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Prospective real estate evaluations in the context of sustainable environmental development for future generations and the energy renovation of real estate

Orlando – May 2023

Jean-Yves Bourguignon

Géomètre Expert

Agenda

1. In continental Europe valuations are backward-looking, sales have already taken place.
2. Climate change.
3. Improvement work to be done.
4. Return on investment period: green value.
5. An evolving regulation.
6. The costs of eco-renovation and energy transition.
7. Taking into account energy audits.

European Green Deal

Fight against climate change 2030 / 1990:

55% reduction in greenhouse gas emissions

Implementation of the taxonomy:

- Mitigation of climate change
- Adaptation to climate change
- Sustainable use and protection of aquatic and marine resources
- Transition to a circular economy
- Pollution prevention and control
- Protection and restoration of ecosystem biodiversity
- Analysis of primary energy consumption and greenhouse gas emissions

Valuation according to past real estate market

Past sales prices and transposed to the present

(Market value).

The value of optimal use of the property (Highest and best value).

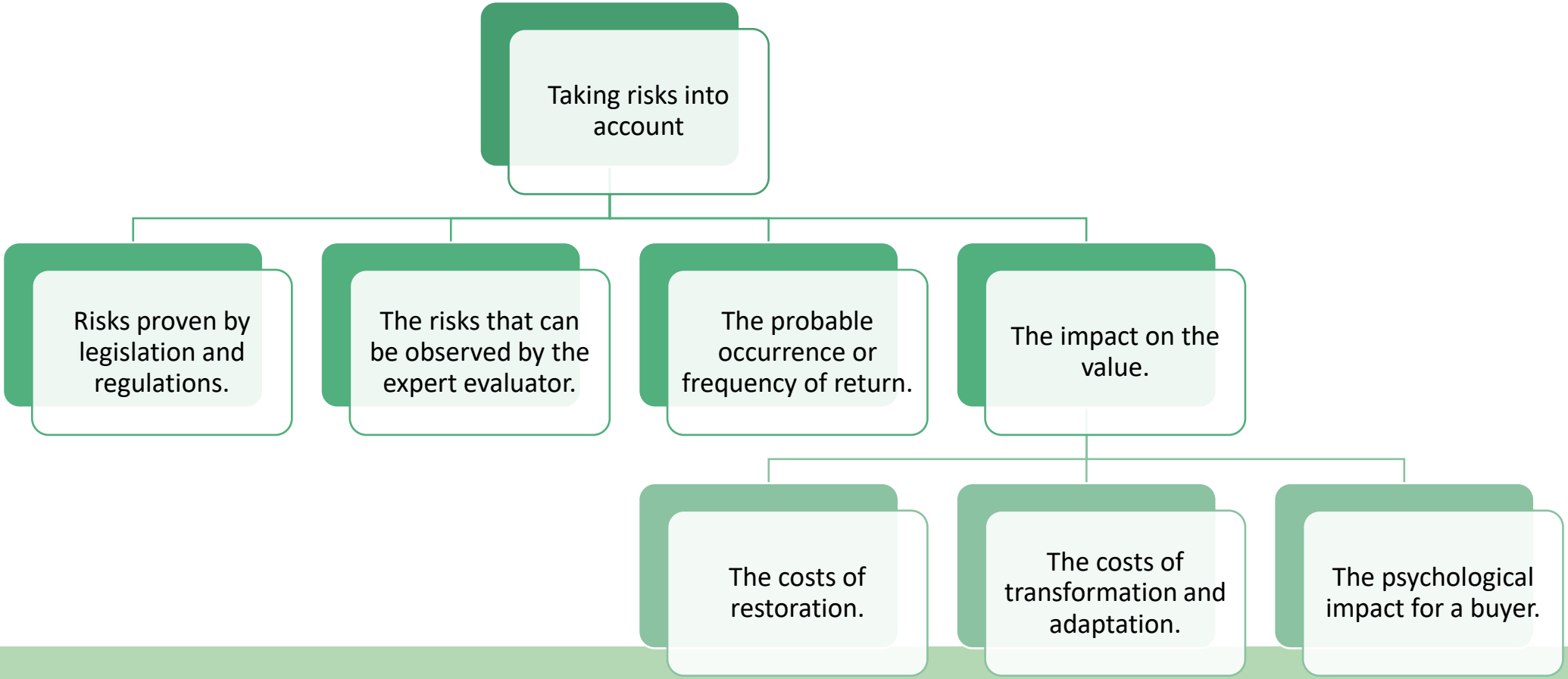
Special assumptions for valuation (Special assumption).

The value in continuation of use (existing use value).

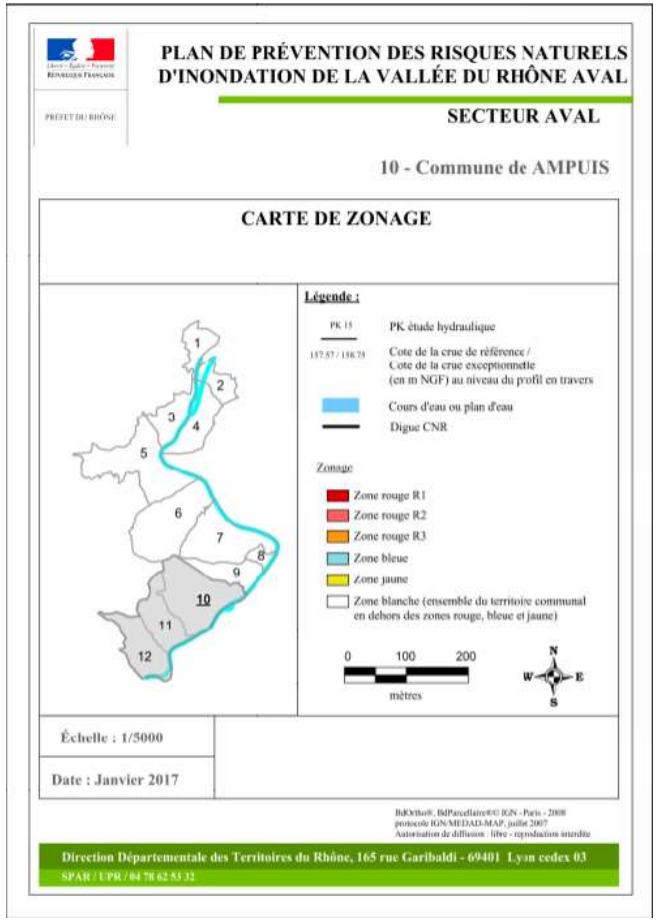
The Fair value.

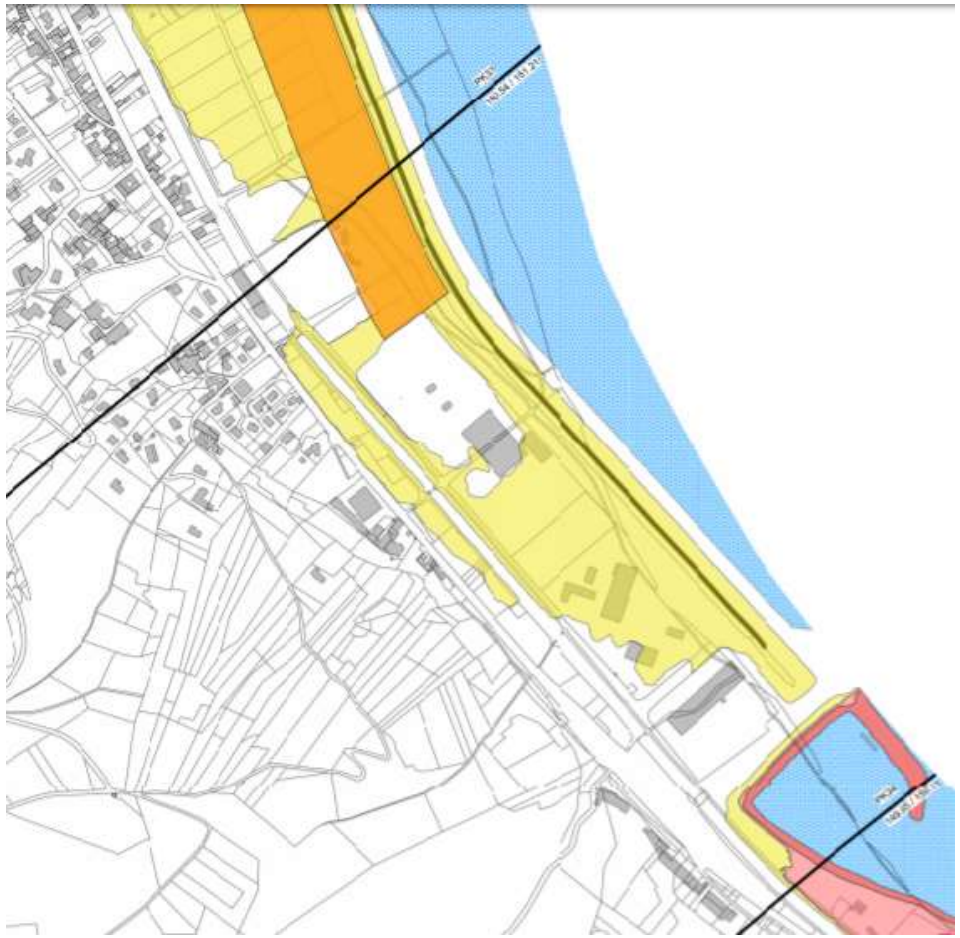
Market rent, market rental value, estimated rental value.

The impact of climate change



Risks: legislation and regulations





Risks: legislation and regulations

	NGF Normal (IGN 69)	
P.K.	Crue décennale	Crue centennale **Cote de référence**
32,00	149,14	150,52
32,10	149,10	150,48
32,20	149,06	150,44
32,30	149,02	150,40
32,40	148,98	150,36
32,50	148,94	150,32
32,60	148,90	150,28
32,70	148,86	150,24
32,80	148,82	150,20

TITRE IV : AVERTISSEMENT CONCERNANT LA ZONE BLANCHE

En dehors des zones rouge et bleue définies ci-dessus, le risque d'inondation normalement prévisible est faible. La zone blanche ainsi définie n'est pas sujette à des prescriptions particulières.

Cependant, pour l'établissement et l'utilisation de sous-sols et dispositifs enterrés, on doit prendre en compte la présence d'une nappe souterraine et éventuellement, à proximité des zones rouges et bleues, une crue de retour supérieur à cent ans.

ARTICLE 3 - Références techniques

Sur un terrain, le coefficient d'emprise au sol (C.E.S.) est défini par le rapport de la projection au sol des bâtiments et remblais de ce terrain sur la surface totale de celui-ci

Sur une parcelle dont le zonage est homogène au titre du présent PPR, le CES s'applique à la totalité de la parcelle.

Sur une parcelle comprenant plusieurs zones au titre du présent PPR, le CES s'applique indépendamment sur chacune de ces zones.

Sur un ensemble de parcelles contiguës (tènement) appartenant au même propriétaire ou à une même copropriété, le CES pourra être calculé globalement sur chacune des zones identiques au titre du présent Plan de Prévention des Risques, sous réserve du respect des dispositions de l'article L. 111-5 du code de l'urbanisme

La présente définition porte sur les parcelles et tènements existant à la date d'approbation du présent Plan de Prévention des Risques.

Les cotes de référence retenues pour la réglementation des zones sont celles de la crue centennale du Rhône. Elles figurent, au droit des Points Kilométriques, sur le plan de zonage inclus dans le dossier de PPRI.

Le tableau de la page suivante reproduit ces cotes avec les cotes intermédiaires ainsi que celles de la crue décennale pour information.

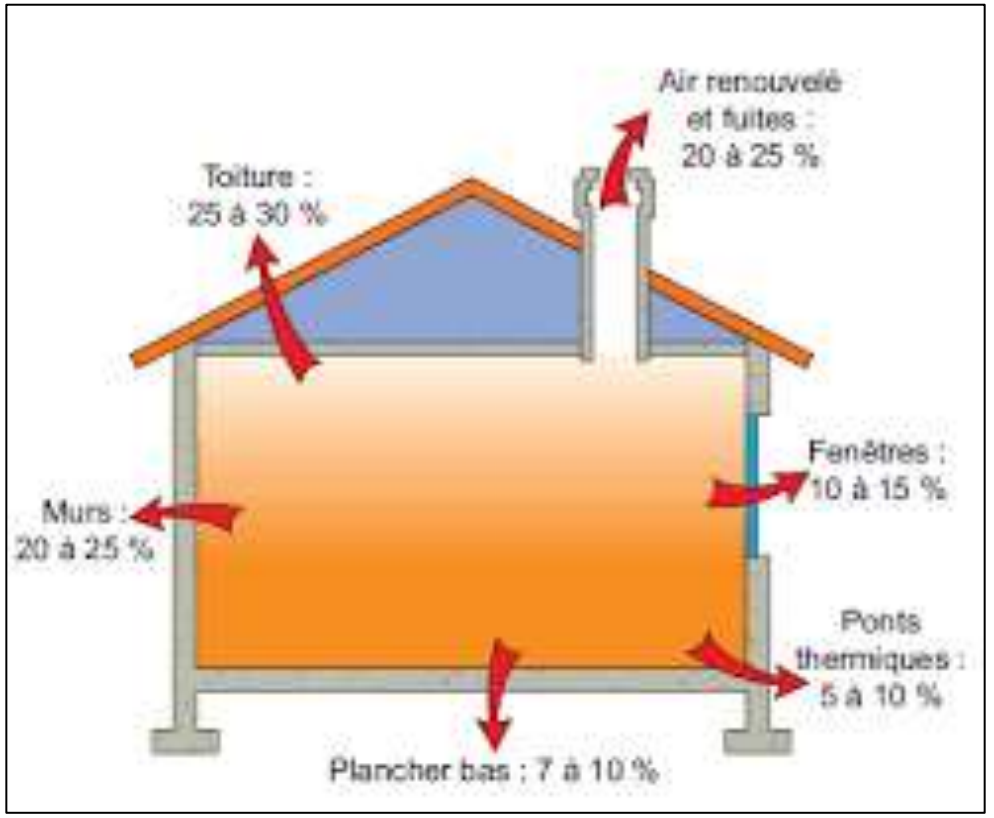
The expert’s visit:

Possibly unregulated risks:

- Flooding by overflow
- Flooding by slope runoff
- Flooding by recession of the coastline
- Fire : constraints of brushwood clearing
- Risk of landslides
- Clay shrinkage and swelling
- Underground cavities
- Radon
- Technological risk
- Nuclear risk

Compensatory or accompanying diagnostic work

- Roof insulation
- Insulation from the outside or inside:
    - The right of overhang for the thermal insulation by the outside of a building on limit.
- Replacement of windows and doors.
- Ventilation.
- The change of heating, heat pump, geothermal surface or deep, solar panels.
- The change of the lighting. (LEDs)



Compensatory or accompanying diagnostic work

Light renovation: **800 to 1000 € /sqm** excluding fees

Heavy renovation: **1500 to 2000 €/sqm**

New construction: **1500 to 2000€/sqm**

Price increase, especially since the pandemic, war in Ukraine and inflation:

- Exterior insulation of walls by cladding: 160€/sqm incl VAT
- Interior insulation with insulation and plasterboard 60 € /sqm

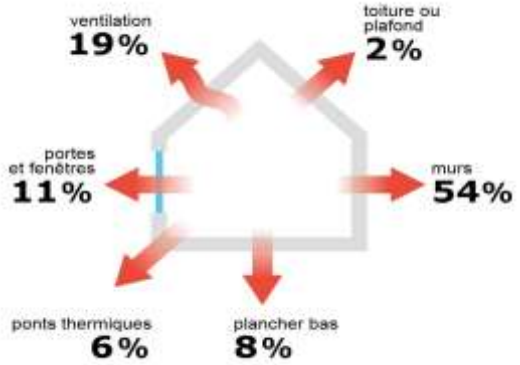
Source SYNAMOME - Professional Union of Architecture and Project Managementz

Example 1 : Unrenovated House

House 1970 – 110 sqm

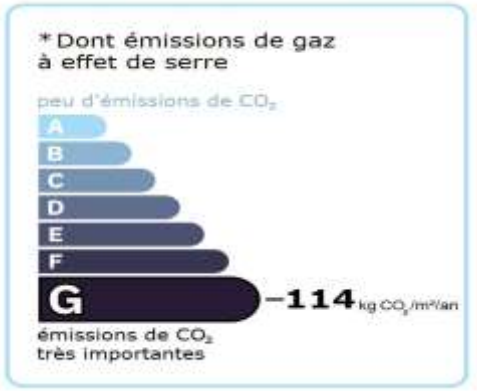
Uninsulated wall & ceiling (20cm)

Old oil boiler



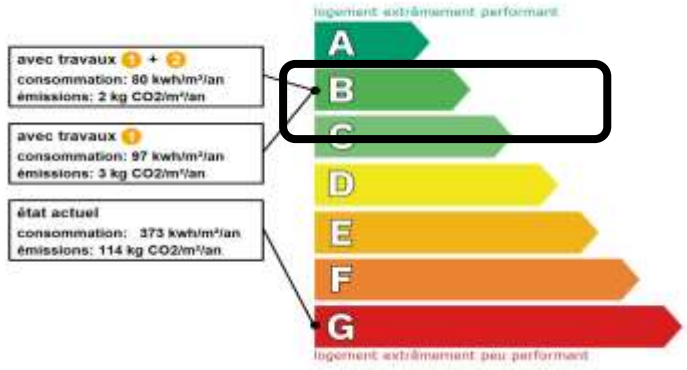
Energy Performance

CO2 emissions



Improving Cost: 70 000- 80 000 €

External insulation	35 000 €
Heat Pump	25 000€
Windows change	15000 €
Ventilation	1500 €



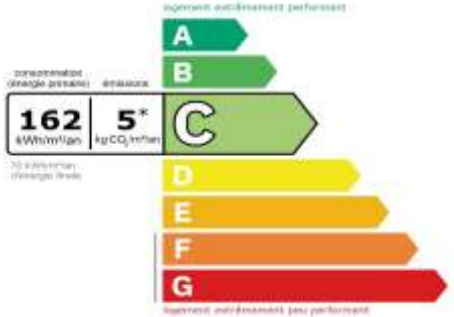
Exemple 2: Renovated House

House 1900 – 120 sqm

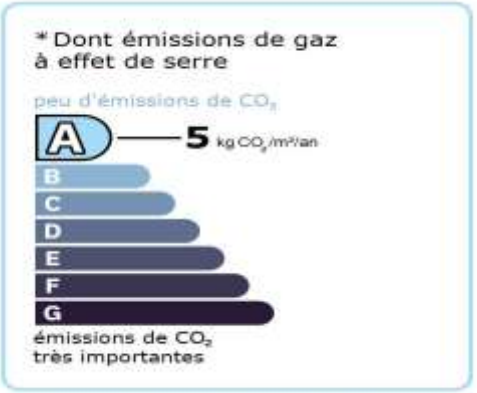
Uninsulated cob wall & ceiling (20cm)

Air/water heatpump + Solar water boiler

Energy Performance

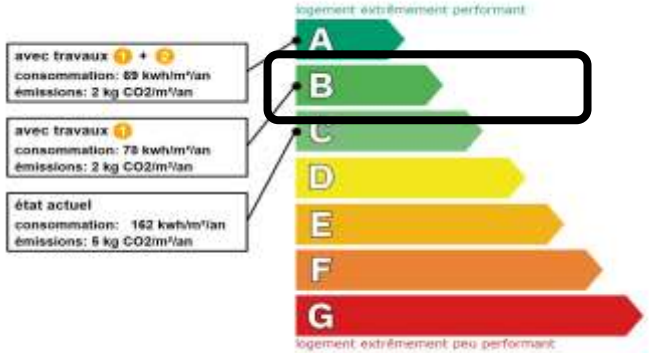


CO2 emissions



Improvements :

External insultation 30 000 €



Exemple 3: Unrenovated Appartment

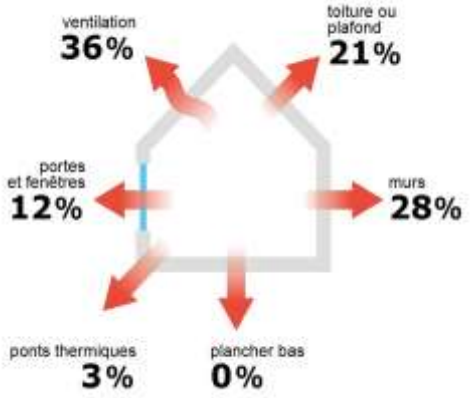
Building 1920s-30s – Apartment 60 sqm

Uninsulated cement clinker walls

Empty attic ceiling

Individual electric heating and hot water

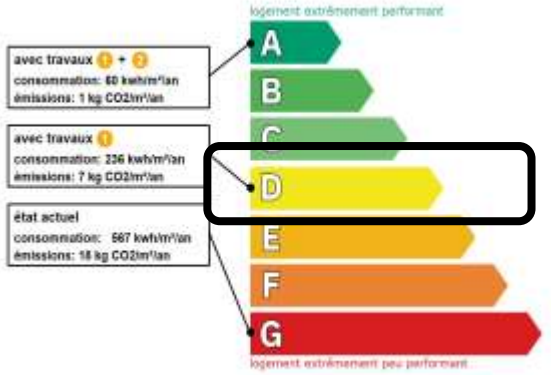
Recent PVC windows



Energy Performance

Improvements for D:

Interior insultation 8 000 €



Photovoltaïc Panels

Creation of a field of photovoltaic panels on 1363.40m² with a total power of 270 KWC or an average annual production of 252 000 Kwh (average over 20 years)

Cost of implementation: 185€/sqm

Before

During

Replacement of insulation and waterproofing complex:

- insulation with a R=3.6m².K/W (higher than the existing)
- Installation of the photovoltaic studs
- Waterproofing in PVC membrane

Cost of service: 85€/m²

After

Lighting

Removal of the existing lighting (Tube T5)
to replace it with LEDs

Cost of replacement : 25€/sqm

Before

After

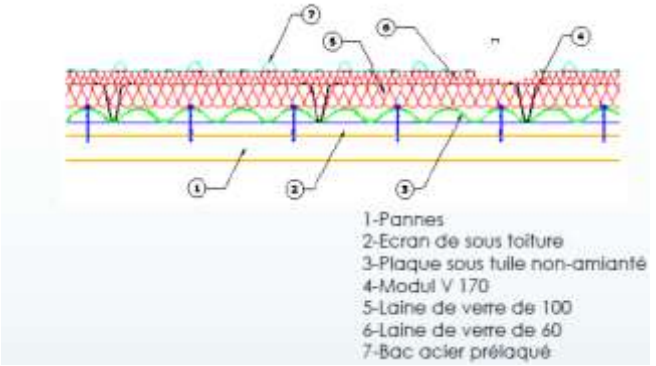
External insulation of the existing roof

Thermal resistance of the existing roof 2.45m².K/W

Composition of the external insulation (recommendation R=4.40m².K/W)

- Screen under existing roof (R=1.40m².K/W)
- Glasswool 100 (R=2.50m².K/W)
- Glasswool 60 (R=1.50m².K/W)
- Thermal resistance obtained : R=5.40M.K/W

Cost : 30€/sqm



Internal wall insulation

Insulated interior lining on the outside of the existing building – non-cavity walls

Implementation:

- Implementation of a simple lining with 75mm insulation including finishing
- Resistance R of the complex R=2.35m².K/W

Cost all included : 57€/sqm

Photovoltaïc Panels

Implementation of photovoltaic panels on tray support:

- Rails are installed on the roofing tray to allow the installation of the solar modules

Cost : 175€/sqm

Photovoltaic installation and external insulation of the roof, without impact on the permanent loads on the structure

- Existing deposited : 30Kg/sqm (13 tiles / sqm --> tile weight = 2.3Kg/u)

- Solution: 25.4Kg/sqm (Frame= 1 + Insulation= 2.4 + Tray =7 + Photovoltaic = 15)

Example of savings at scale: multistorey carpark

Cost of the service of a spot in a multistorey parking: 5447€/spot

Surface parking : 50€/sqm = 1250€/spot

Green value / market value? Impacts on prices

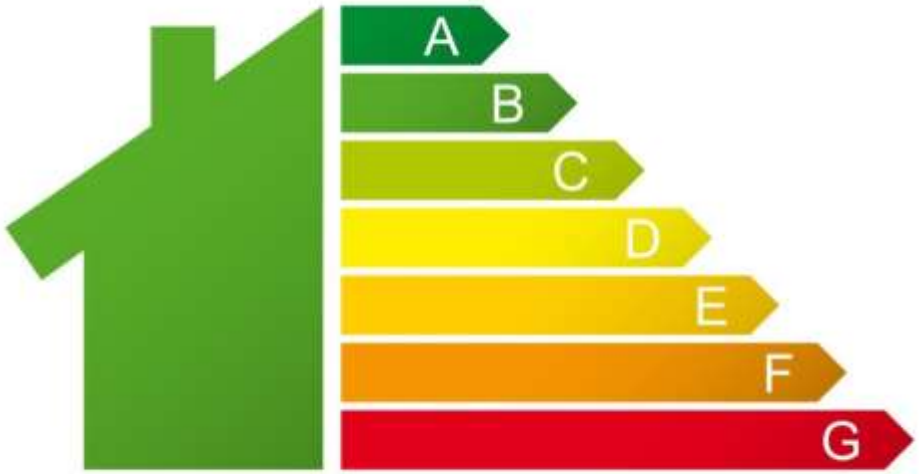
An energy label from A to G

The least energy-intensive A and B:

- 7% of global transactions,

Energy-intensive F and G categories:

- 11% of overall transactions
- 41% in rural areas
- 66% are houses
- 83% built before 1980
- 43% of surfaces between 60 and 100 sqm



Source ADNOV Conseil Supérieur du Notariat de France

Green value / market value? Impacts on prices

The impact on the value compared to an average D label:

The most energy-intensive, F and G -10%.

The least energy efficient: A and B +10%.

- Variation according to the type: Apartment or house
- According to the latitude
- According to the pressure of the real estate market

Source ADNOV Conseil Supérieur du Notariat de France

Green value = market value?
With depreciation of expenses?

Essential energy audit

- Thermal study of the existing building
- Roof insulation
- Replacement of windows
- Heating
- Ventilation
- Alternative energy: solar panels, heatpump, geothermal energy

Planning and renovation budget

Work done by a Local company

Return on investment

For the commercial user **5 to 7 years** (14 to 20%) (charges)

For business real estate **10 to 12 years**: (9 to 11%)

For the housing **25 years** (4 %)

But for investments it is necessary :

- 20 years for thermal
- 30 years for woodwork

➔ Mismatch between real estate investment and rate of return

Tax incentives only allow the optimization of the financial projections

Conclusions for the Land Surveyor

Surfaces:

- RT 2012 heated floor area
- RE 2020 heated living area (Difference = 15%)
- In tertiary offices etc. ... useful surface
- Living area H >1,80 m
- European practice H >2,50 m

Vs Heated volumes

Conclusion for the Expert

Visit the premises

Consult the regulations

Observe the market prices

Analyze the DPE or the energy audit

Cross-check market prices with DPE or energy audit

Simulate the impact of the investment

In our opinion, **only the surveyor, expert in real estate evaluation**, physical person visiting the premises, will be able to achieve a result in **the expertise in real estate valuation integrating potential impact due to climate change**.

Merci.

Jean-Yves Bourguignon. Mars 2023