



UNIT 4 - Sustainability goals and considerations, transversal skills, communication, employment opportunities, professional development





At a glance

Objective

The final learning unit is designed to develop soft skills in a wider context and to provide basic knowledge about the circular economy. The learner will learn to communicate effectively with other participants in the construction/insulation process and to present/promote the advantages of the green insulation materials used. Also, this learning unit will focus on professional development and its importance.

Expected learning outcomes

KNOWLEDGE	SKILLS	COMPETENCES
<p>Knows / Aware of:</p> <ul style="list-style-type: none"> importance of professional development and motivation for upskilling and improving competence to keep people competitive on job market importance of soft skills meaning at work and how they influence communication and overall performance of work 	<p>Be able to:</p> <ul style="list-style-type: none"> recognize benefits of personal development understand ethos of being a construction professional and act according in on a day-to-day basis at work put in practice the circular economy concept at work 	<p>Be able to:</p> <ul style="list-style-type: none"> to interact and communicate with owner about eco-friendly products being installed and discuss benefits communicate effectively with construction manager/ engineer/ site managers/ foreman/ owner highlight the advantages of green materials



At a glance

It is addressed to:

- EQF4 level of learners,
- any public/private educational entity
- construction sector employer providing work-based training,
- for independent use to interested construction sector professionals,
- employees in sectors with similar workplace requirements (e.g., manufacturing) or
- other individuals wishing to upgrade their green insulation skills.





At a glance

If you are interested into integrating GRINSCO learning and assessment materials into your vocational curriculum, follow the guidelines from GRINSCO trainer handbook with WBL guidelines for VET providers & trainers.

Want to learn more?

Read...

Learning Unit 1: Knowledge of the qualities of green insulation materials in construction

Learning Unit 2: Application of green insulation materials in different construction structures

Learning Unit 3: Maintenance of green insulation materials

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LESSON 1

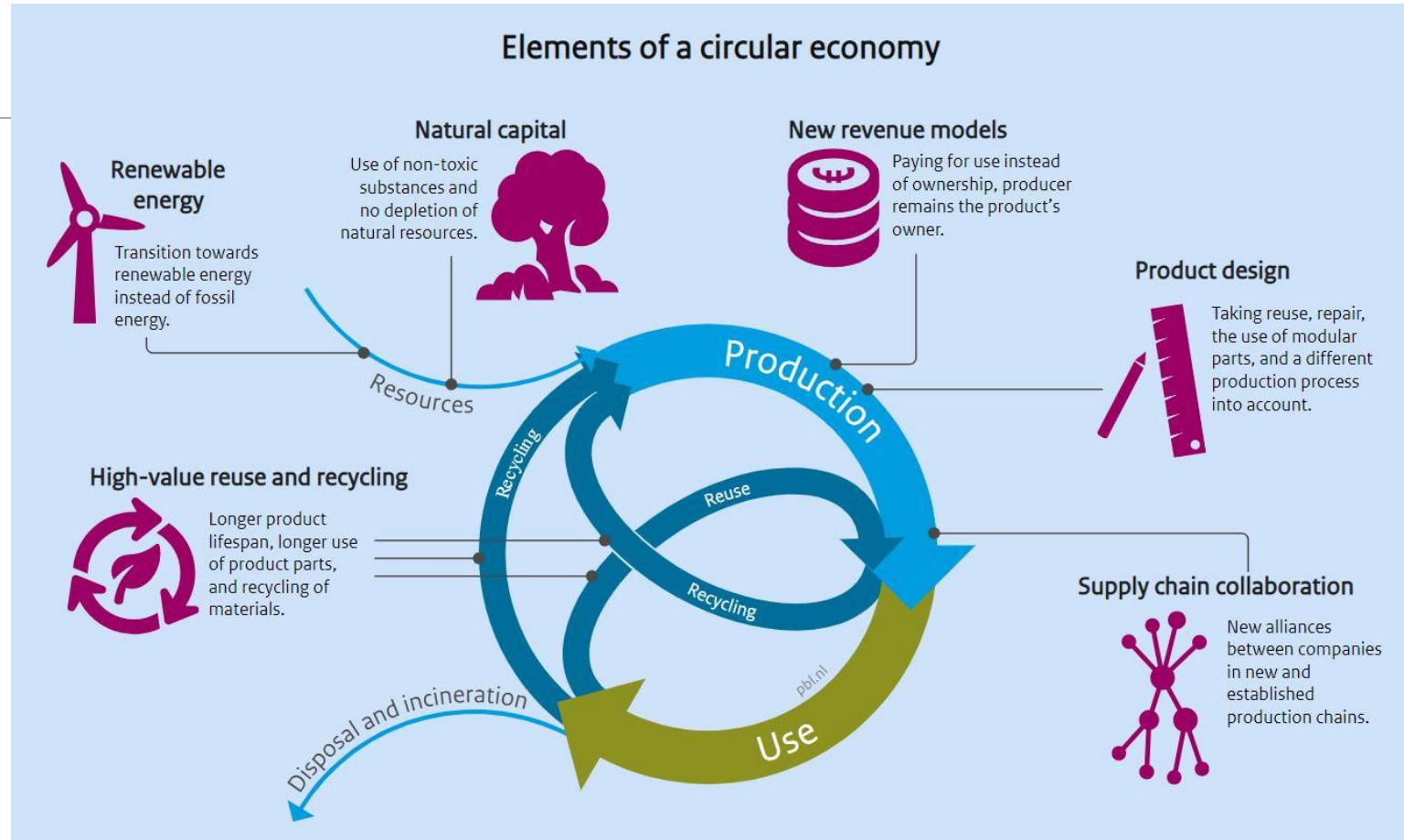
KNOW THE CONCEPT OF CIRCULAR ECONOMY





Fundamentals

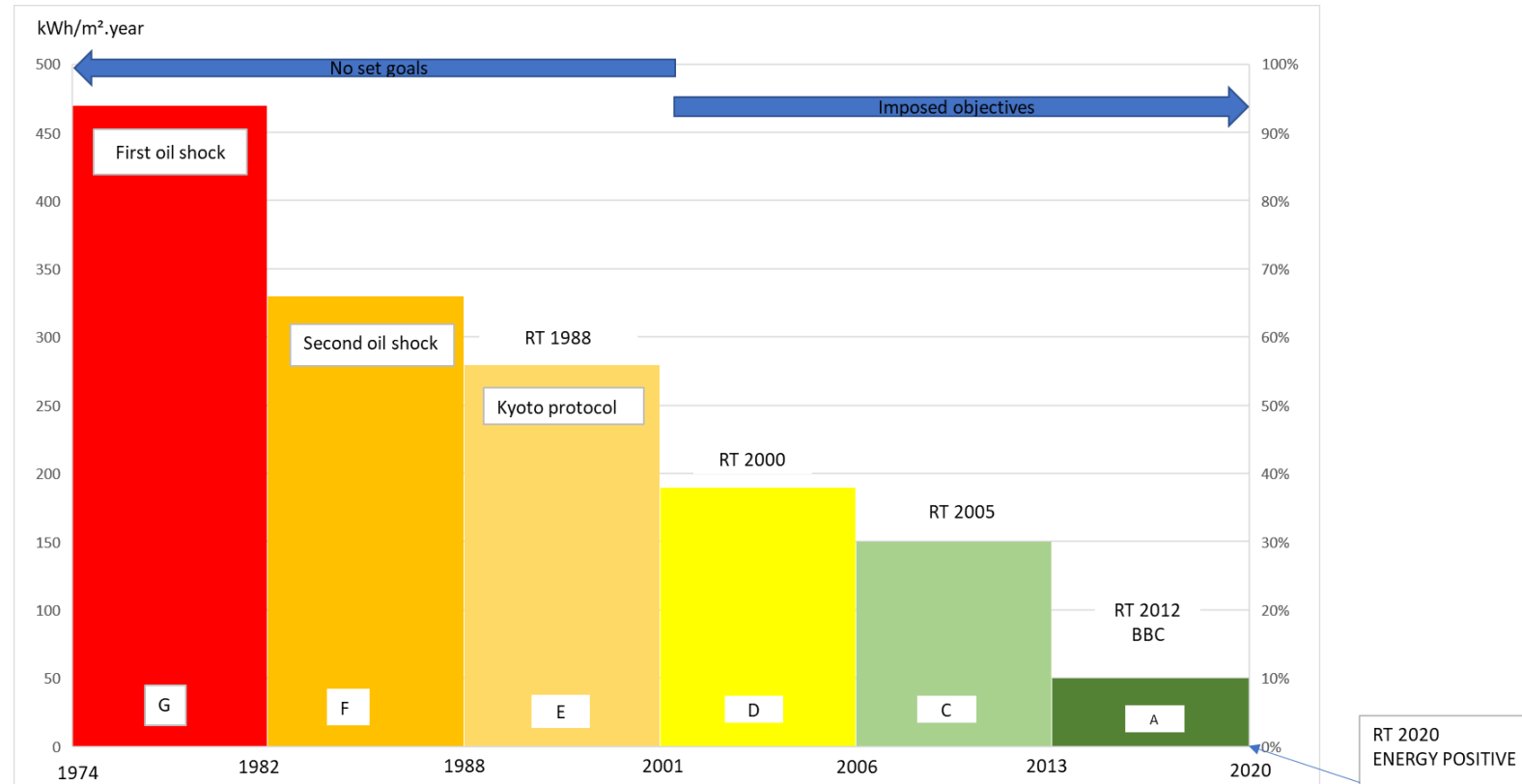
- **Sustainable sourcing** takes into account the environmental and social impacts of the resources used, particularly those associated with their extraction and exploitation.
- **Ecodesign** takes into account environmental impacts over the entire life cycle of a product and integrates them from its design.
- **Industrial and territorial ecology** synergizes and pools between several economic actors the flows of materials, energy, water, infrastructure, goods or services in order to optimize the use of resources in a territory.
- **The functional economy** privileges use over possession, selling a service rather than a good.
- **Responsible consumption** takes into account environmental and social impacts at all stages of the product's life cycle in purchasing choices, whether the buyer is public or private.
- **The extension of the useful life of products** uses repair, sale or purchase, through donation, reuse and reuse.
- **Improving waste prevention, management and recycling** reinjects and reuses waste materials into the economic cycle.



Source : <https://kenniskaarten.hetgroenebrein.nl>



Current context



Thermal regulation.

Sources

<http://www.microminerauxphotos.fr/batiment-durable/la-reglementation-thermique-en-france/>

<https://www.ecologie.gouv.fr/reglementation-environnementale-re2020>



Case study – scenario 1

Instructions to be executed individually or by 2

Comparison of 2 subjects on the fundamentals of the circular economy: hemp wool / glass wool :

- Rely on databases and/or websites recognized by the profession such as government or building federation sites
- Relying on Lecture Note LU4, chapter I-A



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LESSON 2

HIGHLIGHT THE BENEFITS OF ECOLOGICAL PRODUCTS, COMMUNICATE EFFECTIVELY WITH THE OWNER, THE MASTER BUILDER AND OTHER PROFESSIONALS INVOLVED IN THE IMPLEMENTATION OF GREEN INSULATION





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Definition of an environmentally friendly product

Let's try to co-construct a definition ...



Definition of an environmentally friendly product

According to a concerted reflection of European actors on eco-construction projects, an ecological product is:

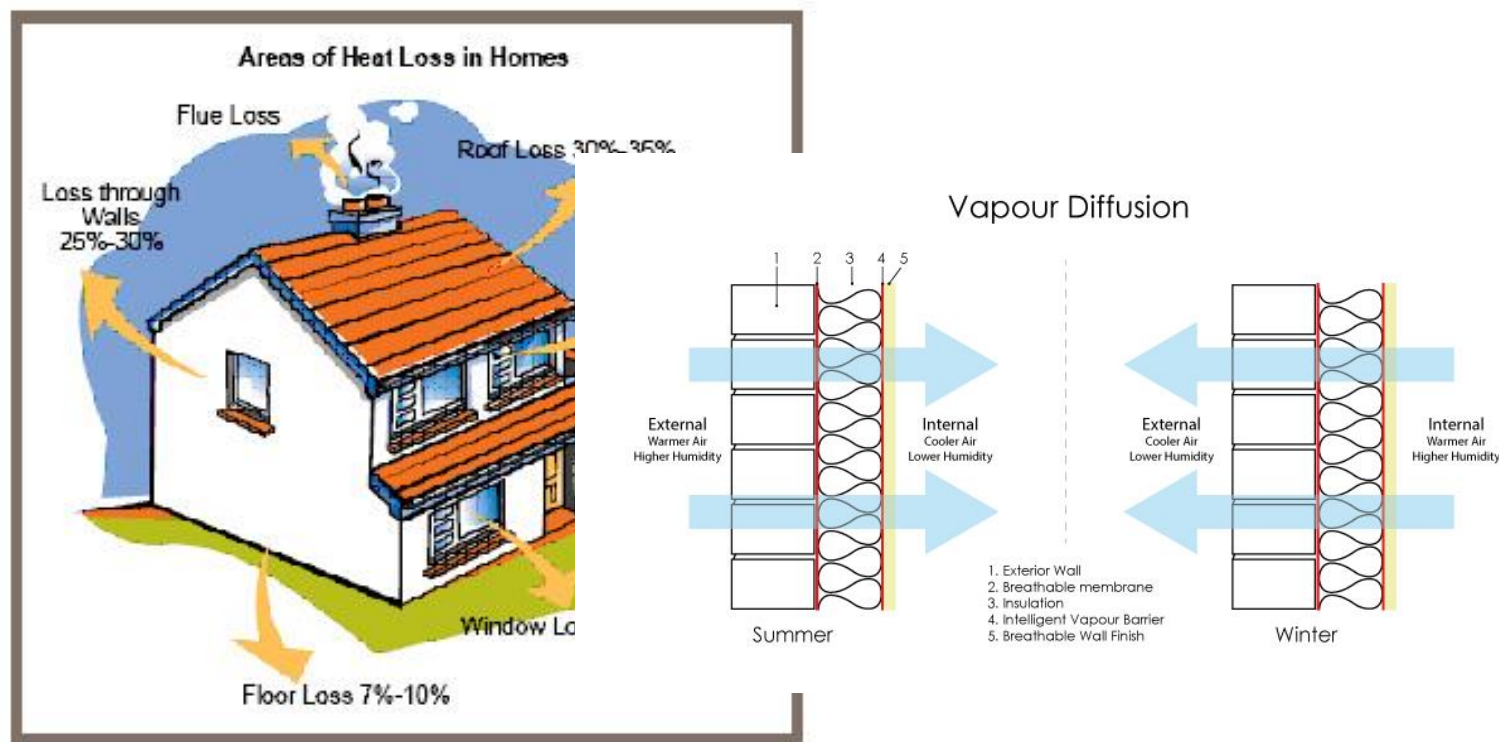
- as respectful as possible for humans and their environment
- use of basic natural products
- A minimally transformed
- a minimum transported
- A maximum used
- a product that can be repaired at most
- compostable
- biodegradable
- recyclable

.



Know the use of eco-friendly products to communicate effectively

1 - The Qualities of an Insulating Wall





Thermal conductivity (W/mK unit)

$$R = \frac{e}{\lambda} + \text{Résistance thermique superficielle}$$

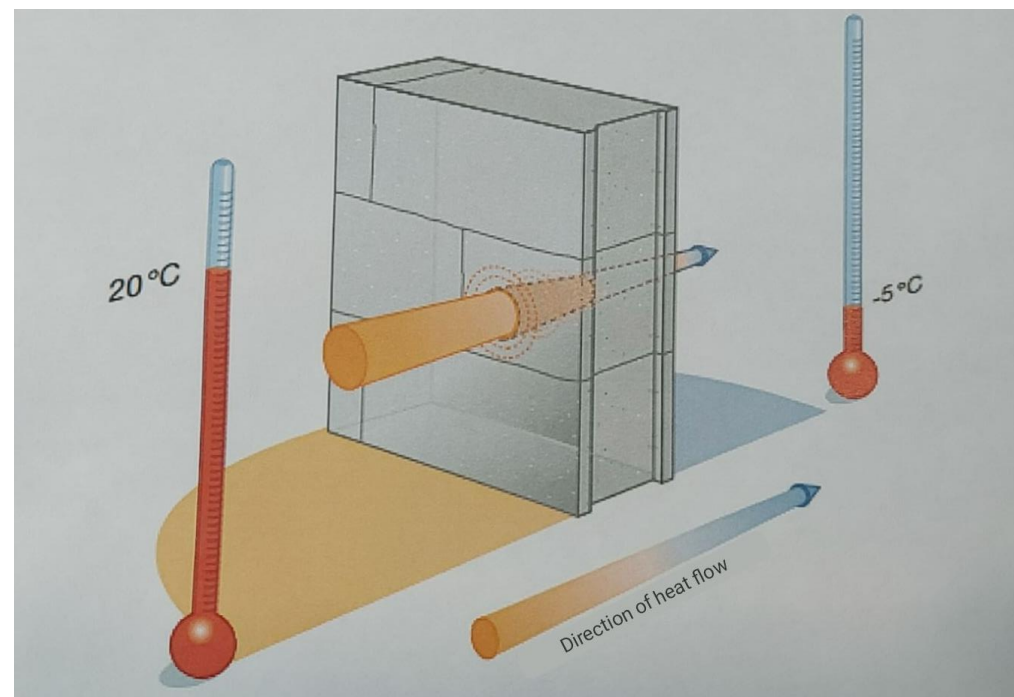
e = épaisseur de matériau en mètre

λ = conductivité thermique en W/m.K

R = résistance thermique en m².K/W

Thermal resistance (expressed in m²k/W)

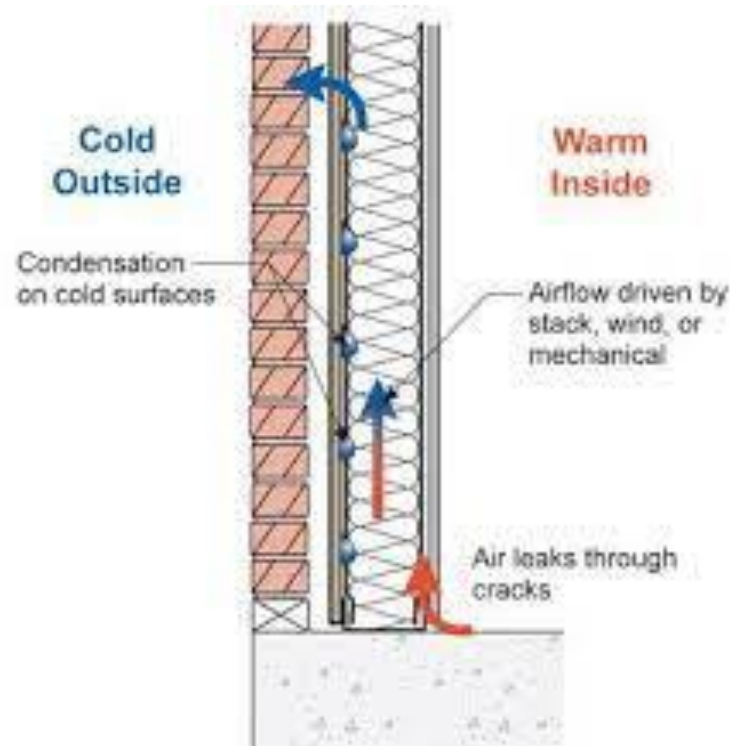
Thermal transmittance (expressed in W/m²k)





Water vapour diffusion (expressed with resistance factor μ)

S_d = the μ of the material x the thickness in m of this material present in the wall

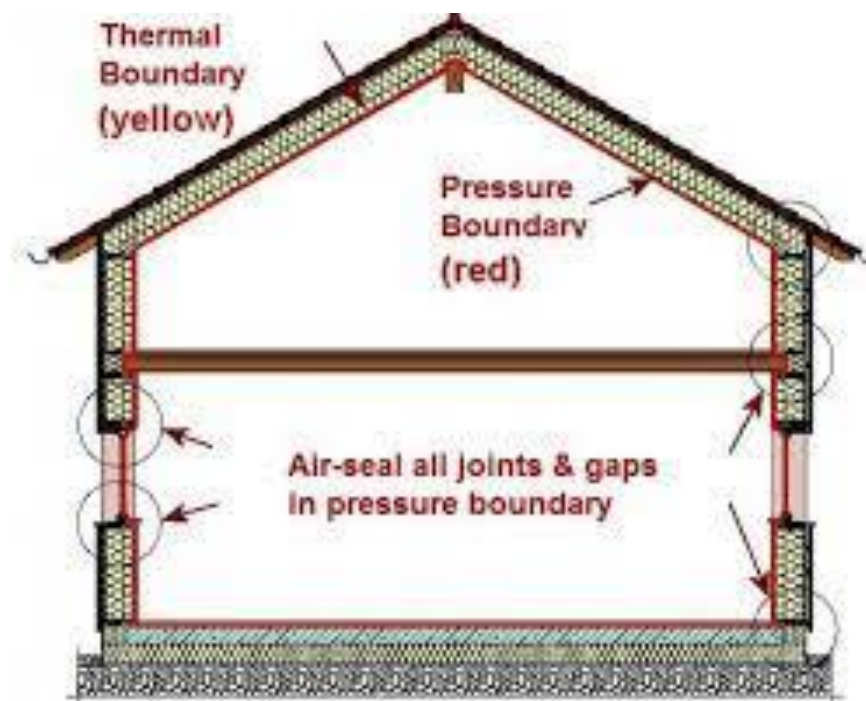




Air sealing

A house requires a controlled air renewal to :

- control indoor air quality
- control humidity





2 - The different insulation techniques

Interior insulation (ITI) / exterior insulation (ITE)





Distributed Insulation (RTID)



Single-wall cinder block



Aerated concrete block



Hemp cinder block



Case study – scenario 2

Activity - Instructions for a group exercise of two or 3 people

With equal constructive qualities, offer 3 insulation solutions (one per group), one of plant origin, one of animal origin, one of origin of recovery, in a specific context: region, type of building, possible participation or not of the customer, existence of local resources etc ...

Argue your choice to the other groups by taking into account the life cycle of the material, their constructive qualities and their virtuous implementation for humans.

Use simple and effective diagrams to explain to the owner.

Then all groups will choose only one solution out of the three and give the reasons for their choice.



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LESSON 3

UNDERSTAND THE ETHICS OF A CONSTRUCTION PROFESSIONAL AND ACT ACCORDINGLY ON A DAILY BASIS IN THE WORKPLACE





Definition of ethics

In the dictionary, ethics is what concerns morality.

The Building does not derogate from a professional ethic, on the contrary there is a long tradition of ethics in the construction trades.

For the proper functioning of the construction, we need rules,

- to be able to work together with coordination and trust,
- to respect customers and their environment,
- to respect the health and safety of workers,
- to avoid or resolve conflicts.



Material ethics

For materials

CE				Nom ou marque distinctive Adresse déposée du fabricant 2 derniers chiffres de l'année d'apposition marquage CE N° certificat de conformité CE N° EN de cette norme produit Identité du produit			
Organisme notifié n° XXXXXX				code de désignation			
Euroclasse A2 S1 d0	λ m².KW 1,35	λ, W/m.K 0,038	épaisseur mm 50				
m²/coils 3,60	pièces par coils 3		longueur mm 1200	largeur mm 1000			
NOM PRODUIT XXXXXXX							
N° contrôle + usine							
En option : profil d'usage ISOUL certifié							
AT CSTB N° XX/YY-ZZZZ							
Nom ou marque commerciale							

For implementation



For the frame





Social ethics

- To solve the problems of social conflicts, between craftsmen and customers, between craftsmen and the State, between craftsmen and compagnonnage/apprenticeship,
- To ensure the safety and hygiene of people,
- To respect individual rights, equity and parity,
- To respect the environment.



Aesthetic ethics

What balance can be found between thermal optimization and aesthetic regulations?

Give your opinion on the issue, between respect for heritage and regulations and thermal efficiency taking into account the different actors, customer, supplier, architect, communities.





Case study – scenario 3

Instructions for a group exercise of two or 3 people

With regard to ethics in construction, analysis of a site file for the renovation of a cultural building in a listed village.

Refer to Chapter III in LU4



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LESSON 4

HIGHLIGHT THE BENEFITS OF GREEN MATERIALS





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What is a green material ?

Exchange debate for a definition of a green material



Definition of a green material

To define a green material, the final insulation material must be made from,

- Bio-based materials
- Natural materials
- Heavily processed but recycled materials
- Materials with very high insulation performance



The 2 essential criteria for choosing green insulation

Grey Energy

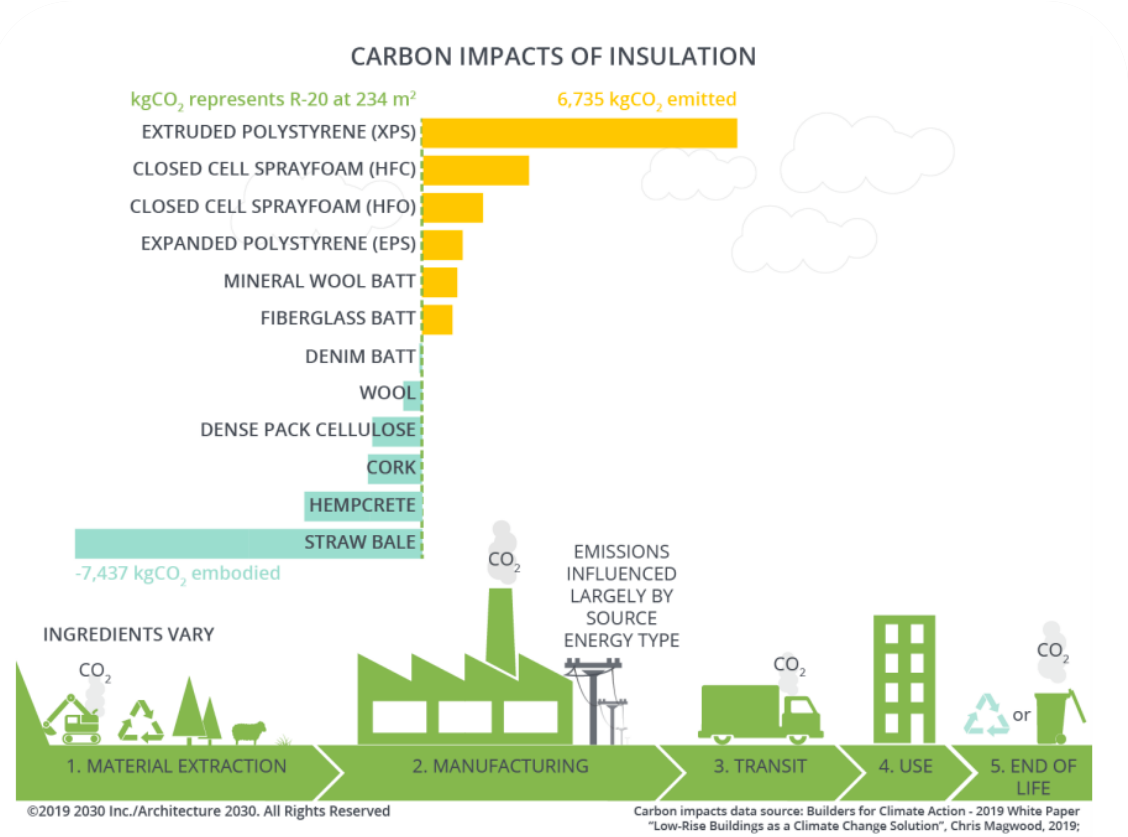
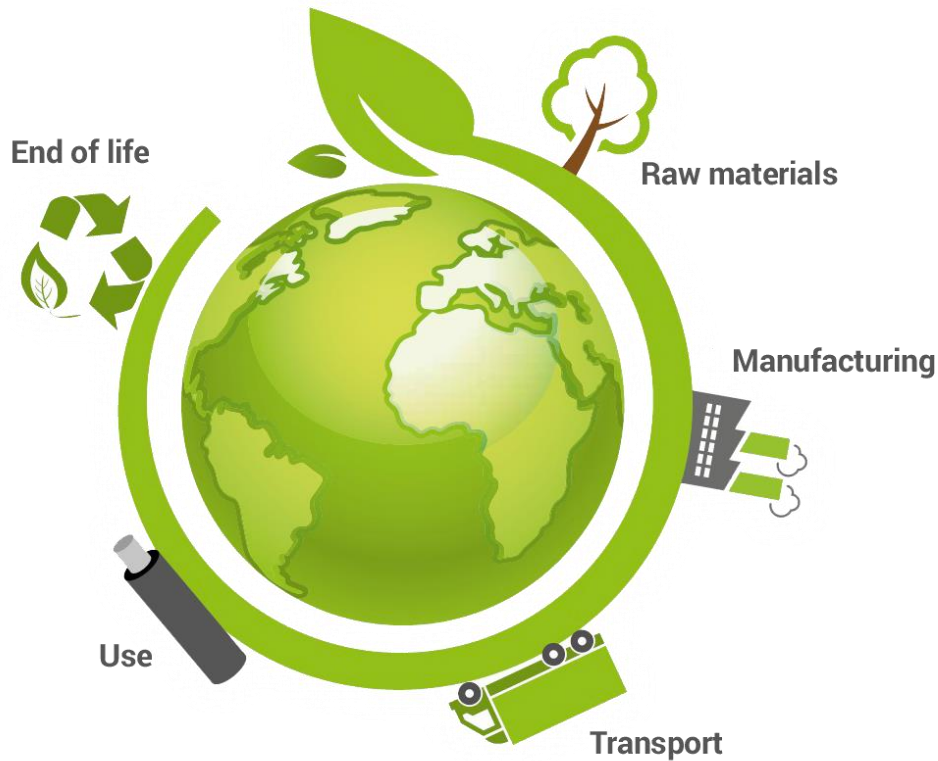


Figure 2. Carbon impact of insulation

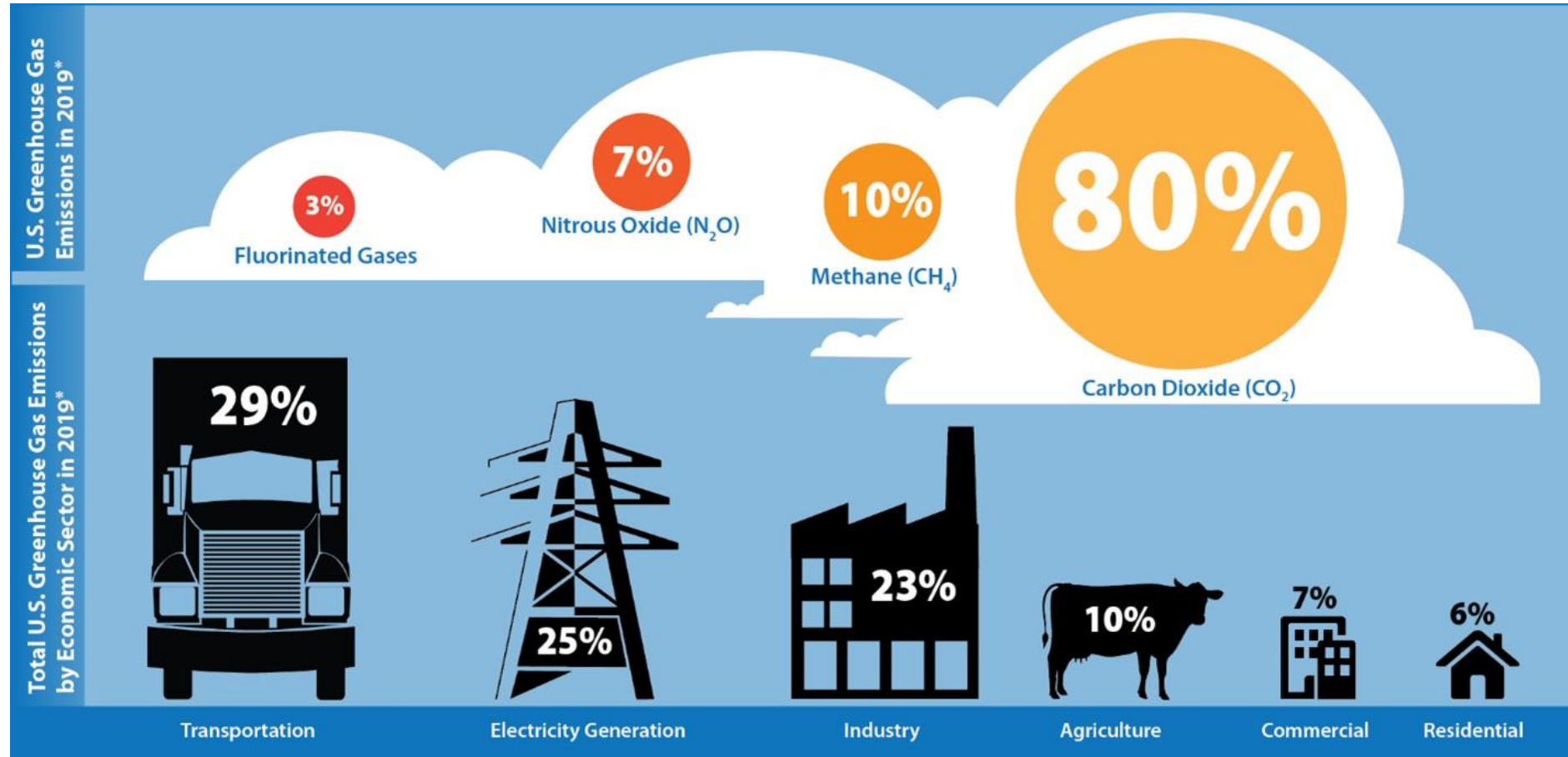
Source: Architecture 2030. <https://materialpalette.org/insulation>

source: Architecture 2030. <https://materialpalette.org/insulation>

Figure 2. Carbon impact of insulation



Greenhouse gas emissions





Other criteria for an environmental assessment

- The cost
- Technical efficiency: thermal, phonic, water
- Maintenance
- Impact on health
- Sustainability
- Social impact



Case study – scenario 4

Instructions to be carried out individually or by 2

Find the environmental balance of a minimally processed insulation such as wood wool and a highly processed insulation such as "extruded polystyrene"

Rely on databases and/or websites recognized by the profession.



Case study – scenario 5

Instructions for a group exercise of two or 3 people

Make a table on the advantages and disadvantages of green insulation (plant-based insulation such as flax, hemp, straw, sheep's wool, wood particles, recycled textile, etc.) and mineral-based insulation (glass wool, rock wool, polystyrene, polyurethane foam)

- Rely on databases and/or websites recognized by the profession.
- Take into account the criteria,
 - Cost
 - Technical efficiency: thermal, phonic, water
 - Maintenance
 - Health impact
 - Durability
 - Social impact



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LESSON 5

RECOGNIZE THE BENEFITS OF PERSONAL DEVELOPMENT





Definition

Personal development is a set of practices with the objective of:

- self-knowledge,
- self-confidence,
- knowledge of others and one's environment,
- the development and broadening of his perception, his reflection and his practices through his profession.



Personal development in 7 steps

- The discovery of a profession for oneself
- Learning the trade
- The practice of the profession
- Practical and theoretical mastery of the profession
- Mastery of the practical, theoretical and ethical profession
- Transmission
- Give meaning to the profession or realize oneself



Development tools

Technical training, self-training on the Internet, training within the corporation itself and between corporations, meetings with trades, participation in participatory and collective projects.

Training with a broader or different objective from his profession, conferences and debates, places of inter-professional exchanges, inter-generational, debates and political and philosophical information.



Positioning tools

Recognition,

- Through experience
- By the diploma
- Through excellence



Case study – scenario 6

Complete the positioning table of his personal development journey

	I'm starting	It's ongoing	Confirmed	I master
Discovery.				
Learning.				
Practice.				
Mastery of practice.				
Mastery of the trade.				
Transmission				
Self-realization.				