PREBAT "Fuel poverty: New public issues, new research questions" possible to draw operational diagnostics precarious situations and energy vulnerability of territories and their population. This diagnostic questions the balance and scope of existing programs against fuel poverty, as far as possible to quantify and guide the nature and location of these actions.

This diagnosis emphasizes, with a systemic view, the impact of residential mobility and migration on the development of the vulnerability of territories outside poles of urban areas.

Development of prospective modules is underway to model and quantify the impact of migration on residential and mobility energy insecurity.