



RESPONDER

Linking SCP and Growth Debates

François Schneider (ICTA-UAB)
Joan Martinez-Alier (ICTA-UAB)
Viviana Asara (ICTA-UAB)
Bettina Schaefer (Ecoinstitut Barcelona)
Filka Sekulova (ICTA-UAB)

Sustainable housing in a post-growth Europe

Background Paper

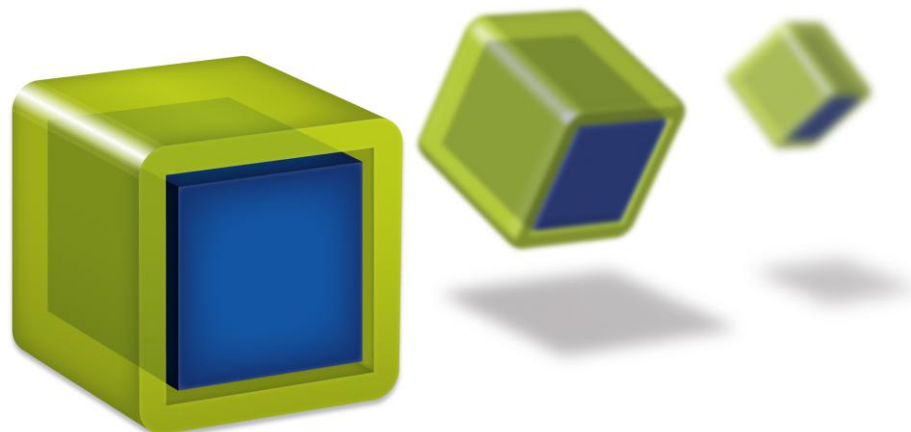
Exploring Policy Options and Open Research Questions

2nd Multinational knowledge brokerage event on Sustainable Housing

Barcelona, June 6-7, 2013

COAC (Association of Architects of Catalonia) Plaça Nova 5

RESPONDER - linking **RE**search and **PO**licy making for managing the contradictions of sustain**able** consumption and **E**conomic **g**rowth



The information in this document reflects the authors' view and is provided as is. No guarantee or warranty is given that the information is fit for any particular purpose. The user thereof uses the information at its sole risk and liability.

This work was done as part of the RESPONDER project and is published on behalf of its European Consortium. The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 265297 (RESPONDER, www.scp-responder.eu).



Join the RESPONDER community today by registering at
www.SCP-RESPONDER.eu

Table of Contents

EXECUTIVE SUMMARY.....	4
1 Housing.....	5
2 Sustainability of Housing in Europe.....	5
3 Post-growth Europe.....	7
4 Mechanisms in housing: mapping the socio-economic factors at play in the sector.....	10
5 Proposals.....	15
6 Conclusions.....	19
7 Structure of the workshop.....	19
References.....	22
Annex: the System Map.....	24

Executive Summary

Increase of consumption of energy in houses, increase of land use due to sprawling, denied access to housing rights in many countries, strong inequalities in housing, and the bursting of the housing bubble in some EU countries, are some of the factors leading us to assert that ecological, social and economic sustainability is far from being reached in the European housing sector.

After reviewing the socio-environmental impacts of the housing sector, different key mechanisms are analyzed depending on the policy options:

1. Monetarist support of “Austerity”: Increasing taxes or cutting subsidies in the housing sector in order to rebuild the capacity for economic growth. Austerity measures would be related to the neoliberal idea of market deregulation for economic growth in housing and beyond.
2. Keynesian support of “Stimulus”: Investments in housing by the state in order to restart the high activity in the building sector. These investments can be more or less green. The stimulus would enable the increase of consumption by households and is related to the idea of more state regulation for economic growth in housing and beyond.
3. The approach of “Beyond growth” integrating the idea of post-growth in housing develops a different perspective, in which growth of the housing sector is not an objective, and “greenfield” housing developments are proscribed as there is sufficient housing capacity in Europe.

Our objective is to explain each rationality with the same framework, and developing proposals for a sustainable housing sector

Three parallel tracks emerge:

- a. The reuse & recycling of houses, land and construction materials: we focus on “refurbishment” of the existing building stock
- b. The limits to growth in housing: we focus on setting limits to the price of rents in Europe with so-called “social rents”
- c. The development of frugal innovation that is convivial and non-productivist: we focus on house-sharing.

1 Housing

Housing is the answer to a key basic need: sheltering. Houses are also “homes” where we feel secure. But they are also key social elements of integration (“where do you live?”). Houses are also important spaces for sociability and social recognition¹.

With 1.3 trillion euros of yearly turnover (E2B, 2012), housing is a very important sector for the economy and economic growth. It is a key area where people have been able to make money by the act of buying and selling in times of stagnation of other profits (until the housing bubble explodes). This sector is key in terms of jobs it creates: millions of jobs in Europe are dependent on the housing sector and on fields connected to it. At the household level, for a vast majority of older Europeans, the most important component of their wealth is housing (Angelini et al. 2010).

The housing sector can also be seen as a gigantic material flow. Stones, sand and gravel and other primary building materials represented in 2007 61%% of all materials extracted in Europe, a very important item in total material flows (Hass and Popescu, 2011). In 2006, at the construction peak in Spain, construction materials represented about 13 tons per person per year (González et al., 2012). This does not account for all the energy, land, water, waste disposal also involved by the housing total system. The housing system includes all the building operations: the management of resources necessary to make houses habitable. Furthermore, all the stages of the houses’ cycle should be taken into account: extraction, transport, processing, storage, construction and final disposal, as well as the use of the houses (with the connected energy consumption), and all the tremendous implications in terms of lifestyle with high impacts on the ecological milieu. In the next section we will analyse the (lack of) sustainability of the housing sector, articulated in its ecological, social and economic component.

2 Sustainability of Housing in Europe

Housing in Europe does not present social, economic and ecological characteristics that would secure on the short and long term the needs and livelihood of present and future generations. On the other hand with 600m² of built area² per person (MOSUS, 2003) and 40m² of dwellings per persons (Kees & Haffner 2010) in EU-27 there is more a surplus than a shortage of housing in Europe. Let us explore this paradox.

Ecological Sustainability

Energy consumption in buildings — for space heating, water heating and use of electric appliances — represents approximately 40 % of total final energy consumption and 36 % of CO₂ emissions in Europe (EEA, 2010). Such a level cannot be secured by renewable energy alone.

The trend in the housing boom (until 2007) has involved an increase in energy use notwithstanding efficiency improvements. Household final energy consumption increased by 13 % in EU-27 between 1990

¹ Fijalkow (2011) describes the evolution of housing in terms of domiciliation, affiliation, and individualisation.

² Built areas (including residential, commercial, industrial, and infrastructure areas and associated vegetation) in EU-27 is an surface between the size of France and Germany (7% of EU-27) or 600m² per european (MOSUS, 2003).

and 2008.³ This increase was due to rising personal incomes permitting higher standards of living, an increase in comfort levels and broader ownership of domestic appliances. About two thirds of household energy demand stem from space heating and cooling (EEA, 2012). The demand for electricity from appliances and lighting has increased most rapidly from a share of 13% to 16% of final household energy consumption (Lapillone et al., 2011). A growing demand for single households and a decreasing occupancy rate per dwelling in all EU-27 (Dutch Ministry of Interior, 2010) further enhanced the demand for energy in the housing sector.

It is true that the average energy consumption per dwelling was reduced in 2/3 of European countries, in particular in most new member states (Lapillone et al., 2011). However, efficiency improvements have not led to an absolute decrease in energy demand due to a growing number of dwellings (ibid) and to new forms of consumption (more appliances: TV sets, dishwashers, consumer electronics and information and communication equipment — and a rising demand for air conditioning and cooling technologies, especially in the Mediterranean countries).

Housing comes also with high direct and indirect material flows. Roughly one third of total material use in Europe is for housing and infrastructure — mainly construction material — with consequent negative impacts on land and biodiversity from mining and waste disposal. Construction waste is increasingly recycled but it remains marginally used in buildings (6 % of the materials used in new construction in the best European cases (EEA 2010)).

House building, especially diffuse residential sprawling, vacation homes, and related infrastructure are responsible for a high share of land-take. Sprawling is particularly affecting the agricultural land in the peri-urban areas. Urbanization is predicted to cause the loss of 1.6–3.3 Mha per year in the world of prime agricultural land (Lambin and Meyfroidt, 2011). But in the EU, land takeover for paving and housing could be reduced to zero.

Social sustainability

The economic crisis has increased the number of homeless people. Some 30 million people or 6 % of the population in the EU 27 area were reported to suffer from severe housing deprivation in 2009. More than 12 % lived in households affected by high housing costs (Eurostat, 2011). Nevertheless, the housing social problems did not begin with the 2008 crisis and increased with urban sprawl (poorest household have to look for land far away, and transport costs are increasing). The post-world war social housing have become the most unattractive places in cities, most acute in the French “banlieues” even if differentiations have to be made (Rowland et al., 2009)

From 2002 to 2007 housing prices in Europe have often risen above 6% per year which is considered an alarm threshold for bubbles. Spain’s national average house price went up to 250% (155% in real terms) from 1996 to 2007. By the end of 2011, real house prices had fallen from their peak by about 41 percent in Ireland, 29 percent in Iceland, 23 percent in Spain and the United States, and 21 percent in Denmark.

In Spain in 2005, housing starts peaked at 760,000 in 2006, due to rising demand from Spanish and EU nationals. In 2010, there were only about 91,500 housing starts in Spain. The number of unsold properties in Spain reached 1 million in 2009, according to The Ministry of Housing.

³ <http://www.eea.europa.eu/data-and-maps/indicators/final-energy-consumption-by-sector-1/final-energy-consumption-by-sector-6> (last accessed 15 February, 2012).

The inequality in housing in Europe is tremendous. The inequality exists not only within each country, but also between countries. From Latvia, Romania, with more than 50% of the population experiencing overcrowding to Luxembourg with new houses having more than 100m² per person on average.

Economic sustainability

Although this was not a new idea, (“when the housing sector goes well, the whole economy goes well”⁴), the idea that housing development is key for economic well-being has gained high support from the 60-70s (Harris and Arku, 2006). This crisis is related to activity reduction of the building industry, which on its turn created unemployment. But does that mean that economic sustainability needs growth of housing?

There is widespread agreement that there has been excessive investment not only in private housing but also in public infrastructure in some EU countries, both representing one of the important drivers of debt increase. Civil engineering works (e.g. railways, roads, bridges, airport runways, dams) did not reduce with the crisis. But civil society resistance to big “useless” infrastructure projects has been increasing in the last few years, from the new network GPII (Grands Projets Inutiles Imposés – Large projects useless and imposed⁵), to the longstanding protest against the TAV Torino-Lyon in Italy, the airport at Notre Dame des landes, the new train station in Stuttgart.

3 Post-growth Europe

Many factors combine to confirm that we are in a situation of post-growth and that this situation will prevail in the future

Post-growth in demography

Given the trends in population growth (with European population likely to peak very soon, (Scherbov et al., 2011), slight depopulation will become a permanent feature of many European regions, as it has happened in Japan. Longer life expectancies will compensate only to some extent the under-replacement birth rates. How migration trends will evolve is difficult to predict. The European population peak implies that there is no need to develop new housing for a growing population in Europe. To preach demographic growth for economic growth and for being able to pay the debt is nonsensical. The economy is for the people, not people for the economy.

Post growth in economy

The illusion of “debt-fuelled” growth with mortgaged housing which insures the financial system is not realistic. In general property speculation is of course not a viable option, we know that it creates bubbles that burst. Ecological economists question that further economic growth is at all possible in West-

⁴ Martin Nadaud « Vous le savez, à Paris, lorsque le bâtiment va, tout profite de son activité. (you know it, at Paris, when the building sector goes well, everything profits from its activity) » (Discourse at the French National Assembly, 5th of may 1850), altered in « Quand le bâtiment va, tout va (When the building sector goes well, everything goes well)». Also song by Maurice Chevallier.

⁵ <http://forum-gpii-2012-ndl.blogspot.fr/>

ern-developed countries. House purchases have lately declined in many countries and approvals are low in UK⁶, Spain⁷, and France (Pelissier, 2013). According to Eurostat this situation has continued (Eurostat, 2013). The crisis challenges the use of houses as financial investment. It gives opportunities for technical and social innovations in environmentally friendly refurbishment, social renting, co-housing etc.

Physical post-growth

There is a physical limit to growth in terms of natural resources, energy and land, and in the resilience of natural systems to absorb waste (including greenhouse gases). Housing is an important direct and indirect consumer of material, energy and land, causing excessive pressure due to sprawling, the cement industry, and the related environmental conflicts connected to the extraction of materials.

Which housing politics?

Two visions prevail in policies facing the (housing) crisis.

Some call for mass governmental support of the building industry. Stiglitz, for example has called for a mass mortgage refinancing (Stiglitz and Zandi, 2012). Housing is the sector that propels growth. Krugman advises investment in housing, and low interest rates (Smialek, 2013).

Other authors call attention to the weight of the public debt (Reinhart & Rogoff 2010). Unless there are devaluation and defaults, a large debt prevents growth. The relation is open to doubt in the sense that there is no precise percentage of debt in terms of GDP that prevents growth. However the debt burden gives arguments to austerity policies. In the housing sector, austerity means cutting much of the social support for housing. Supposedly a period of austerity would be beneficial in order to build productivity in the housing market which would support further growth. In line with one of these options, most policy makers and advisers (both austerity-minded and keynesian) support the idea of more growth in the housing sector either now or in the future.

Nevertheless, a large part of the existing stock is underused, for example in Spain about 22% and in Italy about 20% of houses are empty. The increase of the number of dwellings and of the floor space per person is a European trend (EEA, 2012).

The high policy profile of housing as an engine of economic growth still rests on a weak empirical foundation and is vulnerable to shifts in intellectual fashion (Harris and Arku, 2007). Another option is emerging: the “beyond growth”, “prosperity without growth” (Jackson, 2009) or degrowth alternative. This option would support a type of efficiency that would go in line with frugality and conviviality: challenging the level of urbanisation and urban sprawl (going back to Patrick Geddes and Lewis Mumford as theorists of urban planning rather than Le Corbusier), developing more co-housing, flat-sharing, smaller floor space per capita, improving integration between houses and their environments, and increasing the degree of utilization of the existing stock of housing.

⁶ “Approvals for house purchases and remortgaging in the UK have each fallen year on year, although net mortgage borrowing from the banks grew by 0.1% last month, the latest figures from the British Bankers’ Association shows.” <http://www.propertywire.com/news/europe/uk-home-purchase-lending-201303257590.html>

⁷ “Construction was once Spain’s biggest industry but approvals are down 44% on last year and the trend is likely to continue. Building is no longer a strategic priority. It could be a generation before we see Spanish developers back to anything like their boom-time glory.” <http://www.globaledge.co.uk/news/spain-4-3-million-empty-properties-48674>

We have seen that housing is related to economic, social and ecological impacts. Degrowth and “steady-state economy” supporters would maintain that the growth of housing is socially unnecessary, since there is availability of an excessive unused stock. It is economically counterproductive because it increases the burden of debt on the economy, and is ecologically damaging.

The question that emerges is: Should the growth of the building sector be reactivated in some new technical and social modalities? We will answer this questions by analysing different worldviews and mechanisms at play.

4 Mechanisms in housing: mapping the socio-economic factors at play in the sector

The present economic system is dependent on economic growth. Economic growth is basically derived from investment and consumption. According to Friggit (2011) households have increased their indebtedness by 15-20% of GDP between 2000 and 2009 in France. This type of growth, however, occurs in an artificial manner as it is not linked to an improvement of the “housing service”. The level of overall indebtedness creates a danger of default that is a perfect spark for a crisis, as was the case in 2008 in Spain, Ireland, UK or the US. The credit agencies should be blamed not so much for grading B- what used to be A+ but rather for their absurd optimism down to 2008.

This section presents several important elements in the discussion on housing, explaining how these are linked and what are the mechanisms at play. Each element, or topic, is discussed taking three different visions which we refer to as: “austerity”, “stimulus” and “beyond growth”. The interpretations associated with each vision are taken at their extremes for the sake of clarity. The causality mechanisms at work are then useful to understand and devise the proposals to exit the housing crisis. The housing crisis in Europe is a crisis of “poverty in the midst of abundance” rather than of scarcity of housing.

What we call here an “austerity” interpretation implies a drastic reduction in government spending, in our case, cutting subsidies in the housing sector, in order to get rid of the “non-efficient” housing activities and rebuild capacity for a new expansion of urbanization. The austerity view is based on the neoliberal idea of deregulation in order to leave most room for manoeuvre for the private sector. It also implies giving-up renewable energy subsidies. The underlying theory is the Expansionary Fiscal Contraction (EFC) hypothesis (Giavazzi and Pagano, 1990) which predicts that the major reduction in government spending can be conducive to private investments and as a consequence lead to an overall economic expansion. A typical supporter of austerity measures is the IMF and Angela Merkel in Germany.

The “stimulus” interpretation, typically Keynesian, is based on supporting public investment in housing so as to restart activity in the building sector, implying a strong indebtedness of the state. These investments are often considered to have a social connotation and are aimed at the increase of consumption by households. The “stimulus” interpretation involves regulation of rents, housing prices, and banking with the idea of creating conditions for a strong economic growth in the housing sector and beyond. Typical supporters of this approach are Krugman, Stiglitz, and Francois Hollande in France. A “green deal” variety gives also green technology a particular emphasis as a stimulus engine.

Both interpretations consider economic growth as a central goal. This is not the case with “beyond growth”. This vision does not support a further expansion of urbanization and house building. It does not see the current crisis as cyclical, but explains it with the reaching of some fundamental limits, especially bio-physical ones. The three visions are displayed in the system map used in the RESPONDER housing project (see the Section 7 and the annex).

4.1 Demand for housing

Demand for housing in Europe could be proxied by the number of square meters of houses in Europe which are either owned, rented or shared. A common way out of the housing crisis from an “austerity” or “stimulus” perspective, is the increase in housing demand, considered as a way to foster house construction or refurbishment which creates employment, pays loans and restarts the economy through

the increase of household consumption. Both the austerity and the stimulus visions favour the increase of the housing capacity. However their interpretation differs on the moment of creating the demand.

From an “austerity” perspective, recession needs to be lived through, and the repayment of debts is a short-term priority, so that confidence in the credit system is not lost and enterprises can recover and undertake new private investments through bank loans. For the “stimulus” vision, demand of housing shall increase, facilitated by public subsidies, in order to restart the economy. From a “beyond growth” vision, better use of existing housing capacity is put forward, rather than building new one. “Beyond growth” supporters do not see housing as a financial investment, nor as a conspicuous good, but rather as places which fulfil important social needs.

4.1.1 Comfort level and housing aspirations

Demand for housing is very much related to the required, or dreamed, level of comfort and the level of aspirations. Homes are also “positional goods” with status value derived from social comparison which is stronger in an environment of higher inequality (Ward et al., 2009; Tunstall et al. 2013). In a “stimulus” view, houses of a high enough standard should be socially accessible, while an “austerity” vision would suggest that high-comfort housing should only be attained with more wealth. The “beyond growth” discourse promotes instead the consideration of houses as elements of social networking, conviviality, frugality and the good accessibility and not as status symbols.

4.1.2 Efficiency

An “austerity” approach would argue in favour of recovering economic efficiency first, based on the idea that economic crises are a part of the business cycles and need to be lived through, as they will in the long term increase productivity (through, for example, dismissal of workers). The type of efficiency in the “austerity” perspective is geared towards economic growth, and implies increases in productivity through economies of scale established by large enterprises, or urbanizations in the case of housing. The city would be therefore shaped mono-functionally (as suggested by Le Corbusier) in order to enable large scale rational city organization. “Beyond growth” proposes a different type of efficiency, which is frugal and based on reducing inputs and outputs, sharing spaces, refurbishment of unused houses and an effective use of small spaces. This is developed in the upcoming section.

4.1.3 Household consumption

Demand for housing is furthermore reflected in the composition of household expenditures. Household consumption roughly contributes to half of the GDP⁸. Expenditures on housing are then as high as one quarter of expenditures of Europeans, being by far the first of all consumption items.

From an “austerity” and “stimulus” perspective household expenditures are at the heart of economic growth as these generate profits and taxes, which can be reinvested. From an “austerity” perspective private enterprises and private banks are necessarily the motor of growth and the key to its recovery. In a “stimulus” vision, this initial spurring role is assigned to the state in the form of increased public investments creating employment and household consumption or public consumption in times of crisis, with a multiplier effect. In a “beyond growth” vision the increase of household consumption is not an

⁸ http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/National_accounts_%E2%80%93_GDP

objective for higher income households, and as consumption is not good per se, wasteful and detrimental consumption should be avoided.

4.2. House construction and urbanization

The mainstream visions (“austerity”/“stimulus”) present the construction of buildings as one of the motors of economic growth and a source of employment opportunities. As seen earlier, house-construction is highly energy and resource-intensive. A common response to this concern, provided by the “stimulus” supporters is investment in new green housing. From an “austerity” perspective investment in new construction is considered more productive than restorations of old buildings. From a “beyond growth” perspective, new construction is not a priority, because numerous square meters of underused housing capacity are available in Europe, either in derelict, secondary/vacation, or large houses with few inhabitants. As we will discuss later, small-sized ecological houses are promoted within this vision.

An important factor for house-construction is building permits. These are usually delivered by local administration. Change in permits can have important effects on the price of land, which then affects the construction and housing price (Fijalkow 2011). Giving building permits has constituted in some European countries one of the main forms of political corruption – political parties have financed themselves by charging commission on such permits.

4.2.1. Investment and speculation in housing

According to many analysts (see for ex. Friggit, 2012), the main reason of the price hikes of 2000-2007 has been the financial environment. Housing appeared as a good investment after the stock exchange crashes. Excessive financial investment in houses is conducive to the creation of bubbles, which can burst while dragging the economy into a crisis. The financial investments of households in financial titles have reduced in Europe as a general trend, from 13,6% to 7,3% in France (Bigot, 2011) in the last 15 years and the share of people having titles have reduced too from 21% to 14% in France. This is highly problematic from an «austerity» point of view.

From an austerity perspective private investments create employment and efficiency.. If investment is speculative, however, nothing is produced. In the short term it creates economic growth, consumption and some employment. Eventually, certain debts cannot be served, creating economic downturns and a requirement for economic growth. A “stimulus” perspective supports public subsidies in social housing construction, like after the Second World War. Some of the measures suggested by “stimulus”, are the low interest rates, which allow for easy borrowing and indebteding. At present the stimulus discourse would go in a direction of the “Green New Deal”, building ecological houses or even creating an eco-housing bubble. From a “beyond growth” view there is a lot of disinvestment to be done from damaging housing projects. This would liberate resources for sufficient roofs and small socio-ecological projects without an increase of the housing capacity.

4.2.2 House Renting

Renting situation is very different in different parts of Europe. Some countries are typical “owner countries” (especially Eastern and Southern Europe) while others have a higher renting share (north-western countries), although in the last two decades there has been a general trend on the relative increase of housing ownership. Renting is generally less regulated in countries with smaller renting shares. Rent

control regimes have generally been dismantled or softened since the mid-1990s, and removed in many Eastern and Central Europe countries.

Regulation has the advantage of keeping price low and affordable. One of the most advanced renting control seems to be the German “mirror” system in which renters can be sued if the price is higher than 20% of the price in the area. Also the rent is indexed to inflation and cannot be increased if conditions of the renting service does not improve. In Sweden rents in all dwellings must match rents for alternative, comparable dwellings, based on size and ‘attractiveness’, especially so for low-price municipal houses. The system is enforced by Rent Tribunals. A tenant has the right to reject any rental increase, and the landlord has to appeal to the Rent Tribunal for the increase to take effect.

From an “austerity” perspective a deregulation of renting would motivate investors to acquire housing for rent and would increase efficiency in the housing market. In Spain, where rent is much deregulated (contracts duration, limits to renting prices), renting is an unstable, insecure and expensive alternative⁹.

A “stimulus” perspective would advocate rent regulation in new housing. In fact, it seems that countries with highest level of regulation are also ones with highest ratio of renting versus owning. As mentioned earlier, house acquisition is promoted by tax-breaks such as mortgage deductions which disadvantage the renting alternative. Direct building subsidies, that were prominent after World War II have largely been replaced by supports geared towards providing financial assistance to people in the housing market. Expectations of obtaining a renting subsidy on the other hand bear the risk of being incorporated in the final renting price and push prices artificially up (Fack 2011).

4.3. Household Debt

The level of household indebtedness is seen here as a result of a combination of rising housing demand, house construction and deregulation of the mortgage markets. Credit for housing represented 21% in Italy, 37% in France or as high as 60% of national GDPs in 2008 in Spain (De Bandt, 2010). Countries with more house-purchasing tend to have higher indebtedness. From 2000 to 2007 the household debt in the European Union has increased on average by almost 19%. After the de-regulation of the credit markets during the nineties it appeared that households had gained accessibility to various forms of debt resources. In fact, while some households managed to efficiently smooth their saving and consumption pattern, others have been (involuntarily) introduced into a vicious cycle of debt accumulation, leading to what in the literature is regarded as over-indebtedness. According to Eurostat, in 2011, in EU-27, 35% of households have claimed to have heavy financial burden due to housing costs. When house prices declined, ushering in the global financial crisis, many households saw their wealth shrink relative to their debt, and, with less income and more unemployment, found it harder to meet mortgage payments. The deregulation of the mortgage market, and flexibilization of the conditions for granting loans and their repayment terms pushed people into careless borrowing. This has finally affected housing prices.

From an “austerity” perspective only those that can afford it shall become owners, hence investments in housing by actors who did not have sufficient revenues is considered to be a core driver of the housing crisis. This view blames mainly the rating agencies for the crisis and gives priority to the repayment of debts. From a “stimulus” perspective, debt reimbursement is one of the fundamental limiting factors of housing growth. Access to debt is limited by government regulations, fear of crisis, and illiquidity. A “stimulus” way to get out of the crisis is debt-moratorium and zero or low interest rates to promote

⁹ See the powerpoint presentation of Adria Alemany for last year’s knowledge brokerage event on sustainable housing (www.scp-responder.eu).

ownership and energy efficient housing (as proposed by the French administration)¹⁰. From a “beyond growth” perspective household debt can lead to an increased exploitation of natural resources and overuse of nature’s sinks through money creation. A “beyond growth” vision favours a decrease of the money-creation capacity by banks. Household debt can furthermore deepen inequalities in home-ownership (Angelini et al., 2013). There seem to be a direct relationship between the degree of economic inequality and home ownership. In the absence of redistributive programs, home ownership tends to prevail where state commitments to social insurance programs are smallest (Conley and Gifford, 2006).

4.4 Employment

Demand for housing, house-construction and household debt are closely related to employment (Strauss, 2013). The housing sector is generally considered as an important provider of jobs. This sector is, however, not the most labour-intensive and its share in employment is lower than its corresponding share in GDP (12% in France according to Bigot 2011). In a “stimulus” perspective the housing sector can pull the rest of the economy (Dietz, 2012) and have spillovers creating jobs in other sectors. From an “austerity” view, building of new houses is beneficial for job-creation, while, when investing in old houses the added value associated with the price increase of a house between acquisition and resale does not reflect a contribution to production.

From a “stimulus” perspective, high prices and home ownership reduce mobility of households, thus reducing job market flexibility. Mobile households tend to be less affected by unemployment. This evidence is however not always significant (Tunstall et al. 2013). On the other hand home ownership (without mortgage) acts as a social security in case of unemployment, and in general homeowners are less affected by economic crisis. An austerity position is suspicious of social housing, which is deemed to cause poverty traps.

A “beyond growth” approach would analyse employment differently. In this vision reducing working hours could also be conducive to a more active involvement in refurbishing one’s own house, or on the personalisation of living space as a meaningful and fulfilling activity. Furthermore, refurbishment of houses could represent an important source of employment, in substitution to greenfield investment in housing, while at the same time leading to energy efficiency improvements.

In a nutshell, both the austerity and the stimulus approaches focus on how to spur economic growth. Nevertheless, the creation of artificial demand created crises in the first place. If we take into account the macro-rebound effect (Schneider, 2012), both approaches clash with ecological limits. The austerity approach leads to a profound social crisis by cutting social help and by disregarding the problem of inequalities. The stimulus does better in the social sphere or in the environmental sphere (in its “green deal” variety), but paves the way for another (debt) bubble and a deeper economic crisis. We have to refer to the work of Frederick Soddy (Martinez-Alier 1990) who forecast and analysed the 1929 crisis. It is easy for the financial system to increase the public (or private) debts, and to mistake the expansion of credit with the creation of real wealth. In fact, increases in wealth will be used for more housing, re-

¹⁰ <http://vosdroits.service-public.fr/F10871.xhtml>

source extraction and use of energy (and production of greenhouse gases). The current crisis is due to the overgrowth of financial assets relative to the growth of real wealth; there is too much liquidity, not too little in order to guarantee the over-inflated debts. Both “austerity” and “stimulus” believe in increased productivity in the housing sector. The “austerity” approach achieves it by eliminating economically inefficient activities, and the “stimulus” perspective does so through public investments. In what follows we present some policy proposals related to the third approach.

There is no general answer to the housing problems, because situations and expectations are very different in housing. But solutions might include: simple individual homes, or large shared houses, refurbishment instead of building anew, new light housing, no impact or reversible housing, and social rent. We discuss each of these below.

5 Proposals

5.1 REUSE and RECYCLE

The first general proposal is the more efficient use of each square meter of building space, and reusing urbanized land and construction waste.

Renting is the first and obvious way to reuse houses and better utilize the existing house capacity. This implies having a tax system which favours renting over buying, as well as a rent-regulation which makes housing more accessible (as in Sweden). To counteract the use of houses for speculation empty houses can be reused and refurbished¹¹. A general inventory of empty houses is the first step, which could be used for social housing (see later discussion). One approach could be a prohibition of house evictions, as done in the French cities Grigny or Bobigny and state requisition of empty buildings (as planned by Cécile Duflot, minister of housing in France). Other measures for having more efficient utilization of the existing housing capacity is the strengthening squatters’ rights and the better utilization of brownfields and construction materials. Within the broad range of strategies to reuse and recycle the existing housing stock, we focus on “refurbishment”, discussed in section 5.4.1. below

5.2 Limiting urban expansion

Urban expansion can be limited in different ways. Slow shrinking of urbanized areas toward farming and wildlife zones is the general approach suggested here. In particular, it implies a re-concentration or reversing the urban sprawl trend by changing the status of land from urbanized to agricultural or natural area. This implies avoiding the further urban expansion on agricultural land or natural spaces, or the colonization of new wild places, while supporting more compact habitat (which is not “mass-housing”) and sustainable transportation schemes. Land use planning, or zoning can be used to restrict urbanisation outside public transport nodes, to bring back nature in the city and keep neighbourhoods compact (Register, 1987).

Another aspect to consider is avoiding the further expansion and development of road, energy or water infrastructure. Sustainable housing needs to be thought in the context of the transition towards ecological cities, meaning converting car-based infrastructure into walking, cycling and open common spaces, relocalizing urban life and developing its multi-functionality and public spaces, fostering proximity rela-

¹¹ For example, in France an ordinance of 1945 gives the possibility of empty houses requisition by the government.

tionships through urban redesign-reorganization, smaller scale and distance, use of regional materials and bioclimatic design. Ecological cities are also understood as all-inclusive, rather than as a rescue island for a gentrified minority.

Another way to limit urban expansion is by reducing advertising for luxurious housing and mortgage schemes. A reform of the banking system is needed which goes in the direction of higher reserve rates. This will provide a natural limit to the amount of loans which can be issued. Some housing could be obtained without debt as a form of a basic income.

Finally, some structural measures concerning economic institutions that lead to the creation of housing bubbles, loans and unjust house-allocation need to be elaborated. Houses should fulfil their basic need requirement, rather than being perceived as financial assets. A proposal in this respect is a tax that would take away unjustified added value on housing: price hikes would have to be justified by improvements in housing quality and infrastructures around it (McKim, 2012).

In order to limit the price of rent we develop in more detail the possibility of the social rent for which Europe has a rich and diversified experience, this is developed in detail below.

5.3 Making housing affordable – Reducing square meters per person on average: Simple individual homes – Small is beautiful and house sharing.

The idea of creating the smallest dwellings, or nano-houses¹² (Richardson, 2011), is interesting because innovation and design of ecological houses has mainly focused on large homes. Tata, for example, has been developing the idea in a commercial context with houses that have all comforts at a reduced cost of 5000 euros. It is unclear, however, if these houses will actually replace the present houses or if they will be bought as secondary housing. An alternative to the trendy nanohouse, is “light housing”, consisting in revisiting the idea of cabins, yurts, tents, caravans, tipis etc. Within the range of strategies to make housing affordable by reducing square meters per person, and in a EU context of ample uninhabited housing space we focus on the practice of sharing, which is developed in the next section.

5.4 Focusing on some specific solutions

5.4.1 Refurbishments

It consists in renovating a building while keeping its main structure. Cuchi and Sweatman (2011) identify three objectives of refurbishments:

- 1) Focus on the efficient use of resources. It is essential to increase the resource efficiency of homes through productive investments to improve buildings’ energy efficiency and reduce their environmental impacts.
- 2) Improve the habitability and technical facilities of buildings. Today’s socially acceptable quality of life increasingly includes access to health, education, culture, sports, leisure etc. which are not a part of the home but its surroundings. Proper refurbishment policies should contemplate the social, energy and

¹² “These small shelters combine sustainability, economy and portability” (ibid). They might represent the future of human living. Instead of resembling coffin-like sleeping pods, each house, in harmony with its surroundings, is filled with charm and natural light. Designs range from basic to futuristic, taking advantage of the best of modern manufacturing with traditional materials and familiar geometry.

environmental impacts of the home's habitat also at a neighborhood and urban level. The sustainability of the physical structure is targeted, as well as ensuring basic habitability.

3) Improving affordable access to housing. This is defined as the ability for households to have a decent and adequate housing unit.

For example, Cuchi and Sweatman (2011) estimate that in Spain proper refurbishment policies can target the deep retrofit of 10 million (64%) of its pre-2001 primary residences by 2050 to reduce their energy needs by up to 80% and hot water energy requirements by 60%.

Refurbishment shall be a form of collaborative design (Anguelovski, 2013). One negative side effect of refurbishment policies to be considered is gentrification (Grant & Mittlestead 2004, Filjalkow 2011).

Refurbishment could come high on the list. There was a call in 2012 by Cecodhas, Eurima, EuroACE and the European Builders Confederation to refurbish at least 10 million housing units in order to reinvigorate Europe's economy. In Germany, the building renovation programme for energy efficiency has mobilised €100 billion in investments, reducing energy bills, avoiding carbon dioxide emissions and creating around 300,000 direct jobs per year along the way.

Cuchi and Sweatman believes that 10 million Spanish primary homes built before 2001 can be transformed into low-energy, low emissions, modern housing delivering benefits to owners and occupants, and creating 110,000- 130,000 stable, long-term direct jobs from 2012 to 2050.

5.4.2 Social rent in post-growth Europe

Social housing is a type of rent in which the tenant does not pay more than 30% of her/his rent, with a dignified quality of residential life, independent of whether the house is public, cooperative or private. The social rent is even more social if it involves lower material and energy consumption, using the already existing housing infrastructure.

The availability of social rent schemes is often too limited to satisfy all needs, waiting lists may be very long. Some people prefer to self-organise their housing in a social way. Although there is no single European model for social housing and diversity in this field is high (Houard et al., 2011), the stock of social housing in Europe nonetheless tends to accommodate more and more vulnerable populations, and is seen as an increasingly residual part of housing policies in most EU member states (Houard and Waine, 2012). In some countries like Spain or Greece, however, social housing is virtually non-existent, while in other countries such as the Netherlands, it is a quite regulated and important policy within the housing sector. Some countries focus more on housing affordability, while others see social housing as a safety net for the poorest populations. The three knowledge units on social rent by Alice Pittini, Joris Hoekstra and Javier Burón offer a very good overview of the policies at the Spanish, Dutch and European level.

5.4.3 House sharing

House-sharing is an approach to better utilize the existing stock of housing and can take various forms. One is flat-sharing, which is most popular among students. Another is sharing a flat with a family-type-of community. The latter type of house-sharing is losing grounds in Europe, while the former seems to be on the rise as a strategy to reduce costs. Co-housing, which emerged in the Northern countries, and is slowly gaining ground in southern Europe is a third strategy. It implies designing of buildings for communal use (Lietaert, 2010). We deal with each of these below.

The family house model

Sharing within the family is the typical way of sharing a house, which has been decreasing with the reduction of the family size in all countries. Family house sharing has remained more widespread in southern and eastern Europe where young adults stay longer at their parents' home. Unemployment and high housing prices de facto leave them no other choice.

Flat-sharing

Flat sharing (Steinfuhrer and Haase, 2009) is just one household shared between individuals who are not from the same family. Typically, this housing arrangement consists of at least two young adults, often without children. Sharing the flat and the housing costs is the basis of their relationship but living with others is an additional reason to share the house. Flat-sharing challenges the idea of the individual home and is very much on the rise, especially now with the economic crisis. The cost per person of maintaining the same standard of living has been evaluated to be at around 40% lower in a two-person household than in a one-person household (He et al., 2010). There are further economies of scale in larger flats with three or more people. House-sharing is generally associated with a reduced level of resources use. The sharing of flats furthermore creates positive spill-overs, as it involves (and creates the habit of) sharing electro-domestic appliances, and various household tools. Unfortunately flat sharing is not adequately supported by tax legislation.

Co-housing

Co-housing communities (Lietaert, 2010) are neighbourhood developments where private and common facilities are combined and compromise is built between the collective and private needs. Co-housing communities can gather on average between 15 and 35 families, or 50–100 people. The co-housing models are often set in an urban or semi-urban context. The equivalent model in a rural context, are eco-villages. Cohousing communities have shown a constructive alternative to the growing atomisation and loneliness of individuals in large cities. Lietaert identifies six fundamental characteristics of co-housing: participatory process, intentional neighbourhood design, extensive common facilities, a complete resident management, the absence of hierarchy, separation of incomes. Like flat sharing co-housing communities, enable the spread of "efficient sharing" habits. Car, tools, toys and clothes for children are reused several times; services are offered between the members of the cohousing community and its neighbours, and so on.

More house sharing

A last type of house-sharing which is worth mentioning, is the transitory or occasional sharing, associated with initiatives like couch surfing and house swaps¹³, which are slowly spreading and act as efficiency improvements of the use of the housing infrastructure while building conviviality and trust.

One of the difficulties in house-sharing is the lack of legislation that favours the communal ownership. Sharing thus needs to be included within the normality of jurisdictions. Results from the few existing studies (Sekulova 2013) points out that it has a very positive effect on well-being, it favours the sharing of many goods, and still tremendously reduces the financial burden on renters. House sharing is not

¹³ Examples are Hospitality Club, Home swaps, Home exchanges.

favoured by the tax system, nor by public policy in general. Taxing unused square metres, could be one approach. The tax can be progressive in terms of square meters per person used, or rented out (Schaff 2011). While laws usually specify the maximum rate of occupancy, we can also propose the reverse: a minimum rate of occupancy. Another proposal is subsidies, or taxes reduction, for house and goods sharing, or offering hospitality towards homeless people. The knowledge unit on co-housing by Dick Urban Vestbro has been specifically designed to offer a very useful overview of the topic.

6 Conclusions

This paper confronted three representations of housing within a European context of non-growth and the same mental “map” (see annex). Two of them, the austerity and the stimulus, focus on fostering growth in the housing capacity, considered as an important spurring sector for the economy. We argued earlier that these fail to address the challenges posed by post-growth Europe and clash with ecological limits. The first aggravates the economic crisis while the second creates the conditions for a new (debt) bubble and a deeper economic crisis.

It was argued earlier that an increase of the overall housing capacity is by no means a way to stimulate employment in the long run, nor a guarantee for the fulfilment of housing needs. These will best be served when houses are perceived as places fulfilling important social functions and elements of social networking and nests of conviviality, rather than symbols of status or targets for financial investment. The housing sector requires an efficiency which is frugal and based on the better utilization of existing housing capacity, by means of sharing, refurbishment and social rent. A focus on these three strategies can furthermore reduce unemployment, especially when applying techniques of ecological construction requiring a lot of manual work for building and renovation.

There is no single or straightforward answer to all the problems we identified. Nevertheless we have outlined some key directions. The first one involves the more efficient use of square meter built space, and reusing urbanized land and construction waste. Refurbishment is one of the first practical strategies in this direction. The second direction relates to limiting urban expansion through the seizure of unused houses, and through the promotion of social-housing, or social-rent. This is a key concern, given the fact that urban growth no longer represents cities’ exclusive development path. Urban shrinkage is a new path that is spreading widely across the world (Haase et al. 2012), although the ways of making sustainable shrinking cities needs to be carefully studied. The third direction concerns improving house-affordability, which can be achieved through the reduction of square meter built space used per person, meaning a promotion of schemes for longer and short-term house-sharing.

7 Structure of the workshop “Sustainable Housing in a Post-growth Europe”

7.1 The RESPONDER project

RESPONDER deals with potential political, social and economic contradictions between sustainable consumption and economic growth. Housing is one of the five thematic axes around which sustainable consumption and economic growth are discussed in two rounds of knowledge brokerage events, the other being food, mobility, ICT, and household savings and debt. RESPONDER deals with those cross-cutting contradictions by trying to link different communities, attempting to improve mutual understand-

ding between science and policy on the one hand, and on the other, what could be called the “pro-growth community” (mostly mainstream economists and policy makers oriented towards the EU Lisbon Strategy) and the “beyond-growth community” (mostly scientists and ecological economists highlighting biophysical limits to growth, social movements in several European member states and policy makers involved in the sustainable development debate). Therefore a highly innovative knowledge brokerage system that supports a structured dialogue between researchers and policy makers across Europe is developed and implemented.

Mutual understanding requires a systemic approach: RESPONDER carries out participatory system mapping, a methodology which can also support knowledge transfer, systematising empirical findings, questioning different model assumptions, analysing the effects of different policy options and identifying new research questions.

7.2. Knowledge Brokerage Event on “Sustainable housing in a post-growth Europe”

This second Multinational Knowledge Brokerage Event on “Sustainable Housing in a Post-Growth Europe” takes place on June 6-7, 2013 at the COAC (Association of Architects of Catalonia) Plaça Nova 55, Barcelona, Spain. Differently from the First Multinational Brokerage Event which took place last year at the end of March, it will focus on the policies conducive to sustainable housing. Three themes will thus constitute the main topics for discussions during the event: social housing, house refurbishment and house sharing (in particular co-housing). The event is planned to be interactive, rich of debates, feedback discussions, with a poster-walk with contributions from participants, and the two system mapping sessions.

In the two system mapping sessions we will work on a system map which has been built from two system maps produced in two of the working groups from last year’s event (see the Annex). Each system mapping session will be constituted by **three parallel working groups**, each one working on one of the thematic axes of the event: social rent, refurbishment and house sharing (co-housing).

In the **first system mapping session** on Thursday 6 June, after an explanation and exploration of the macro-map (see figure 1 below), and a discussion and feedback process, we will proceed to an analysis of the three policies, taking into account the societal representations related to austerity, stimulus and beyond growth. Below are the definitions of the three topics along with the main questions driving the discussions of the first session:

1) Social rent: a rent in which the tenant does not pay more than 30% of her/his income, with a dignified quality of residential life, independent of whether the housing is public, cooperative or private. We will in particular focus on a type of social rent which involves low material and energy consumption, using the existing housing infrastructure.

Main question: which are the conditions for successful implementation and the socio-environmental effects of social rent policies?

2) Refurbishment (or rehabilitation): the activity that restitues or endows buildings with functionality, intending with functionality its adaptation to current needs (see section 5.4.1). In particular three objectives have been identified: energy and resource efficiency; improvement in the habitability and technical facilities of buildings; improving affordable access to housing.

Main question: what are the conditions for successful implementation and the socio-environmental effects of refurbishment policies?

3) House sharing: it is an approach to an effective utilization of the housing stock by sharing, and it includes flat sharing, co-housing and transitory or occasional sharing (see section 5.4.3)
Main question: what are the conditions for a successful implementation and more widespread diffusion of house-sharing practices and their socio-environmental effects?

In **the second system mapping session** on Friday 7 June, we will analyse the job effects and the knowledge and research gaps of each policy/theme as related to the macro-map.

References

- Angelini, V., Laferrère, A. and G. Weber. 2013. "Home-ownership in Europe: How did it happen?" *Advances in Life Course Research*, 18 (1): 83–90.
- Angelini, V., Weber, G. and A. Laferrère. 2010. "Homeownership in old age at the crossroad between personal and national histories". Manheim Research Institute for the Economics of Aging. Available at http://mea.mpsic.mpg.de/uploads/user_mea_discussionpapers/1113_216-10.pdf
- Anguelovski, I. 2013. „New directions in Urban Environmental Justice: rebuilding community, addressing trauma and remaking place“. *Journal of planning education and research*, vol. 33 no. 2: 160-175.
- Beguín, F. and C. Rollet. 2012. „Réquisitions de logements vides: Cécile Duflot plaide la patience“. Le Monde. Available at http://www.lemonde.fr/societe/article/2012/12/28/requisitions-de-logements-vides-cecile-duflot-plaide-la-patience_1811098_3224.html
- Bigot, R. 2011. *Les répercussions directes et indirectes de la crise du logement sur l'emploi*. CREDOC pour le MEDEF. Département « Conditions de vie et Aspirations des Français. <http://www.credoc.fr/pdf/Rapp/R273.pdf>
- Conley, D and B. Gifford. 2006. "Home Ownership, Social Insurance, and the Welfare State". *Sociological Forum*, 21 (1) https://files.nyu.edu/dc66/public/pdf/res_home_welfare.pdf
- Christian Cruz, P. 2009. "The pros and cons of rent control". Global Property Guide. Available at <http://www.globalpropertyguide.com/investment-analysis/the-pros-and-cons-of-rent-control>
- Cuchi, A. and P. Sweatman. 2011. *A National Perspective on Spain's Buildings Sector. A Roadmap for a New Housing Sector*. Working Group for Rehabilitation "GTR". Available at [http://www.europeanclimate.org/documents/20111128_GTR_Spain%20Building%20Retrofits%20Study\[1\].pdf](http://www.europeanclimate.org/documents/20111128_GTR_Spain%20Building%20Retrofits%20Study[1].pdf)
- De Bandt, O (ed). 2010. *Housing markets in Europe: A macroeconomic perspective*. Springer-Verlag Berlin Heidelberg.
- Dietz, R. 2012. "Why housing can still pull the United States out of economic doldrums". USNews. Available at <http://www.usnews.com/news/blogs/home-front/2012/11/26/why-housing-can-still-pull-the-united-states-out-of-economic-doldrums>
- E2B. 2012. *Energy-efficient Buildings PPP beyond 2013 - Research & Innovation Roadmap*. Available at: http://www.ectp.org/cws/params/ectp/download_files/36D2263v2_E2B_Roadmap_Infodays_V.pdf
- Economidou, M. (ed) 2011. *Europe's buildings under the microscope; A country-by-country review of the energy performance of buildings*. October 2011 by Buildings Performance Institute Europe (BPIE)
- EEA. 2010. Urban environment - SOER 2010 thematic assessment, State of the environment report No 1/2010 <http://www.eea.europa.eu/soer/europe/urban-environment>
- EEA. 2012. Consumption and the environment. 2012 update.
- Eurostat. 2013. "March 2013 compared with February 2013. Euro area production in construction down by 1.7%". Eurostat newsrelease euroindicators. 77/2013 – 17 May 2013. Available at http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/4-17052013-AP/EN/4-17052013-AP-EN.PDF
- Eurostat, 2011. Population and social conditions – Statistics in focus. Eurostat 4/2011 (available at http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-11-004/EN/KS-SF-11-004-EN.PDF [Accessed 12 December 2011])
- Fijalkow, Yankel. 2011. *Sociologie du logement*. Collection Repères. Paris : La découverte. 125p.
- Friggit J. 2011. Quelles perspectives pour le prix des logements après son envolée?, In : Pour sortir de la crise du logement, Regards croisés sur l'économie, n.9. Paris : La découverte.
- Geddes, P. 1915. *Cities in Evolution*. London: Williams & Norgate.

- Giavazzi, F. and M. Pagano. 1990. "Can Severe Fiscal Contractions Be Expansionary? Tales of Two Small European Countries". *NBER Macroeconomics Annual* 5: 75–111.
- González, A.C., Walter, M., Brun, J., Pérez Manrique, P., Ortega, M. and J. Martínez Alier. 2012. "The weight of building materials in the social metabolism of Spain and conflicts on quarries". Knowledge Unit of the First Knowledge Brokerage Event on Sustainable Housing of the RESPONDER project. Available at http://www.scp-responder.eu/knowledge_base.
- Haase D. Haase A. Kabisch N. Kabisch S. Rink D. 2012 *Actors and factors in land-use simulation: The challenge of urban shrinkage* Environmental Modelling & Software 35
- Harris, R. and Arku, A. 2006. *Housing and economic development: The evolution of an idea since 1945*, Habitat International 30: 1007–1017.
- Hass, J. and C. Popescu. 2011. „Economy-wide material flows: European countries required more materials between 2000 and 2007“. Eurostat statistics in focus 9/2001. Available at http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-11-009/EN/KS-SF-11-009-EN.PDF
- Houard, N. (ed.). 2011. *Loger l'Europe. Le logement social dans tous ses États*, Paris : La Documentation française ; MEDDTL–DiHAL.
- Houard, N. and Ol Waïne. 2012. "Social housing in Europe: the end of an era?" *Metropolitiques*. Available at <http://www.metropolitiques.eu/Social-housing-in-Europe-the-end.html>
- IMF. 2012. "Dealing with household debt", in: *World Economic Outlook: growth resuming, dangers remain*. Available at <http://www.imf.org/external/pubs/ft/weo/2012/01/pdf/c3.pdf>
- Jackson, T. 2009. *Prosperity without growth*. London: Earthscan.
- Kees, D. and M. Haffner. 2010. *Housing Statistics in the European Union*. The Hague: Ministry of the Interior and Kingdom Relations. OTB Research Institute for the Built Environment, Delft University of Technology, September 2010
- Lambin, E. & P. Meyfroidt. 2011. Global land use change, economic globalization, and the looming land scarcity. *PNAS* March 1, 2011 vol. 108 no. 9 3465-3472. Published online before print February 14, 2011, doi: 10.1073/pnas.1100480108.
- Lapillone, B., Sebi, C. and L. Pollier. 2011. Energy efficiency trends for household in the EU. (available at http://www.odyssee-indicators.org/reports/household/Household_EU.pdf, last accessed 15 February, 2012)
- Lietart, M. 2010. Cohousing's relevance to degrowth theories, *Journal of Cleaner Production*, vol. 18 (6): 576–580.
- Martinez-Alier, J. 1990. *Ecological Economics: Energy, Environment and Society*. Oxford, England: Basil Blackwell.
- McKim, B. 2012. *Understanding housing bubbles*. San Bernardino Pilot Project.
- MOSUS (2003) WP 3 – Environmental Evaluation. Built-up and associated land area increases in Europe, MOSUS Sylvia Prieler WP 3 – Environmental Evaluation. Built-up and associated land area increases in Europe. http://mosus.net/documents/MOSUS_Built-up%20land%20increases.pdf
- Mumford, L. 1961. *The City in History* San Diego, Harcourt Inc, 1961; p. XI
- Pelissier, J.-P. 2013. „La construction de logements neufs accentue son recul“. *L'Expansion*. Available at http://lexpansion.lexpress.fr/economie/la-construction-de-logements-neufs-accentue-son-recul_377618.html
- Register, R. 1987. *Ecocity Berkeley: Building cities for a Healthy future*. Berkeley, Calif. : North Atlantic Books
- Reinhart, C. M. and Rogoff, K.S. 2009. *This Time is Different, Eight Centuries of Financial Folly*. Princeton, New Jersey: Princeton University Press.
- Richardson, P. 2011. *Nano House. Innovations for Small Dwellings*. London: Thames & Hudson
- Rowlands R., Musterd, S. and R. van Kempen. 2009, *Mass housing in Europe*, Palgrave Macmillan.

- Trannoy, A. and Schaaf, C. 2011. Pour une remise à plat de la fiscalité foncière et immobilière, Pour sortir de la crise du logement. Faut-il encourager l'accèsion à la propriété?, Regards croisés sur l'économie, n. 9, Editions La Découverte.
- Scherbov, S., Lutz, L. and W.C. Sanderson. 2011. The Uncertain Timing of Reaching 8 Billion, Peak World Population, and Other Demographic Milestones. *Population and Development Review*, Vol. 37 (3).
- Schneider, F. 2012. "Jevons paradox and sustainable housing". Knowledge Unit of the First Knowledge Brokerage Event on Sustainable Housing of the RESPONDER project. Available at http://www.scp-responder.eu/knowledge_base.
- Sekulova F, 2013. *On the Economics of Happiness and Climate Change*. Doctoral Thesis in print
- Smialek, J. 2013. „Krugman says Fed low rates key to housing rebound: Tom Keene“. Bloomberg. Available at <http://www.bloomberg.com/news/2013-02-15/krugman-says-fed-low-rates-key-to-housing-recovery-tom-keene.html>
- Steinfuhrer, A. and A. Haase. 2009. Flexible–inflexible: socio-demographic, spatial and temporal dimensions of flat sharing in Leipzig (Germany). *GeoJournal*, 74:567–587.
- Stiglitz, J. and M. Zandi 2012. "The One Housing Solution Left: Mass Mortgage Refinancing". The New York Times. Available at http://www.nytimes.com/2012/08/13/opinion/the-one-housing-solution-left-mass-mortgage-refinancing.html?_r=3&ref=opinion&
- Strauss, J. 2013. „Does housing drive state-level job growth? Building permits and consumer expectations forecast a state's economic activity“. *Journal of Urban Economics* 73: 77–9
- Tunstall, R., M. Bevan, J. Bradshaw, K. Croucher, S. Duffy, C. Hunter, A. Jones, J. Rugg, A. Wallace and S. Wilcox. 2013. „The links between housing and poverty: an evidence review“. Joseph Rowntree Foundation. Available at <http://www.jrf.org.uk/sites/files/jrf/poverty-housing-options-full.pdf>
- UNEP. 2001. *Consumption Opportunities. Strategies for change. A report for decision-makers*. Geneva: UNEP
- Waide, P, 2006. High rise refurbishment. The energy efficient upgrade of multi-sotry residences in the European Union. IEA Information Paper. HIGH-RISE REFURBISHMENT.
- Ward, T., Lekles, O., Sutherland, H. and I.G. Toth (eds) 2009. *European Inequalities: Social Inclusion and Income Distribution in the European Union*. Budapest: TARKI Social Research Institute Ltd

Annex: The system map

