Questions around the environmental footprint of housing

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'Sustainable construction & housing'
Question 1

IS HOUSING CONSTRUCTION NEEDED ANY MORE?
Population scenarios FSO 2020

- Population growth is expected to slow down (1/2 of today's rate in 2050 in Scenario A)
- No more growth after 2040 (Scenario C)?
- It depends essentially on immigration

Entwicklung der ständigen Wohnbevölkerung der Schweiz gemäss den 3 Grundscenarios, 1990–2050

Quelle: BFS – SZENARIEN
Scenarios for households

- More important for the housing stock is the number of households
- Similar scenarios, with a slowdown in growth
The number of persons per dwelling reached a floor.

This means, that the same population will NOT occupy more dwellings.
• The new households will be very small households
• If they could share dwellings, the need for new dwellings would rise much less
Size of dwellings by construction period

- From 1945 until about 2005, the surface of dwellings was rising

Source: data collected from the SHEF project partners
Age of dwellings

- 1/2 dwellings are over 50 years old
- This shows a potential for reconstruction … or the lack of reconstruction

Data: OFS je-f-09.03.00.14
Numbers of dwellings built, transformed, demolished

Décomposition de l'augmentation du nombre de logements en Suisse, depuis 1970

- Demolition-reconstruction is nearly irrelevant
Spending on new construction and existing dwellings

Répartition des dépenses de construction pour les bâtiments d'habitation

- Spending on existing dwellings (essentially for renovation) is still very low
So, is housing construction needed any more?

- The need for new dwellings is shrinking
- The demand for second and third homes is only slightly mitigating this, as is demolition-reconstruction
- Households get smaller and smaller, while dwellings get larger and larger
- If this trend were reversed and the existing housing stock used more efficiently, it could accommodate most of the population growth
- More should be spent on improving the existing stock
Question 2

HOW SHOULD THE EXISTING HOUSING STOCK BE IMPROVED?
Energy performance of housing stock

- There are still many energy inefficient buildings
- They mostly burn fossil energy
- Low rate of (energy) refurbishment (about 1%/year)

Distribution of housing energy reference area per energy efficiency class in 2015, depending on construction period

Source: estimation by Arzoyan, Oberpriller, Thalmann, Vielle (work in progress), using data from SFOE
Price of heating oil

• Heating oil is cheap despite rising CO₂ tax
The problems with energy refurbishment

- At the current low price of heating oil, energy refurbishment costs passed on to the tenant are not offset by his reduced energy bill.
- Split incentives: the owner determines the bulk of energy use; the tenant pays the bulk of the energy bill.
- When rents did not follow the decrease in the reference interest rate, they can not be raised after refurbishment.
- Energy refurbishment pays neither for owner, nor for tenant (hence the Buildings Program and cantonal regulation).
Other measures designed to improve the sustainability of housing

• Who pays for
  – the most energy efficient appliances in dwellings?
  – renewable electricity generation on buildings?
  – bio-diversity around the buildings and rooftop vegetation?
  – advanced waste sorting, composting, shared gardens?
  – for social infrastructure such as activity rooms, bicycle and car sharing, neighbourhood shops?

• Maybe the solution is income diversity and burden sharing: tenants who can pay more (for the sustainability) pay more
Tenants' interest for sustainability

What are the tenants of ABZ, SCHL, Mobiliar looking for?

- When invited to pick the 3 most important characteristics of their ideal dwelling among 23, only 13% picked 'ecological (e.g. Minergie)'; the favourite picks were 'low rent', 'with balcony', 'green spaces', and 'quiet'
- 45% know that their dwelling is better than average energy wise (Minergie, renewable energy, etc.)
- Of these 45%, 44% indicate that this overperformance was a criterion for picking their dwelling

- Sustainability characteristics rank low among tenants' housing choice criteria
- Only about 1/5 of the tenants seem to care
- This could change or be changed

Survey conducted by SHEF team among the tenants of ABZ, SCHL and Mobiliar between September and November 2019. 968 answers
So, how should the existing housing stock be improved?

- Under current conditions, energy refurbishments are difficult to justify on economic grounds
- So are most of the investments that make a building or neighbourhood more sustainable
- As the environmental footprint of housing, outside of energy, is essentially proportional to the housing area, fewer m² per inhabitant are a natural way to reduce it
- May be a more holistic view is needed…
Question 3

HOW CAN LANDLORDS MAKE THEIR TENANTS' LIFE MORE SUSTAINABLE?
Total environmental footprint of housing

Tenants contribute to the environmental footprint of housing:

- How they choose a dwelling
- How they use their dwelling
- What they do with their non-rent money
The carbon footprint of inhabitants of densely populated municipalities is 2/3 of those of thinly populated municipalities.

Transportation is as important as housing as a source of CO$_2$; food comes next.
When tenants need to spend less for rent, they use a large part of these savings for travel, in particular air travel.

This is especially true in higher income segments.
So, how can landlords make their tenants' life more sustainable?

• Lowering rents could be bad for the environment!
• If sustainability in the buildings raises rents, this doubles the environmental gain!
• Tenants could be induced to accept smaller dwellings through lower rents, but that would again free more income for other spending…
• Just as the environmental footprint of people depends on their housing and many other choices they make, it cannot be reduced by measures in housing alone

THANK YOU FOR YOUR ATTENTION