### TABLE OF CONTENTS

This briefing was produced by Alliance HQE-GBC with the support of WorldGBC’s Europe Regional Network. Its purpose is to assist actors interested in piloting an energy efficiency mortgage product to understand and navigate technical and regulatory aspects of energy efficiency and environmental performance of buildings in France. It has been produced as part of the EU Horizon 2020 funded ‘Energy Efficient Mortgages Action Plan’ initiative.

[www.energyefficientmortgages.eu](http://www.energyefficientmortgages.eu)

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>3</td>
</tr>
<tr>
<td>Green loans and green mortgages in the French home market</td>
<td>5</td>
</tr>
<tr>
<td>ENERGY PERFORMANCE CERTIFICATES</td>
<td>7</td>
</tr>
<tr>
<td>Problems and possible solutions</td>
<td>7</td>
</tr>
<tr>
<td>PREDICTING ENERGY PERFORMANCE</td>
<td>8</td>
</tr>
<tr>
<td>MEASURING ENERGY PERFORMANCE</td>
<td>9</td>
</tr>
<tr>
<td>Problems and possible solutions</td>
<td>9</td>
</tr>
<tr>
<td>GOING BEYOND ENERGY</td>
<td>10</td>
</tr>
<tr>
<td>CONCLUSIONS</td>
<td>11</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>12</td>
</tr>
</tbody>
</table>
INTRODUCTION

Green finance has gained momentum in France. However, the bulk of green financing in the building sector remains supported by the public sector with a bundle of initiatives including tax and fiscal incentives, soft loans and subsidies. The French home financing market does not rest on a loan secured against the value of the asset, as with the classic mortgage, but instead is backed by an institutional guarantee arrangement. Due to this market specificity, the integration of sustainability criteria in loans/mortgages appraisal should include not only items impacting property value but also items increasing the disposable income of the borrower.

French sustainability targets for the building stock

France has ambitious targets set in the 2015 law for energy transition and green growth:

- new buildings after 2020 have to be positive energy and low carbon emission buildings
- Building stock:
  - All buildings: 38% reduction of primary energy consumption (compared to 2005) by 2020
  - All buildings: 75% reduction of GHG (compared to 1990) by 2050
  - Dwellings: Renovate 500,000 old dwellings per year from 2017 (up from 150,000 at present)
  - Private dwelling: all private residential buildings must be renovated before 2025 if their energy consumption exceeds 330 kilowatt hours of energy per square metre per year.

The recent French Presidential election saw candidates competing to offer the best household energy efficiency policies. There is now a general consensus, across relevant business sectors and politicians, that the worst performing of some 30 million dwellings can be cost effectively addressed. The targeted use of tax credits, building standards, energy saving certificates and loans looks set to evolve rapidly in the coming years.

In terms of electricity supply, the French market is dominated by one provider, the quasi-state company, Électricité de France (EDF). The vast majority of households are on regulated tariffs and even with some competition around tariffs there is little switching. France is pushing forward with Smart Meter roll-out and could expect to have good coverage by the end of the decade.

Whilst early and substantial investment in nuclear power has put France ahead in meeting EU carbon goals, a number of ageing plants now face decommissioning. Generation is expected to move towards renewables and energy efficiency will gain in importance, particularly as a form of support for lower income householders. The French have an Agency for Habitation Improvement (ANAH) which has supported a focus on their high levels of ‘energy poor’ at around a third of households.

Central government has moved to a carbon budgets approach, akin to the UK, and the reporting on this will cover energy efficiency and their target to reduce building energy use. Implementation allows flexibility at a regional and local level. Schemes and policies around energy efficiency are often overseen by the state-funded agency ADEME and they have experience trialling innovations around sustainability and energy management.

Overview of the French building stock

54% of French buildings were built before 1975. The French building stock consists of 35.4 million dwellings and 4 million commercial buildings (around 900,000 m² of heated surface).

The graph below shows the age of the French housing stock with reference to the average energy consumption in kWh per m² per year. The average of the French housing stock is around 250 kWh per m² per year when then newest thermal regulation (2012) sets a maximum of 50.

The energy performance of the residential sector is mostly reaching an E level for private housing and a D level for social housing. See two graphs below.
Breakdown of residential buildings by energy performance

**PRIVATELY OWNED**
- 11% — C
- 24% — D
- 30% — E
- 17% — F
- 16% — G

**SOCIAL HOUSING**
- 1% — A
- 6% — B
- 35% — C
- 38% — D
- 13% — E
- 5% — F
- 3% — G

Source: I4CE 2017

Over 3.5 million housing renovations were completed in 2014, of which 288,000 are highly energy efficient. In all this represents investment of €35 billion. The average reaches €10,000 by housing unit with a financial help of 17% on average thanks to existing subsidies and green finance tools.

Regarding energy consumption of the commercial sector, studies show a decrease since 2002 for all building types: retail, offices, hotels, hospitals and schools. See graph below.

**Overview of existing policy and initiatives on green finance in the French building sector**

Green finance has been gaining momentum since the Climate Finance day organized in Paris in preparation for the COP 21. Since 2011, asset managers are required to report on the integration of environmental, social, and governance criteria into their investment practices. The 2015 Law on Energy Transition for Green Growth also introduced mandatory climate-related disclosure for institutional investors and more broadly for asset owners.

Interest from financial market players to develop a climate-related strategy for their investment portfolios is growing, including for property investment as well as real estate bonds, equities and debts. Simultaneously, the French green bonds market is swiftly expanding. In early 2017 the French government issued the largest green bond ever issued for a total of €7 billion. As of mid 2017 France represents 24% of issuers and 27% of investors of the global green bond market.\(^8\)

The building sector represents 42% of green finance in France. It reached €14.5 billion in 2015\(^9\). The bulk of these green investments consists in energy efficiency, amounting to 78% of the total for the sector. The public sector still bears a large part of the burden, with 45% of the green finance in the building sector backed up by public funds (state, state owned companies or local authorities) either to foster energy renovation of households and social housing or for their own properties and investments.
The following diagram shows the breakdown of green finance in the building sector by types of financing tool.

![Breakdown of green finance in the French building sector by types of financing tool](image)

Subsidies and fiscal incentives consist of various public initiatives to help private bodies (households, companies, etc.) finance their own projects. Existing tools include tax abatement and tax credit for energy performance upgrades, subsidies for installing energy efficient equipment or assessing improvement potential.

Concessional debt includes attractive loans regarding duration, rate or guarantee. Zero tax rates are considered concessional debt. Soft loans in France consist mainly of the 0% eco loan (PTZ) proposed by the State. Other local initiatives exist through local public private initiatives including third-party financing.

Commercial debt includes regular loans issued by banks at regular market conditions. Equity and self-financing is comprised of all other financing directly from the body holding the property.

### GREEN LOANS AND GREEN MORTGAGES IN THE FRENCH HOME MARKET

French homeowners who wish to improve the sustainability performance of their homes have access to different financial sources:

#### Soft loans to finance retrofit works

National government and local authorities propose soft loans to finance energy efficiency upgrades. In particular, the national government offers a 0% Eco-loan (Eco-PTZ) whereas different local authorities have developed soft loans using public private partnership. Eligibility depends on homeowners’ revenues (most government incentives are targeted on the lower revenues, local initiatives are usually less specific) as well as sustainability characteristics. However, uptakes remain low due to different barriers. First, home owners are required to meet various conditions and present various information triggering additional cost. On the other hand, banks are expected to validate the technical feasibility of the renovation projects which is not their ‘core business’. Consequently, the whole administrative procedure for issuing these loans remains complex and time consuming. Secondly, construction companies and craftsmen are required to issue detailed invoices (e.g. type of materials used, expected energy savings) to be eligible under the financing scheme which is not in line with their standard procedures. These mechanisms which do help improving sustainability requires public funding.

#### Focus on public private initiatives including third-party financing

Different initiatives exist in France with the most advanced in Picardie Region, the so-called “Picardie Pass Rénovation”.

*Source: Plan Bâtiment Durable*

The Picardie Pass Rénovation is funded by Europe, it aims at renovating 2000 private housing units between 2014 and 2018 and 10,000 units per year from 2018. This tool has a considerable impact on the jobs and growth in the region. See summary of the ambitions and goals below.

### DIRECT THIRD PARTY FINANCING

- Picardie Pass Rénovation
- SEM Energies Posit’IF
- ARTÉE
- Oktave
- SEM ORREL

### INDIRECT THIRD PARTY FINANCING

- Auvergne Rhône-Alpes
- Occitanie
- Centre-Val de Loire

*Source: I4CE 2017*
thus represent a key opportunity to foster sustainability in the building sector. In this type of project, refurbishment costs can be directly assessed since it is the bulk of the project. Consumer loans usually have a maturity ranging from 7 to 10 years. The average loan interest as at 08/2017 amounts to 3.8%. This interest rate is higher than in the other types of financial sources, but the mechanism is more straightforward and less time consuming since the administrating burden is lower.

**Consumer loan to finance retrofit works**

Consumer loans may be used to finance energy performance upgrades. In this type of project, refurbishment costs can be directly assessed since it is the bulk of the project. Consumer loans usually have a maturity ranging from 7 to 10 years. The average loan interest as at 08/2017 amounts to 3.8%. This interest rate is higher than in the other types of financial sources, but the mechanism is more straightforward and less time consuming since the administrating burden is lower.

**Loan with mortgage collateral to finance retrofit works**

Key principles are similar to the previous situation.

**Mortgage / guaranteed loan to purchase or build a property**

Buying/selling transactions are a perfect opportunity to assess the sustainability of the property and plan energy efficiency upgrades. Energy refurbishment costs can only be integrated in the overall amount covered by the loan. As previously stated, borrowers usually have the choice between two systems: a loan with a classical mortgage where the value of the property is used to back the loan, or a loan with an institutional guarantee. On average, mortgages and guaranteed loans have longer maturity periods (18 years in average) and lower interest rates (Average loan interest as at 08/2017 rate amounts to 1.6%). They thus represent a key opportunity to foster sustainability in the building sector.

**Specificities of the French home financing market**

The French mortgage market is the third largest European market in terms of new origination. The peculiarity of this market is the importance of guaranteed loans. Under this system a mutual funder acts as the guarantor for the loan in return for a guarantee fee proportional to the amount borrowed. The borrower has the choice between a guarantee covering the full amount of the loan or a more classic mortgage based on the loan-to-value ratio. In case of default, the financial institution acting as guarantor pays the bank. The system rests on a risk mutualisation principle similar to insurance. In 2014, guaranteed loans represented 61% of new home loans in France. 12

This system has several consequences on the way projects and prospective borrowers are assessed at the loan origination. First, assessment rests mainly on the borrower’s revenues and capacity to reimburse the loan. Second, the value of the real estate is not considered, neither at origination to define the guarantee fee amount nor at the time of default.

Different criteria are used to be eligible for the different tools. See table below.

<table>
<thead>
<tr>
<th>TYPES OF TOOL</th>
<th>TYPES OF CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal tools (CITE, low VAT)</td>
<td>List of eligible energy improvements</td>
</tr>
<tr>
<td></td>
<td>+ Accreditation of the building sector professional (RGE qualification)</td>
</tr>
<tr>
<td>Subsidies (ANAH (French agency for housing upgrade), local authorities)</td>
<td>List of eligible energy improvements</td>
</tr>
<tr>
<td></td>
<td>+ Accreditation of the building sector professional</td>
</tr>
<tr>
<td></td>
<td>And/or energy label /certification</td>
</tr>
<tr>
<td>State supported green loans (0% eco loan, loan for social accessibility, sustainable development loan)</td>
<td>List of eligible energy improvements</td>
</tr>
<tr>
<td></td>
<td>(or) Global energy performance threshold</td>
</tr>
<tr>
<td></td>
<td>+ Accreditation of the building sector professional (RGE)</td>
</tr>
<tr>
<td>White certification scheme</td>
<td>List of eligible actions</td>
</tr>
<tr>
<td>Regional or individual bank subsidies and preferential loans</td>
<td>List of eligible energy improvements</td>
</tr>
<tr>
<td></td>
<td>(or) Labels and certification schemes</td>
</tr>
<tr>
<td></td>
<td>(or) Global energy performance threshold</td>
</tr>
</tbody>
</table>

Right now in France the green finance tools do not seem to directly depend on EPC classes. They are triggered by specific renovation works which do not guarantee better energy performance at the end. Eligible works include: thermal insulation, heating and hot water production, cooling, lighting and on-site sanitation. In addition, those works need to be done by a certified professional (the certification that applies is called RGE). At the end of 2016 there were 70,000 RGE professionals in France.

Overall, France should provide good impetus for testing the energy efficiency mortgage. The greatest barriers are likely to be:

- Potential confusion and interdependencies if developed alongside a raft of other initiatives, including tax free eco-loans.
- Inconsistencies – in assessment, data and local approaches more broadly. That said, the scheme could be focussed on areas/property types with most promise11.
- Specificities associated with the institutional guarantee system: impact of sustainability upgrades on value is less likely to represent a direct benefit for banks, as opposed to impacts on borrowers’ capacity to reimburse its loan. Accounting for sustainability impacts on the disposable income seems key.
- Like any country, consumer understanding and demand will be a challenge. ADEME social surveys show quite a low ‘claimed’ influence of EPC rating on purchasing decisions but quantitative analysis actually does show “energy efficiency is rewarded” particularly for some cities/property types12.

---

Picardie Pass Rénovation is granting owners an advance on works, for an average of € 42,000. Once the works have been done, the owner will repay the public body an amount less than or equal to the post-renovation energy savings (on average 56% of savings, for a posted target of 46 to 75%-reduced final consumption). This advance on energy savings is granted at a rate of 2.5%, given over a period of 15 years, for equipment, and up to 25 years for building insulation works.

BUILDING ASSESSMENT BRIEFING FRANCE | 6
A strong EPC framework should reduce the variance between assessments of similar properties/installations and allow for stronger prediction of actual energy performance. In turn, this means a better understanding of savings against a (predicted) counterfactual energy cost and a calculation of improved ability to repay the mortgage.

Several factors, when considered together, help to determine the strength of a country’s EPC framework and the consistency of its reporting. The Buildings Performance Institute Europe (BPIE) has compared EPC frameworks across member states. The following points show how the French framework operates:

- There is positive evidence that EPCs are being issued extensively. France was the first EU country to require EPCs to be part of property advertisements and evidence suggests high compliance for sales.

- There would seem to be a good approach to qualifying assessors – both a mandatory theory exam and practical test. Refresher training is only once every five years and more frequently done in Ireland at two years, for example.

- Assessor testing – random sampling of assessments by an assessor and not just of all assessments. That said, sampling levels are lower than many countries at 1% overall (Italy checks over 5% and Austria over 10%). Although the evidence pre-dates a French review and changes, stakeholders in the property market have strongly criticised the quality and consistency of assessments.

- There is a mandatory register for assessors and an accreditation committee for certificating bodies. Loss of accreditation can be a sanction.

- A data protocol allows movement of the report straight to a central database. However, it appears the EPC data is not always passed through and the database is quite incomplete.

- New build housing has an assessment as part of the planning and build process.

**PROBLEMS AND POSSIBLE SOLUTIONS**

Overall, France appears to have a fairly strong framework for EPCs, but in operation there remains a widespread perception that assessments are not always well done and there are inconsistencies in approach. One solution would be to work with the accreditation body to tighten standards or perhaps create a more ‘advanced’ EPC assessor level with more assessments checked and more frequent refresher courses. (The following section explores HQE, which may prove to be an alternative and ready-made solution.)

The data protocols seem to lead to very low levels of data capture, even if compliance in completing EPCs has been good. This needs investigation but appears to be a step in lodging data that most are leaving out. If lodging data is made a legal requirement around house sales or a certification issue for assessors then the data concerns might be resolved. Of course, such a regulatory change would take time and political will.

A free and public database exists, accessible online: [http://www.observatoire-dpe.fr](http://www.observatoire-dpe.fr) (started June 2013). However, coverage remains low. EPCs are required in sale transactions and level of completeness is increasing, from 45% in 2014 to 60% in 2016.

For the residential sector, studies show the impact of one EPC class on the sale prices. The discount for F-G is from 6 % to 17 % according to regions while the increase in value for A-B is from 6 % to 13 % according to regions.
Work has been carried out by CSTB (Scientific and Technical Center for Building) on algorithms to predict energy consumption after retrofit: the REPERE methodology. Using this tool can help identify best renovation practices and replicate them. It can also raise awareness among end-users, showing how their behavior impacts energy consumption. The REPERE methodology deduces real performance by observing intrinsic building performance, user behavior and climatic conditions. It has been tested so far on social housing in France: for the renovation of 1,300 units in 2012-2014 and 1,000 in 2017. This is currently at the research stage.

The 2015 law for energy transition introduced the digital book for housing maintenance (carnet numérique de suivi et d’entretien du logement) aiming at informing occupants how to use their building (especially how to use its innovative features to optimize energy consumption) and how to deal with retrofit. This leaflet is mandatory for all buildings with a building permit starting in 2017. It will be mandatory for all buildings starting works from 2025. 12 buildings tested in 2017 this and the content of the leaflet will be formalized based on the results of the pilot phase.

Predicting Energy Consumption – beyond the EPC

France has a ‘High Quality’ sustainability assessment; HQE. It is a stronger and more thorough assessment than an EPC and like other voluntary sustainability certification schemes, it can be used in other countries. These other International frameworks could also be used in France but evidence suggests HQE is heavily favoured\(^5\).

HQE covers energy as well as wider environment, quality of life and economic performance. It has a single certification body and strong auditing (all good for strengthening consistency). The rating is graded from a ‘pass’ through to ‘exceptional’ and is calculated relative to the 2005 baseline in standards. There is an emphasis on choice around meeting a standard. Interestingly, and potentially confusingly for mortgage purposes, the rating is related to source of energy. Although such schemes tend to develop for commercial buildings, there is a version for a house when it is first built or has a major refurbishment.

HQE can be complemented by a Sustainable Buildings Passport\(^6\) – a voluntary and comparative measure of a building’s quality (in the commercial sector and, in the future, residential properties). Although it is just one financial institution, BNP Paribas have praised the passport for simplifying their consideration of complex assessment issues\(^7\).
France wished to move towards actual measured performance through different means:

- Deployment of energy performance contracting
- Deployment of smart meters (legal target of 95% household coverage by 2020)
- Shift in energy regulation and HQE certification schemes towards global effective energy performance

→ MONITORING OF MEASURED PERFORMANCE OVER TIME

The accuracy of an assessment is just one source of variance in predicting the energy performance of a building with occupants. The quality of materials and installation, weather and the behaviour of occupants can necessitate an ‘in-use’ factor18 – refined over time – whereby assessments are adjusted to reflect average performance data on actual energy use. Actual energy use data may also help householders to identify more quickly if their energy use is different from that expected and rectify this where possible.

PROBLEMS AND POSSIBLE SOLUTIONS

It is assumed that accessing billing data will require the agreement of energy suppliers/regulator in France. The dominance of EDF as a supplier may actually help with coordination and capture significant data with just one agreement reached. The agreement would match what they have agreed for the UK. From the UK experience19, data tends to be time lagged and infrequently produced e.g. annual release, relating to two years ago. Again, subject to access, the roll out of Smart Meters (which is progressing in France) will allow for more up to date and responsive data on actual energy use. ADEME are active in researching the impact of Smart Meters on energy use20.
There is a need to shift from an energy focus to sustainability goals. Energy seldom is the key driver for renovation, with comfort and well-being likely to be more important considerations. In addition green value is driven by comfort and mobility gains rather than energy savings. The literature shows that 1% reduction in energy consumption return less than 1% value whereas 1% increase in productivity resulting from improved comfort and mobility return between 5-30% of rental value.

In France every building to be rented or sold needs an EPC and additional documents:

- Proof of lead exposure;
- Proof of presence or absence of asbestos;
- State of the building due to termites;
- State of the gas installation;
- State of the electricity installation;
- State of natural, mining and technological risks;
- Control of the non-collective sanitation installation (if any);
- Information on the potential dry-rot risk.

It could be possible to establish green loans based on EPC or certification schemes and additional documents such as those listed above provided they are also required in other European countries.

Regulation and HQE certification schemes are evolving to encompass a broader scope of issues.

One area touched upon in Ademe evaluations is water. Whilst local councils control the approach to water and this may make some data issues harder it would seem quite possible to add water use to energy use for an energy (or resource) efficiency mortgage. Indeed, some energy saving measures, such as more efficient boilers, have the dual benefit of saving on water use. Whilst water bill savings are likely to have less impact on mortgage defaults, their addition to energy savings may strengthen the initiative at relatively low cost. The EPC does not capture water saving and its inclusion would require a broader sustainability assessment such as HQE.
CONCLUSIONS

France has developed a variety of tools to fund energy renovation. However, using a multi-criteria approach would be better to encompass key drivers and key benefits for sustainable retrofits. In addition, there is a need to use effective performance monitoring to ensure green loans meet their “green” purpose.

At this stage, France would certainly merit further consideration as an early adopter of an energy efficiency mortgage. As well as supportive government departments/agency structures and industry accreditation frameworks, France has highly developed legal and financial sectors to underpin the scheme.

France already has good quantitative analysis on energy performance and the impact on property value and there is a good wider evidence base to build on. This paper represents an initial scoping and it highlights several areas.

While discussing the implementation of green loans for sustainable building in France, one needs to remember that the amount loaned by French banks is based on the income of the families rather than on the building value. This is why the expenses or savings linked to transportation and energy need to be included in the calculation of green loans.

On the evidence presented here, the basis for defining a green loan would be as follows:

- Measured energy performance
- Measured environmental performance.

Such information could be obtained through three means:

- The bank can internalise the audits and have a dedicated trained team to carry them out. However, this process is costly and the cost is borne solely by the bank.
- The bank can use data provided directly by the borrower (EPC, invoice, energy consumption, simplified survey). This less costly process may allow for deeper deployment. However, data may not always be reliable and environmental targets may not always be met.
- The bank can rely on data provided by the borrower and verified by a third party. Environmental certification are already well deployed tools that can be used for this purpose.

To further integrate sustainability-related issues in the financing of real estate, two main pathways could be investigated:

- Implementing a new loan mechanism which could take over subsidised loans, costly for the public authorities. This mechanism would need to be straightforward to be easily deployed.
- Providing a common standard to report on the sustainability performance of loans and mortgages. This standard could be used by regulation bodies to identify energy efficient lending and encourage it with a more favourable prudential treatment as recommended by the EU's high-level group on sustainable finance. Last but not least, it could also be used to improve transparency for refinancing opportunities, such as in green bonds. So far, existing green bonds for the non-residential sector are based on third-party environmental certification in France.
REFERENCES

02 – IEA Country Report France 2016
04 – Various sources including those cited for other points
05 – Various references including OECD Environmental Performance Reviews OECD Environmental Performance 2016
06 – CEREN 2015
07 – INSEE 2016
10 – Observatoire Crédit Logement
11 – Energy performance certificates in buildings and their impact on transaction prices and rents in selected EU countries FINAL REPORT European Commission (DG Energy) 2013
12 – Energy performance certificates in buildings and their impact on transaction prices and rents in selected EU countries FINAL REPORT European Commission (DG Energy) 2013
14 – Dinamic, 2017
15 – European Construction Sector Observatory 2016
16 – European Construction Sector Observatory 2016
17 – European Construction Sector Observatory 2016
18 – Based on UK experience at DECC, relating to several installations CWI, SWI, etc
19 – My own personal experience agreeing UK access to data

FURTHER USEFUL RESOURCES

ADEME, 2016, Campagne 2015 de l’Observatoire Permanent de l’amélioration Énergétique du logement (OPEN) (link)
Crédit Foncier, 2015, Les aides et les financements verts dans le secteur de l’immobilier (link)
Institute for Climate Economics (I4CE), 2017, Panorama des financements climat en France (link)
DINAMIC, 2017, La valeur verte des logements en 2016 (link)
Plan Bâtiment Durable, 2017, Financements de la rénovation énergétique des logements privés et déploiement du tiers-financement : état des lieux et perspectives (link)
Décret n°2010-1022 du 31 août 2010 relatif aux dispositifs de comptage sur les réseaux publics d’électricité en application du IV de l’article 4 de la loi n° 2000-108 du 10 février 2000 relative à la modernisation et au développement du service public de l’électricité (link)
60 millions de consommateurs, juillet-août 2014, Diagnostic énergétique, la grande loterie (link)
Caisse d’Epargne webpage, L’enveloppe BEI HQEE II en pratique, visited on 28th July 2017 (link)
Plan Bâtiment Durable, 2017, Rapport d’activité 2016 (link)
Plan Bâtiment Durable, 2014, Construction ensemble la carte vitale du logement (link)
With the support of the World Green Building Council’s Europe Regional Network