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**BIO-CIRC Project**

European Regional Development Fund

# BIO-CIRC Project

Bio(and)Circular Insulation for Resourceful  
Construction

## Legal analysis on waste bedding items recovery activities

*Final version*



# Presentation of the BIO-CIRC project

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The BIO-CIRC Project, Bio(and)Circular Insulation for Resourceful Construction, intends to tackle the building sector's high carbon, energy and resource dependencies, while taking advantage of an unused waste resource: polyester from waste bedding.

The project aims to design, produce and deploy 3 prototypes of innovative low-carbon thermal insulation material made from polyester and combined with natural fibres. It intends to promote the emergence of a bespoke waste polyester valorisation industry and the use of virtuous Natural and Recycled Fibre Insulation (NRFI) products.

This project is carried out by a cross-channel partnership of 4 key and complementary links in the building sector's value chain:

- Nomadéis (lead partner)
- Alliance for Sustainable Building Products
- Eden Renewable Innovations
- Back to Earth

Planned over 2 years, the BIO-CIRC project receives funding from the European Regional Development Fund (ERDF). The ERDF's contribution amounts to €399,600 for a total budget of €499,500.



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# Abstract

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The BIO-CIRC project's intention is to mitigate the building sector's high carbon, energy and resource dependencies, while recycling unutilized polyester from waste bedding. The project aims to design, produce and deploy 3 prototypes of **innovative low-carbon thermal insulation material** made from recycled polyester combined with natural fibres.

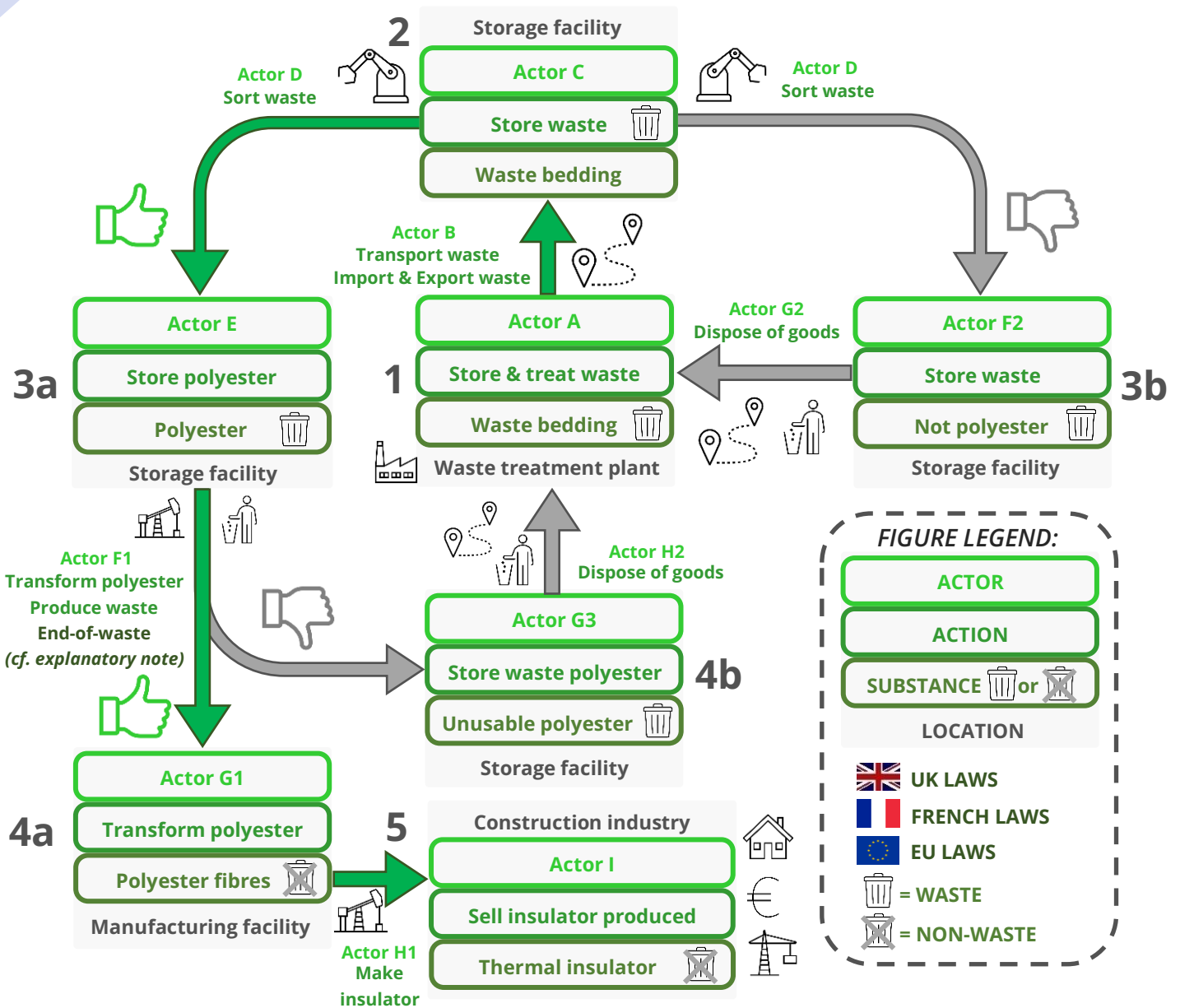
Because the low-carbon thermal insulation material of this project is **novel**, the legal framework in which actors can produce it is not readily available. The aim of this legal analysis is to produce a **practical guide** for industrial actors wanting to use waste bedding to make thermal insulation materials for construction.

This analysis serves the purpose of gathering information from the European, British and French legal frameworks to make them more accessible to industrial actors but is in no way legally binding. French, British and EU legislation prevail on any content included in this analysis. Moreover, this describes the situation as of December 2020, though due to the United Kingdom leaving the E there maybe some future changes. **While this guide is focused on the commercialisation of waste bedding, most steps and laws are applicable to other categories of waste items.**

First the key steps to produce a low-carbon thermal insulation from bedding waste are presented. Then, legal definitions and their relevance to the project are introduced for the concepts of waste, by-product, end-of-waste and actors and activities in the waste sector. Once this context is set, specific legal requirements in Europe, France and United Kingdom are analysed and compared for all waste-handling activities that are relevant to this project. The key operations actors will need to perform are the following:

1. Collect waste
2. Store waste
3. Transform waste
4. Sell the insulation produced using waste
5. Produce waste
6. Dispose of waste

Finally, a practical guide, featuring both the project steps and their regulatory framework is produced. This gathers the main legal requirements actors are committed to alongside the production process flow. This practical guide is included here to present a synthetic form of the analysis findings:



**TREAT WASTE:**  
 Respect waste treatment hierarchy from WFD\*<sup>1</sup>:  
 1. Recycle  
 2. Recover  
 3. Eliminate  
 \*WFD: waste framework directive

**TRANSFORM WASTE:**  
 Apply: Environmental Permit<sup>21</sup>  
 Waste Transfer Note<sup>17</sup>  
 Test waste<sup>31</sup>  
 Keep register of handled waste<sup>24</sup>

**STORE WASTE:**  
 Apply: Environmental Permit<sup>21</sup>  
 Waste Transfer Note<sup>17</sup>  
 Register facility as ICPE\*<sup>9</sup>  
 \*ICPE: Installations classées pour la protection de l'environnement (facilities registered for the protection of the environment)

**SELL THE INSULATOR:**  
 Get ACERMI\* certification<sup>24</sup>  
 Meet the Construction Product Regulation<sup>32</sup> requirements  
 Pass ETE\*\* to obtain CE marking  
 \*ACERMI: Association pour la Certification des Matériaux Isolants  
 \*\*ETE: European Technical Evaluation

**TRANSPORT WASTE:**  
 Waste Transfer Note<sup>17</sup>  
 Declare transport to prefect<sup>11</sup>  
 Register transported waste<sup>24</sup>

**Import & export waste:**  
 Regulation (EC) 1013/2006<sup>14</sup>  
 Waste Duty of Care Code of Practice<sup>17</sup>  
 Basel Convention<sup>13</sup>

**PRODUCE WASTE:**  
 Respect waste producer's obligations and waste hierarchy from WFD\*<sup>1</sup>  
 2020 waste law\*\*<sup>15</sup>: additional waste producer obligations  
 \*WFD: waste framework directive  
 \*\*Loi anti-gaspillage pour une économie circulaire, 2020

**END-OF-WASTE:**  
 Substance must meet European end-of-waste criteria (WFD\*<sup>1</sup>)  
 Pass end-of-waste assessment or comply with a Quality Protocol  
 Pass end-of-waste assessment  
 Match implicit end-of-waste criteria<sup>8</sup>  
 \*WFD: waste framework directive

# Explanatory note for the practical guide

This guide provides the path, from a legal standpoint, to transform a waste item into a commercial product. The **BIO-CIRC project aims at valorising waste bedding items but the general rules, laws and frameworks are applicable to other types of waste.**

The guide follows the **production process** that aims to transform bedding waste into marketable insulator products and the **legal requirements** associated with each step and actions for the collection and transformation. Within the production route, each step features the actor performing it, the action performed, the nature of the substance alongside its legal waste or non-waste status and the type of facility in which it occurs.

The general flow of the process is as follows. Readers can start at step 1, where waste bedding is stored in a waste treatment plant. Then, Actor B transports the waste bedding to a storage facility, where it is stored by Actor C. After this, Actor D sorts the waste bedding into useful polyester (step 3a) and other materials (step 3b), which are eventually disposed of in the waste treatment plant (step 1). The useful polyester from step 3a is transformed into polyester fibres for insulator manufacturing (step 4a) by Actor F1. This process generates waste (step 4b), which gets disposed of by Actor H2 and returns to the waste treatment plant (step 1). Actor G1 then receives the non-waste polyester fibres in step 4a and Actor H1 uses it to produce a marketable thermal insulating material, which is sold to the construction industry in step 5.

Note: In the transformation performed by Actor F1, it is assumed that the polyester goes through a cleaning process as well as a specific transformation that gives it the standard properties of a marketable product. Therefore, it will be assumed that Actor F1 performs the key operation that enables the polyester to meet the European end-of-waste criteria. Depending on the type of sorting operation performed by Actor D, end-of-waste could also occur between step 2 and step 3a and the polyester in step 3a could have the status of non-waste. **The assumption of the guide is the most conservative, in order to ensure no actors overlook waste legislation when it could apply to them.**

The target reader of this legal analysis should:

1. **Identify with at least one actor** presented in the guide by recognising the actions they perform as part of the production process.
2. **Refer to each waste-handling action** presented in the lower half of the guide to find the key legal requirements they are subjected to in Europe, France and England.
3. **Gain further understanding** of the implications of such requirements and the specific procedures to follow by reading the relevant sections of the present legal analysis.
4. **Refer to European, French and English law** to ensure their planned activities are lawful before starting to perform any waste handling activity.

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# 1. Introduction

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The BIO-CIRC project's intention is to mitigate the building sector's high carbon, energy and resource dependencies, while recycling unused polyester from waste bedding. The project aims to design, produce and deploy 3 prototypes of **innovative low-carbon thermal insulation material** made from recycled polyester combined with natural fibres. It intends to promote both the emergence of a **waste polyester valorisation industry** and the use of virtuous Natural and Recycled Fibre Insulation (NRFI) products.

Since the low-carbon thermal insulation material project partners intend to conceive is **novel**, the legal framework in which actors can produce it is not readily available. The aim of this legal analysis is to produce a **practical guide** for industrial actors wanting to use waste bedding to make thermal insulation materials for construction.

The process of transforming waste into a functional insulator will first be detailed step by step. Then, relevant regulations concerning each step will be presented for the EU, France and the UK. Any significant differences will be pointed out and analysed in the context of the project. Finally, a guide of regulatory steps to follow is presented for France and England.

## 2. Scope of the analysis

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### 2.1. Framework and boundaries

Prior to analysing the legal framework regulating the activities generated by the project, the exact boundaries of the project and thus of its legal analysis need to be specified. Throughout this analysis, it will be assumed that only bedding that has already been disposed of and has hence acquired the legal status of **waste** will be used in the making of the innovative low-carbon polyester thermal insulator. Furthermore, imports and exports of waste will be included in the scope of the present legal analysis.

While waste bedding items are the primary targets of this legal analysis, the general **national and European guidelines and frameworks may also apply to other categories of waste items and therefore be of interest to stakeholders outside of this industry.**

### 2.2. Key steps from waste to marketable insulator

Figure 1 (see next page) summarises the key steps manufacturers will need to follow in order to transform waste bedding into a marketable low-carbon insulator. Specific players and steps are identified using alphanumeric codes to ensure they can be clearly found when referred to later in the analysis.

The present legal analysis is structured around the waste-handling actions performed throughout the production process of the innovative low-carbon thermal insulation material made from recycled polyester combined with natural fibres. As a conclusion, in Figure 5, the graph from Figure 1 will be reproduced alongside the legal framework associated with each waste-handling action, putting the learnings from this legal analysis into a **compact actionable guide format.**



Figure 5 is also presented in the abstract so that actors needing to find specific information in the present analysis can obtain it from the abstract directly.

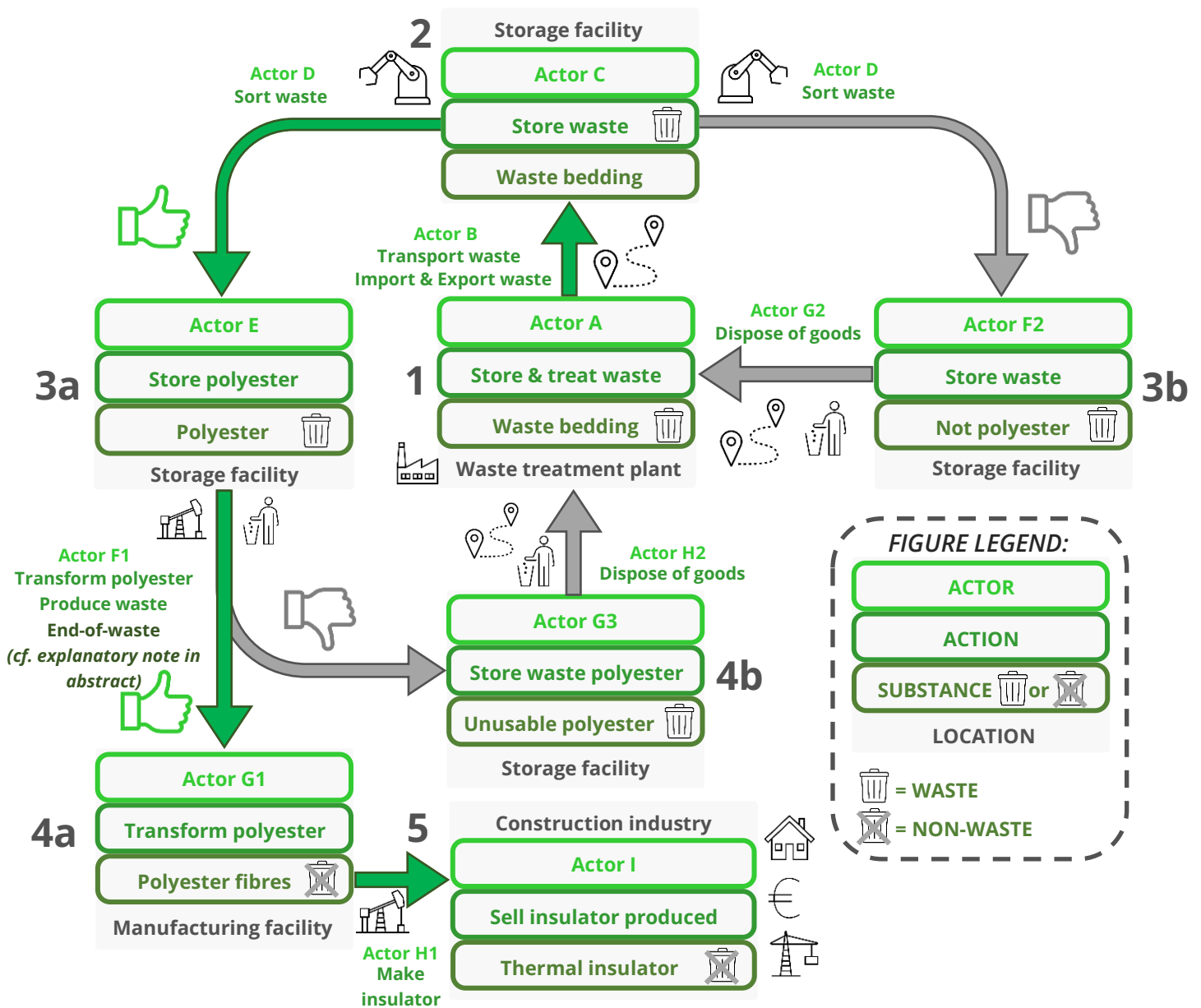


Figure 1: The key steps, actors and actions to produce low-carbon insulating materials using waste bedding, from waste collection to thermal insulator commercialisation.

## 3. Definitions

### 3.1. Waste

#### 3.1.1. Legal definition

The current legal status of waste in the European Union (hereinafter EU) was set by **Directive 2008/98/EC** of the European Parliament and of the Council of 19 November 2008<sup>1</sup>, also known as the **Waste Framework Directive** (hereinafter **WFD**). EU Member States' governments must set up laws and practices to enforce EU environmental law within the specific circumstances, administrative structures and local conditions of their States. Because of this setup, it is necessary to analyse national environmental legislation in France and England in addition to the WFD, in the context of this project.

The definition of waste determines what falls under the WFD's scope and thus has a role in determining the EU's approach towards waste management. The definition of waste also sets the scope of other EU instruments directly concerning waste management, including the Landfill Directive (1999/31/EC)<sup>2</sup> and the Industrial Emissions Directive (2010/75/EC)<sup>3</sup>.

**Article 3(1) of the 2008 WFD<sup>1</sup> defines waste as “any substance or object which the holder discards or intends or is required to discard”.** Any substance or object either has the status of waste or that of non-waste. This definition is repeated in the French environment code<sup>4</sup> (article L.541-1-1) and in British law: The Waste (England and Wales) Regulations-2011<sup>5</sup>.

#### 3.1.2. Implications

It is difficult to determine exactly what substance or object has the legal status of 'waste' because the definition isn't just based on an observation (“discards”) or a requirement (“is required to discard”) but can also be based on the holder's **intention** (“intends to discard”). In order to further specify the distinction between waste and non-waste, the concepts of 'by-product' and 'end-of-waste' were introduced into the WFD.

<sup>1</sup> Directive 2008/98/EC on waste (Waste Framework Directive), <https://ec.europa.eu/environment/waste/framework/>

<sup>2</sup> Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, Official Journal L 182, 16/07/1999 P. 0001 – 0019 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31999L0031>

<sup>3</sup> Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control), <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32010L0075>

<sup>4</sup> Code de l'environnement, [https://www.legifrance.gouv.fr/codes/texte\\_lc/LEGITEXT000006074220/2020-09-14/](https://www.legifrance.gouv.fr/codes/texte_lc/LEGITEXT000006074220/2020-09-14/)

<sup>5</sup> The Waste (England and Wales) Regulations 2011: <http://www.legislation.gov.uk/uksi/2011/988/contents/made>

## 3.2. By-product

### 3.2.1. Legal definition

Article 5 of the WFD<sup>1</sup> defines the status of 'by-product' as:

*"A substance or object, resulting from a production process, the primary aim of which is not the production of that item, may be regarded as not being waste referred to in point (1) of Article 3 but as being a by-product only if the following conditions are met:*

- (a) **further use** of the substance or object is **certain**;*
- (b) the substance or object can be used directly **without any further processing** other than normal industrial practice;*
- (c) the substance or object is produced as an integral **part of a production process**;*
- (d) and **further use is lawful**, i.e. the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts."*

### 3.2.2. Implications

Depending on the exact nature, form and composition of the unwanted goods and the will of actors at **steps 3b and 4b** of **Figure 1**, the goods could in part get the status of 'by-product'. By default however, they are not being used for our purposes and further valorisation of unwanted parts of bedding waste is not directly included into the scope of the project so they will be considered as 'waste'.

## 3.3. End-of-waste

### 3.3.1. Legal definition

#### European Law

Article 6 of the WFD<sup>1</sup> defines the 'end-of-waste' status as:

*"Certain specified waste shall cease to be waste within the meaning of point (1) of Article 3 when it has undergone a **recovery**, including **recycling**, operation and complies with specific criteria to be developed in accordance with the following conditions:*

- (a) the substance or object **is commonly used** for specific purposes;*
- (b) a **market or demand exists** for such a substance or object;*
- (c) the substance or object fulfils the **technical requirements** for the specific purposes and meets the existing **legislation** and **standards** applicable to products; and*
- (d) the use of the substance or object will not lead to overall adverse environmental or human health impacts.*

*The criteria shall include limit values for pollutants where necessary and shall take into account any possible adverse environmental effects of the substance or object."*

#### Relevance

Because **waste bedding is not typically used for further transformation to make new goods it does not have precedents in end-of-waste procedure demands**. There are thus no specific regulations for polyester or waste bedding, but **end-of-waste status can be obtained by satisfying the criteria given by the European Union**. An actor wanting to go through an end-of-

waste procedure for waste bedding would have to get the conformity to European criteria certified by an accredited certifier before obtaining the end-of-waste status for their waste.

## Member States differentiation

The end-of-waste procedure suffers from a lack of harmonisation between the EU Member States. The end-of-waste procedure on the European level is common to all but requires a long process and applies only to a set number of waste flows. Hence, some countries have taken the initiative of creating their own end-of-waste procedures for some types of materials. These different regulation levels create distinctions between competent authorities to grant end-of-waste status. Because of the disparities between national procedures, the products that have gone through an end-of-waste procedure in one country could still have the status of waste in another. In order to access the European market, goods need to meet end-of-waste requirements set by the European Union. This means that some goods can only be sold nationally if national rules for end-of-waste are more lenient than European legislation.

## Relevance

In the context of our project, this differentiation can be relevant if national end-of-waste procedures do not match European norms and the legal waste status of exchanged goods is different in France and England. A possible solution would be to **follow the most stringent guidelines in all cases** in order to avoid complications when exchanging goods on the European market.

## Legal practices in France and England for end-of-waste procedures

There are important differences between the French and British legal systems which impact the way the end-of-waste procedures are developed and executed on a national level. The British legal system grants a central place to **case law**. The United Kingdom therefore tends to formulate criteria **faster**, even if it means revising them later if necessary (technological evolutions, market structure changes, accidents with materials originated by end-of-waste, etc.). Thanks to this, England is more advanced than France today in the end-of-waste process. Indeed, end-of-waste criteria and procedures are implemented for a larger number of products in England than in France. In France, the case law culture is far less developed, and the administration takes more time to develop criteria, favouring **continuity** over speed of implementation. In France, the end-of-waste thus concerns a reduced number of products.

In the United Kingdom (UK), if the waste holder wishes to go through an end-of-waste procedure two main routes exist:

1. An **end-of-waste assessment** can be carried out, which is in all aspects a replica on a national level of the European end-of-waste procedure. The difference is that approval depends on the ruling of the Court of Appeal at a national level.
2. Alternatively, in the UK, waste holders can comply with a **Quality Protocol (QP)**. There is a specific QP for each type of waste, which sets a series of requirements to qualify for end-of-waste. The QPs are updated regularly and publicly available on the government's website. The use of QP is a voluntary procedure left to the initiative of waste holders, and encouraged by the different **Environmental Regulators**, the bodies in charge of QPs. Disparities exist in QPs within the different nations of the UK.

Beyond the differences in French and British administrative procedures relating to end-of-waste, there are also differences in the **support** available to waste holders. In France, there is no implemented assistance to help waste producers apply for end-of-waste. In the United Kingdom there are more support measures linked to specific QPs. For instance, the **ItIsWaste**<sup>6</sup> tool was launched in November 2014 to allow users to self-evaluate their actions and their compliance with the end-of-waste requirements for reuse in England. This tool provides an indicative result on the status of waste, which may subsequently be submitted to the Environment Agency for notice. The **Quality Protocol Checker** is another tool, which enables waste holders to check their compliance to QP standards.

In **France**, the end-of-waste status can be granted after **verification that the criteria set by the European Union** are met. The competent authority to adjudicate an end-of-waste request is the local prefect when the request relates to a specific waste recovered in a specific installation. The end-of-waste criteria are then fixed by a prefectural decree and can be fixed for a determined period. However, in general, it is the **Ministry of the Environment** that grants or denies the end-of-waste authorisation, after deliberations with the Consultative Commission of the Status of Waste. The information relative to the entry and functioning of this commission is presented in Article 1 of the Decree n°2012-602 on the end-of-waste procedure<sup>7</sup>.

Because of the complexity of the end-of-waste procedure, waste owners in France may, under certain circumstances, carry out **"implicit" end-of-waste procedures**, as was done before the WFD was enacted. In some cases, the European administration or case law have recognised that waste can be reused or recycled as products without any specific administrative procedure. Implicit end-of-waste applies to processes where waste material is introduced into an existing production process to replace new raw material. The result of this production process must be identical in all respects to what it would have been with the new raw material. The produced substance or object must be identical to the one produced without waste. Subject to compliance with the REACH regulation<sup>8</sup>, the produced substance or object does not have the status of waste, even though some elements introduced in the production process effectively had the status of waste.

In opposition with the "explicit" end-of-waste, which takes place in waste treatment facilities, implicit end-of-waste takes place in manufacturing facilities, which use waste to replace raw material. The "manufacturing facilities" are facilities listed in the **ICPE** (Installation Classified for the Protection of the Environment)<sup>9</sup> nomenclature. In the current state of the regulations, only implicit end-of-waste that occurred in this kind of facility is officially recognised in France. There is no official recognition of the integrity of objects resulting from a manufacturing process causing implicit end-of-waste that did not occur in an ICPE. In France implicit end-of-waste was recognised by an official notice from the Minister of Ecology on January 13<sup>th</sup>, 2016. There is no European or British equivalent. The key steps of explicit and implicit end-of-waste protocols in France and England are summarised in Figure 2.

<sup>6</sup> <https://www.gov.uk/government/publications/isitwaste-tool-for-advice-on-the-by-products-and-end-of-waste-tests>

<sup>7</sup> Décret n° 2012-602 du 30 avril 2012 relatif à la procédure de sortie du statut de déchet, <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000025789260/>

<sup>8</sup> *Registration, Evaluation and Authorisation of Chemicals regulation* <https://echa.europa.eu/regulations/reach/understanding-reach>

<sup>9</sup> Installations Classées et nomenclature ICPE, [https://aida.ineris.fr/liste\\_documents/1/18023/1](https://aida.ineris.fr/liste_documents/1/18023/1)

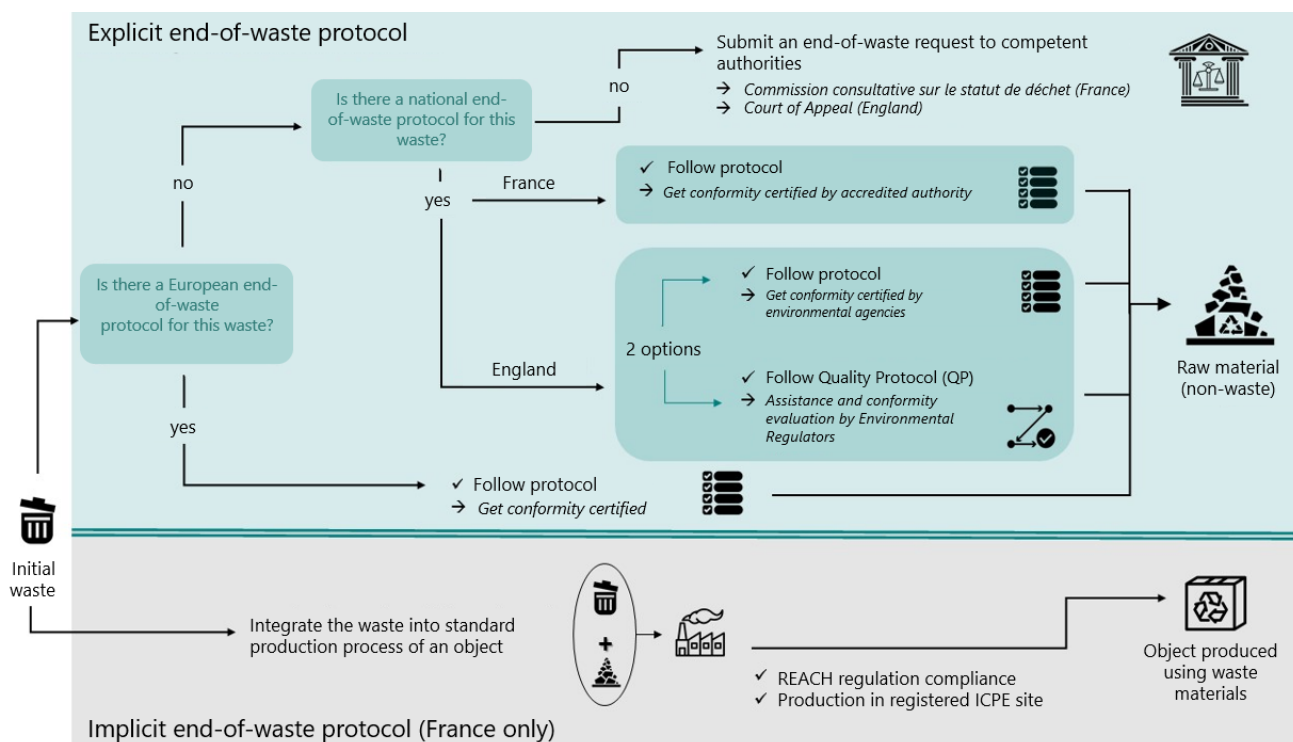


Figure 2: Explicit and implicit end-of-waste protocols in France and United Kingdom

Relevance

In the project, when waste bedding is transformed into standard polyester fibres by Actor F1, the useful polyester should go through an end-of-waste procedure. End-of-waste could also occur when Actor D performs the sorting operation, but a conservative assumption is that Actor F1 would generally perform the end-of-waste process. If the sorting occurs in the UK, this can be achieved via an end-of-waste assessment. If it is in France, compliance to EU criteria must be verified and the end-of-waste request approved by the Ministry of the Environment.

Alternatively, if the manufacturing process and end product are already approved of, without waste material, implicit end-of-waste can be granted without administrative protocols. However, because the insulator manufactured in this project is novel, there is no set process to manufacture it using new polyester. Therefore, **implicit end-of-waste cannot be granted** today when making it with waste polyester. This means the administrative steps to obtain the end-of-waste status will have to be followed in accordance with EU and national law. This should also facilitate the exchange of goods between France and England at any point of the project as well as with other countries if need be.

Even if an end-of-waste request has been filed and the waste matches all relevant criteria to qualify for end-of-waste, it is only effective when final approval is granted. Until then, the goods are still waste and must comply with regulatory constraints about their transport, storage, certification, traceability and transformation. Once end-of-waste is approved, the regulatory framework of waste no longer applies and that specific to the nature of the product prevails. Likewise, in France, at the end of a production process integrating waste and leading to implicit end-of-waste, the object is not subject to waste management laws.



### 3.3.2. Implications

In our case, the goods have a status of waste in **steps 1, 2, 3b** and **4b**. Indeed, an 'end-of-waste' procedure can apply as soon as **Actor F1** has transformed the polyester into standard fibres. While bedding is not commonly used for specific purposes after acquiring the status of waste, polyester is. Therefore, as soon as the material becomes polyester in a useable and transformable form, it matches the EU criterion of a non-waste material. Therefore, pending on end-of-waste approval by competent authorities, the goods in **steps 3a, 4a** and **5** have the legal status of 'non-waste'. In **step 4b**, the unusable products of the polyester transformation are stored for discarding. The scrap polyester in **step 4b** thus has the status of waste, unless a new application for this form of material is identified and **Actors F1** and **G3** collaborate to give value to this material and give it the status of 'by-product'. We will assume for the purpose of this study that this is not the case.

### 3.4. Waste classification

The WFD<sup>1</sup> introduces a waste classification according to different criteria: the type of **producer** (household waste or waste generated by economic activities), the **sector** in which the waste is produced (agricultural or industrial waste, etc.) or the **attributes** of the waste (dangerous or not, inert or not). From this classification stems a regulatory codification of waste categories in the form of six-digit identification codes, which must feature on all official documents related to waste management practices. It should be noted that EWC code may be 20 01 11 (textiles) or 04 02 22 wastes from processed textile fibres (manufacturing process).

Some types of waste or types of activities dealing with waste can be excluded from different administrative and fiscal obligations if they meet the criteria set out in the WFD<sup>1</sup>. However, **no specific exemptions apply to waste bedding directly, as it is not commonly recycled or recovered for transformation today.**

### 3.5. The implications of the status of waste

In the EU, in France and in England, when a substance or object acquired the status of waste, further operations on it, including handling, owning, storing, moving, transforming or discarding it, are tightly regulated and generate particular administrative and fiscal obligations. It is thus capital to know, at every step from waste bedding collection to insulator commercialisation, if the substance or object has the legal status of waste or non-waste.

### 3.6. Actors of the waste sector

#### 3.6.1. Legal considerations

Article 3 of the WFD<sup>1</sup> introduces the definitions of the **legal status of actors** when performing different operations with waste. The most relevant ones to our analysis, directly quoted from Article 3 of the WFD<sup>1</sup>, are the following:

- **"Waste producer"** means anyone whose activities produce waste (original waste producer) or anyone who carries out pre-processing, mixing or other operations resulting in a change in the nature or composition of this waste."
- **"Waste holder"** means the waste producer or the natural or legal person who is in possession of the waste."
- **"Dealer"** means any undertaking which acts in the role of principal to purchase and subsequently sell waste, including such dealers who do not take physical possession of the waste."

- *“Broker” means any undertaking arranging the recovery or disposal of waste on behalf of others, including such brokers who do not take physical possession of the waste.”*

The WFD<sup>1</sup> and national laws spell out the obligations of every actor in the waste industry. In France, waste holders in treatment facilities must comply with the regulations of classified installations for environmental protection (ICPE). Waste storage and treatment sites must be ICPE registered subject to prefectural approval. The regional prefect can thus control waste management activities and mitigate their risks. In England, the environmental protection bodies oversee the application of the laws on waste. In England, this is the Environment Agency who will issue the appropriate environmental permits for the operation of waste facilities and monitor their performance in relation to the permit.

Key actors for the recovery and treatment of waste include:

- **Local communities:** municipalities in France organise household waste elimination and are sometimes in charge of local waste treatment companies. In England, municipalities are part of the “waste collection authorities” and of the “waste disposal authorities, who are responsible for municipal waste; the actual waste collection and treatment can be carried out by private companies contracted by the municipality. Commercial waste may be collected by a municipality or a private waste company, who will charge accordingly.
- **Territorial bodies:** In France, the NOTRe law of 2015<sup>10</sup> assigned the responsibility for non-hazardous waste to regions instead of departments. The action plan for the treatment and recovery of waste is now part of the Regional Plan for Waste Prevention and non-hazardous Waste Management.

### 3.6.2. Interpretation

In order to outline the legal requirements pertaining to various players of the value chain (see Figure 1 for an overview), each should be matched to one of the legal statuses laid out by the WFD<sup>1</sup>. Taking the recycling value chain of waste bedding items as a basis, each actor is legally viewed in the following ways:

- **Actor A** is a ‘waste holder’ because within the waste treatment plant they are in possession of the waste. Actor A is also a ‘waste producer’ in the sense that they carry out pre-processing, mixing or other operations resulting in a change in the nature or composition of this waste. Actor A could have the status of ‘waste dealer’ if they bought and sold waste as part of the waste treatment plant activities.
- **Actor B** buys the waste bedding from Actor A and transports waste from the waste treatment plant to an industrial facility. As such, Actor B is a ‘waste holder’ during the transportation activity. Actor B is also a ‘dealer’, as they buy the waste from Actor A and sell it to Actor C. **Actor C** is a ‘waste holder’ and a ‘dealer’ as they buy waste from Actor B and sell it to Actor D for sorting.
- **Actor D** sorts the bedding waste and separates it into polyester and non polyester. Because they change the composition of the waste, Actor D is a ‘waste producer’. In addition, they are a ‘waste holder’ for the duration of time for which they are in possession of the waste.
- **Actors F2 and E** store waste after Actor D sorted it, as such they are ‘waste holders’.

<sup>10</sup> LOI n° 2015-991 du 7 août 2015 portant nouvelle organisation territoriale de la République, <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000030985460/>



- **Actor G2** then transports the waste to the waste treatment plant for disposal. As such, Actor G2 is a 'waste holder' for the duration of the transport.
- **Actors E, G1, H1 and I** thus have no specific actor status related to waste because they are handling 'non-waste' products.
- **Actor F1** is a 'waste producer' because they generate waste when transforming the polyester into long polyester fibres.

## 3.7. Activities in the waste sector

### 3.7.1. Legal definition

The status of different waste handling activities is also defined in Article 3 of the WFD<sup>1</sup>. The most relevant ones to our analysis are the following:

- *"**Waste management**' means the collection, transport, recovery and disposal of waste, including the supervision of such operations and the after-care of disposal sites, and including actions taken as a dealer or broker."*
- *"**Collection**' means the gathering of waste, including the preliminary sorting and preliminary storage of waste for the purposes of transport to a waste treatment facility."*
- *"**Separate collection**' means the collection where a waste stream is kept separately by type and nature so as to facilitate a specific treatment."*

### 3.7.2. Interpretation

'Waste management' is defined very broadly, as presented above. Hence all activities presented in *Figure 1* where the good has the legal status of waste (**steps 1, 2, 3b and 4b**) are 'waste management' activities.

'Collection' includes sorting and preliminary storage of waste and thus includes step 1 – where sorting can occur between different areas of waste treatment – and steps 3b and 4b as well as the transport to the waste treatment plant by Actors G2 and H2. The route going through step 4b and actor H2 could be considered as 'separate collection', because the nature of the waste collected in this stream should be uniform.

## 4. Legal analysis

In this section, industrial actors wishing to set up a process to manufacture an innovative process may find the legal obligations and processes they must follow; as with the rest of this document, the production of an innovative low-carbon polyester thermal insulator using bedding waste is the focus though general rules may apply to other types of valorisation processes.

The key operations actors will need to perform are the following:

1. Collect waste
2. Store waste
3. Transform waste
4. Sell the insulator produced using waste
5. Produce waste
6. Dispose of waste

These operations are presented in a synthetic form in Figure 1. The nomenclature introduced in Figure 1 for actors and steps will be used throughout the analysis to signal where legislation applies.

### 4.1. Collecting waste

**In France**, the Waste Management Law (*Plan national de gestion des déchets*<sup>11</sup>) states that companies who transport waste must declare it to the regional prefect if they are transporting more than 500kg of non-hazardous waste. This declaration must be renewed every 5 years. Exemptions exist if the company transports waste that they produce and that the waste is registered for environmental protection. Furthermore, it defines the following obligations of the waste transporter<sup>12</sup>:

- *The waste transporter must transport waste towards waste management plants that conform to waste management regulations.*
- *They must commit to the lawful waste management of waste they were transporting and abandoned, dumped or transported to a destination that was not in line with waste management regulations.*
- *They must commit to informing the regional prefect without fail in the case of an accident or accidental dumping of waste.*

The import and export of waste are regulated by international laws such as the Basel Convention<sup>13</sup> and European laws such as law n°1013/2006<sup>14</sup>. These laws state that companies who import or export waste as well as companies who transport must comply to different legislations depending on:

- *The nature of the waste (dangerous or non-dangerous);*
- *The type of transfer (import or export);*

<sup>11</sup> Plan National de Gestion des Déchets

[https://www.ecologie.gouv.fr/sites/default/files/Plan%20national%20des%20dechets\\_octobre%202019.pdf](https://www.ecologie.gouv.fr/sites/default/files/Plan%20national%20des%20dechets_octobre%202019.pdf)

<sup>12</sup> <https://www.ecologie.gouv.fr/gestion-des-dechets-principes-generaux>

<sup>13</sup> Basel convention, <http://www.basel.int/>

<sup>14</sup> Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32006R1013>

- *The countries involved in the transfer (European Union Member State, Basel Convention signatory country, member of the Organization for Economic Co-Operation & Development (OECD), etc.);*
- *The type of operation (valorisation or elimination).*

In Article 12bis of the Anti-waste law for a circular economy<sup>15</sup> the regulations of international waste transport are presented and the sanctions for violations are referred to in Article L541-42 of the Environment Code<sup>14</sup>.

In England, any company transporting waste must file a request to the Environment Agency to be registered in a specific public register (public register of waste carriers, brokers and dealers). There is no minimum waste weight threshold beyond which an economic actor must obtain an authorisation, like in France. Exemptions exist but do not apply to waste bedding or polyester. The British law states that any person found transporting waste without authorisation can be condemned to pay a fine which may be up to £5,000. All details relative to this registration procedure are presented on the British government website<sup>16</sup>.

In England, in order to transfer ownership of a load of non-hazardous waste, a **waste transfer note** must be filled in with enough information to help the business taking care of the waste to handle and dispose of it safely. This can be done online<sup>17</sup>. Once this is filled in and signed a copy must be kept for 2 years. This note must be shown to an enforcement officer from the local council or the Environmental Agency if asked.

In England, the processes to follow to import or export waste are presented on the government website<sup>18</sup> within the Waste duty of care code of practice<sup>19</sup> and depend on the:

- treatment planned for the waste when it reaches its destination;
- country of destination and the transport route;
- waste type.

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<sup>15</sup> Loi anti-gaspillage pour une économie circulaire, 2020, <https://www.ecologie.gouv.fr/loi-anti-gaspillage-economie-circulaire-1>

<sup>16</sup> <https://www.gov.uk/waste-carrier-or-broker-registration>

<sup>17</sup> <https://www.gov.uk/managing-your-waste-an-overview/waste-transfer-notes>  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/311081/LIT\\_7932.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/311081/LIT_7932.pdf)

<sup>18</sup> Guidance, waste: imports and exports, <https://www.gov.uk/guidance/importing-and-exporting-waste#article-18>

<sup>19</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/759083/waste-code-practice-2018.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759083/waste-code-practice-2018.pdf)

## 4.2. Storing waste

The integration of waste storage and transformation activities in the production process of a manufacturer may render the classification of their facility to the authorities mandatory.

### France

In France, waste treatment plants must be registered as Facilities Classified for the Protection of the Environment (ICPE) before their commissioning. Depending on the level of danger presented by an exploitation, there are three types of classification (from least to most constraining): declaration, registration and authorisation. This classification procedure is necessary if the company's activity corresponds to one of the sector categories, or « rubrics », included in the ICPE nomenclature. A single company can be subject to several ICPE rubrics: for example, a material manufacturer wishing to use textile waste for their production must register their facilities separately for storage and transformation. We therefore present separately, for storage and transformation, the cases in which a company is required to demand an ICPE.

In our case actors who store bedding and polyester waste would most likely have to ask for an ICPE classification of Rubric 2714 for textile waste: *"Transit, gathering or sorting of non-hazardous waste of paper/cardboard, plastics, rubber, textiles, wood"*.

If a manufacturer stores between 100 m<sup>3</sup> and 1 000 m<sup>3</sup> of textile or plastic waste for recovery, they must make a declaration to the prefect. The regulatory constraints are then relatively limited. In the rubric 2714, the decrees of 14/10/2010 define the general prescriptions applicable to the ICPE. If a manufacturer stores more than 1000 m<sup>3</sup> of waste, they must file an authorisation and demonstrate risk level acceptability. A prefectorial decree can then authorise the facility to operate and set specific operating constraints on a case by case basis. Table 1 summarises this information:

Volume susceptible to be present in the facility:	ICPE classification regime	General prescription rubric 2714
1. Greater or equal to 100 m <sup>3</sup> but inferior to 1 000 m <sup>3</sup> .	<b>Declaration</b>	14/10/10 Decree
2. Greater or equal to 1 000 m <sup>3</sup> ;	<b>Authorisation</b>	-

Table 1: ICPE classification applied to the project

Article 6ter of the Anti-waste law for a circular economy of 2020<sup>15</sup> states that communal waste disposal and treatment facilities must dedicate a section of their facilities to **reusable objects** so that people can occasionally come and collect objects in a good state and reuse them directly or with little repair<sup>20</sup>. This is a new obligation for communal waste disposal and treatment facilities in France and it must be taken into account by actors performing such activities. Article 5A of the same law<sup>15</sup> presents the fines that apply to actors who manage or transfer waste illegally.

Transformation of waste in France requires the actor performing it to register their facility with an ICPE classification under Rubric 2791 for textile waste: *"non-hazardous waste treatment facility"*. As shown in Table 2, if the manufacturer deals with less than 10 tons of waste per day, they must make a declaration and follow the standards introduced in the 23/11/2011 decree. If the actor handles more than 10 tons of waste per day, the company must be granted an authorisation.

<sup>20</sup> Article L. 2224-13 du code général des collectivités territoriale

Volume of treated waste	ICPE classification regime	General prescription
1. Inferior to 10 tonnes/day	<b>Declaration</b>	23/11/11 Decree
2. Greater or equal to 10 tonnes/day	<b>Authorisation</b>	Prefectoral Order

Table 2: Threshold for the quantity of waste treated in 2791 rubric

Overall, requirements depend on the volume stored and weight of waste handled per day by the waste storage and treatment facility. Requirements are summarised in Table 3.

Type of waste	Storage operation	Transformation operation
Textile waste	Volume of waste > 100m <sup>3</sup> Rubric 2714	Quantity of waste > 0 ton/day Rubric 2791

Table 3: minimum thresholds for an ICPE classification (all regimes combined) by type of operation

## England

In England, waste storage and treatment facility managers must apply for an **Environmental Permit** from the Environment Agency, unless their activity qualifies for exemptions presented on the government's website<sup>21</sup>. Requirements to qualify for storage waste exemptions are listed on the government website<sup>22</sup>. However, you cannot qualify for such an exemption if you are storing waste that was produced elsewhere, as is the case for **Steps 2, 3b and 4b** on Figure 1 in this project (it should however be noted that this applies to waste that is stored at the non-producer site; but there are other exemptions which do not need to be registered as they are non-WFD for those that are produced and stored at the same site). S1 is also relevant to textiles stored in a secure container of 400 m<sup>3</sup>. S2 waste exemptions exist for storing but not treating certain types of waste<sup>23</sup>. Relevant ones to the project are:

- Waste codes 070213, 120105, 191204, which allow to store plastic up to 500 tonnes and 12 months;
- And waste codes 040222, 191208, 200111, which allow textiles and clothes to be stored up to 1000 tonnes up to 12 months.

Bedding waste does not specifically feature in the List of Waste (LoW) Regulations, but industrial actors in England should check with their local authorities if they can obtain exemptions considering bedding is a mix of plastics and textiles. The exemption is free and must be renewed every three years.

<sup>21</sup> <https://www.gov.uk/government/collections/waste-exemptions-storing-waste>

<sup>22</sup> <https://www.gov.uk/guidance/waste-exemption-nwfd-2-temporary-storage-at-the-place-of-production--2>

<sup>23</sup> <https://www.gov.uk/guidance/s2-waste-exemption-storing-waste-in-a-secure-place>

### 4.3. Waste sorting, transformation and traceability

#### France

Throughout the chain of waste, in France, all parties – producers, collectors, transporters, traders and operators of transit, pooling or waste treatment facilities – must keep a register of all the information regarding the waste they handle. The February 29, 2012<sup>24</sup> decree outlines the content of these registers for all types of waste handling actors. The most relevant roles and registers for this project are the following:

- **“Waste transporters and collectors”** must keep a chronological register of the collected or transported waste. All the information that must feature is listed in Article 3 of the decree<sup>24</sup>.
- **“Operators of facilities of transit, gathering, sorting or treatment of waste”** must keep a chronological register recording all incoming waste. The information that must be recorded is presented in Article 1 of the decree<sup>24</sup>.
- If a manufacturer **recovers waste**, they must keep a chronological register of the substances or objects that they have transformed and of the remaining waste, as stated in Article 5<sup>24</sup>.

Figure 3 summarises the recordkeeping requirements for each of these activities. Since the type of register kept depends on the activity, one actor may have to keep several records if they perform different waste-handling activities. All registers must be kept for a minimum of three years and must be accessible to the authorities in paper or digital format.

Failure to comply with these traceability obligations (no waste tracking record, allocation of transport to unauthorised actors, etc.) exposes the actor at fault to imprisonment up to 2 years and a fine of up to 75 000€. Further record-keeping obligations apply to the handling of dangerous or asbestos waste, but these should not be relevant to this project.

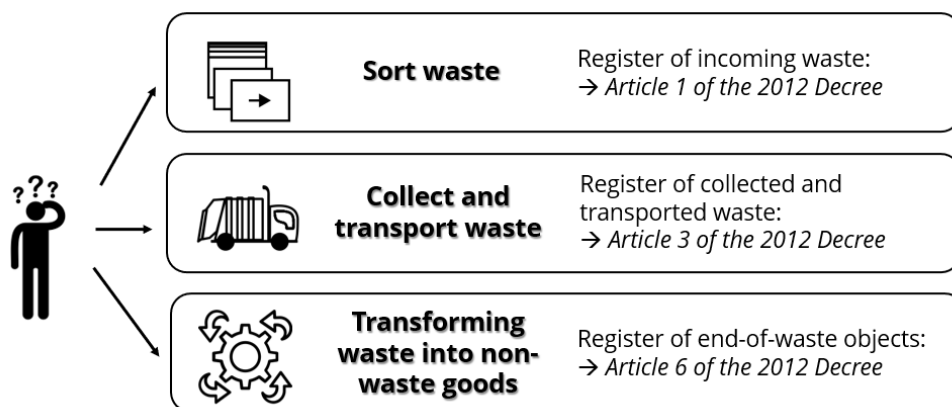


Figure 3: Waste traceability obligations for different actors in France as presented in the 2012 Decree<sup>24</sup>

<sup>24</sup> Decree of the 29th of February 2012 setting the content of the registers mentioned in the R. 541-43 et R. 541-46 articles of the code of the environment:  
<https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000025454959&dateTexte=20171010>

## England

In England, exemptions from needing an environmental permit exist for waste treatment and recovery<sup>25</sup>. However, no specific exemption exists for waste bedding, as it is not currently recovered in practice. However, there are the following exemptions which are likely to be relevant:

- T2 waste exemption: recovering textiles – 20,000 tonnes can be stored at any one time; this is for laundering and cleaning for codes 191208, 200110 and 200111 (textiles and clothing)<sup>26</sup>
- T4 waste exemption: preparatory treatments, such as, baling, sorting, shredding – it is likely that the bedding will need to be baled, this allows for 1,000 tonnes outside in any 7-day period 3,000 tonnes inside in any 7-day period; and the storage of up to 1,000 tonnes at any one time<sup>27</sup>.
- U9 waste exemption: using waste to manufacture finished goods – this covers textiles and plastics; 1,000 tonnes of textiles and 500 tonnes of plastic at any one time can be used

. In order to legally transform waste into non-waste, actors need to meet the end-of-waste criteria set out by the EU and in England<sup>28</sup>, as presented in Section 2.3. Before starting a waste recovery activity, actors should reach out to the Environmental Agency and apply for relevant authorisations depending on their specific activity<sup>29</sup>.

## 4.4. Selling the insulator

This section tackles the legal framework as well as evaluative processes a manufactured product would need to go through in order for the finished product to be sold on the market (either directly to consumers or to bulk distributors). A more in-depth roadmap of all necessary evaluations, certifications, labels, etc. required for optimal marketability. This roadmap will be focused on the three prototypes the BIO-CIRC partners intend to produce. The section below is more generic to insulation product manufacturing and to waste valorisation value chains.

### 4.4.1. Certifications and technical evaluations

In order to sell products to a building professional, manufacturers must demonstrate their products are fit for purpose and meet the claims made for their respective products.. This can be demonstrated through evaluations and certifications demonstrate. Construction managers need to certify quality to qualify for building warranties for example. This section will introduce the different types of evaluations and certifications needed for the commercialisation of a product. The role these technical and normative documents play in the insurance considerations of the construction manager will then be presented.

<sup>25</sup> <https://www.gov.uk/government/collections/waste-exemptions-treating-waste>

<sup>26</sup> <https://www.gov.uk/guidance/waste-exemption-t2-recovering-textiles>

<sup>27</sup> <https://www.gov.uk/guidance/waste-exemption-t4-preparatory-treatments-baling-sorting-shredding-etc#textiles>

<sup>28</sup> <https://www.gov.uk/guidance/turn-your-waste-into-a-new-non-waste-product-or-material>

<sup>29</sup> <https://www.gov.uk/guidance/waste-recovery-plans-and-permits>



## Mandatory European evaluations: CE marking and European Technical Evaluation

In order to access the European Market, products must comply with the requirements of the European regulations and directives. Construction products must meet the requirements of the Construction Product Regulation<sup>30</sup>. Most of them, including thermal insulation materials, are subject to this regulatory framework and must therefore obtain CE marking.

To obtain the CE marking, two scenarios arise. In one case, a harmonised standard exists for this product. The manufacturer just needs to certify that their product meets the characteristics of this standard for commercialisation in Europe. **If the good does not match any existing standard, the manufacturer can place the product on the market without a CE mark but they must request a European Technical Evaluation (ETE) if they wish to obtain a CE mark.** The ETE certifies the technical performance of the material for a given use. Because no harmonised standard exists today for insulators made using polyester from waste bedding, manufacturers (**Actors H1** and **I** on Figure 1) must obtain an ETE to get the CE marking for the insulator..

## Voluntary evaluations in France

### 1. The Technical Notice and Technical Application Document

The Technical Notice and Technical Application Document are assessments made by expert committees led by the Scientific and Technical Centre for Construction<sup>31</sup> that examine the suitability of a material for a given use. If the material requires CE marking, it should get the Technical Application Document; if not, it should obtain a Technical Notice. **For thermal insulation products, the manufacturer should apply for a Technical Application Document.**

### 2. Technical Appreciation of Experimentation

The Technical Appreciation of Experimentation is an evaluation procedure that is faster than the Technical Notice and Technical Application Document and aims to promote innovation in construction. It is usually completed before a Technical Notice request, to inform consumers of the reliability of a product before enough feedback is collected to complete more formal documents.

## Certification in France

In France, certification is a voluntary process, which guarantees to the consumer that products have satisfactory performances and are manufactured reliably and consistently. For insulators, the **certification is overseen by the ACERMI**<sup>32</sup>.

## Insurance and incentive schemes for construction managers in France

Since 1978, the prime contractor of a construction site in France is responsible for any damage occurring on the site for 10 years after the start of the work. They must subscribe to a decennial liability insurance to cover the guarantee they owe the project owner. Therefore, the implementation of a new material must fit into the scope of the decennial liability insurance. Each insurance company defines their own requirements, but they must all meet the recommendations

<sup>30</sup> Règlement de produit de construction RPC 305/2011, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R0305>

<sup>31</sup> CSTP : Centre Scientifique et Technique du Bâtiment

<sup>32</sup> Association pour la certification des matériaux isolants



of the Products Prevention Commission<sup>33</sup>, overseen by the Construction Quality Agency. **If a technique is recognised by a European Technical Evaluation, a Technical Notice or Technical Application Document, or a Technical Appreciation of Experimentation with a favourable opinion, it should be accepted by insurance companies.**

If not, the technique of fabricating the insulator is classified as “uncommon” and construction managers will need to ask for an extension of guarantee from their insurer which is likely to generate additional costs. The construction manager and insurer negotiate the insurance price depending on the manager’s professional experience and on the use of the material (high risk in weight bearing roles). It is not necessarily a deal breaker to use a “uncommon” technique to manufacture an insulator but it could generate additional costs for the end-client and thus be avoided on such grounds. Figure 4 illustrates the influence of technical evaluations on construction managers’ access to insurance schemes.

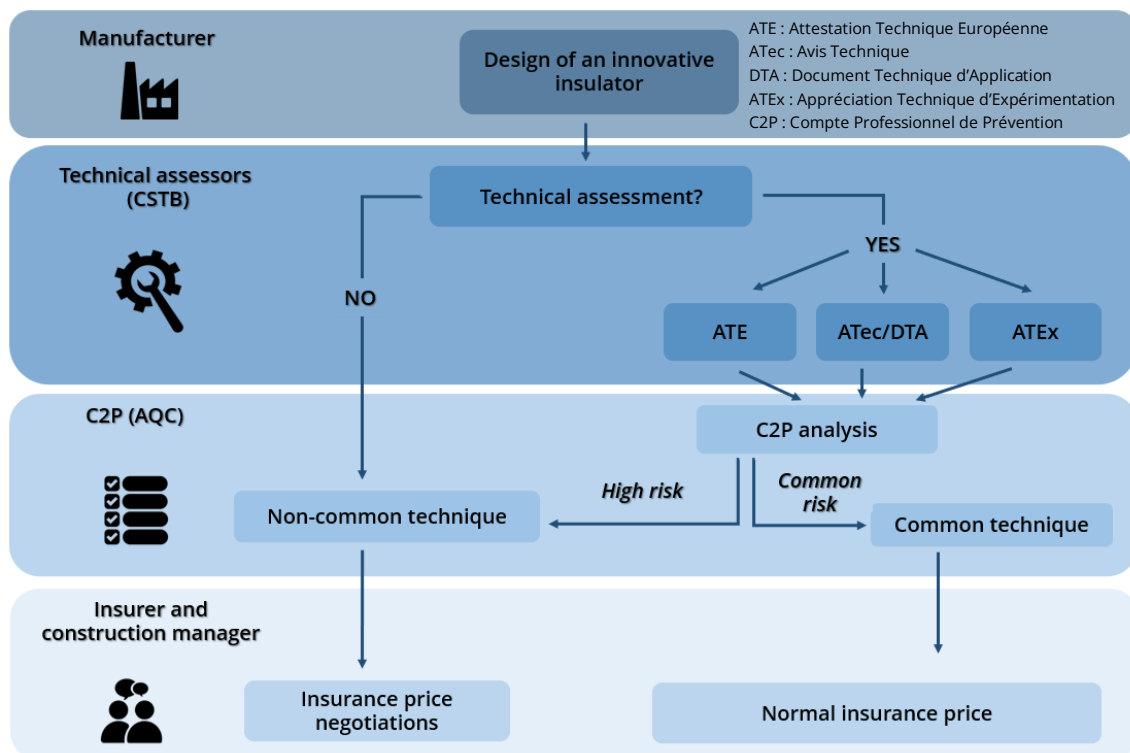


Figure 4: technical evaluations and insurance prices for construction managers

Certifications are also used for the commercial development of an innovative product. They can allow manufacturers and construction managers to benefit from fiscal advantages to promote the implementation of sustainable construction materials and techniques. The ACERMI certification for insulation materials is required to obtain the Energy Saving Certificate<sup>34</sup> or the Energy Transition Tax Credit<sup>35</sup>. The ACERMI certification thus gives manufacturers access to new markets when developing an innovative product.

## Evaluations and Certifications in the UK

<sup>33</sup> Commission Prévention Produits (C2P)

<sup>34</sup> Certificat d'économie d'énergie (CEE)

<sup>35</sup> Crédit d'impôt pour la transition énergétique (CITE)

3 sets of Building Regulations are in force in the UK covering England & Wales, Scotland and Northern Ireland. All 3 provide regulations for materials and workmanship and all 3 provide similar guidance on ways to establish fitness of materials.

#### 1. CE Marking under the Construction Products Regulation

It should be noted that in Great Britain, the CE mark will be replaced by the UK Conformity Assessment (UKCA) mark from 1<sup>st</sup> January 2021 although there is a transition period allowing the use of the CE mark until the 1<sup>st</sup> January 2022. Similarly, the CE mark will be replaced in Northern Ireland with the UKNI mark.

#### 2. CE Marking under other EU directives and regulations.

As above, it should be noted that in Great Britain, the CE mark will be replaced by the UK Conformity Assessment (UKCA) mark from 1<sup>st</sup> January 2021 although there is a transition period allowing the use of the CE mark until the 1<sup>st</sup> January 2022. Similarly, the CE mark will be replaced in Northern Ireland with the UKNI mark.

#### 3. British Standards

Currently most, but not all British standards are British versions of harmonised European standards. The potential now exists for divergence between British standards and European standards. It is feasible if standards diverge sufficiently, that European standards may cease to be valid in the UK. Standards are currently equivalent but this should be a consideration as part of any long term strategic planning.

#### 4. Other national and international technical specifications

An international technical specification, including those prepared by ISO, or a national technical specification of a country other than the UK, may be used to demonstrate that a product not covered by a harmonised European standard or British standard meets the performance requirements of the Building Regulations.

#### 5. Independent certification schemes

Although independent certification schemes provide an effective means of demonstrating fitness for purpose, products which are not certified by an independent scheme may still conform to a relevant standard.

Accreditation of a certification body by a national accreditation body belonging to the European co-operation for Accreditation (EA) provides a means of demonstrating that their certification scheme can be relied upon. Under an amendment to its articles UKAS remains a member of EA until the 31st January 2022. This has a bearing on exports from the UK to EU-27 countries. In addition, UKAS is also UK approved body, equivalent to an EU notified body. The requirements for CE, UKCA or UKNI marking do not apply to independent certification schemes.

#### 6. Tests and calculations

Where there is no relevant harmonised European standard, tests, calculation or other means may be used to demonstrate that the material can perform the function for which it is intended. Following Brexit, UKAS or an equivalent UK approved body may accredit the testing laboratories as means of showing that the tests can be relied on.

#### 7. Past experience

Past experience, such as in a building in use, may show that the material is capable of performing the function for which it is intended.

#### 8. Sampling

Local Authorities have the power to take samples of materials either used or to be used in building work, to establish if that material complies with the provisions of the Building Regulations.

## 4.4.2. Encouraged use of recycled materials in construction

### France

The 2020 *Anti-waste law for a circular economy*<sup>15</sup> includes Articles encouraging reuse and recycling of materials. Article 6 *bis* states that government entities of all levels should, wherever possible, favour reused goods or goods containing recycled materials and include such criteria in their public call for tender specifications. Article 6 *quater* states that from January 1<sup>st</sup> 2021, goods acquired by the State and its entities must be reused or include 20% to 100% recycled materials depending on the type of product (except if this threatens national security or is technically unfeasible). A Decree from the State Council must list all product categories and their associated percentage of reused goods or waste or recycled materials. Finally, Article 6 *quinquies A* says that public projects must take into account greenhouse gas emissions mitigation and carbon storage considerations and must favour the use of materials that are either reused or come from renewable sources<sup>36</sup>.

### England

There are no specific requirements to use recycled materials in construction in England. However, there are a number of drivers such as the use of environmental certification schemes such as BREEAM<sup>37</sup> which provides credits for materials with a lower environmental impact (which may include recycled content); some clients/developers may set targets for recycled content. The Waste Resources and Action Programme (WRAP) in the past undertook a large body of work encouraging organisations to set recycled content by value targets, at 20%<sup>38</sup>. Some organisations still use this target.

### Implications

Overall, when a good acquires the status of waste, legal and administrative obligations arise and control its handling in order to ensure health and safety standards are met. However, in recent years, governments have actively encouraged and committed to the reuse of goods, reuse of waste and use of recycled materials in State funded projects, including construction projects. This means that once the insulator is certified to match European and national **standards in both France and England, there should be a growing demand for products that contain recycled content due to their lower environmental impact, being driven by net zero requirements and also by more circular economy strategies.**

<sup>36</sup> Article L. 228-4 du code de l'environnement

<sup>37</sup> <https://www.breeam.com/>

<sup>38</sup>

<https://www.wrap.org.uk/sites/files/wrap/Delivering%20higher%20recycled%20content%20in%200construction%20projects.pdf>

## 4.5. Producing waste

If the manufacturer, in the process of handling or transforming waste, produces waste of its own then it will become, from a legal standpoint, a waste producer. In this situation, the actor is subject to specific regulations outlined below.

### 4.5.1. Obligations of the waste producer

#### Europe and England

The WFD<sup>1</sup> introduces obligations for waste producers and holders, which have been transposed into French and British law. The obligations are the following:

- **Prevention:** anyone whose activity could lead to waste production must limit:
  - The amount of waste they generate;
  - The threat this waste presents for the environment and human health.
- **Re-use, recovery and recycling:** if they cannot prevent the production of waste, waste producers should prepare their waste for re-use, recovery or recycling in this order of preference. Indeed, re-use enables the product (with or without the status of waste) to be used again in the same function or a different one. Recovery is the process of using waste to fulfil a function otherwise fulfilled by another substance. Finally, recycling is the transformation of waste into products.
- **Disposal:** when reuse, recovery and recycling are not possible, disposal should be carried out in a way that protects the environment and human health and safety.
- **Transparency and traceability:** Waste producers must record and provide information on the production, collection, transport, treatment and disposal of the waste they generate. Up-to-date Waste Monitoring Forms<sup>39</sup> ensure accurate tracking of waste management steps.
- **Extended producer responsibility:** "Every company is responsible for managing the waste it produces and/or holds until it is disposed of or ultimately recovered, even when the waste is transferred to a third party for processing. It must ensure that its disposal complies with regulations." The waste producer is thus responsible for their waste until its complete elimination or exit from the status of waste. In France, article L541-10 of the Environment Code<sup>4</sup> extends this responsibility to all actors involved in the waste management process, making all actors jointly liable. As yet, there are no EPR schemes for construction products in England, though there is a commitment in the Resources and Waste Strategy to look at the possibility of introducing them<sup>40</sup>.

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<sup>39</sup> BDS : bordereau de suivi

<sup>40</sup> <https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england>

In both France and England, laws ensure the application of the obligations set out by EU law. In France, additional measures have been voted into law in 2020. The measures will be applied between 2020 and 2030 depending on cases.

## France

Article 7 of the 2020 *Anti-waste law for a circular economy*<sup>15</sup> presents the obligations of the waste producer. Firstly, activities related to fabricating, selling or providing products that generate waste can be tightly regulated or even forbidden, in order to reduce and aid the handling of such waste. Then, depending on the product of interest, the article sets the minimal share of recycled materials that must be used to produce it. Thirdly, authorities can request the waste producer to present the percentage of recycled materials they use in their products, any potentially dangerous materials used and the process for the handling of waste stemming from dangerous substances, with a risk assessment. Finally, Article 7 presents the sanctions associated with not respecting the aforementioned obligations or not reaching the goals they must reach by law.

Article 8 of the 2020 *Anti-waste law for a circular economy*<sup>15</sup> presents the obligations of any physical or moral person who designs, manufactures, handles, treats, sells or imports waste generating products:

1. Contribute to waste prevention and handling, while adopting an eco-design approach to manufacturing.
2. Support the extension of a product's lifetime: by manufacturing products while planning for effective maintenance and supporting networks of reuse and repair.
3. Support development assistance projects for waste collection and treatment.
4. Develop the recycling of waste from handled products.

Article 8 also delineates in what capacity waste producers must contribute to eco-organisms to cover the costs of waste prevention, collection, transport and treatment. Article 8 *bis* sets the goals and timelines for reuse and recycling by type of product and industry. The law then presents the modalities of waste sorting in Article 9 *bis* A. All waste producers, from January 1<sup>st</sup> 2025, must organise the sorting of their waste if it is not treated on site. This includes paper, metal, plastic, glass, wood and textiles for general waste owners and producers and wood, minerals, metal, glass, plastic and plaster for construction waste owners and producers. The sanctions for not respecting these modalities are presented in Article 9 *bis* B. They include 2 years in prison and a 75 000 euro fine. In Article 9 *ter*, the creation of an agency to oversee waste producers' obligations is introduced.

### 4.5.2. Hierarchy of waste treatment

The WFD<sup>1</sup> introduces a hierarchy with respect to the treatment of waste to guide the behaviour of potential waste producers. This hierarchy defines the treatment from most to least desirable: prevention, re-use, treatment, recovery, preparing for re-use, recycling and disposal. For each of these measures, a formal definition is provided. It is quoted here directly from the WFD<sup>1</sup>.

- “ **‘prevention’** means measures taken before a substance, material or product has become waste, that reduce:

(a) the quantity of waste, including through the re-use of products or the extension of the life span of products;

(b) the adverse impacts of the generated waste on the environment and human health;  
or

(c) the content of harmful substances in materials and products;

- **'re-use'** means any operation by which products or components that are not waste are used again for the same purpose for which they were conceived;
- **'treatment'** means recovery or disposal operations, including preparation prior to recovery or disposal;
- **'recovery'** means any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II sets out a non-exhaustive list of recovery operations;
- **'preparing for re-use'** means checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing;
- **'recycling'** means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations;
- **'disposal'** means any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I sets out a non-exhaustive list of disposal operations".

## Implications

This project is directly in line with the underlying mindset of European and national legislation, in the sense that it recycles bedding waste, which is otherwise buried in landfills or burned for energy both in France and England. These aforementioned elements may be relevant to any future manufacturers as their production line may also be a source of 'clean' waste. As such, these stakeholders may need to follow these general guidelines even though the materials they use are or used to be waste.



## 4.6. Waste disposal, treatment and end-of-life

### 4.6.1. Business and commercial waste development

Waste disposal follows European directives both in France and England. In addition, the UK government website presents legal responsibilities for the disposal of business and commercial waste<sup>41</sup>. The main responsibilities for businesses are to prevent, reuse, recycle or recover waste in this order. Then, they should sort and store waste safely and securely. A waste transfer note should be completed for each load of waste that leaves the company premises. Finally, the company should check their waste carrier is registered to dispose of waste and not allow them to dispose of their waste illegally. There are extra responsibilities if dealing with hazardous waste, but this should not be relevant to this project.

Waste collection and sorting regulations are presented in sections 3.1. and 3.2. for **Actors B and D** in Figure 1, for the collection and sorting of existing waste. The same regulations apply for the waste generated from the project for **Actors G2 and H2**. In France, Article 8 *quinquies* of the 2020 *Anti-waste law for a circular economy*<sup>15</sup> reaffirms the responsibility of municipalities to ensure the collection, transport and treatment of household waste in France.

### 4.6.2. Waste treatment hierarchy

The WFD<sup>1</sup> introduces a waste treatment hierarchy in addition to the waste hierarchy presented in section 3.5.2. This stresses once again the importance prevention and preparation for reuse on the manufacturing front. In terms of waste treatment, the hierarchy from most to least desirable is recycling, recovery and elimination.

- **Recycling** is split into closed-loop recycling, where the recycled raw material is used for the same application as the original material, and open-loop recycling, where it is used for a different application.
- **Recovery** is the process by which waste is used as a substitute for other substances in a process. This includes “energetic recovery”, where waste is used as a substitute for fuels to produce heat or energy.
- **Elimination**: Defined as the waste treatment process to be used in last resort, this treatment method can consist of landfill disposal, burial or incineration without energetic recovery. In the case of waste treated by elimination, it is called “ultimate waste”, to the extent that it is no longer likely to be reused or recovered by technically practicable processes.

The definition of the “preparation for reuse” suggested by the European directive<sup>1</sup> can lead to confusion, to the extent that it does not differentiate two types of reuse, that are clearly different in French law. Reuse as “*réemploi*” is defined as “any operation by which non-waste products or components are used again for the same purpose for which they were designed”. “*Réemploi*” is therefore a waste prevention method, which reuses a good without it going through the status of waste. Reuse as “*réutilisation*” is defined in the Environmental Code<sup>4</sup> as “any operation by which substances, materials or products that have become waste are used again”. It therefore applies to goods that have already acquired the status of waste.

<sup>41</sup> Dispose of business and commercial waste (<https://www.gov.uk/managing-your-waste-an-overview>)

## Implications

The waste treatment hierarchy favours waste treatment methods that have the lowest environmental impact. However, the application of this hierarchy is not strictly enforced, with a notable lack of case law in the national law of EU member states on the hierarchy of waste treatment. Moreover, the WFD<sup>1</sup> as well as the French and British laws provide exemption possibilities from following this hierarchy “if economic, social or environmental reasons exist”.

In France, there is no formally defined process to obtain such a derogation for a waste producer or owner. The nature of the documents to be provided to justify exceptions to the hierarchy is unclear. Therefore, “it seems unlikely that a waste producer or owner will need to justify the respect of the hierarchy”. In England, the government has defined cases for which it is recommended to derogate from the hierarchy. Beyond these recommendations, there is no official procedure to obtain a derogation or to control and punish eventual offenders. These subtleties will not affect the project directly, as long as waste producing actors (mainly **Actors D** and **F1**) prevent the production of waste as much as reasonably feasible.



## 5. Practical guide explanatory note

The guide produced is composed of the **production flow** starting from bedding waste to marketable insulator and the **legal requirements** associated with performing waste handling actions as part of this production process. In the production flow, each step features the actor performing it, the action performed, the nature of the substance alongside its legal waste or non-waste status and the type of facility in which it occurs.

The reader can start at step 1, where waste bedding is stored in a waste treatment plant. Then, Actor B transports the waste bedding to a storage facility, where it is stored by Actor C. After this, Actor D sorts the waste bedding into useful polyester (step 3a) and other materials (step 3b), which are eventually disposed of in a waste treatment plant (step 1). The useful polyester in step 3a is transformed into polyester fibres for insulation material manufacturing (step 4a) by Actor F1. This process may generate waste (step 4b), which gets disposed of by Actor H2 and returns to the waste treatment plant (step 1). Actor G1 then receives the non-waste polyester fibres in step 4a and Actor H1 uses it to produce a marketable thermal insulating material, which is sold to the construction industry in step 5.

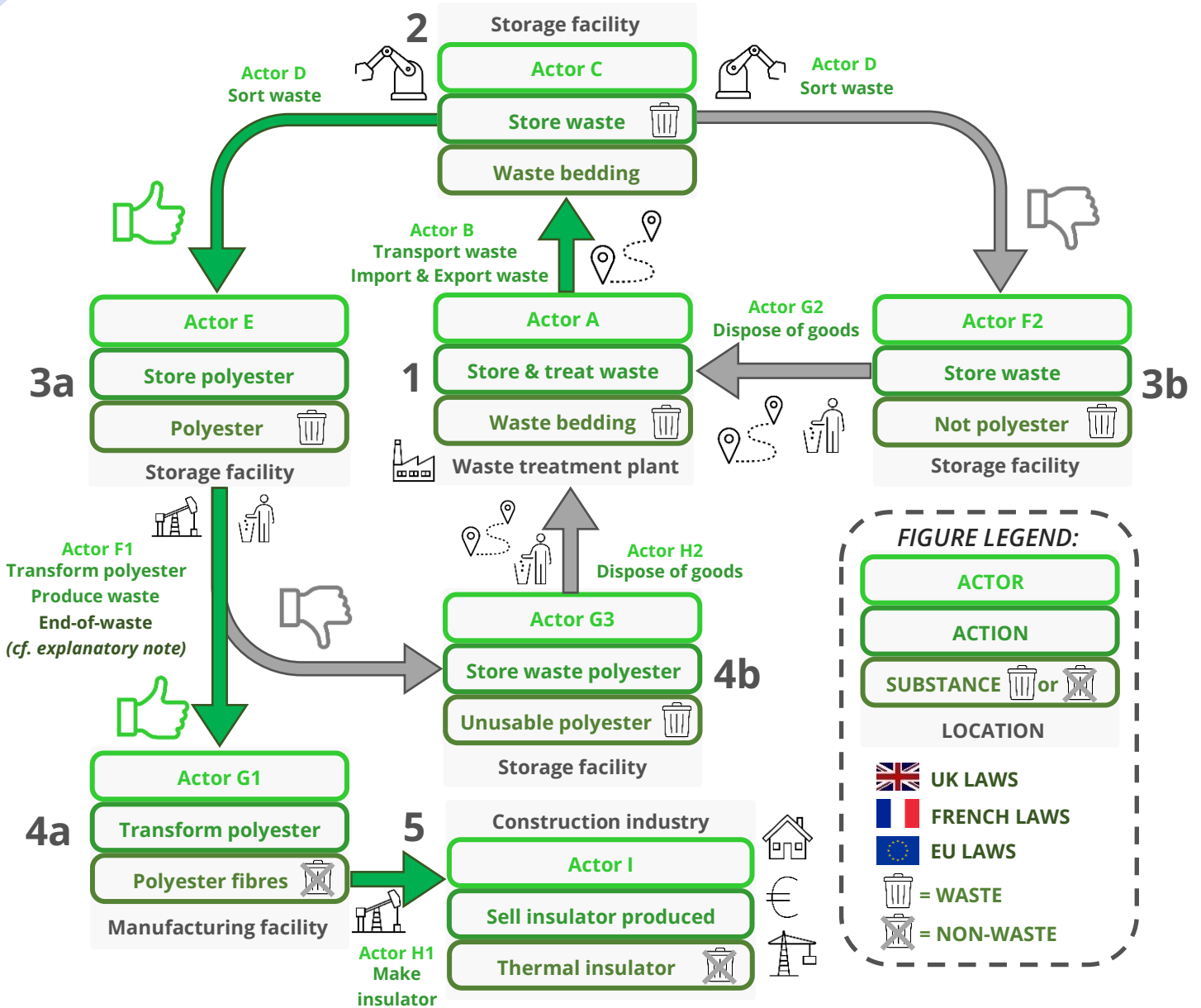
In the transformation performed by Actor F1 it will be assumed that the polyester goes through a cleaning process as well as a specific transformation that gives it the standard properties of a marketable product. Therefore, it will be assumed that Actor F1 performs the key operation that enables the polyester to meet the European end-of-waste criteria. Depending on the type of sorting operation performed by Actor D, end-of-waste could also occur between step 2 and step 3a and the polyester in step 3a could have the status of non-waste. The assumption of the guide is the most conservative, in order to ensure no actors overlook waste legislation when it could apply to them.

The target reader of this legal analysis should:

1. **Identify with at least one actor** presented in the guide by recognising the actions they perform as part of the production process.
2. **Refer to each waste-handling action** presented in the lower half of the guide to find the key legal requirements they are subjected to in Europe, France and England.
3. **Gain further understanding** of the implications of such requirements and the specific procedures to follow by reading the relevant sections of the present legal analysis.
4. **Refer to European, French and English law** to ensure their planned activities are lawful before starting to perform any waste handling activity.

Finally, this legal analysis serves the purpose of gathering information from the European, English and French legal systems to make it more accessible to industrial actors but is in no way legally binding. French, English and EU legislation prevail on any content included in this analysis.

**Figure 5 (next page): Practical guide of the legal framework regulating the production of low-carbon insulating materials using waste bedding, from waste collection to thermal insulator commercialisation**



**TREAT WASTE:**  
 Respect waste treatment hierarchy from WFD\*1:  
 4. Recycle  
 5. Recover  
 6. Eliminate  
 \*WFD: waste framework directive

**TRANSFORM WASTE:**  
 Apply: Environmental Permit<sup>21</sup>  
 Waste Transfer Note<sup>17</sup>  
 Test waste<sup>31</sup>  
 Keep register of handled waste<sup>24</sup>

**STORE WASTE:**  
 Apply: Environmental Permit<sup>21</sup>  
 Waste Transfer Note<sup>17</sup>  
 Register facility as ICPE\*9  
 \*ICPE: Installations classées pour la protection de l'environnement (facilities registered for the protection of the environment)

**SELL THE INSULATOR:**  
 Get ACERMI\* certification<sup>24</sup>  
 Meet the Construction Product Regulation<sup>32</sup> requirements  
 Pass ETE\*\* to obtain CE marking  
 \*ACERMI: Association pour la Certification des Matériaux Isolants  
 \*\*ETE: European Technical Evaluation

**TRANSPORT WASTE:**  
 Waste Transfer Note<sup>17</sup>  
 Declare transport to prefect<sup>11</sup>  
 Register transported waste<sup>24</sup>  
**Import & export waste:**  
 Regulation (EC) 1013/2006<sup>14</sup>  
 Waste Duty of Care Code of Practice<sup>17</sup>  
 Basel Convention<sup>13</sup>

**PRODUCE WASTE:**  
 Respect waste producer's obligations and waste hierarchy from WFD\*1  
 2020 waste law\*\*15: additional waste producer obligations  
 \*WFD: waste framework directive  
 \*\*Loi anti-gaspillage pour une économie circulaire, 2020

**END-OF-WASTE:**  
 Substance must meet European end-of-waste criteria (WFD\*1)  
 Pass end-of-waste assessment or comply with a Quality Protocol  
 Pass end-of-waste assessment  
 Match implicit end-of-waste criteria<sup>8</sup>  
 \*WFD: waste framework directive

## References

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- <sup>2</sup> Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, Official Journal L 182, 16/07/1999 P. 0001 – 0019 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31999L0031>
- <sup>3</sup> Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control), <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32010L0075>
- <sup>4</sup> Code de l'environnement, [https://www.legifrance.gouv.fr/codes/texte\\_lc/LEGITEXT000006074220/2020-09-14/](https://www.legifrance.gouv.fr/codes/texte_lc/LEGITEXT000006074220/2020-09-14/)
- <sup>5</sup> The Waste (England and Wales) Regulations 2011: <http://www.legislation.gov.uk/uksi/2011/988/contents/made>
- <sup>6</sup> <https://www.gov.uk/government/publications/isitwaste-tool-for-advice-on-the-by-products-and-end-of-waste-tests>
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- <sup>8</sup> *Registration, Evaluation and Authorisation of Chemicals regulation* <https://echa.europa.eu/regulations/reach/understanding-reach>
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- <sup>11</sup> Plan National de Gestion des Déchets [https://www.ecologie.gouv.fr/sites/default/files/Plan%20national%20des%20dechets\\_octobre%202019.pdf](https://www.ecologie.gouv.fr/sites/default/files/Plan%20national%20des%20dechets_octobre%202019.pdf)
- <sup>12</sup> <https://www.ecologie.gouv.fr/gestion-des-dechets-principes-generaux>
- <sup>13</sup> Basel convention, <http://www.basel.int/>
- <sup>14</sup> Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32006R1013>
- <sup>15</sup> Loi anti-gaspillage pour une économie circulaire, 2020, <https://www.ecologie.gouv.fr/loi-anti-gaspillage-economie-circulaire-1>
- <sup>16</sup> <https://www.gov.uk/waste-carrier-or-broker-registration>
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- <sup>23</sup> <https://www.gov.uk/guidance/s2-waste-exemption-storing-waste-in-a-secure-place>
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- <sup>25</sup> Environmental Protection Act 1990 <https://www.legislation.gov.uk/ukpga/1990/43/contents>
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- <sup>31</sup> <https://www.gov.uk/guidance/waste-acceptance-procedures-for-waste-recovery-on-land>
- <sup>32</sup> Règlement de produit de construction RPC 305/2011, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R0305>
- <sup>33</sup> CSTP : Centre Scientifique et Technique du Bâtiment
- <sup>34</sup> Association pour la certification des matériaux isolants
- <sup>35</sup> Commission Prévention Produits (C2P)
- <sup>36</sup> Certificat d'économie d'énergie (CEE)
- <sup>37</sup> Crédit d'impôt pour la transition énergétique (CITE)
- <sup>38</sup> Article L. 228-4 du code de l'environnement
- <sup>39</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/794157/SR2010\\_No7.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/794157/SR2010_No7.pdf)
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- <sup>42</sup> <https://www.legislation.gov.uk/ukxi/2005/621/made>
- <sup>43</sup> <http://aei.pitt.edu/8582/1/8582.pdf>
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**BIO-CIRC Project**

European Regional Development Fund

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