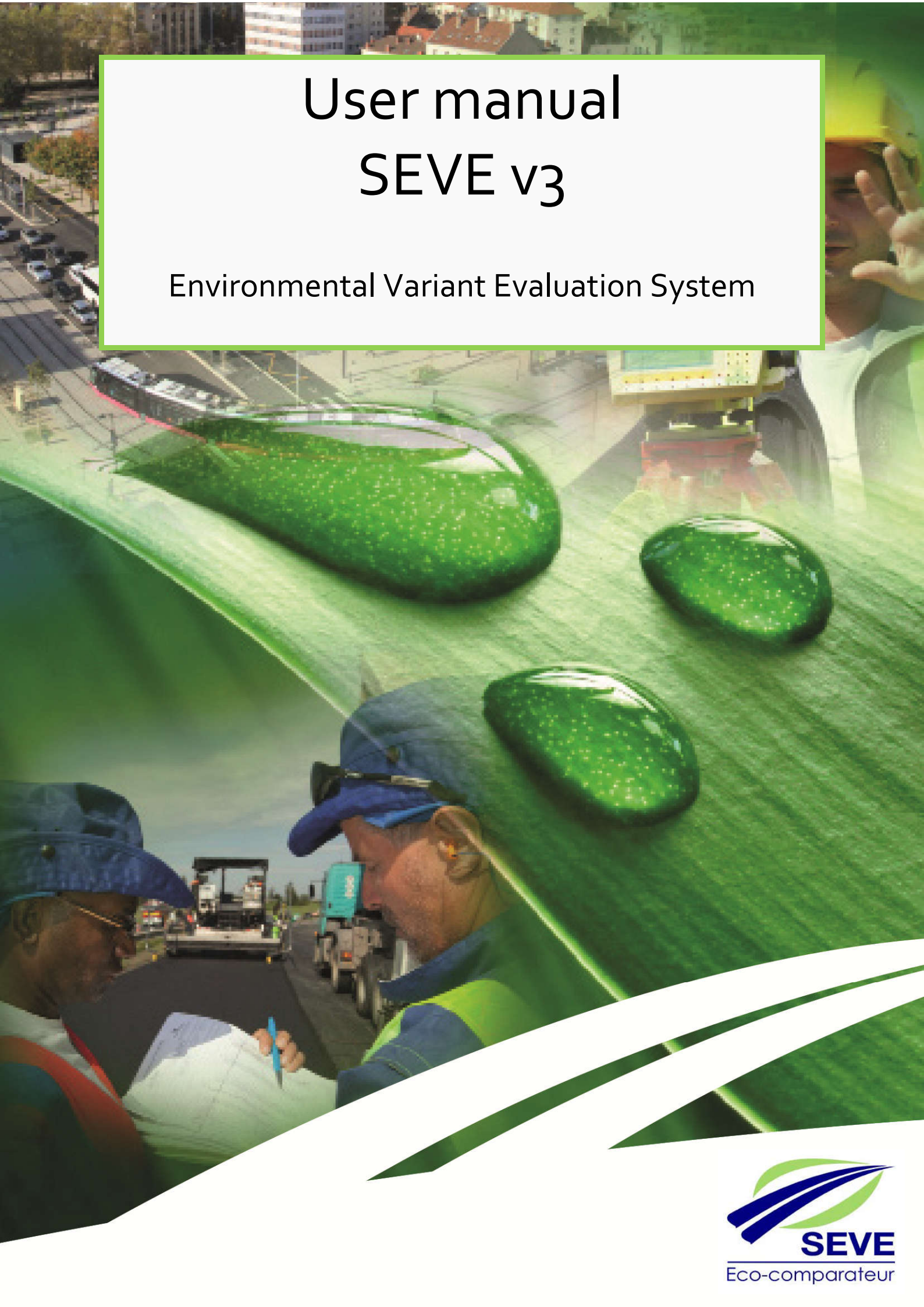


# User manual SEVE v3

Environmental Variant Evaluation System



## Description of the document

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# 1 GENERAL PRESENTATION OF THE SOFTWARE

## 1.1 The origin of SEVE

To respond to calls for tenders incorporating new evaluation criteria based on environmental aspects, members of the USIRF (Union des Syndicats de l'Industrie Routière Française) have created SEVE, an environmental eco-comparator, common to the entire industry. The software created in 2010 has since become a reference within the public works profession.

In 2016, the SPTF (Syndicat Professionnel des Terrassiers de France) joined SEVE for the integration of an earthworks module.

The purpose of SEVE is to compare two technical solutions based on the partial life cycle analysis (LCA) (see GLOSSARY and 1.2) of each of them, according to the methods defined below (Figure 1): the so-called basic solution which is the one described in the call for tenders and the alternative solution (s). For the same offer, there can therefore be as many answers as there are alternative solutions proposed



Figure 1 – Partial LCA of a construction site

## 1.2 Life Cycle Assessment (LCA)

It is therefore important to recall the definition of a LCA. It is a method of quantifying environmental impacts. This analysis includes a life cycle inventory providing environmental data; the latter allows the environmental impacts of the product and its use to be assessed during its lifetime.



LCA studies the environmental aspects and potential impacts throughout the life of a product, including raw materials, production, transport, use and disposal. The general principle is defined by the standards NF EN ISO 14040: 2006 and NF 5 EN ISO 14044: 2006 and the list of environmental indicators partly taken from the standard NF EN 15 804.

Companies cannot commit themselves during the call for tenders on the frequency of maintenance sequences ; this is why it was decided to work on partial LCAs limited to the delivery of the site. It is important to remember that:

- The proposed variants must offer the same level of service over the same duration as the basic solution
- The SEVE tool is an eco-comparator allowing the comparison of two or more solutions in the context of the response to a call for tenders. It is in no way possible to use this tool to calculate the environmental impacts of a construction site in an absolute way and consequently it is not adapted to carry out a greenhouse gas emissions assessment (Bilan Carbone ®, OMEGA TP,...)

During a call for tenders, it is difficult for companies to commit themselves on the frequency of maintenance sequences of a construction site as well as on its total life span, which are function of many parameters that companies cannot control. As a result, it was decided to work on partial LCAs, starting with the extraction of raw materials and limited to the delivery of the site, the condition being that the alternative solution provides the same service as the basic solution to the specifications.

### 1.3 SEVE's strengths

One of the great strengths of the SEVE software is its use via the Internet. Indeed, any user can connect and work on the software. All you have to do is connect to the site:

[www.seve-tp.fr](http://www.seve-tp.fr)

To simplify the understanding of the software, it is good to keep in mind that the two main user profiles working on SEVE are:

- s design offices (Agencies).
- studies (ABE or BE) which build the different solutions of the project according to the industrial catalogue (made available by the industry profiles) and the common SEVE database.

### 1.4 Databases

The SEVE software provides a resource database of materials, machines, products,... common to all users.

A database of formulas specific to each production plant (asphalt, concrete, MTLH, etc.) can thus be created by each industry manager. In addition, one of the other major points of this tool is the possibility of incorporating data specific to each company into the software. To do this, it is sufficient for the company to justify the environmental costs of its specific product(s), by using an environmental expert office to certify the conformity of the data.

SEVE can thus provide the synthesis of project results on the different environmental indicators according to the specific environmental cost of the data present in the databases and the data inherent to the project, entered by the user:

- Distance and type of transport of raw materials to the substation or to the site, from the site to a platform.
- Tonnage used
- Asphalt manufacturing temperature
- Type of fuel used on the asphalt plant
- % water content of materials
- % asphalt aggregates in the formula
- Operating time of the asphalt plant



Figure 2 – SEVE indicators

## 1.5 SEVE indicators

The comparison between the different solutions of a project is based on 7 quantitative and 2 declarative indicators that have been selected within the framework of the voluntary commitment agreement signed with the Ministry of the Environment (it is important to note that this does not reflect the diversity of the potential impacts of the worksites on the environment) and especially in direct connection with Article 79 of the Law on the Energy Transition for Green Growth of 17 August 2015.

### The 7 quantitative indicators:

They are composed of an impact indicator defined in standard NF EN 15 804 and corresponding to global warming (t CO<sub>2</sub> eq) and 6 other flow indicators:

- 1 flow indicator corresponding to the "process" energy consumed (MJ)
- 5 flow indicators specific to the public works sector corresponding to:
  - o per tonne-kilometre (t.km)
  - o the preservation of the resource broken down into 4 indicators:
    - Consumption of natural aggregates (t)
    - Consumption of asphalt aggregates (t)
    - Consumption of excavated material produced and reused within the project (t)
    - Consumption of recycled materials (t)
- The 2 reporting indicators :
  - o Water management
  - o Biodiversity conservation

### The "process energy" indicator (in MJ):

This is the primary process energy which represents the sum of renewable and non-renewable energies used during the construction of the structure. By "primary" we mean the energy

required upstream to have the energy at the end customer's disposal. By "process" is meant the energy actually consumed, which therefore does not include material energy.

#### The "GHG emission" indicator (tonne CO2 equivalent):

This indicator reports on the impact on climate change. The flows corresponding to greenhouse gas emissions in the air are summed for all the materials used but also for all the operations necessary for the project and all transport. This indicator takes into account the emissions of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O converted into CO<sub>2</sub> equivalent according to the following formula, using the GWP (Global Warming Power)

$$\text{Mass CO}_2 \text{ eq} = (\text{mass CO}_2 \times \text{GWP CO}_2) + (\text{mass CH}_4 \times \text{GWP CH}_4) + (\text{mass N}_2\text{O} \times \text{GWP N}_2\text{O})$$

*For your information:*

*The masses are expressed in kilograms according to the SI unit*

*CO<sub>2</sub> GWP = 1 kg CO<sub>2</sub> eq per kg*

*CH<sub>4</sub> GWP = 25 kg CO<sub>2</sub> eq per kg*

*N<sub>2</sub>O GWP = 298 kg CO<sub>2</sub> eq per kg*

#### The "Resource conservation" indicator (tonnes)

- Consumption of natural aggregates (t):

This indicator records the tonnes of natural aggregates consumed on site. In contrast to the basic solution, this makes it possible to measure the quantities of natural aggregates saved. -

- Asphalt aggregate consumption (t):

This indicator tracks the quantities of asphalt aggregate reused in the formulation of hot, warm and cold bituminous materials. This method simply highlights the true value of aggregates and bitumen.

- Consumption of excavated material produced and reused within the project (t):

This indicator accounts for the quantities of excavated material produced and reused within the project. This method highlights the saving of natural aggregates to avoid the permanent storage of these excavated materials.

- Consumption of recycled materials (t):

This indicator tracks the tonnes of recycled materials consumed on site. It differs from the indicator "excavated material produced and reused within the project" because it refers only to recycled materials from outside the project, with the exception of "asphalt aggregates".

#### The "Tonne kilometre" indicator (t.km)

This indicator reports on the preservation of the road network and/or the reduction of lagène to the user, which translates into a tonne.kilometre. This indicator is calculated by multiplying the tonnes transported by the number of kilometres travelled: "the tonne kilometre is a transport unit corresponding to the transport of one tonne over one kilometre". This unit is the basic unit of material transport in life cycle analysis.



### The water management indicator (4 levels of commitment):

This indicator reflects the level of commitment of the company in its offer to preserve water resources and to enhance the capacity of companies to use recycled water on projects (water from temporary or final sewage basins and process water).

### The indicator taking biodiversity into account (4 levels of commitment):

Companies, during the work, strive to preserve biodiversity and ensure that the functionalities of both terrestrial and aquatic natural environments are preserved.

The biodiversity indicator reflects the level of commitment of the company in its offer to preserve this biodiversity.

## 1.6 The 2 modules of SEVE v3

The main evolution of SEVE v3 is the creation of 2 distinct modules in SEVE (Figure 3):

- The Road/VRD module
- The Earthworks module

The distinction of these 2 modules allows the software to provide the results on the different environmental indicators by type of operation and thus to know the impacts related to earthworks and those related to roadworks in a distinct way.

The projects may therefore be of different kinds:

- Road/VRD only,
- or Earthworks exclusively
- or the combination of both

The screenshot displays the SEVE v3 software interface. On the left is a sidebar with a tree view containing 'En cours' (with sub-items like 'PN MURE', 'PROJET Retraitement vs. Rabotage/rechargement', etc.) and 'Archive'. The main area is titled 'PROJET Retraitement vs. Rabotage/rechargement' and includes tabs for 'Projet', 'Scénarios', and 'Messages'. The 'Projet' tab is active, showing an 'Identification' section with fields for 'Code' (ABE), 'Libellé' (PROJET Retraitement vs. Rabotage/rechargement), 'Propriétaire' (Ecole des ponts), 'Créateur' (abepont), and 'Statut' (Actif). Below this is the 'Nature du projet' section with radio buttons for 'Route/VRD' (selected) and 'Terrassement'. A checkbox for 'Prise en compte des indicateurs eau et biodiversité' is also present. The 'Solutions du projet' section shows a table with columns 'Libellé' and 'Supprimer', containing entries like 'Solution de base - Rabotage/rechargement' and 'Solution variante - Retraitement en place'. The bottom section, 'Projet', contains various administrative fields such as 'Référence client', 'Titre 1', 'Titre 2', 'Maitrise d'ouvrage', 'Maitrise d'œuvre', 'Description', 'Dossier', 'Date de remise de l'offre', 'Date d'émission du rapport', and logos for 'maître d'œuvre' and 'entreprise'. At the bottom right are 'Valider' and 'Supprimer' buttons.

Figure 3- SEVE version 3 project modes 9

## 1.7 The results obtained

The results are presented in two different forms (Figure 4). Two graphs comparing the different solutions proposed in a visual way (from 2 to 6 solutions on a single project) and a table of values allowing a numerical approach.

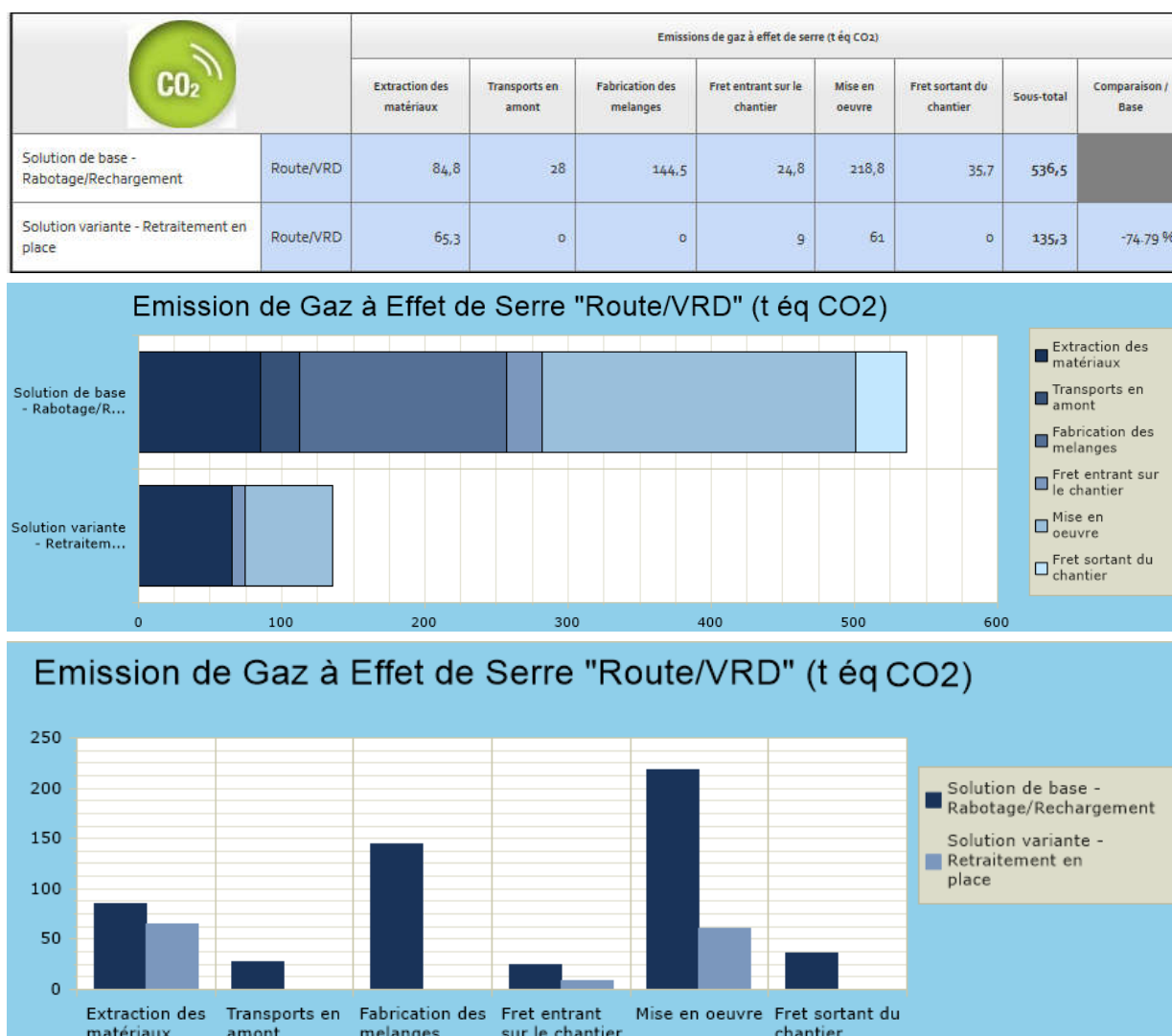


Figure 4 – Example of results obtained on SEVE v3 10

## 1.8 The standardised summary PDF

The complete restitution of the results (Figure 5) is done by the automatic generation of a summary report in PDF format containing all the data entered by the user (type and composition of asphalt mix, products used, quantities, type of plant used, transport, machinery...) and of course the synthesis of the results on each of the 7 quantitative indicators and the 2 declarative indicators. It is thus possible for a third party to verify all the results given. This report is standardized and therefore its form is identical for all SEVE users.

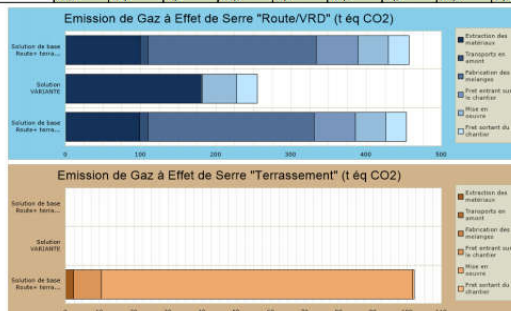


## 4.2. Indicateur : émission de GES en tonnes équivalent CO2

L'Indicateur « émission de gaz à effet de serre (tonne CO2 équivalent) » :

Cet indicateur rend compte de l'impact sur le changement climatique. On somme les flux correspondant aux émissions de gaz à effet de serre dans l'air pour tous les matériaux mis en œuvre mais également toutes les opérations nécessaires au projet et tous les transports. Cet indicateur tient compte des émissions de CO2, CH4 et N2O converties en équivalent CO2.

Solutions	Extraction des matériaux	Transports en amont	Fabrication des matériaux	Fret entrant sur le chantier	Mise en œuvre	Fret sortant du chantier	Total	Comparaison / Base
Solution de base Route+terrassement	Route+VRD	99,2	10,7	223,7	56,2	40,6	27,4	456,9
Solution VARIANTE	Route+VRD	180,4	0	0	1	46,1	27,4	254,9
	Terres	0	0	0	0	0	0	Non Applicable
	Total	180,4	0,0	0,0	1,0	46,1	27,4	254,9
Solution de base Route+terrassement (2)	Route+VRD	99	10,7	220,9	54,9	40,6	27,4	453,5
	Terres	2,4	0	0	8,1	91	0,4	102
	Total	101,4	10,7	220,9	63,0	131,6	27,9	555,5



Engins	Quantité	Unité d'œuvre	Coût environnemental unitaire
(Atelier) Abri de retraitement en place à formulation 600 (1)	10	jour	Base USRP : "Abri de retraitement en place à formulation 600 (1)"
Machine de recyclage en place des couches de chaussées	1	unité	Base USRP : "Machine de recyclage en place des couches de chaussées"
Compacteur tandem vibrant V1	2	unité	Base USRP : "Compacteur tandem vibrant V1"
Répandeur de liant bitumineux	1	unité	Base USRP : "Répandeur de liant bitumineux"
Acrosteuse	1	unité	Base USRP : "Acrosteuse"

Matériaux sortants	Quantité	Unité d'œuvre	Densité	Coût environnemental unitaire	Acheminement
Fraisils issus du chantier	6750	t	-	Base USRP : "Fraisils issus du chantier"	Transport par semi 24t : 100m

### 5.3. Solution de base Route+terrassement (2)

#### 5.3.1 OPERATION RABOTAGE

Engins	Quantité	Unité d'œuvre	Coût environnemental unitaire
Balayeuse aspiratrice	15	jour	Base USRP : "Balayeuse aspiratrice"
Raboteuse 2m à 2,2m	15	jour	Base USRP : "Raboteuse 2m à 2,2m"

Matériaux sortants	Quantité	Unité d'œuvre	Densité	Coût environnemental unitaire	Acheminement
Fraisils issus du chantier	6750	t	-	Base USRP : "Fraisils issus du chantier"	Transport par semi 24t : 100m

#### 5.3.2 OPERATION RECHARGEMENT

Matériaux entrants	Quantité	Unité d'œuvre	Densité	Coût environnemental unitaire	Acheminement
envois test 300x200 (Cople)	6750	t	-	voir la liste des formules utilisées	Transport par semi 24t : 100m

Engins	Quantité	Unité d'œuvre	Coût environnemental unitaire
(Atelier) Abri de mise en œuvre d'engins grande cadence - 200 (1)	3,5	jour	Base USRP : "Abri de mise en œuvre d'engins grande cadence - 200 (1)"
Pressoir (20 à 250)	2	unité	Base USRP : "Pressoir (20 à 250)"
Compacteur à pneus P1	3	unité	Base USRP : "Compacteur à pneus P1"

#### 5.3.3 terrassement

Matériaux entrants	Quantité	Unité d'œuvre	Densité	Coût environnemental unitaire	Acheminement
GNT - Grève non traitée	1000	t	-	Base USRP : "GNT - Grève non traitée"	Transport par semi 24t : 100m

Engins	Quantité	Unité d'œuvre	Coût environnemental unitaire
Chargeuse sur chenilles (15 à 20t)	10	jour	Base USRP : "Chargeuse sur chenilles (15 à 20t)"
Compacteur à pneus P1	100	jour	Base USRP : "Compacteur à pneus P1"
Compacteur mètre V6	100	jour	Base USRP : "Compacteur mètre V6"

Figure 5 – Standardised PDF (cover page, summary of results and all project data entered by the user (ABE or BE))



## 2 STRUCTURAL ORGANIZATION SEVE

It is important at this stage to understand the structural organization of this tool, what are the different profiles, their roles, their rights, their hierarchical levels, the interactions between the different profiles and the perimeters within the application.

### 2.1 SEVE structural organization administrator profiles

**STEP 1:** The SEVE administrator who is called the USIRF Central Administrator (ACU) manages the database of common software resources and creates and administers the rights of SEVE managers within the Member perimeters (companies or organizations), they are called Deputy Central Administrators (ACD). SEVE members are mainly public works companies.

#### Central Administrator of the User Entity (ACU)

##### DEFINITION:

He is the SEVE manager of the User Entity (EU), he receives access rights from his ACD and can himself manage the rights of his AI, ABE, CI or BE users. It creates in the database the design offices (agencies) of the EU.

##### PÉRIMÈTER :

User Entity (EU)

##### FUNCTION :

He administers SEVE for his EU, as such he fills in the SEVE database with the agencies belonging to his EU. It gives user rights to its Industrial Administrators (AI), its Industry Managers (CI) (attached to a production plant), its Design Office Administrators (ABE) and its Design Office Managers (BE) (attached to an agency).

##### SUMMARY :

- Agency management (creation, modification, deletion).
- Management of AI, CI, ABE and BE
- Profiles (creation, modification, deletion)
- Assignment of Heads of Industry (CI) to an industry.

#### Deputy Central Director (ACD)

##### DEFINITION:

The ACD is in charge of the SEVE application within its organization or within its company.

##### PERIMETER :

Member

##### FUNCTION :

Il It administers access rights to its Central Administrators of User Entities (ACEUs) after entering the names of these User Entities (EU) into the database. He is also the sole and direct contact with the system's SEVE manager (ACU).

##### IN SUMMARY :

- Management of User Entities (creation, modification, deletion)
- Management of ACEU profiles (creation, modification, deletion)
- Contact person and single person in charge of his organization at ACU
- Visibility on his organization's general statistics

## 2.2 SEVE structural organization: the EU administrator profile

**STEP 2** : These ACDs will then be able to create access rights for their user entities (EU), which are typically the regional divisions of construction companies or local delegations of local authorities. These access rights will be given to Central Administrators of User Entities (ACEUs).

### Administrateur central de l'Entité Utilisatrice (ACEU)

#### DEFINITION:

Il est le responsable SEVE de l'Entité Utilisatrice (EU), il reçoit des droits d'accès par son ACD et peut lui-même gérer les droits de ses utilisateurs AI, ABE, CI ou BE. Il crée dans la base de données les bureaux d'études (agences) de l'EU.

#### PERIMETRE :

Entité Utilisatrice (EU)

#### FONCTION :

Il administre SEVE pour son EU, à ce titre il renseigne la base de données SEVE avec les agences appartenant à son EU. Il donne des droits d'utilisateurs à ses Administrateurs Industrie (AI), à ses Chefs d'Industries (CI) (rattaché à une centrale de production), à ses Administrateurs de Bureaux d'Etude (ABE) et à ses Responsables Bureaux d'Etude (BE) (rattachés à une agence).

#### EN RESUME :

- Gestion des agences (création, modification, suppression)
- Gestion des profils AI, CI, ABE et BE (création, modification, suppression)
- Affectation des Chefs d'Industrie (CI) à une industrie.

## 2.3 SEVE structural organization: user profiles

**STEP 3** : ACEUs create work agencies and user accounts in their two-level user entity:

- There are two types of profile, the Design Office (BE) which is attached to its agency and the Design Office Administrator (ABE) which can work with all the agencies of the user entity. The ABE is a profile belonging to the EU perimeter.
- there are two profiles, the Industry Manager (CI) who creates the deformula catalogue in the industry to which he is attached and the Industry Administrator (AI) who can create formulas in all industries of the user entity. The AI is a profile belonging to the EU perimeter.

Ici ici ici



### Industry Administrator (AI)

**DEFINITION:**

The AI receives user rights through its ACEU, it is in charge of the administration of the industries of its EU.

**PERIMETER :**

User Entity (EU)

**FUNCTION :**

He can on all the workstations of his EU, elaborate the catalogues of formulas and publish them to the collaborators of his EU. It may also publish these forms to other EU SEVEs, in particular within the framework of EIGs. It can also create mobile asphalt plants within its user entity, and also share plants with other user entities.

**IN SUMMARY :**

- Registers the asphalt mix formulas of its EU plants as a Head of Industry
- Publish the forms to the User Entities
- Creation of resources specific to its User Entity (fuels, products and formulas)
- Shares its positions with other EU countries in the event of an EIG

### Director of Design Offices (ABE)

**DEFINITION:**

The EBA receives user rights through its ACEU, it is in charge of the projects of the Design Offices within its EU.

**PERIMETER :**

User Entity (EU)

**FUNCTION :**

He can develop a project in order to respond to a call for tenders using all the data made available to him. He can thus use the catalogue of formulas established by the AI (or by the CI), the SEVE database of products, the complete list of Equipment and Workshops at his disposal... He can modify a project of any agency of his user entity.

**IN SUMMARY :**

- Creation of resources specific to its User Entity (machines, workshops, transport, transport, transport)
- Can access the projects of the Agencies of its User Entity and can replace any BE
- Prepare the summary report that it attaches to the call for tenders

### Industry Manager (CI)

**DEFINITION:**

The CI is in charge of a specific Industry.

**PERIMETER :**

Industry

**FUNCTION :**

He can on his own workstation, elaborate the catalogues of formulas, inform the type and mode of transport of raw materials and make these formulas available to his EU.

**IN SUMMARY :**

- Saves the formulas of his position
- Publish the forms to the User Entities

### Design Office (BE)

**DEFINITION:**

The BE is in charge of responding to calls for tenders within an Agency

**PERIMETER :**

Agency

**FUNCTION :**

He can develop a project in order to respond to a call for tenders using all the data made available to him. He can thus use the catalogue of formulas established by the AI of his EU (or by an CI), the SEVE database of products, the complete list of Equipment and Workshops at his disposal... He can only develop a project for his own agency.

**IN SUMMARY :**

- Constitutes its projects from the catalogues of formulas and databases specific to the EU and common to all users
- Prepare the summary report that it attaches to the call for tenders

## 2.4 SEVE structural organization: the scheme

It is possible to synthesize using the diagram below (Figure 6), the relationships between the profiles and the different perimeters

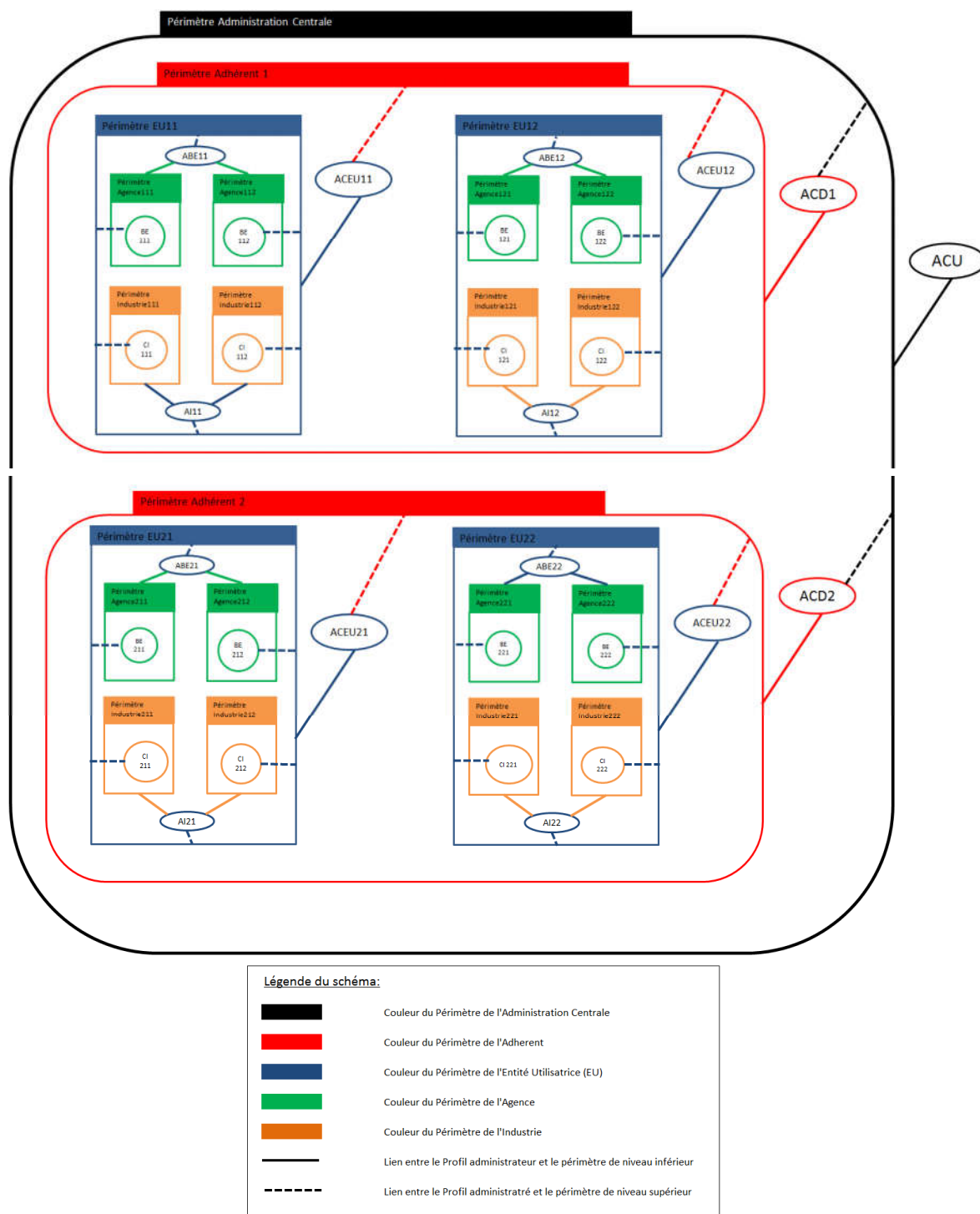


Figure 6 - Relationships between profiles and perimeters in SEVE version 3 15



### 3 FAMILIARISATION WITH THE SOFTWARE

#### 3.1 SEVE Software Registration

Each company or organization intending to register for SEVE must contact the SEVE central administrator for its first use, via the website home page (Figure 7), [www.seve-tp.fr](http://www.seve-tp.fr), in order to obtain user rights.

Figure 7 – [www.seve-tp.fr](http://www.seve-tp.fr) home page, with the "REGISTRATION" box

In the "Registration" box (Figure 7) you must enter the requested information allowing the generation of an automatic email to the Central Administrator SEVE (ACU). Once the registration has been registered, the ACU contacts you and then, with your agreement, creates the Member's first ACD account . 2 automatic emails are sent by [admin@seve-tp.fr](mailto:admin@seve-tp.fr) to the email address provided in the "Registration" box:

- an email confirming the registration of the ACD
- an email generating a link to choose the password (Figure 8)

All the ACD has to do is define a personal password to access the software.

Figure 8 – Choosing the password via the automatic

# ACD

### 3.2 Connection under an ACD profile (Deputy Central Administrator)

The ACD is the first person to use SEVE. As such, it is the privileged contact between the SEVE users of its user entities (EU) and the ACU. In order to access the ACD profile, you must connect with your ACD Login (provided by 'ACU) and Password (which you have chosen via the internet link registered in the SEVE automatic email) on [www.seve-tp.fr](http://www.seve-tp.fr) (Figure 7), you connect in the SEVE ACD configuration described in Figure 9.

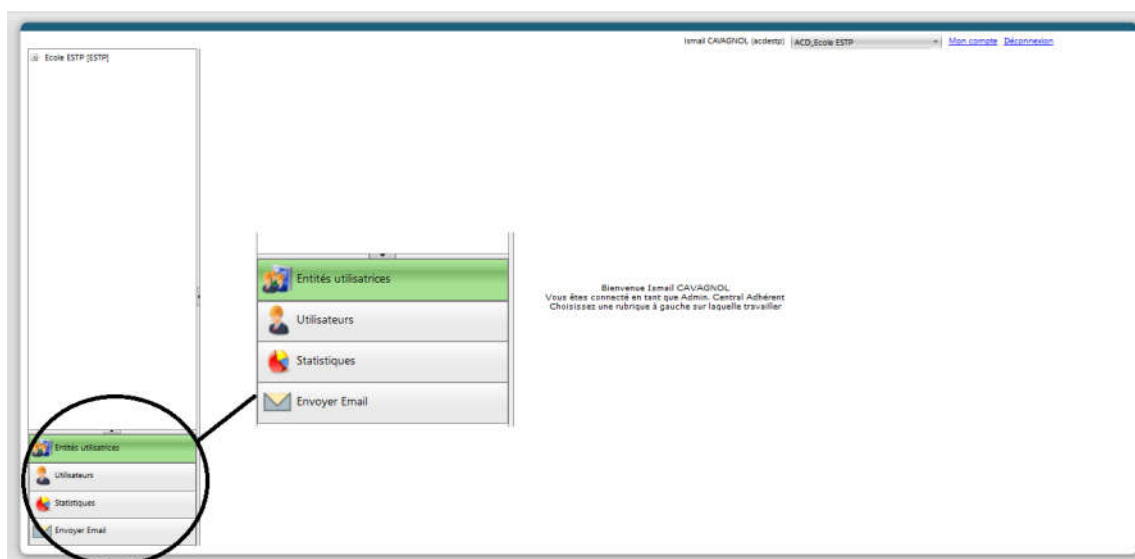


Figure 9 – Managing Central Administrator Environment in SEVE

The ACD has the ability to navigate the tabs on the left side of the screen (Figure 9):

- User Entities
- Users
- Statistics
- Send E-mail

Each of these tabs has very specific functions that we will explain.

#### 3.2.1 « My Account » and « Logout » options:

The "My Account" and "Logout" options written at the top right of the highlighted window (Figure 10) have 2 functions:

- the "email address" and even the user's password (in this case the ACD). This function is available on all types of profiles. Figure 10 - "My account" option 18



Figure 10 – Option « mon compte »



- disconnect from the SEVE application at any time by clicking on it. This function is available on all types of profiles.

### 3.2.2 « User Entities » tab:

#### 3.2.2.1 Creation of a User Entity

The ACD can enter information into the "User Entities" database by creating within the tab the different User Entities belonging to its company or organisation.

To do this (Figure 11):

- 1- Click on the "User Entities" tab
- 2- Right-click on the tree structure above the tab then choose "Create EU"
- 3- Enter the information (Code and Label) then click on "Save"
- 4- The created EU appears in the tree structure

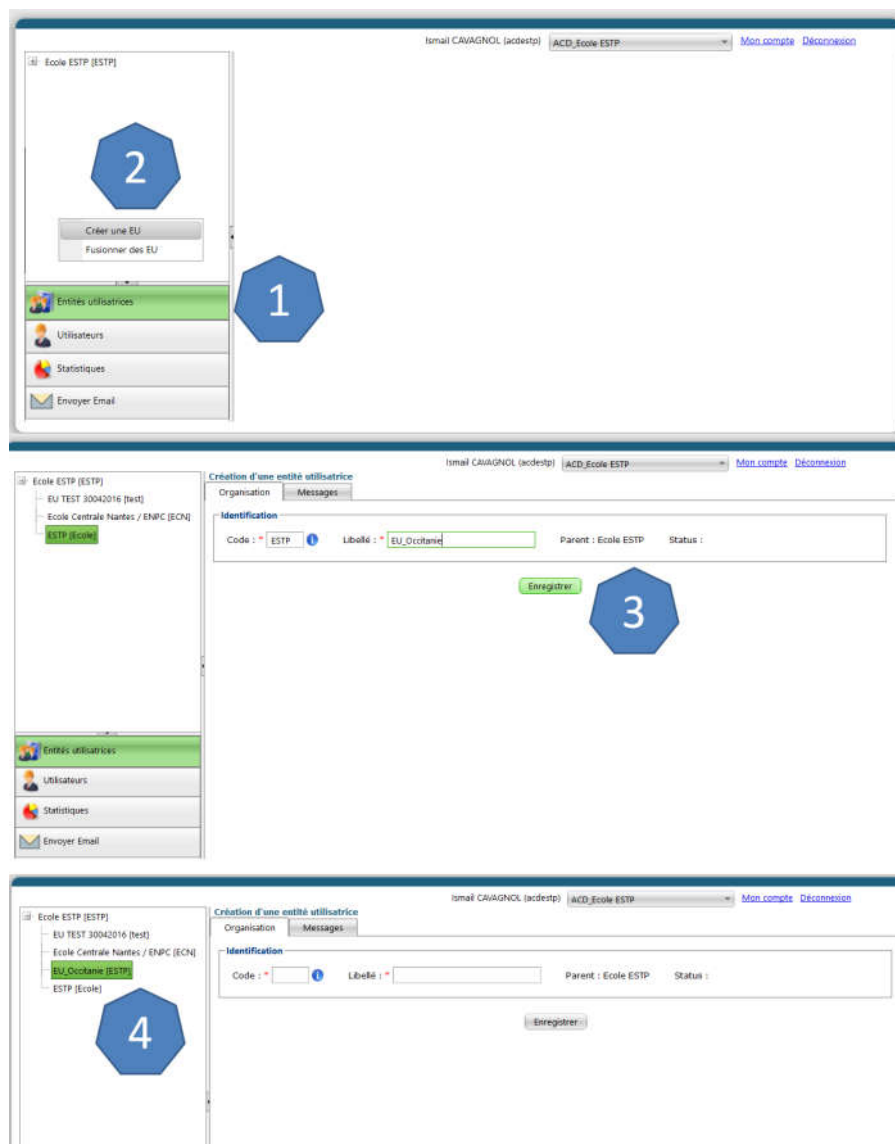


Figure 11 – Creation of an EU 19 user entity

### 3.2.2.2 Merger of a User Entity

In the event of a merger of certain User Entities within an organization (e.g. Merger of regional delegations into a TP group), SEVE gives the ACD the possibility to merge all the resources of the old US by creating a new one.

To do this (Figure 12):

- 1- Right-click on the "User Entities" tab
- 2- Right-click on the tree structure above the tab then choose "Merge EU"
- 3- Fill in the information (Code and Label) of the new EU, choose the EU to be merged. Then click on Save
- 4- The 2 old EU disappear from the tree structure in favor of the newly created EU University that appears in the tree structure.

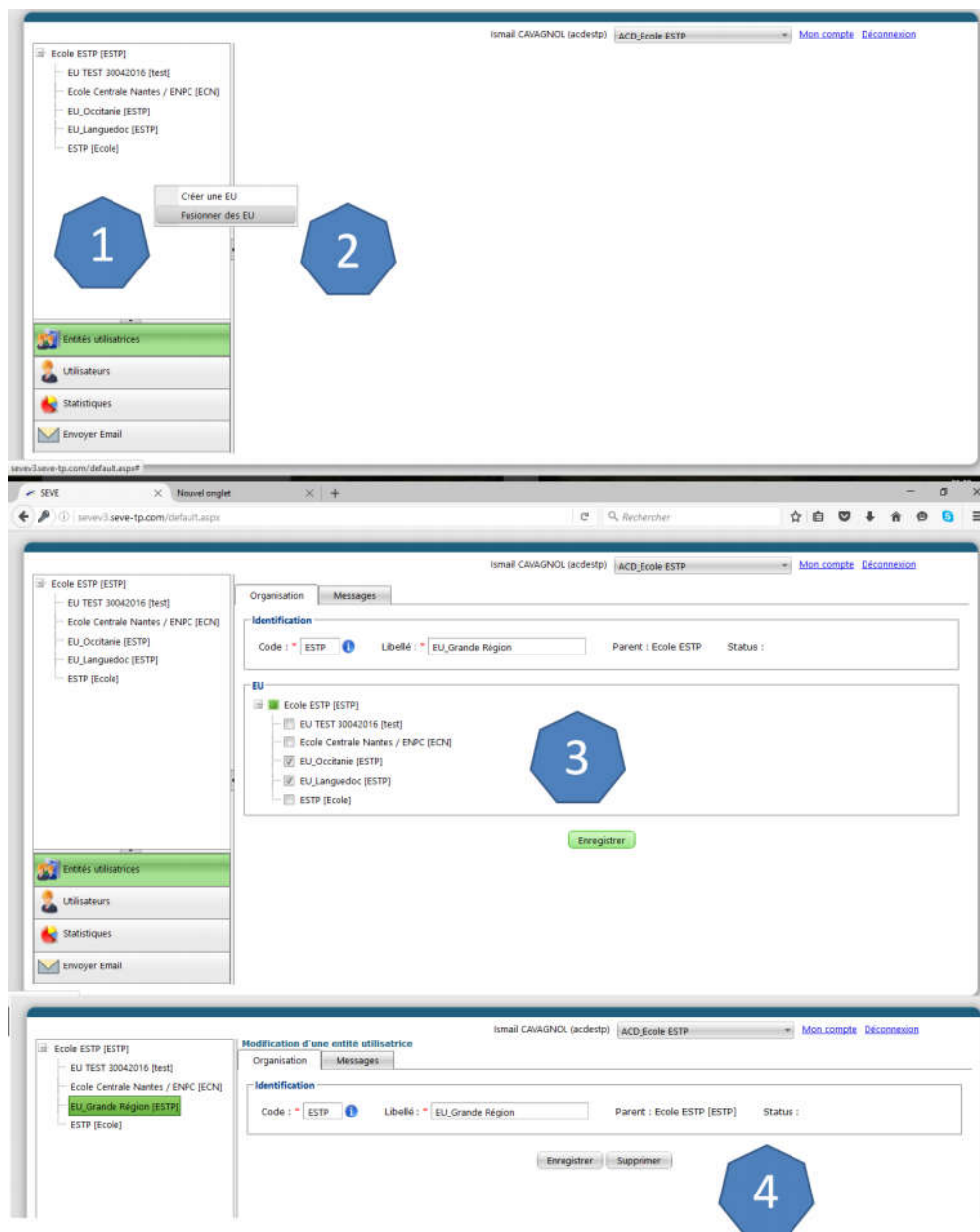


Figure 12 – Merger of a user entity 20

### 3.2.3 « Users » tab:

---

#### 3.2.3.1 Creating an ACEU profile

Each EU created must be administered by an ACEU. In order to create an ACEU profile you must (Figure 13):

- 1- Click on the "User" tab
- 2- Right-click on the tree structure above the tabs then choose "create a user"
- 3- Enter the "User" part
  - a. Choose a login of the type "aceu\_nom"
  - b. Name, First name and e-mail of the person in charge of SEVE in the EU
- 4- On the same page, you must fill in the part "User's right"
  - a. Click on create a right
  - b. Choose under the "Profile" drop-down menu, the ACEU profile
  - c. Choose under the "Perimeter type" drop-down menu, the EU perimeter
  - d. Choose under the "Perimeter" drop-down menu, the name of the EU created previously associated with the ACEU created.

**NB:**

- Do not click on the "**Activate User**" button. The profile of each user will be activated when the automatic confirmation email is received by entering the personalized password.
- It is important for questions of logic and ease of use to assign the future user a simple login. A practical example of a login for the creation of an ACEU account would therefore be "**ACEUfirst name**"
- Once the information entered in the SEVE database concerning the various user entities has been entered, the ACD must contact the ACU again, and designate the various fixed asphalt production plants of its company corresponding to each User Entity and inform it of the technical data of this plant (fuel, geographical situation...).
- For the very particular case of industrial sharing (EIG position = Economic Interest Grouping) the principle being that the power plant is assigned to the EU of the partner that has the CE marking product mission. It will then be up to the EU Industry Administrator (AI) to share the asphalt plant with the other EIG partners (see 3.4.6.3).

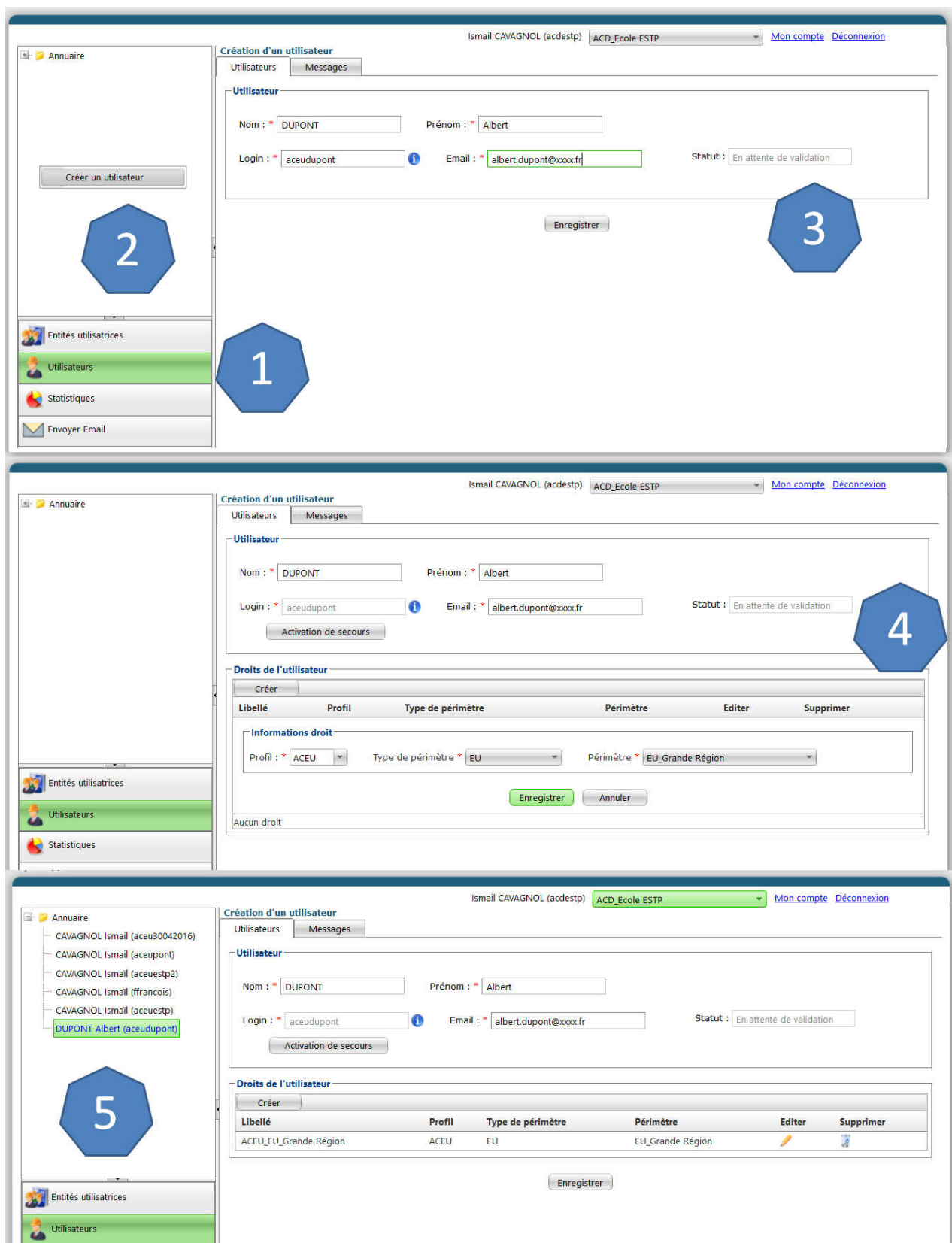


Figure 13 – Creating an ACEU profile 22

### 3.2.4 « Statistics » tab:

This tab allows you to view the Member's own Statistics. There are 3 frames (Figure 14):

- General SEVE statistics, allows to view the total number of different resources of the Member
- SEVE use statistics, allows to extract on EXCEL over a given period the number of projects created by EU and the number of PDF generated via the "Export SEVE use" button.
- General statistics SEVE per EU, allows to visualize the general statistics of each EU of the Member. This data can be extracted in detail via the "Export to EXCEL" button or simplified via "Simplified Export to EXCEL". The "Export Profiles and Territories" button allows you to extract on an EXCEL sheet the names, first names, profiles, email addresses of each SEVE user at the Member's premises.

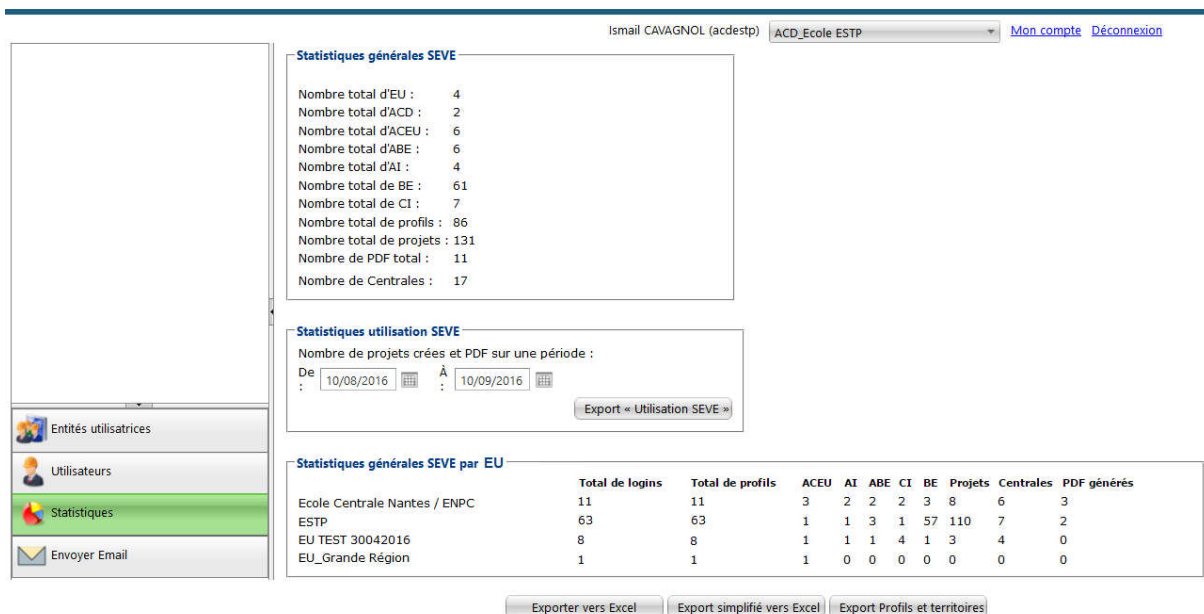


Figure 14 – ACD Statistics 23



### 3.2.5 « Send E-mail » tab:

In this "Send E-mail" tab, it is possible to send emails to the Member's users in 2 different ways (Figure 15):

- Sending by profile - Sending to EU users Figure 15
- Mail application for the ACD profile

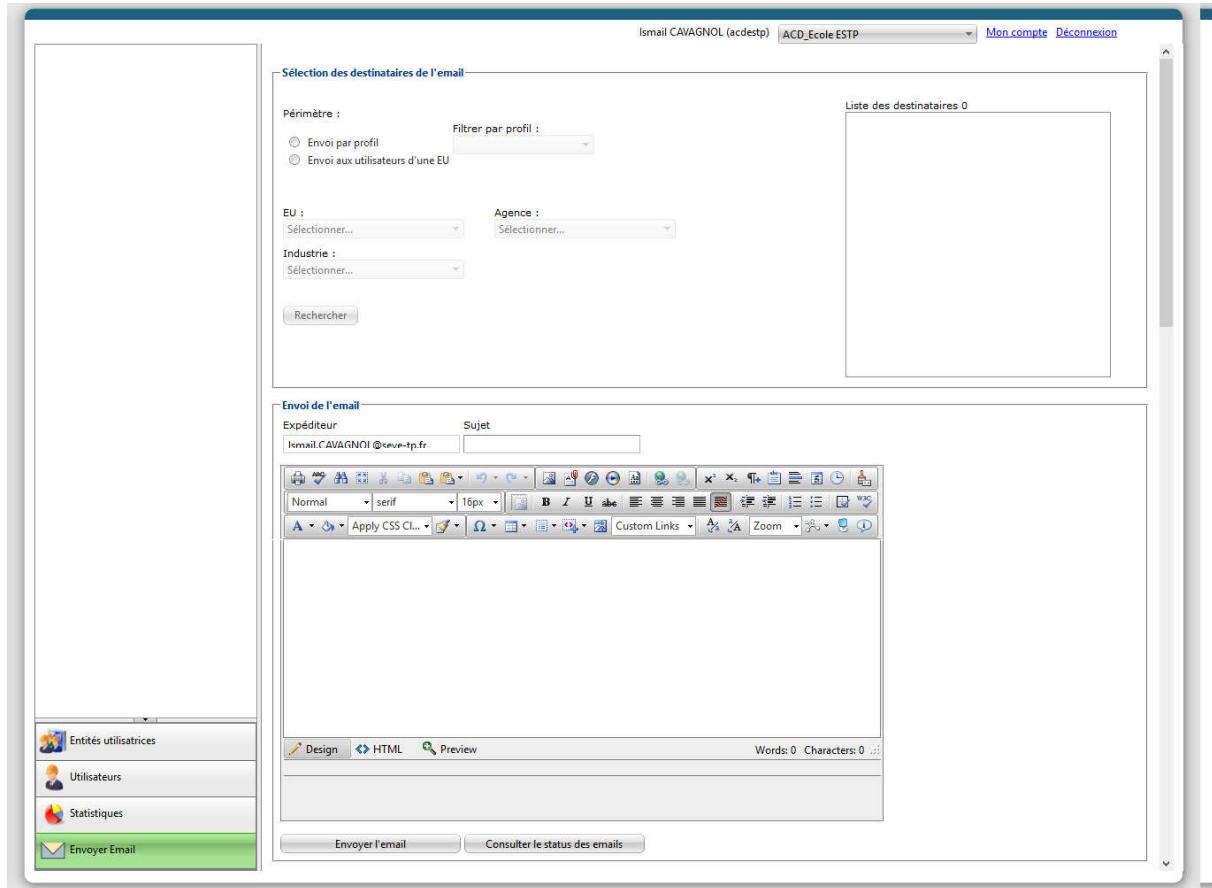


Figure 15 – Application mail pour le profil ACD

It is also possible to view the history and status of emails by clicking on the "View email status" tab. 24

# ACEU

### 3.3 Connection under an ACEU profile (Central Administrator of the User Entity)

The ACEU as Central Administrator of the User Entity, is therefore the SEVE manager of a subsidiary, a regional delegation or a specific pole of an organization. When you arrive on the home page after entering your login and password, you will be offered three tabs on the left of the screen (Figure 16).

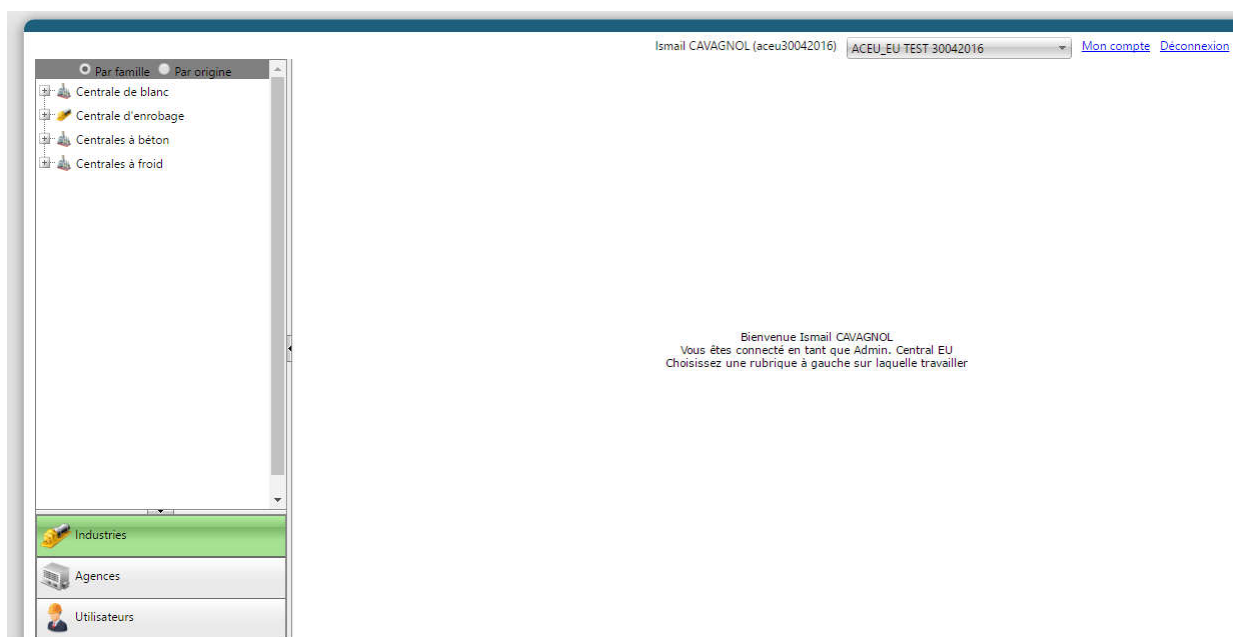


Figure 16 – ACEU Profile Home Page

#### 3.3.1 « My Account » and « Logout » Options:

The "My Account" and "Logout" options written at the top right of the highlighted window have the same functions as those of the ACD profile (3.2.1)

#### 3.3.2 « Industries » tab:

The "Industries" tab (Figure 17) allows you to view the information of the asphalt mixing plants in your EU. ACEU cannot create power plants, nor can it even modify their characteristics.

**Modification d'une industrie**

Industries Messages

**Identification**

Code : \* TRACC Libellé : \* Centrale TRACC

Propriétaire : TRACC - SPRIR MP Créateur : altracc Statut : Actif

**Industrie**

Famille : \* Centrale d'enrobage [CEE] Modèle de fabrication : \* Modèle de noir [NOIR #1]

Poste mobile ? : ☒

**Adresse de l'industrie**

Adresse ligne 1 :

Adresse ligne 2 :

Adresse ligne 3 :

Code postal :  Ville :

**Combustible**

Ajouter

Code	Libellé	Supprimer
FOL	Fuel lourd	

Figure 17 – "Industries" tab

### 3.3.3 « Agencies » tab:

The "Agencies" tab allows you to create EU agencies (Figure 18).

**Création d'une entité utilisatrice**

Organisation Messages

**Identification**

Code : \* test Libellé : \* agence test 30042016 Parent : EU TEST 30042016 Status :

**Adresse de l'agence**

Adresse ligne 1 :

Adresse ligne 2 :

Adresse ligne 3 :

Code postal :  Ville :

Créer une agence

Enregistrer

Figure 18 – Creating an "Agency"

In order to create an agency, you must:

- 1- Click on the "Agencies" tab
- 2- Right-click in the tree structure and choose "Create an agency"
- 3- Fill in at least the fields marked with a red star
- 4- Click on "Register" 27

### 3.3.4 « Users » tab:

The tab, "Users", allows you to create users and assign them user rights within a EU, an Agency or an Industry. To do this, simply (Figure 19):

- 1- Click on the "User" tab
- 2- Right-click in the tree structure and choose "Create a user"
- 3- Fill in the following fields (name, first name, login and email of the future user).
- 4- Click on "Create" in the "User rights" box
- 5- Choose the profile(s) associated with the user who can have more than one (up to 4). The rights can be of type ABE, AI, BE or CI. Thus, it is possible with a single login to switch from one profile to another.
- 6- Choose the Type of perimeter associated with the profile:
  - a. EU for AI
  - b. EU for EBA
  - c. Industry for IC
  - d. Agency for the BE
- 7- Choose the "Perimeter" associated
- 8- Click on "Save".

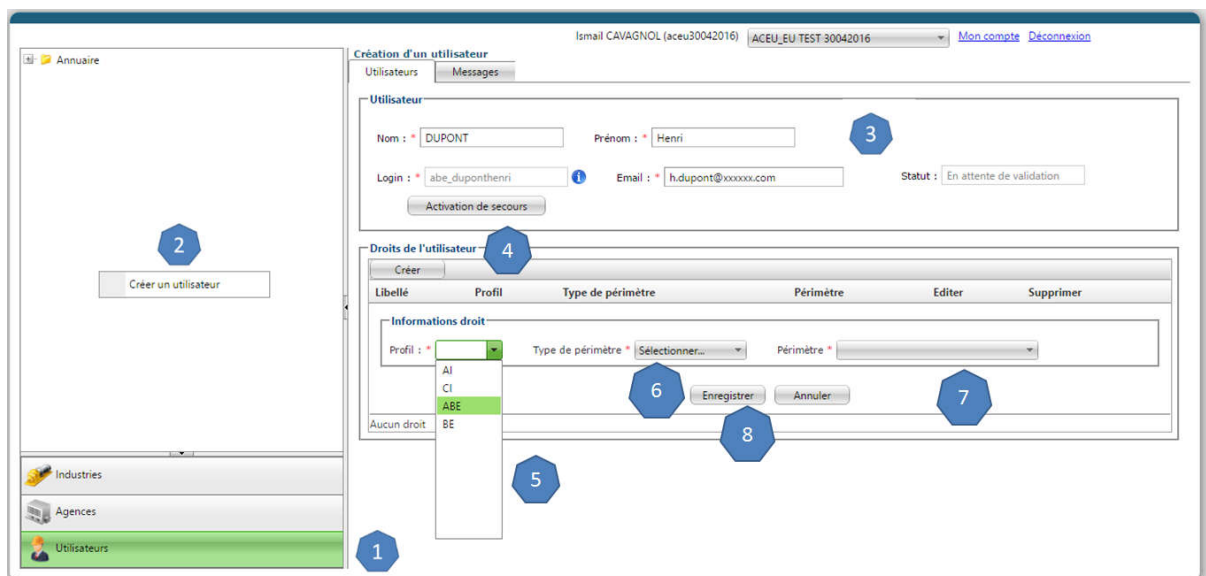


Figure 19 – Creating a "User" account under ACEU

The user can therefore have 4 profiles as shown in Figure 20 below.



Modification d'un utilisateur

Utilisateurs Messages

Utilisateur

Nom : DUPONT Prénom : Henri

Login : abe\_duponthenri Email : h.dupont@xxxxxx.com Statut : En attente de validation

Activation de secours Réinitialiser le mot de passe

Droits de l'utilisateur

Créer

Libellé	Profil	Type de périmètre	Périmètre	Editer	Supprimer
AI_EU TEST 30042016	AI	EU	EU TEST 30042016		
ABE_EU TEST 30042016	ABE	EU	EU TEST 30042016		
CI_CENTRALE TEST ENROBAGE 30042016 v3	CI	Industrie	CENTRALE TEST ENROBAGE 30042016 v3		
BE_agence test 30042016	BE	Agence	agence test 30042016		

Enregistrer

Industries Agences Utilisateurs

Figure 20 – A user account with 4 profiles (AI, ABE, BE, CI)

The user account created, (in this case the user "abe\_duponthenri" in the example) is valid and active once the person who received the email has entered his password and activated his account. From that moment on, ACEU no longer sees the user's name appear in blue, but in black.

# AI

### 3.4 Login under an AI profile (Industry Administrator)

Once the access email has been received, the Industry Administrator (AI) can choose his password and log in by entering the login that ACEU has assigned to him. He is therefore the SEVE industry manager for his EU. When you arrive on the home page, you will be presented with six tabs on the left side of the screen (Figure 21).

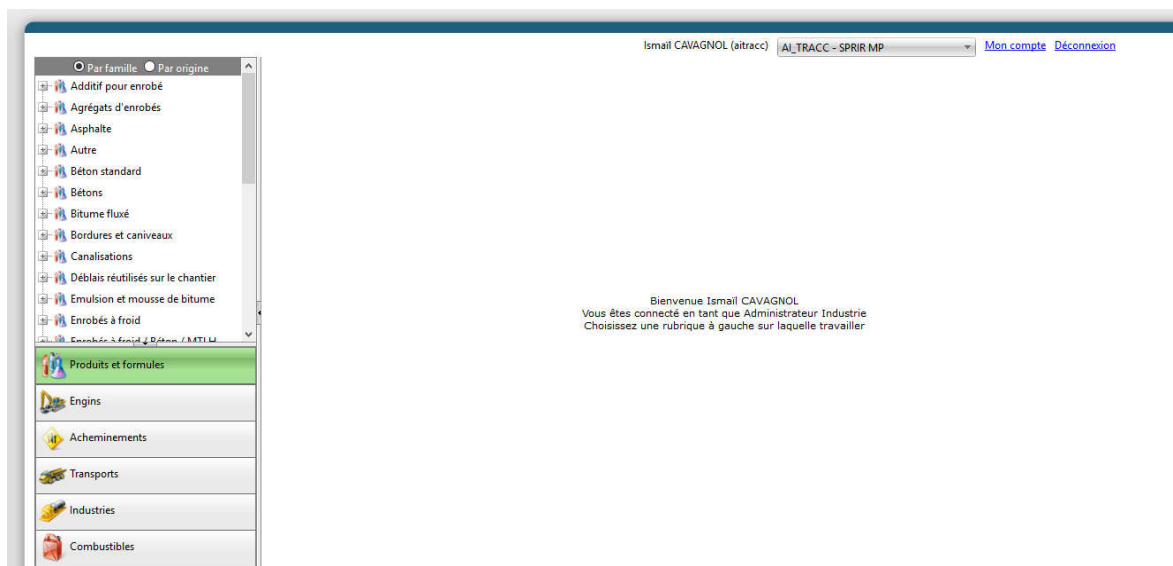


Figure 21 – AI Profile Home Page

#### 3.4.1 « My Account » and « Logout » Options:

The "My Account" and "Logout" options written at the top right of the highlighted window have the same functions as those of the ACD profile (3.2.1)

#### 3.4.2 « Products and formulas » tab:

The "Products and formulas" tab lists the list of products in the SEVE common database. It also lists the specific products and formulas created by the EU's AIs and CIs as well as formulas shared by other EU countries.

##### 3.4.2.1 Creating a Product

The "Products and formulas" tab gives the IA the possibility to create specific products for its EU. To do this, simply (Figure 22):

- 1- Click on the "Products and formulas" tab
- 2- Right-click in the tree structure and choose "Create a product"
- 3- Fill in the following mandatory fields (code, label, product family , work unit, resource type).
- 4- Click on "Validate" then "Save"



Figure 23 – Duplication of an existing product

### 3.4.2.2 Aliasing a product

The "Products and Formulas" tab allows the IA to alias products for his EU. This means copying and renaming a product from the common SEVE database without changing the unit environmental costs of the product. To do this, simply (Figure 24):

- 1- Click on the "Products and formulas" tab
- 2- Right-click on the product to be disposed of and choose "Aliaser"
- 3- Complete the following mandatory fields (code, wording, water content, type of resource).
- 4- Click on "Save and activate"

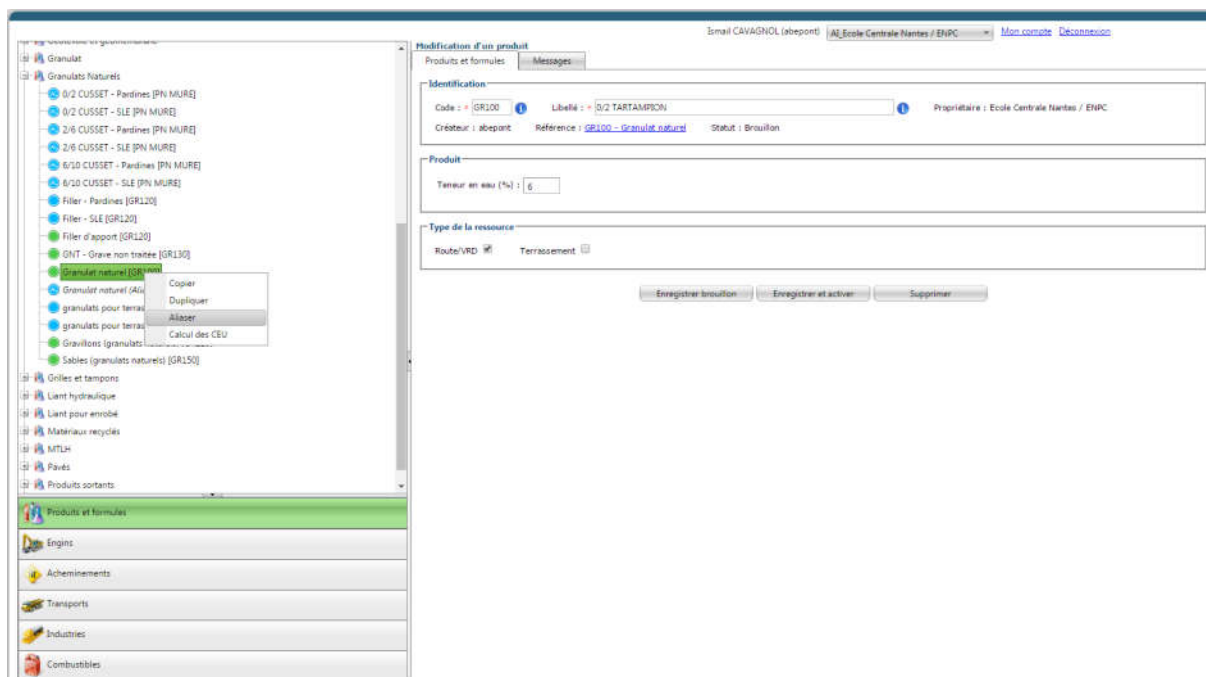


Figure 24 – Aliasing a product

### 3.4.2.3 Creating a Bituminous Asphalt Formula

The "Products and Formulas" tab allows the IA to create formulas specific to an asphalt plant belonging to a EU. To do this, simply (Figure 25):

- 1- Click on the "Products and formulas" tab
- 2- Right-click on the "Bituminous Asphalt" family and choose "Create a formula"
- 3- Complete the following mandatory fields (code, wording, type of resource).
- 4- Click on "Save draft"



Figure 25 – Creating a bituminous asphalt formula

- 5- Choose the family: "Asphalt mixes" (Figure 26)
- 6- Choose the asphalt plant where the formula is manufactured
- 7- Enter the % of fuel (must be 100%)
- 8- Enter the manufacturing temperature

Figure 26 – Fields to be filled in for the creation of a mix formula

- 9- In the "Composition" table, Click on "Add" in order to add components to the formula, a pop-up must open up. (Figure 27)
- 10- Choose the different components in the tree structure then click on "Add" at the bottom of this pop-up.

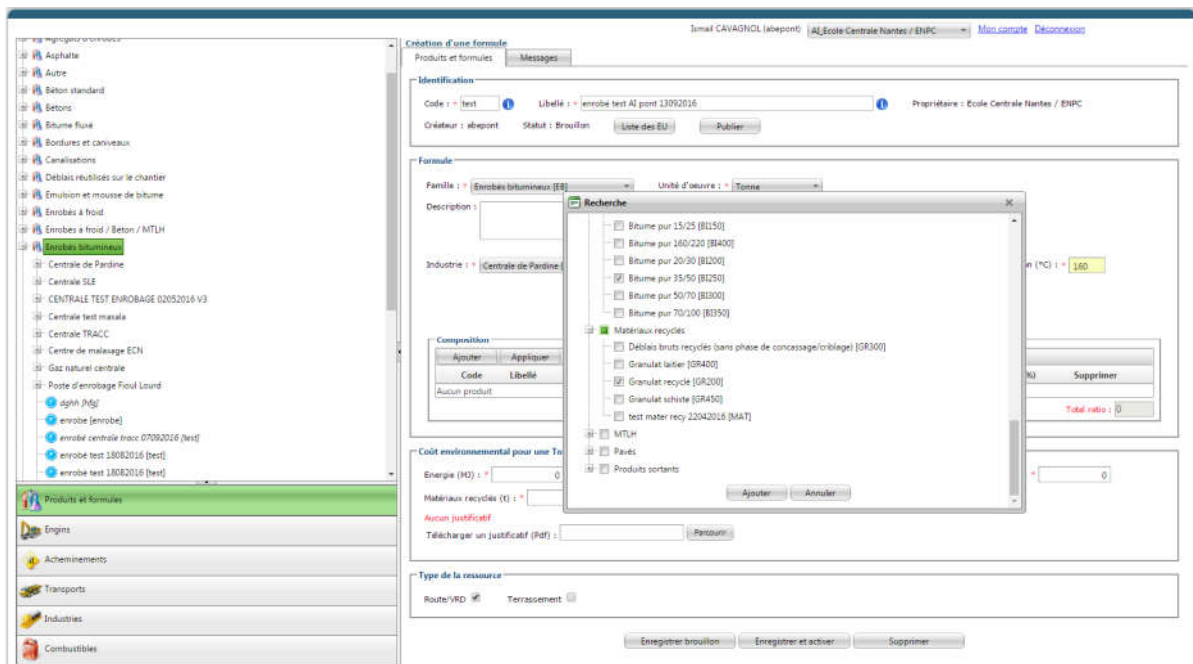


Figure 27 – Insertion of the different products composing the asphalt formula

- 11- Choose for each component, the type of transport and the distance or a multimodal transport (use of a routing). Use the Double-Freight option if trucks are recharging where they are loading. Click on "Apply" then "Save and Activate" at the bottom of the page (Figure 28). The "Multimodal Transport" option gives the possibility to use a routing (See section 4.4.3)

**Création d'une formule**

Produits et formules Messages

Code : test Libellé : Enrobé test AI port 13092016 Propriétaire : Ecole Centrale Nantes / ENPC Créateur : aleaort Statut : Actif Liste des BU Publier

**Formula**

Famille : Enrobés bitumineux (B) Unité d'œuvre : Tonne Description :

Industrie : Centrale de Parolme (Pn MURE) Combustible : Code Pourcentage (%)

Gaz naturel : GAZ 100.00 %

Fuel lourd : FOL 0.00 %

Température de fabrication (°C) : 180

**Composition**

Code	Libellé	Transport	Distance (km)	Double Fret	Transport multimodal	Ratio (%)	Supprimer
B250	Bitume pur 55/50	Transport par chemin 24h	250	0	0	5	
GR000	Granulats naturels	Transport par semi 24h	30	0	0	80	
GR200	Granulats recyclés	Transport par semi 24h	30	0	0	25	
GR110	Granulats (granulats naturels)	Transport par semi 24h	30	0	0	20	
						<b>Total ratio</b>	100

**Coût environnemental pour une Tonne**

Energie (MWh) : 300.786 CO2 (t) : 0.018076 Granulats naturels (t) : 0.3 Agrégats d'enrobés (t) : 0 Matériau recyclé (t) : 0

Déchet réutilisé au sein du projet (t) : 0

Aucun justificatif Télécharger un justificatif (pdf) : Chemin :

**Type de la ressource**

Road/VRD : Terrassement

Valider Supprimer

Figure 28 – Filling in information for each product

### 3.4.2.4 Creating a cold mix, concrete or MTLH formula

The "Products and formulas" tab allows the IA to create formulas specific to a cold, concrete or MTLH plant belonging to an EU. To do this, simply (Figure 29):

- 1- Click on the "Products and formulas" tab
- 2- Right-click on the "Cold mix" or "Concrete" or "MTLH" family and choose "Create a formula"
- 3- Complete the following mandatory fields (code, label, Family, work unit and resource type).
- 4- Click on "Save".

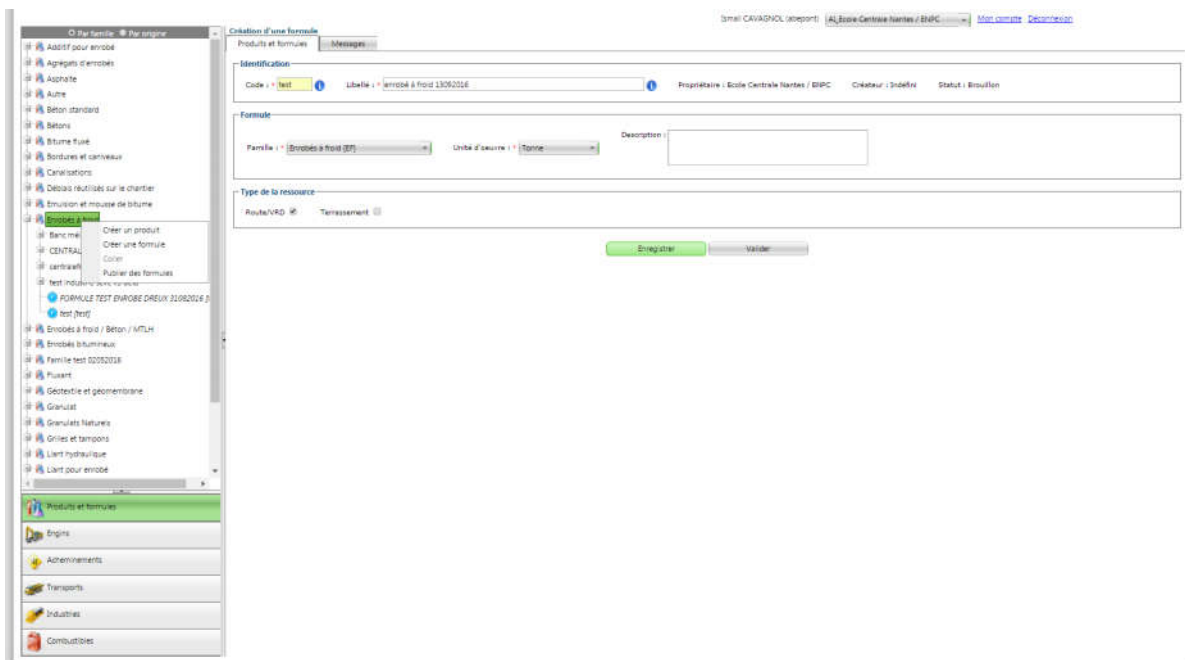


Figure 29 – Creation of a cold mix, concrete, MTLH formula

- 5- Choose the station where the formula is manufactured (Figure 30)
- 6- In the "Composition" table, Click on "Add" in order to add components to the formula, a pop-up must open up.
- 7- Choose the different components in the tree structure then click on "Add" at the bottom of this pop-up.

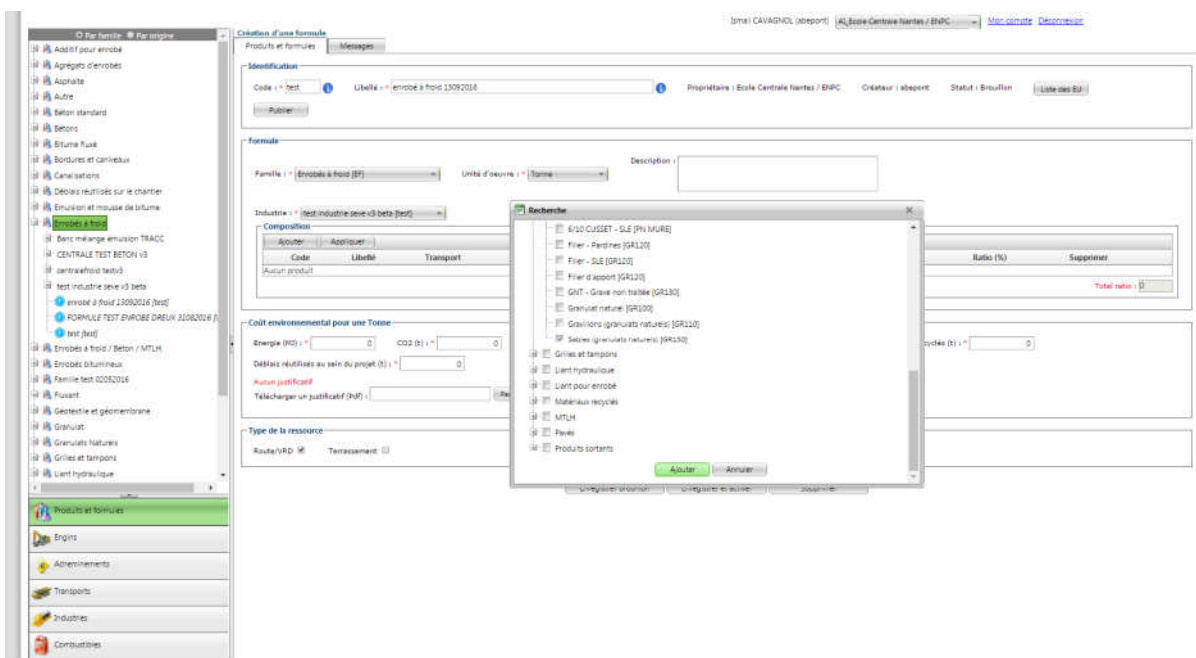


Figure 30 – Insertion of the different products composing the asphalt formula

- 8- Choose for each component, the type of transport and the distance or multimodal transport (use of a route). Use the Double-Freight option

if trucks are reloading a product leaving the site at the location where they are loading. Click on "Apply" then "Save and activate" at the bottom of the page (Figure 31).

Figure 31 - Information provision for each product

#### 3.4.2.5 Publication of a form

The "Products and Formulas" tab gives the IA the possibility to publish formulas belonging to an asphalt mixing plant, a cold mixing plant, a concrete mixing plant or an MTLH belonging to a EU. To do this, simply (Figure 32):

- 1- Click on the "Products and formulas" tab
- 2- Right-click on the family "Asphalt mixes" or "Cold mixes" or "Concrete" or "MTLH" and choose "Publish formulas"
- 3- A window opens automatically asking you to choose the destination of the publication between :
  - "Publication in the EU of the member": this gives limited access to publication to the EU of the member only
  - "Publication to other EU of SEVE": this gives access to publication to all EU present in SEVE.
- 4- Click on "Validate".



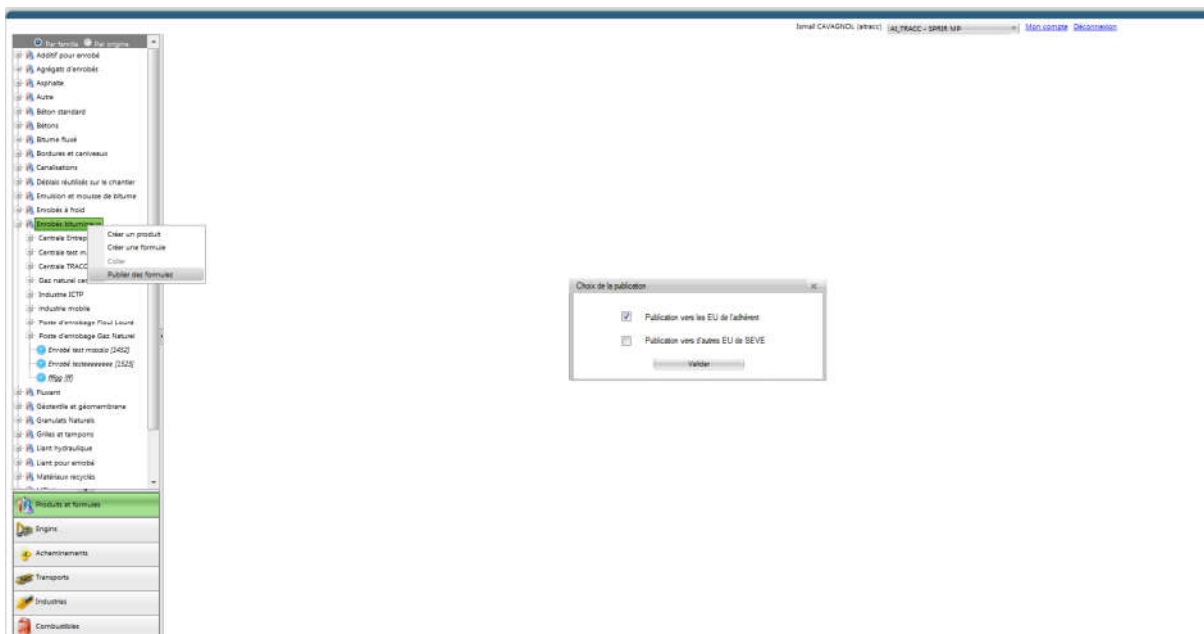


Figure 32 – Publication of a formula, choice of recipients

- 5- Choose the EU of the member to which to publish the formulas (Figure 33)
- 6- Click on the following at the bottom of page 39

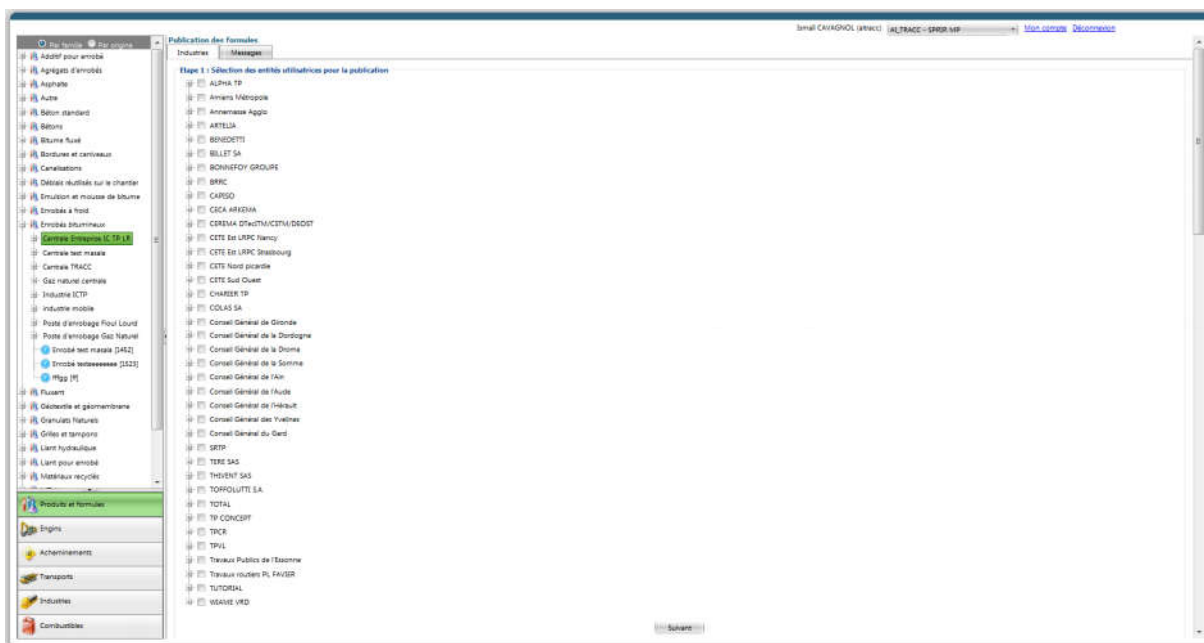


Figure 33 – Selection of user entities for publication

- 7- Choose the formula(s) to be published (Figure 34)
- 8- Click on "Publish"



**Création d'une formule**

Identification

Code : test Libellé : embois à froid 13082016

Propriétaire : Ecole Centrale Nantes / ENPC Créateur : a4report Statut : Actif

Formula

Famille : Embois à froid (EF) Unité d'œuvre : Tonne Description :

Industrie : test industrielle seve v3 beta (test)

Composition

Code	Libellé	Transport	Distance (km)	Double Fret	Transport multimodal	Ratio (%)	Supprimer
PH MURE	0/2 CUSSET - Pardines	Transport par semi 24h	20			10	
PH MURE	0/8 CUSSET - Pardines	Transport par semi 24h	20			20	
PH MURE	A00 0/10 - Pardines	Audun Transport	0			45	
BUL150	Emulsion 60%	Transport par camion 24h	1			20	
GR150	Sables (granulats naturels)	Transport par semi 24h	20			15	
						<b>Total ratio</b>	<b>100</b>

Coût environnemental pour une Tonne

Energie (MWh) : 333.62891 CO2 (t) : 0.01803883 Granulats naturels (t) : 0.45 Agrégats d'embois (t) : 0.45 Matériaux recyclés (t) : 0

Debitaire réutilisée au sein du projet (t) : 0

Aucun justificatif Télécharger un justificatif (pdf) : [Charger]

Type de la ressource

Route/VRD ☒ Terrassement ☐

Valider Supprimer

Figure 36- Shortcut direct publication of the selected formula

Then follow steps 5, 6 and 9, the formula being already pre-selected.

**Reminder:** The publication of asphalt formulas to its own EU is mandatory in order to be able to use them under ABE/BE profiles.

### 3.4.3 « Equipment » tab:

This tab only displays the equipment listed in the common SEVE database and those created by the EBAs in the EU. The AI profile cannot create devices within its EU, only the ABE profile can do so (Figure 37).

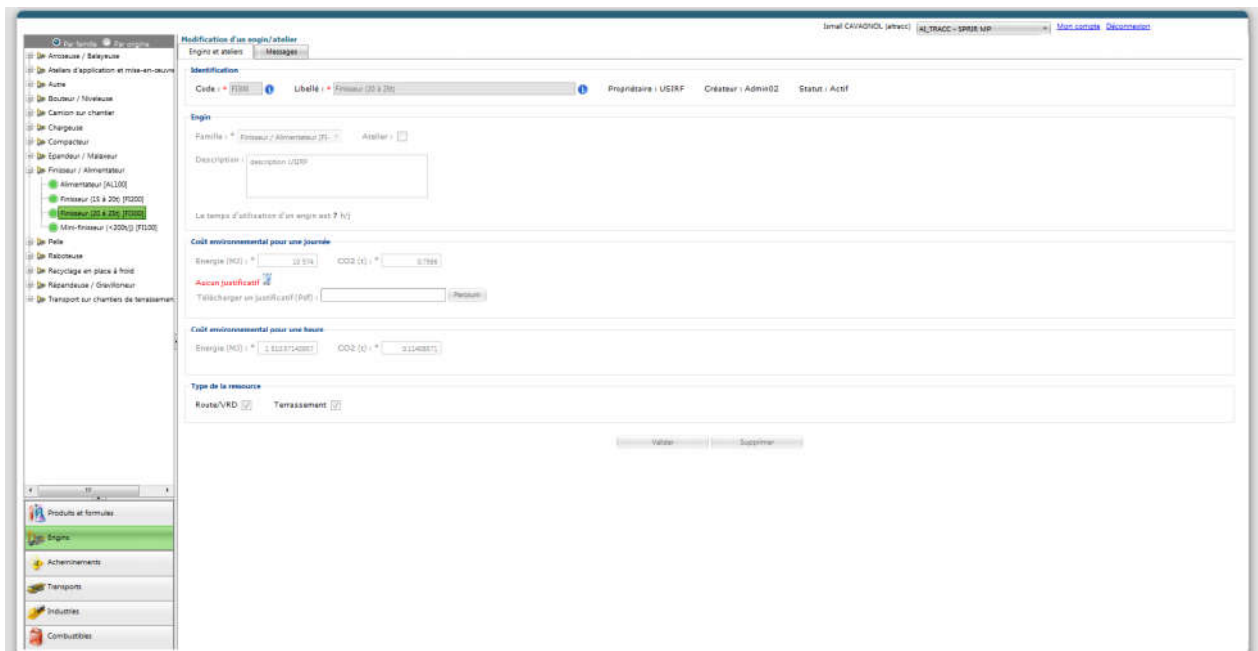


Figure 37 – View of all gears present in the EU

### 3.4.4 « Routes » tab:

The « *Routes* » tab lists the list of current routes created within the EU. Both the routes created by the AIs and the EBAs.

#### 3.4.4.1 *Creating a route*

The "Routes" tab allows the IA to create routes that can be used when creating formulas. To do this, simply (Figure 38):

- 1- Click on the "Routes" tab
- 2- Right-click on the family in the tree structure .
- 3- Choose "Create a routing"
- 4- Fill in the following mandatory fields (code, wording, type of resource).
- 5- Click on "Save draft"
- 6- Click on "Create a route"
- 7- Fill in the "Label" fields of the route as well as "Percentage" of the route.
- 8- Click on "Save"
- 9- Then create one or more routes within this route 42
- 10- Fill in the "Distance" and "Type of route" fields
- 11- Click on "Save"
- 12- Click on "Save and activate" to complete the route creation.

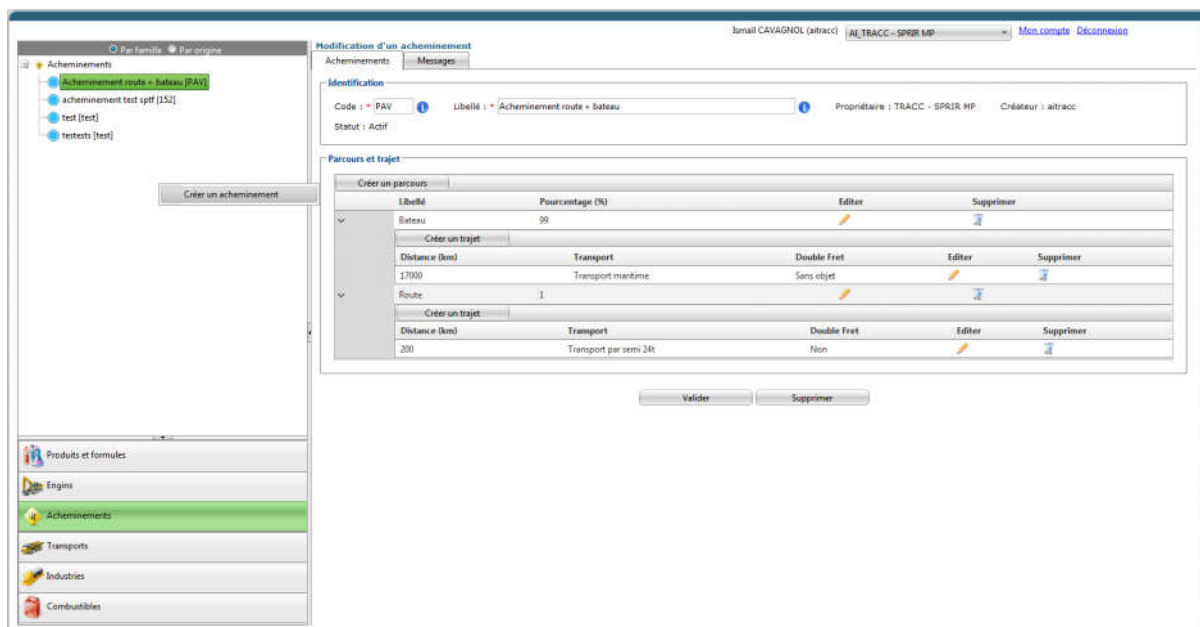


Figure 38 – Creating a NB Routing

NB Routing: To better understand the value of the routing, simply take a simple case. Indeed, the percentages to be filled in apply to tonnages and not to distances.

For example, if 80% of the supply (in tonnes) of a raw material is made by "river + rail" transport and 20% by road only, then the creation of a specific routing is extremely useful and simplifying.

### 3.4.5 « Transportation » tab:

The « *Transportation* » tab lists the list of existing routes created within the EU. Both the routes created by the AIs and the EBAs.

#### 3.4.5.1 Creation of a transportation :

The "*Transportation*" tab allows the IA to create routes that can be used when creating formulas. To do this, simply (Figure 39):

- 1- Click on the "Transportation" tab
- 2- Right-click on the family in the tree structure .
- 3- Choose "Create a transportation"
- 4- Fill in the fields "Energy (MJ)" and "CO2 (t)" 43
- 5- Click on "Browse" and attach the proof for the creation of this transport (card justifying the values "Energy (MJ)" and "CO2 (t)")
- 6- Click on "Save and activate"



Figure 39 – Creating a specific transport

### 3.4.6 « Industries » tab:

The "Industries" tab lists the list of industries belonging to the EU and those shared by the EU. It allows AI to create cold, concrete and MTLH power plants. It can also create mobile asphalt mixing plants.

#### 3.4.6.1 Creation of a mobile asphalt mixing plant

The "Industries" tab allows AI to create mobile asphalt mixing plants, simply (Figure 40):

- 1- Click on the "Industries" tab
- 2- Right-click on the family in the tree structure .
- 3- Choose "Create an Industry"
- 4- Fill in the fields Label, Code,
- 5- Choose the family "Asphalt mixing plant": the manufacturing model "black model" is automatically selected and the function "Mobile substation" checked.
- 6- Fill in the fields "Addresses" (Optional)
- 7- Click on "Add" to choose one or more fuels used for the plant.  
NB: The fuel utilization ratio must be provided when creating the formula.
- 8- Click on "Save and activate"

Figure 40 – Creation of a mobile asphalt plant

It is now possible to create asphalt formulas within this Industry and publish them to EBAs.

### 3.4.6.2 Establish a Cold Mix, Concrete or MTLH Plant

The "Industries" tab gives the possibility to the AI to create Cold mix, Concrete or MTLH plants, just click on the "Industries" tab (Figure 41):

- 1- Click right on the family in the tree structure.
- 2- Choose "Create an Industry"
- 3- Fill in the fields Label, Code,
- 4- Choose the family "Cold plant" or "Concrete plant" or "MTLH plant": the manufacturing model "Manufacturing in cold mixing plant" is automatically selected.
- 5- Fill in the fields "Addresses" (Optional)
- 6- Click on "Save and activate"

Figure 41 – Creation of a cold mix, concrete or MTLH plant

As soon as the creation of a Cold Mix, Concrete or MTLH plant is registered, it is possible to create formulas for Cold Mix or MTLH.

### 3.4.6.3 Sharing an Industry

The "Industries" tab gives the possibility to the AI to share industries, in particular within the framework of EIG, it is enough for that (Figure 41):

- 1- Right-click on the "Industries" tab (Figure 42)
- 2- Right-click on an Industry which belongs to the EU
- 3- Choose "Share an Industry"
- 4- Fill in the fields Labelled, Code,
- 5- Choose the USA to which the Industry must be Shared.
- 6- Fill in the "Addresses" fields (Optional)

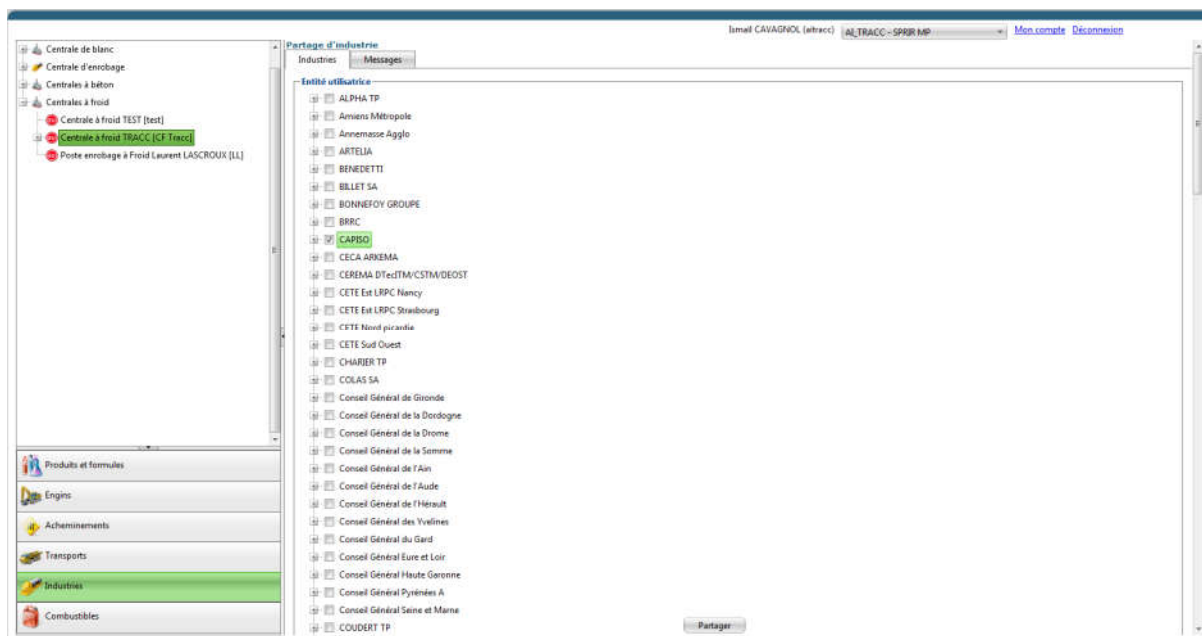


Figure 42 – Sharing an Industry

Thus, the following screen (Figure 43) appears to confirm that the selected industry(s) are shared in the selected EU.

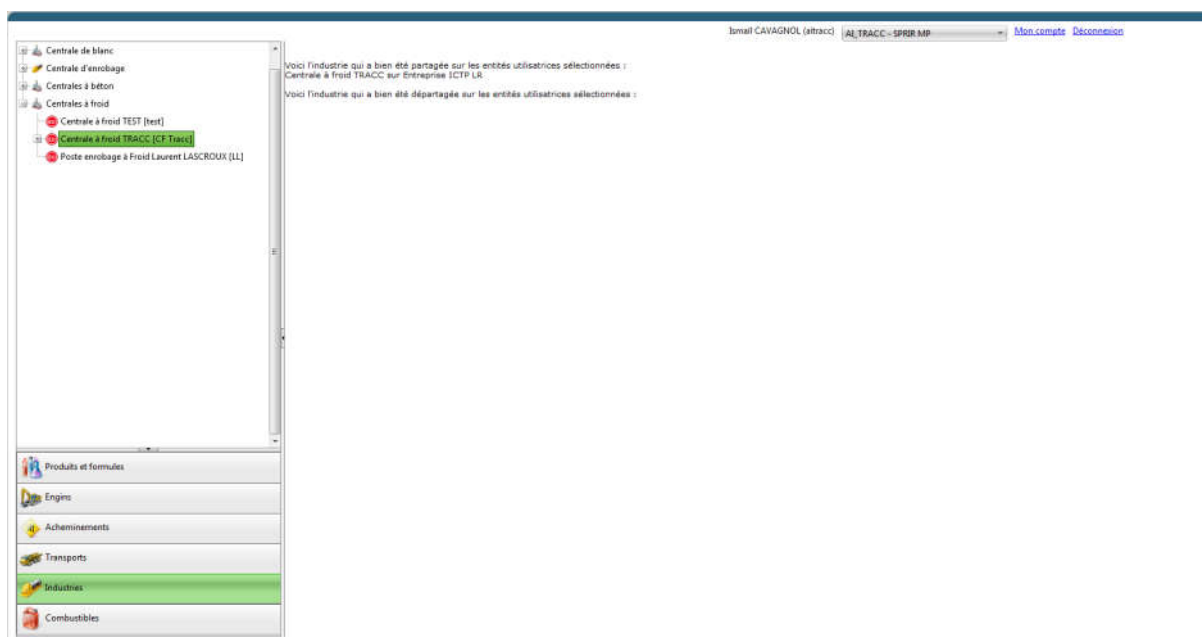


Figure 43 – Message confirming the share/division of an industry

The US AI profiles can therefore create formulas in the industries that have been shared with them.

**NB:** Although industries can be shared, the formulas remain very confidential and property of the one who created it within his EU. Forms are only visible if they are published.

### 3.4.7 « Fuels » tab:

The "Fuels" tab lists the list of fuels present in SEVE and those created by the AI. It also makes it possible to create specific fuels.

#### 3.4.7.1 Creation of a fuel

The "Fuel" tab allows the CEW to view and create specific fuels. (Figure 44 Figure 41):

- 1- Click on the "Fuels" tab
- 2- Right-click on the family in the tree structure .
- 3- Choose "Create a fuel"
- 4- Fill in the fields Label, Code and emission factor in (tCO2/MJ)
- 5- Click on "Validate"

The screenshot displays the 'Modification d'un combustible' (Modify a fuel) interface within the SEVE Eco-comparateur application. The interface is divided into several sections:

- Left Sidebar:** A tree structure under 'Combustibles' showing categories like 'Fioul domestique (FOD)', 'Fuel lourd (FOL)', 'Gaz naturel (GAZ)', 'Lignite (LIG)', and 'Lignite test spf (LIS)'. The 'Lignite test spf (LIS)' category is currently selected.
- Top Bar:** Displays the user's name 'Simell CAVAGNOX (atraccc)' and the selected fuel family 'ALTRACC - SPRIIR MP'. It also includes links for 'Mon compte' and 'Déconnexion'.
- Main Form:**
  - Identification:** Contains fields for 'Code' (set to '152'), 'Libellé' (set to 'Lignite test spf'), 'Propriétaire' (set to 'TRACC - SPRIIR MP'), 'Créateur' (set to 'atraccc'), and 'Statut' (set to 'Actif').
  - Combustible:** Contains a field for 'Facteur d'émission (tCO2/MJ)' set to '0.1'.
- Buttons:** At the bottom of the form are buttons for 'Créer un combustible', 'Valider', and 'Supprimer'.

Figure 44 – Creating a fuel



# ABE

### 3.5 Connection under an ABE profile (Design Office Administrator)

Once the access email has been received, the Design Office Administrator (AI) can choose his password and log in by entering the login that ACEU has assigned to him. He is in charge of BE projects for his EU.

When you arrive on the home page (Figure 45), you will be presented with six tabs on the left of the screen.

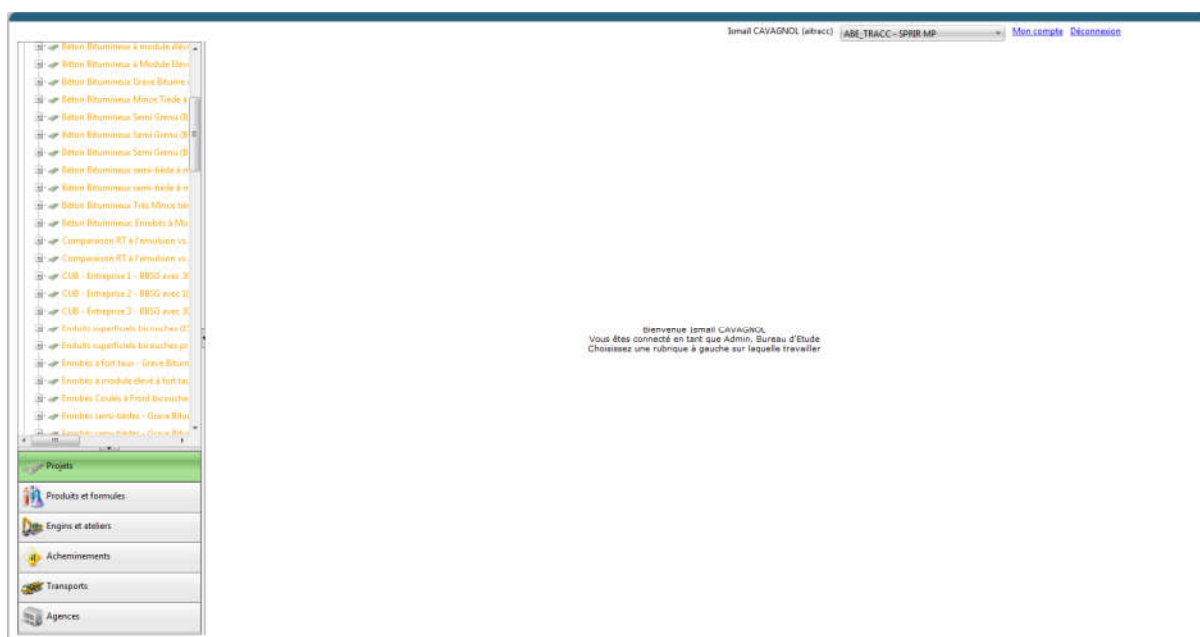


Figure 45 – ABE Profile Home Page

#### 3.5.1 « My Account » and « Logout » Options:

The "My Account" and "Logout" options written at the top right of the highlighted window have the same functions as those of the ACD profile (3.2.1)

#### 3.5.2 « Projects » tab:

The "Projects" tab lists all the projects created within the EU. This allows the EBA to access and modify BE projects.

##### 3.5.2.1 Creating a project

The creation (Figure 46) of projects is the purpose of the software and all the steps seen above allow the user with an ABE profile to create a project under good conditions.

- 1- Click on the "Projects" tab
- 2- Right-click on the family in the tree structure.

3- Choose "Create a project".

4- Fill in the "Label" and "Code" fields

5- Indicate the "Nature of the project".

- Road/VRD: This module concerns road works, various network roads and small earthworks < 50,000 m<sup>3</sup> of displaced materials.
- Earthworks: This module specifically concerns large-scale earthworks > 50,000 m<sup>3</sup> of displaced materials.
- Road/VRD + Earthworks

Figure 46 – Environment for project creation

6- Check the box "Taking into account water management and biodiversity indicators" (Figure 47)

- These indicators are automatically taken into account when the choice of Project Nature is "Earthworks" or "Road/VRD + Earthworks".
- The consideration of these indicators is therefore optional when choosing "Road/VRD" alone.

7- Then fill in at least "Title 1" and the name of the "Contracting Authority" which will be written on the first page of the summary results PDF.

- In addition, it is possible to fill in the following information:
  - o "Customer reference", written on the first page of the PDF
  - o "Title 2", written on the first page of the PDF
  - o "Project Manager", listed on the first page of the PDF
  - o "Date of submission of the offer", written on the first page of the PDF
  - o "Date of issue of the report", entered on the first page of the PDF
  - o "Project Manager Logos", "Client" and company, listed on the first page of the PDF
  - o "Project description", written on the second page of the PDF

8- Click on "Save".

**NB:** When project names appear in red, it means that one data is missing (error in one of the formulas for example) and that it cannot be used as it stands.

When it appears in orange, it means that changes have been made since the last time it was used.

The screenshot shows the 'Création d'un projet' window. The left sidebar contains a tree view with categories like 'En cours', 'Projet SEVE', 'Produits et Formules', 'Engins et ateliers', 'Achèvements', 'Transports', and 'Agences'. The main area is titled 'Création d'un projet' and has tabs for 'Projet', 'Scénarios', and 'Messages'. The 'Projet' tab is active, showing fields for 'Identification' (Code: 16-252-1, Libellé: Projet SEVE v3, Propriétaire: TRACC - SPRIR MP, Créateur: atacc), 'Nature du projet' (Route/VRD, Terrassement), 'Prise en compte des indicateurs gestion de l'eau et préservation de la biodiversité', and 'Solutions du projet'. The 'Créer' button is at the bottom right of the 'Solutions du projet' section.

Figure 47 – First project information (code, name, project type, logos...)

9- In Project Solutions, a "Basic Solution" is automatically created (Figure 48)

10- Click on the "Basic Solution", in order to modify its parameters and enter all the necessary operations.

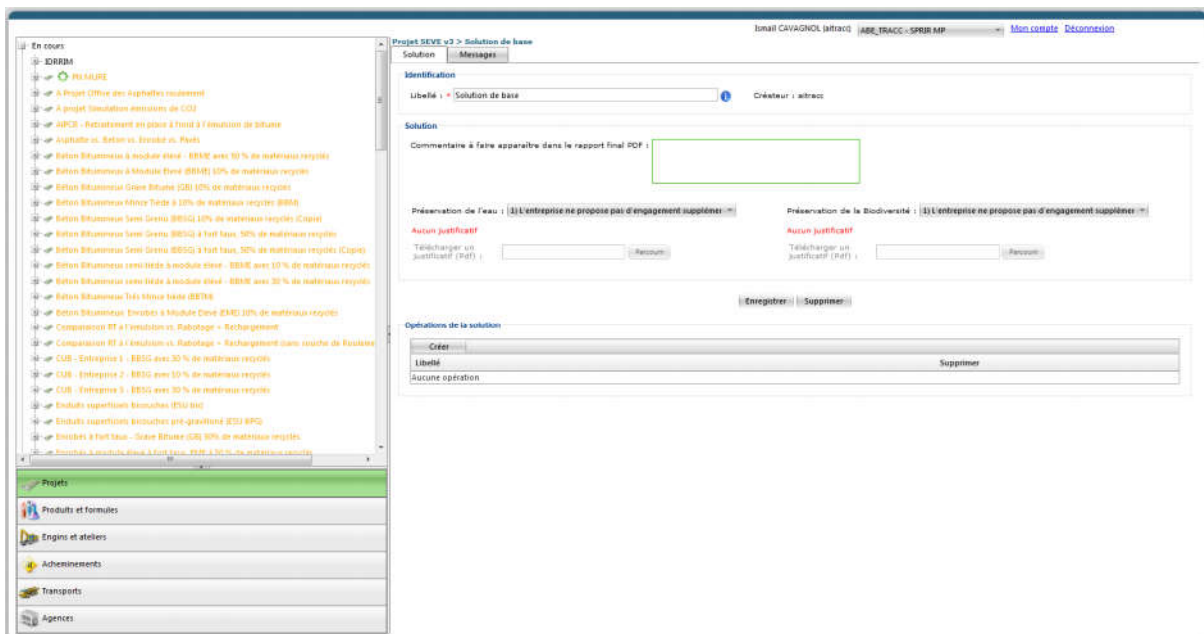


Figure 48 – Creating operations in the 1st solution commonly referred to as "basic"

11- Renaming (Optional) the Solution (Figure 49)

12- Filling in the commentary on the solution (Optional)

13- Choosing the level of commitment regarding the indicators: - "Water conservation".

This indicator reflects the level of commitment of the company in its offer to preserve the water resource and to enhance the capacity of companies to use recycled water on projects (water from temporary or final wastewater basins and process water).

- o Level 1: The company does not offer any additional commitments beyond legal and contractual constraints.
- o Level 2: The company monitors the withdrawals by making an inventory of the origin (withdrawal from the intake, water bodies or streams, water supply and storage basin (recycled runoff water in the watering system).
- o Level 3: The company monitors the samples as in version 2, but also follows the destination: watering the tracks, water required for compaction, water required for soil treatment, etc.
- o Level 4: The company undertakes to respect a percentage of recycled water over the entire consumption. The insertion of a supporting document is mandatory for commitments 2, 3 and 4. - Biodiversity conservation " The Biodiversity indicator reflects the level of commitment of the company in its offer to preserve this biodiversity. During the works, the companies are committed to preserving biodiversity and ensuring that the functionalities of natural environments, both terrestrial and aquatic, are preserved.
- o Level 1: The company does not offer any additional commitments beyond legal and contractual constraints.
- o Level 2: The company undertakes to deploy biodiversity signage in relation to the specific challenges of the project (sensitive areas, work near watercourses, etc.)

- o Level 3: The company undertakes to deploy biodiversity signage in relation to the specific challenges of the project (sensitive areas, work near watercourses, etc.) and to develop training activities (at least 1/4 hour biodiversity per month)
- o Level 4: The company undertakes to deploy biodiversity signage in relation to the specific challenges of the project (sensitive areas, work near water...) and to develop training actions (1/4 hours biodiversity per month) and implement a Biodiversity Insurance Plan (biodiversity management plan = integrated features, final study and monitoring the effectiveness of actions)

NB: The insertion of a supporting document is mandatory for commitments 2, 3 and 4.

- 14- Click on "Create" in the "Solution Operations" box to create an operation in the solution
- 15- Fill in the "Label"
- 16- Choose the "Type of operation" that differentiates the environmental impacts due to "Road/VRD" operations from those due to "Earthworks" operations in the results synthesis.
- 17- Fill in the description of the operation (Optional)
- 18- Click on "Save", the box "Operation detail" is activated

Figure 49 – Information on the type of solution operation (earthworks or road/village)

- 19- In the "Operation detail" box under the "Incoming product" tab, click on "Add" (Figure 50)



The screenshot displays the 'Opération de Terrassement' interface. A search dialog box is open, showing a list of products. The main window has tabs for 'Produits entrants', 'Engins', and 'Produits sortants'. A table on the right lists the selected products and their quantities.

Unité d'oeuvre	Quantité	Supprimer
0/2 CUSSET - Pannes	5 000	[Icon]
Déblais issus et réutilisés sur le même chantier	70 000	[Icon]
Granulat recyclé	30 000	[Icon]

Figure 50 – Inserting products and incoming formulas on the site

- 20- After selecting the different products, "Click" on "Add" (Figure 51)
- 21- Choose the "Type of transport" for each of these products as well as the "Distance (km)" covered to the site (e.g.: Central Worksite or Quarry-Construction Site)  
NB: It is possible to activate the Double-freight function if necessary.
- Or**
- Choose a "Multimodal Transport" by pressing (+) to select a route (see 4.4.3)
- 22- Enter the "Quantity (t)" for each of the materials
- 23- Click on "Apply"

The screenshot shows the 'Opération de Terrassement' details. A sidebar on the left contains navigation links. The main area displays the 'Opération de Terrassement' details, including a table for 'Produits entrants'.

Produit	Editer	Transport	Distance (km)	Double Freight	Transport multimodal	Unité d'oeuvre	Quantité	Supprimer
0/2 CUSSET - Pannes	[Icon]	Transport par semi 24t	50	[Icon]	[Icon]	Tonne	5 000	[Icon]
Déblais issus et réutilisés sur le même chantier	[Icon]	Aucun Transport	0	[Icon]	[Icon]	Tonne	70 000	[Icon]
Granulat recyclé	[Icon]	Transport par semi 24t	20	[Icon]	[Icon]	Tonne	30 000	[Icon]

Figure 51 – Information for each of the incoming products

- 24- In the "Operation Details" box under the "Machines" tab, click on "Add" (Figure 52)

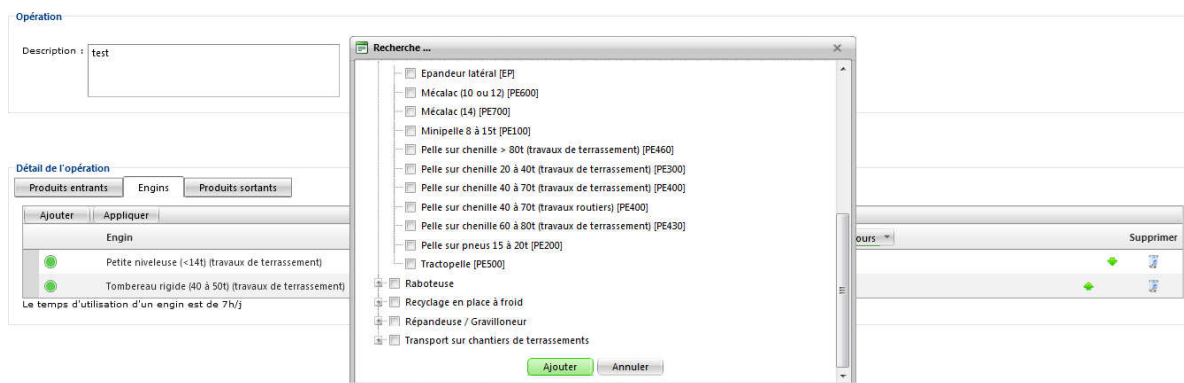


Figure 52 – Inserting the machines present on the site

- 25- After selecting the different machines, "Click" on "Add" (Figure 53)
- 26- Enter the "Number of hours (h)" or "Number of days (j)" of use associated with the "Quantity (t)" previously entered in the "Incoming products" tab for each machine.
- 27- Click on "Apply"

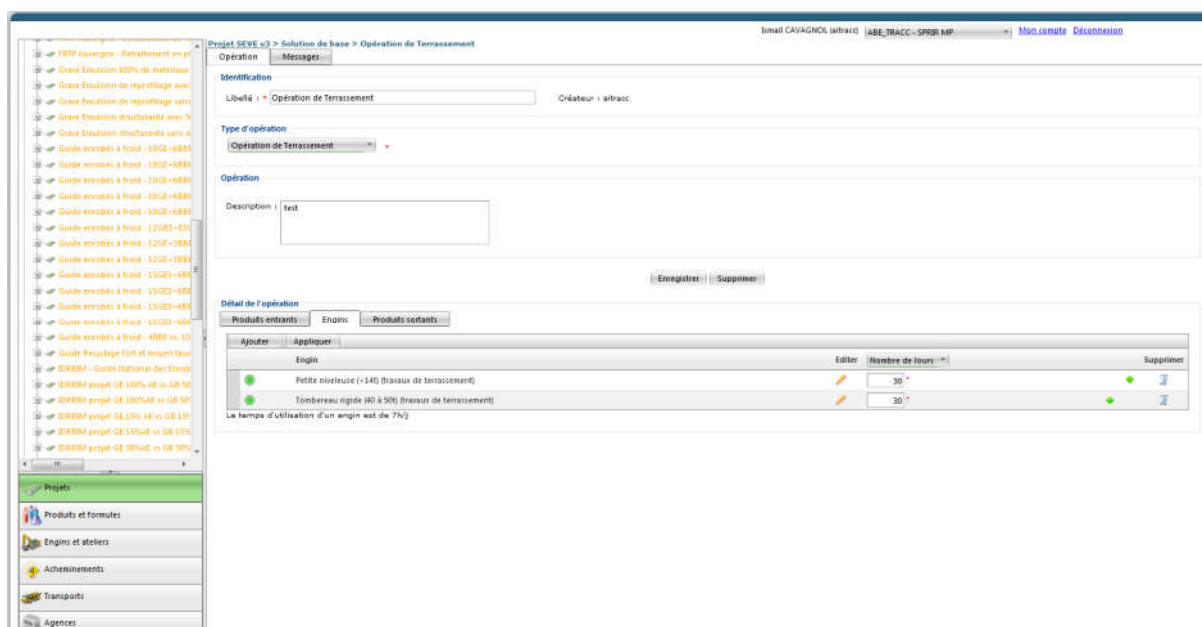


Figure 53 – Information on the number of days or hours of use on the entire site

- 28- In the "Operation details" box under the "Outgoing products" tab, click on "Add" (Figure 54)

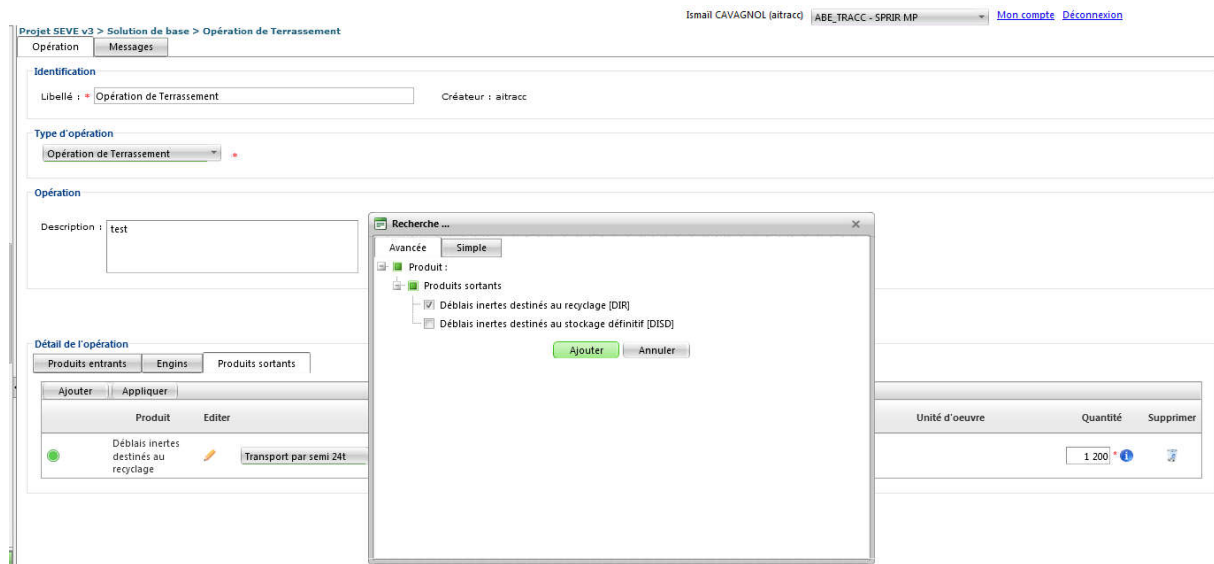


Figure 54 – Inserting products leaving the site

- 29- After selecting the different products, "Click" on "Add" (Figure 55)
- 30- Choose the "Type of transport" for each of these products as well as the "Distance (km)" covered to the site (e. g.: Central Worksite or Quarry-Construction Site)  
NB: It is possible to activate the Double-freight function if necessary.  
**Or**  
Choose a "Multimodal Transport" by pressing (+) to select a route (see 4.4.3)
- 31- Enter the "Quantity (t)" for each of the materials
- 32- Click on "Apply"
- 33- Click on "Save"

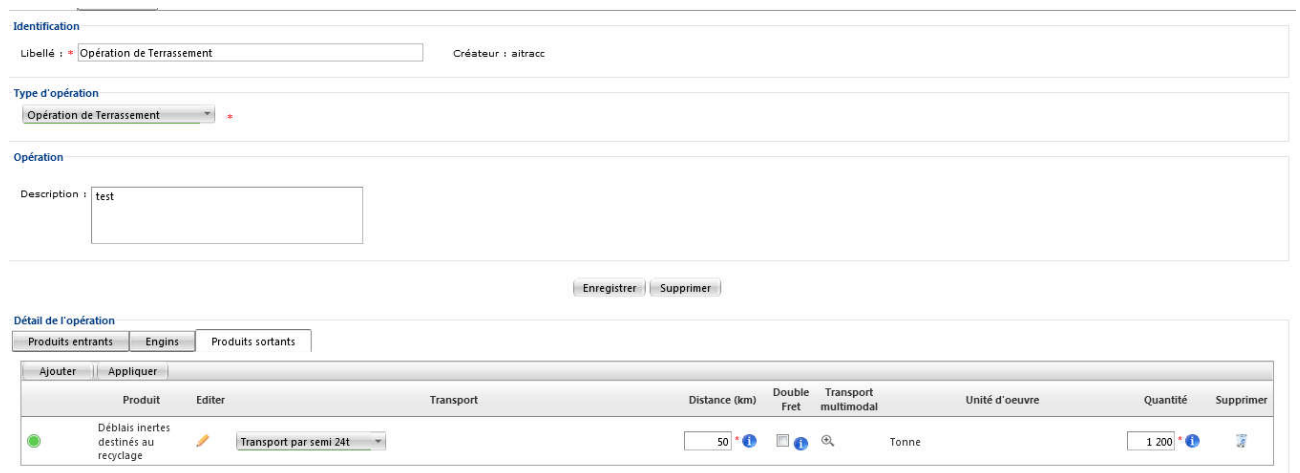


Figure 55 – Information on each of the outgoing products

- 34- Repeat steps 14 to 33 as many times as there are operations in the solution. Once the solution is finished, click in the tree structure on your project, here: SEVE v3.

- 35- In the "Project Solution" box, click on "Create" to add the alternative solution that will be compared to the first one.

NB:

- It is possible to compare a maximum of 6 solutions on the same project.
  - For reasons of speed, it is possible in the tree structure, by right-clicking on "Duplicate", to duplicate a solution (a project or an operation elsewhere) and modify its fields (Label, quantities, distance...).
- 36- Fill in the "Label" of this new solution.
- 37- Repeat steps 12 to 34 for this new solution

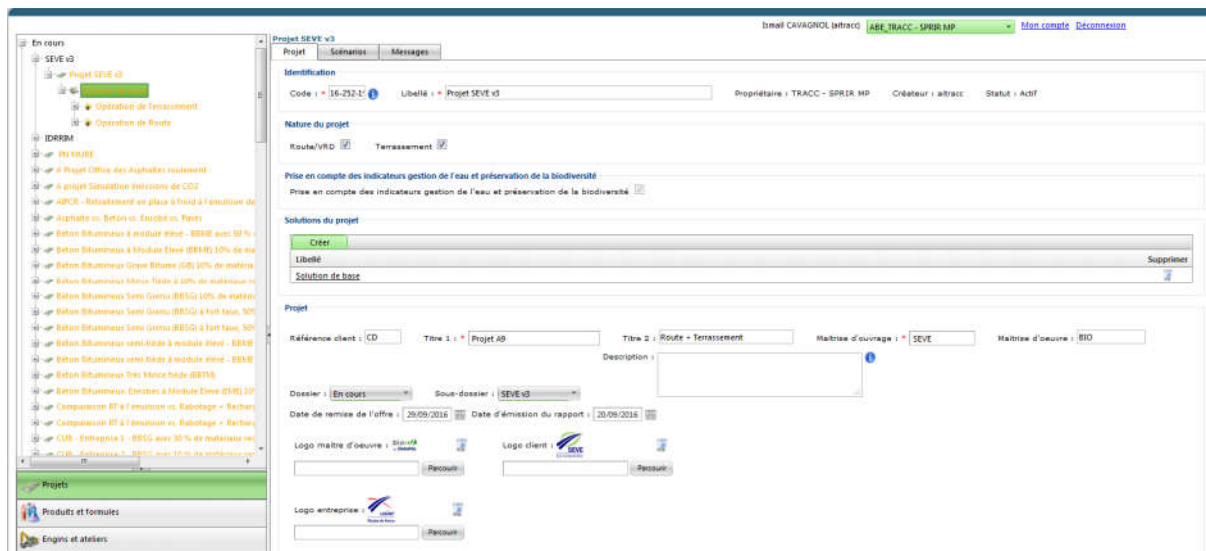


Figure 56 – The first solution is finished, and visible in the tree structure

At this point the 2 solutions are created (Figure 57), so:

- It is possible to visualize in the tree structure, the project, the 2 solutions of the project, the different operations of each of the 2 solutions as well as the incoming products, the machines, the outgoing products for each operation.
- It is possible to compare them in the "Scenario" tab

The screenshot shows the 'Créer' (Create) form for a project named 'Projet SEVE v3'. The form is divided into several sections:

- Identification:** Code: 13-252-1, Libellé: Projet SEVE v3, Propriétaire: TRACC - SPRIR MP, Créateur: atracc.
- Nature du projet:** Route/VRD: ☒, Terrassement: ☒.
- Prise en compte des indicateurs gestion de l'eau et préservation de la biodiversité:** ☒.
- Solutions du projet:** A table with columns 'Créer', 'Libellé', and 'Supprimer'. It contains two rows: 'Solution de base' and 'Solution variante'.
- Projet:** Référence client: CD, Titre 1: Projet A9, Titre 2: Route - Terrassement, Maître d'ouvrage: SEVE, Dossier: En cours, Sous-dossier: SEVE v3, Date de remise de l'offre: 20/09/2016, Date d'émission du rapport: 20/09/2016.
- Logos:** Logo maître d'ouvrage, Logo client, Logo entreprise.

Buttons at the bottom: Valider, Supprimer.

Figure 57 – Creating the 2nd solution commonly called "variant"

38- Click on "Scenario" (Figure 58)

39- Click on "Create" a scenario

40- Click on "Save" 59

The screenshot shows the 'Scénarios du projet' form for 'Projet SEVE v3'. The form is divided into several sections:

- Créer:** Buttons for 'Créer', 'Libellé', 'Energie (MJ)', 'CO2 (t)', 'Préservation de la ressource', 'Tonne Kilomètre (tk)', 'Gestion de l'eau', 'Préservation de la biodiversité', 'Synthèse', 'Editer', 'Supprimer'.
- Identification:** Libellé: Projet SEVE v3.
- Scénario:** Commentaires dans le chapitre "Commentaire général", Commentaires dans le chapitre "Tableau des résultats", Commentaires dans le chapitre "Présentation sommaire des solutions".
- Indicateurs:** Energie (MJ): ☒, CO2 (t): ☒, Tonne-kilomètre: ☒, Gestion de l'eau: ☒, Préservation de la biodiversité: ☒.
- Buttons:** Enregistrer, Annuler.

Figure 58 – Creating a comparison scenario (Only between the first 2 solutions for example)

41- Click on "Synthesis" of the results (Figure 59)

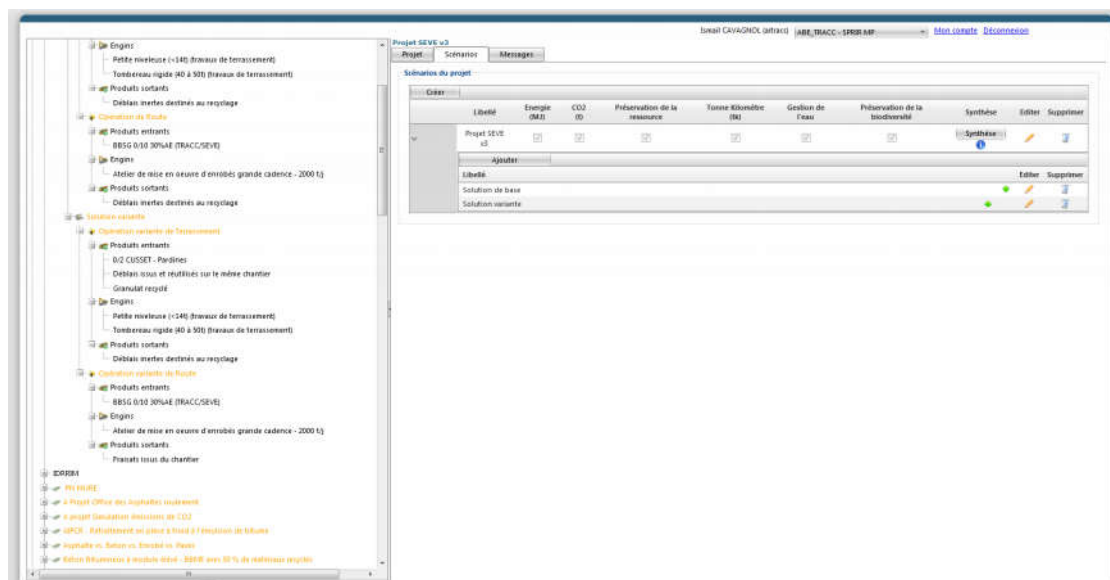
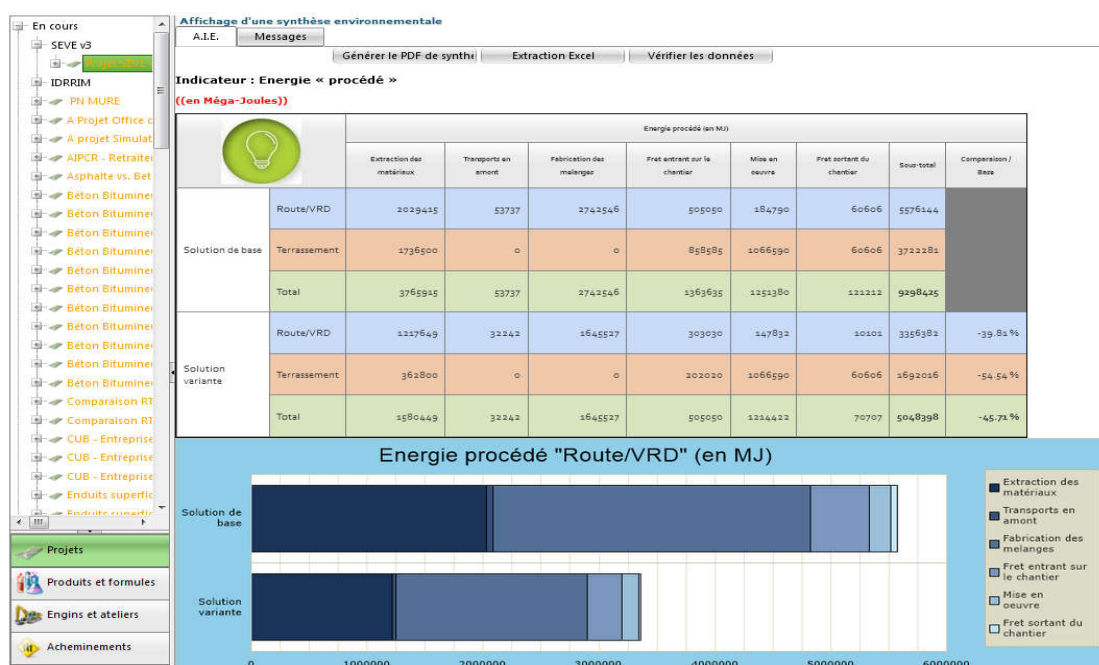


Figure 59 – Generating the synthesis of the results

The summary of the results is displayed directly on your web page in the following form, it is possible to view the results on the 4 quantitative indicators (Energy (MJ) (Figure 60), Greenhouse gas emissions (t<sub>éq</sub> CO<sub>2</sub>) (Figure 61), Conservation of natural resources (tonne) (Figure 62) and tonne.kilometre (tonne.kilometre) (Figure 63))

- A comparative table of solutions over all phases of the project life cycle (from extraction to implementation)
- Several graphs to better visualize the differences between the proposed solutions and between the different phases





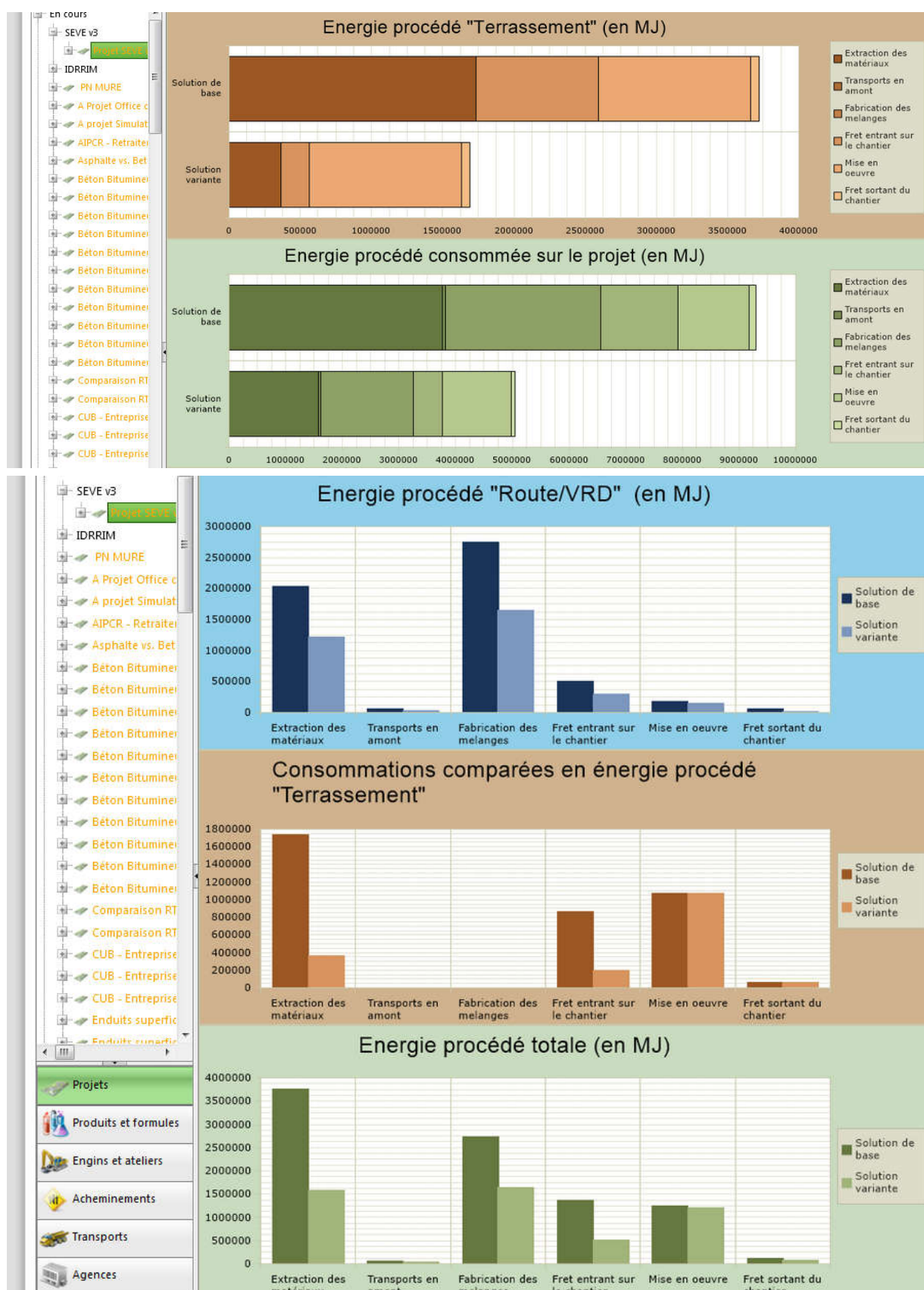


Figure 60 – Results on the Energy indicator (MJ)



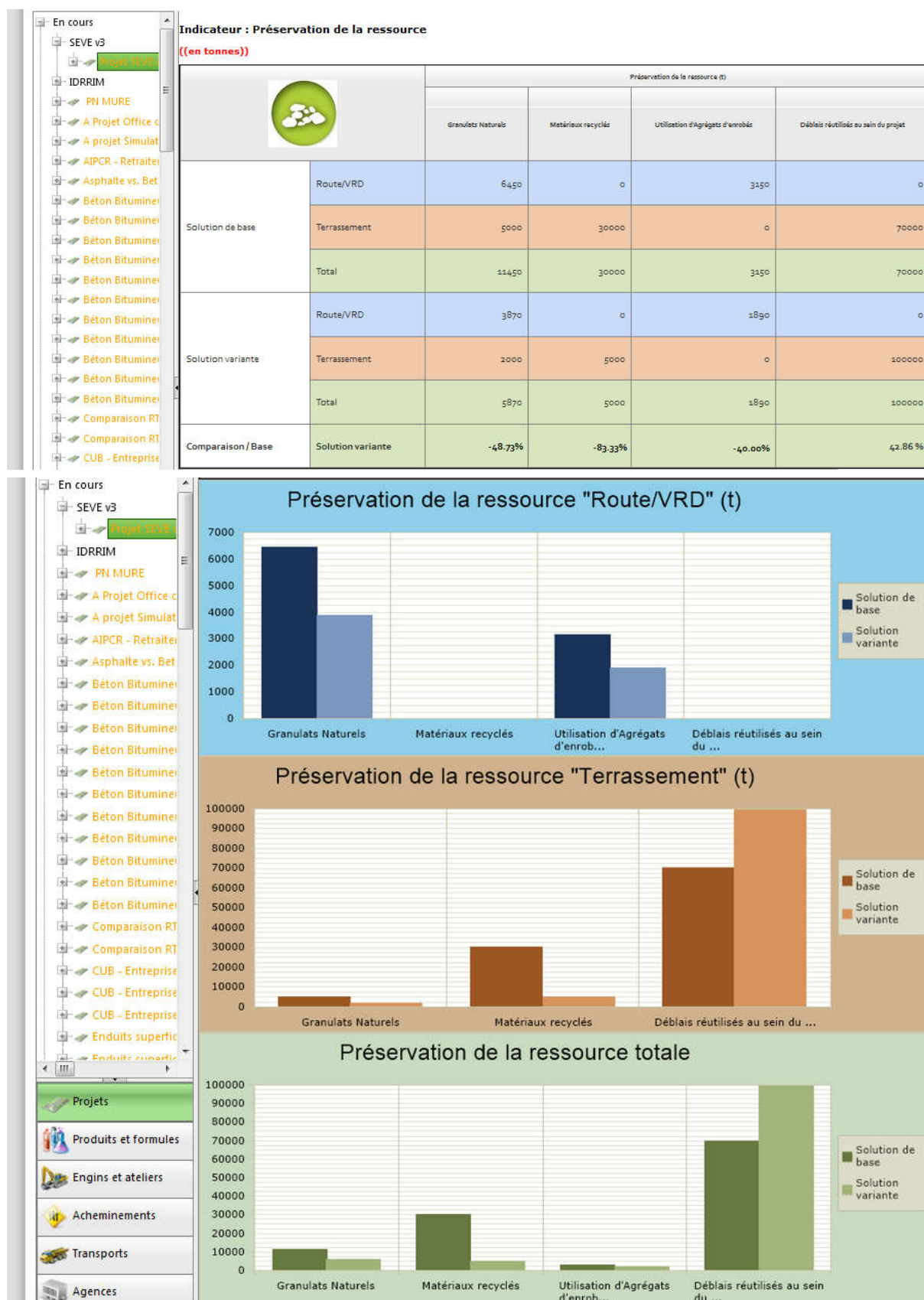


Figure 62 – Results on the Resource conservation indicator



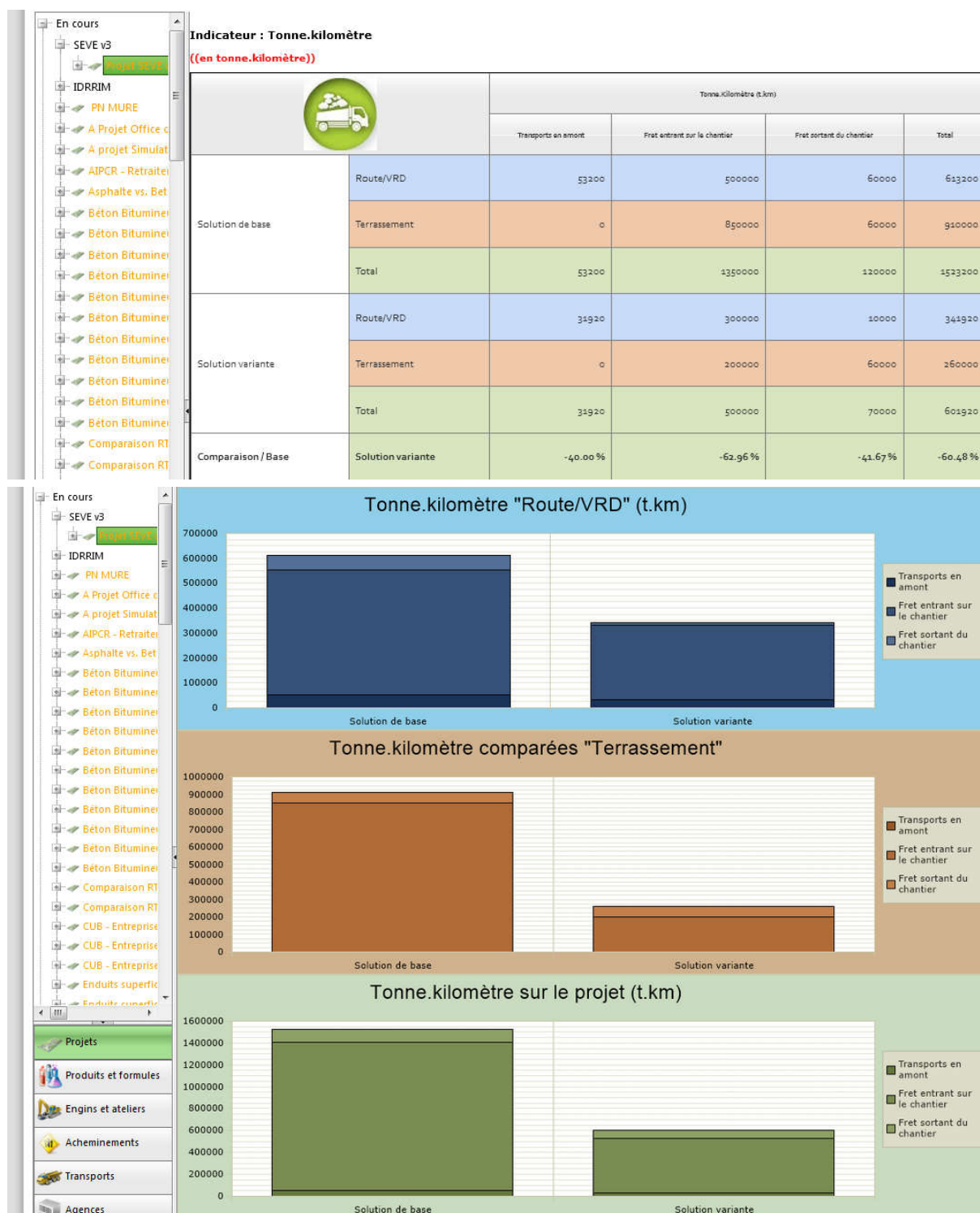


Figure 63 – Results on the Tonne.kilometer indicator (t.km)

The summary of results also includes information from the "Management of Water" and "Biodiversity conservation" (Figure 64):

- Level of commitment
- Document justifying the commitment

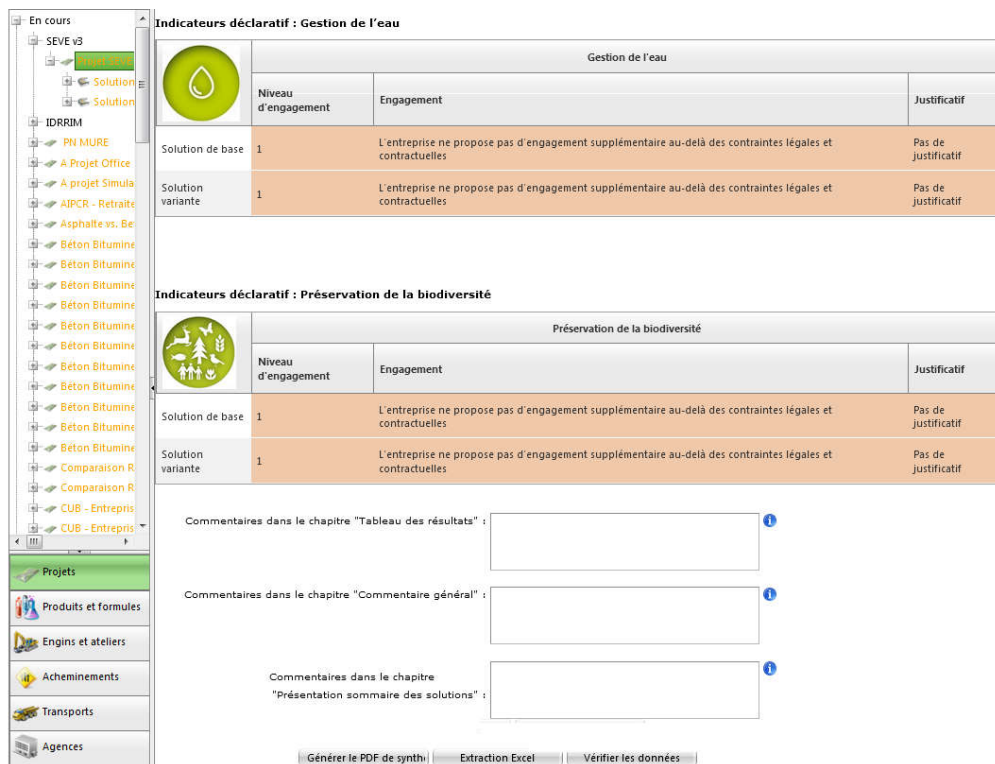
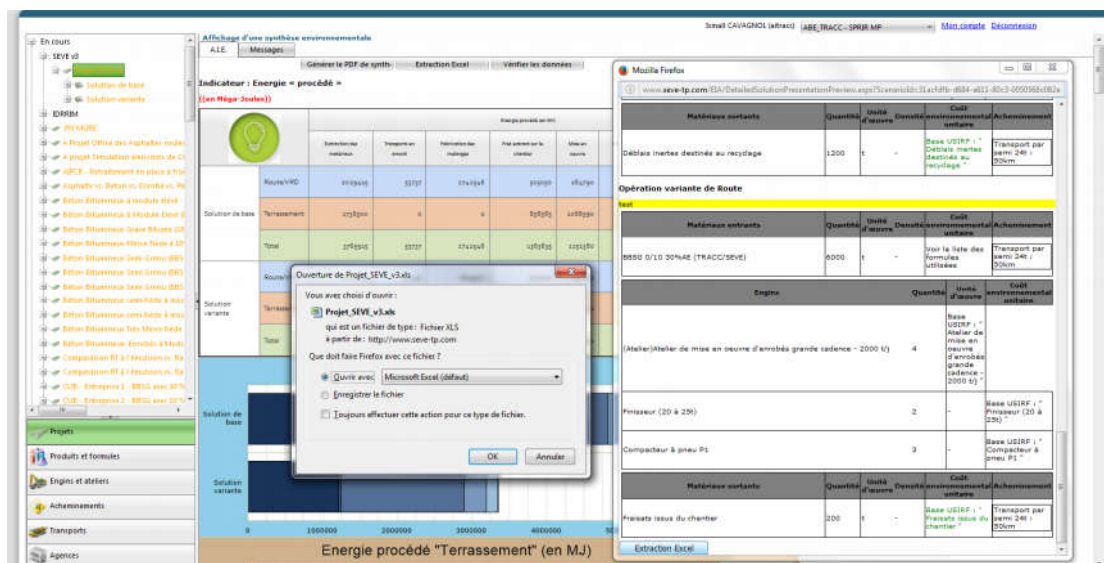


Figure 64 – Information on the "Water Management" and "Biodiversity Preservation " indicators

- 32 Click on "Verify data", a pop-up is automatically generated (Figure 65) to view all the input or user-provided data. It is also possible to generate an EXCEL extraction of the input data by clicking on "EXCEL Extraction" at the bottom of the page.



Présentation détaillée des solutions					
<b>Notes</b>					
Les notes écrites en jaune sont établies par l'utilisateur du SEVE.					
Les notes écrites en vert sont établies par l'utilisateur du SEVE.					
Les notes écrites en bleu sont établies par l'utilisateur du SEVE.					
Les notes écrites en rouge sont établies par l'utilisateur du SEVE.					
<b>Solution de base</b>					
<b>Opération de Terrassement</b>					
<b>test</b>					
Matériaux entrants	Quantité	Unité d'œuvre	Densité	Coût environnemental unitaire	Acheminement
OZCUSSET - Paires	5000	t	-	Par de justifié par	Transport par semi 24 : 50m
Gravier recyclé	70000	t	-	Base USRF - "Gravier recyclé"	Transport par semi 24 : 20m
Déblais sous enrobés sur le même chantier	70000	t	-	Base USRF - "Déblais sous enrobés sur le même chantier"	
Engins	Quantité	Unité d'œuvre	Coût environnemental unitaire		
Pente niveleuse (160 travaux de terrassement)	20	-	Base USRF - "Pente niveleuse (160 travaux de terrassement)"		
Tombereau rigide (42 à 500 travaux de terrassement)	70	-	Base USRF - "Tombereau rigide (42 à 500 travaux de terrassement)"		
Matériaux sortants	Quantité	Unité d'œuvre	Densité	Coût environnemental unitaire	Acheminement
Déblais terres destinés au recyclage	500	t	-	Base USRF - "Déblais terres destinés au recyclage"	Transport par semi 24 : 50m
<b>Opération de Route</b>					
<b>test</b>					
Matériaux entrants	Quantité	Unité d'œuvre	Densité	Coût environnemental unitaire	Acheminement
BRSQ (RD 30-AE) (TRACOSEVE)	70000	t	-	Voit la liste des formules utilisées	Transport par semi 24 : 50m
Engins	Quantité	Unité d'œuvre	Coût environnemental unitaire		
Tracteur (Tracteur de mise en œuvre d'enrobé grande cadence - 2000h)	5	-	Base USRF - "Tracteur de mise en œuvre d'enrobé grande cadence - 2000h"		
Presseur (20 à 250)	5	-	Base USRF - "Presseur (20 à 250)"		
Compacteur à pneu P1	5	-	Base USRF - "Compacteur à pneu P1"		
Matériaux sortants	Quantité	Unité d'œuvre	Densité	Coût environnemental unitaire	Acheminement
Déblais terres destinés au recyclage	500	t	-	Base USRF - "Déblais terres destinés au recyclage"	Transport par semi 24 : 50m

Figure 65 – Verification of data and extraction of project input data from file EXCEL

- 43- Click on "Generate summary PDF" of the results, a pop-up opens automatically to open the PDF (Figure 66).

The screenshot shows the SEVE software interface with a pop-up window titled "Ouverture de Projet\_SEVE\_v3.pdf". The window contains a table of project data, a bar chart titled "Energie procédé 'Route/VRD' (en MJ)", and a list of project details. The PDF content includes a cover page with project information and a table of contents.

**Table 1: Project Data**

Indicateur	Projet	Projet	Projet	Projet	Projet	Projet	Projet
Route/VRD	100000	100000	100000	100000	100000	100000	100000
Terrassement	100000	100000	100000	100000	100000	100000	100000
Travaux	100000	100000	100000	100000	100000	100000	100000
Route/VRD	100000	100000	100000	100000	100000	100000	100000
Terrassement	100000	100000	100000	100000	100000	100000	100000
Travaux	100000	100000	100000	100000	100000	100000	100000

**Table 2: Energy Consumption**

Indicateur	Projet	Projet	Projet	Projet	Projet	Projet	Projet
Route/VRD	100000	100000	100000	100000	100000	100000	100000
Terrassement	100000	100000	100000	100000	100000	100000	100000
Travaux	100000	100000	100000	100000	100000	100000	100000
Route/VRD	100000	100000	100000	100000	100000	100000	100000
Terrassement	100000	100000	100000	100000	100000	100000	100000
Travaux	100000	100000	100000	100000	100000	100000	100000

**Table 3: Project Details**

Indicateur	Projet	Projet	Projet	Projet	Projet	Projet	Projet
Route/VRD	100000	100000	100000	100000	100000	100000	100000
Terrassement	100000	100000	100000	100000	100000	100000	100000
Travaux	100000	100000	100000	100000	100000	100000	100000
Route/VRD	100000	100000	100000	100000	100000	100000	100000
Terrassement	100000	100000	100000	100000	100000	100000	100000
Travaux	100000	100000	100000	100000	100000	100000	100000

**Table 4: Project Summary**

Indicateur	Projet	Projet	Projet	Projet	Projet	Projet	Projet
Route/VRD	100000	100000	100000	100000	100000	100000	100000
Terrassement	100000	100000	100000	100000	100000	100000	100000
Travaux	100000	100000	100000	100000	100000	100000	100000
Route/VRD	100000	100000	100000	100000	100000	100000	100000
Terrassement	100000	100000	100000	100000	100000	100000	100000
Travaux	100000	100000	100000	100000	100000	100000	100000

Figure 66 – Extracting the results summary PDF



44-Extracting the EXCEL results summary file, a pop-up opens automatically to open the EXCEL file (Figure 67).

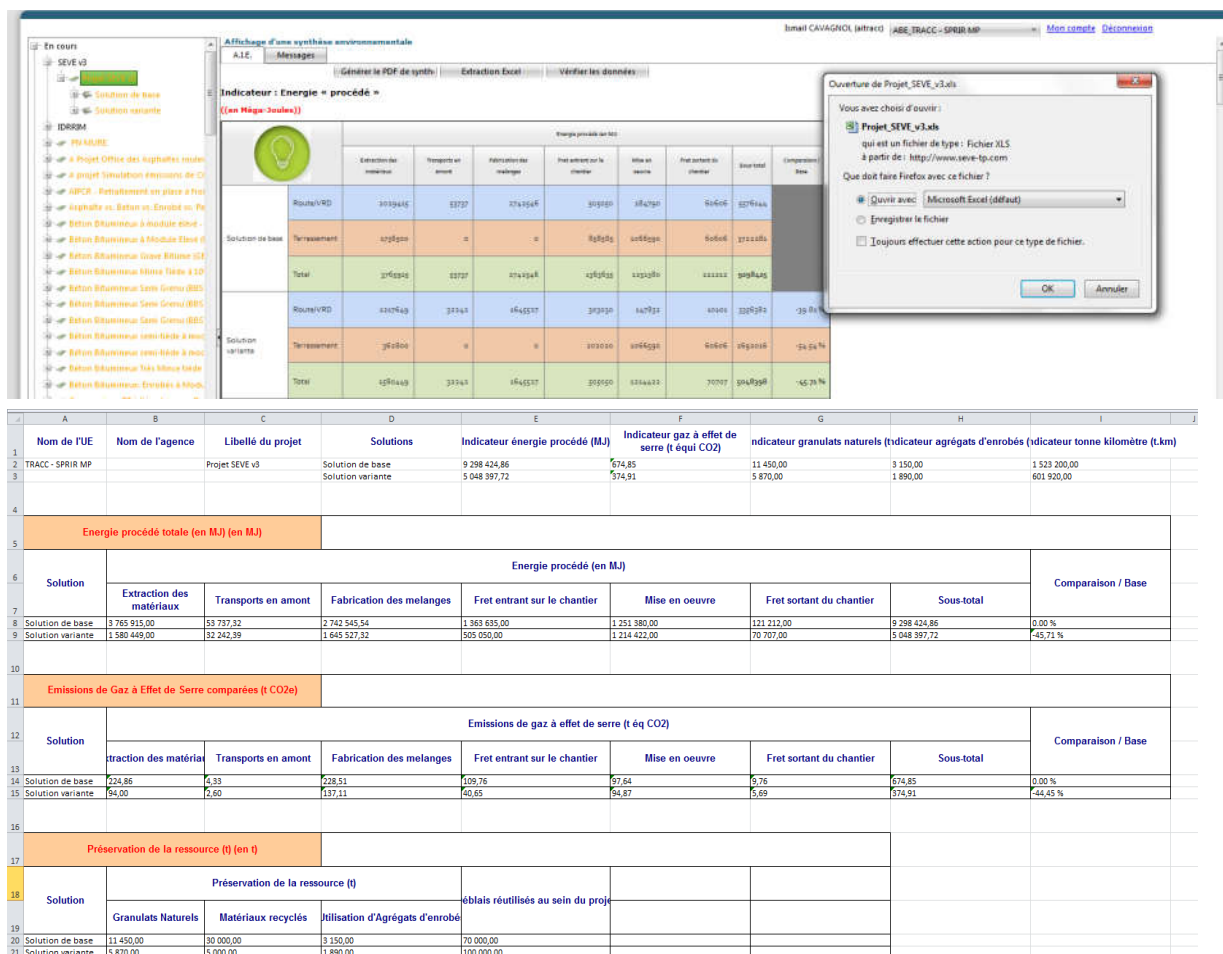


Figure 67- Extraction of the EXCEL file summarizing the results

### 3.5.3 « Products and formulas » tab:

This tab only displays the products and formulas listed in the common SEVE database (Figure 68) and those created by AIs in the EU. The EBA profile cannot create products or formulas within its EU, only the AI profile can do so.

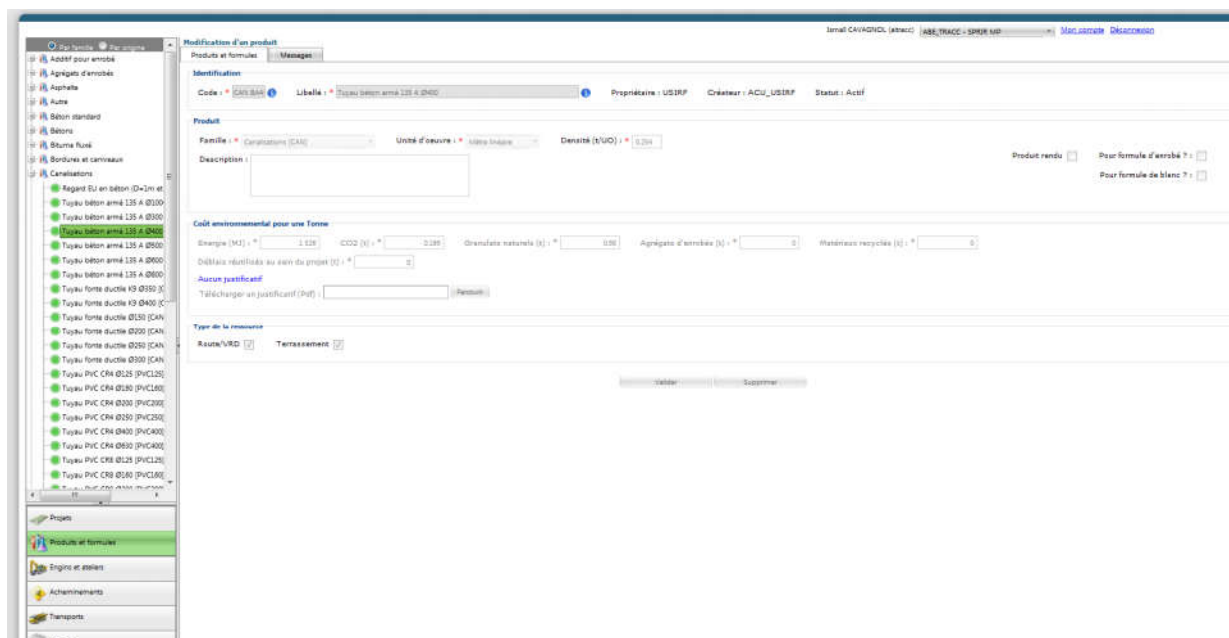


Figure 68 – Viewing all products in the EU and formulas published in the EU

### 3.5.4 « Machines and workshops » tab:

The *"Machines and workshops"* tab lists the list of machines and workshops in the SEVE common database. It also lists the list of machines and workshops created by the EU EBAs.

#### 3.5.4.1 Creation of a gear

The *"Machines and Workshops"* tab gives the EBA the possibility to create specific machines for its EU. To do this, simply (Figure 69):

- 1- Click on the "Machines and workshops" tab
- 2- Right-click on the tree structure and choose a "Create a machine"
- 3- Fill in the following mandatory fields (code, label, gear family, resource type).
- 4- Click on "Save draft"

Figure 69 – Creating a machine

- 5- Filling in the fields (Energy (MJ) and CO2 for a day of use) or reciprocally (Energy (MJ) and CO2 for one hour of use), knowing that the operating time of a machine is 7 hours/day with an idling rate more or less high depending on the type of resource.
- 6- Click on "Browse" and insert a PDF file justifying the environmental costs.
- 7- Click on "Save and activate".

Figure 70 – Environmental cost information for machinery

### 3.5.4.2 Création d'un atelier

The "Machines and Workshops" tab gives the EBA the opportunity to create specific workshops for its EU. To do this, simply (Figure 71):

- 1- Click on the "Machines and workshops" tab
- 2- Right-click on the tree structure and choose "Create a workshop"
- 3- Fill in the following mandatory fields (code, wording, gear family , resource type).
- 4- Click on "Save draft".

The screenshot shows the 'Création d'un engin/atelier' form. The left sidebar contains a tree structure with categories like 'Arroseuse / Balayeuse', 'Ateliers de mise en oeuvre d'enrobés', 'Autre', 'Boulevard / Nivelage', 'Camion sur chantier', 'Chargeuse', 'Compacteur', 'Epardeur / Malaxeur', 'Fraiseur / Alimentateur', 'Pelle', 'Raboteuse', 'Recyclage en place à froid', 'Repandeur / Graviporteur', and 'Transport sur chantiers de terrassements'. The main form has the following sections:

- Identification:** Code: test, Libellé: atelier test, Créateur: atracc, Statut: Brouillon.
- Engin:** Famille: Ateliers de mise en oeuvre c..., Atelier: ☒, Description: .
- Atelier:** A table with columns: Code, Libellé, Quantité, Unité d'oeuvre, Editier, Supprimer. Below the table is a button 'Ajouter'.
- Coût environnemental pour une journée:** Energie (MJ): , CO2 (t): .
- Coût environnemental pour une heure:** Energie (MJ): , CO2 (t): .
- Type de la ressource:** Route/VRD ☒, Terrassement ☐.

At the bottom are three buttons: 'Enregistrer brouillon', 'Enregistrer et activer', and 'Supprimer'.

Figure 71 – Creating a gear

- 5- Click on "Add" in the "Workshop" box to add gear in the workshop (Figure 72).
- 6- Choose the gears and click on "Add"
- 7- Fill in the following mandatory fields (code, label, gear family, resource type).

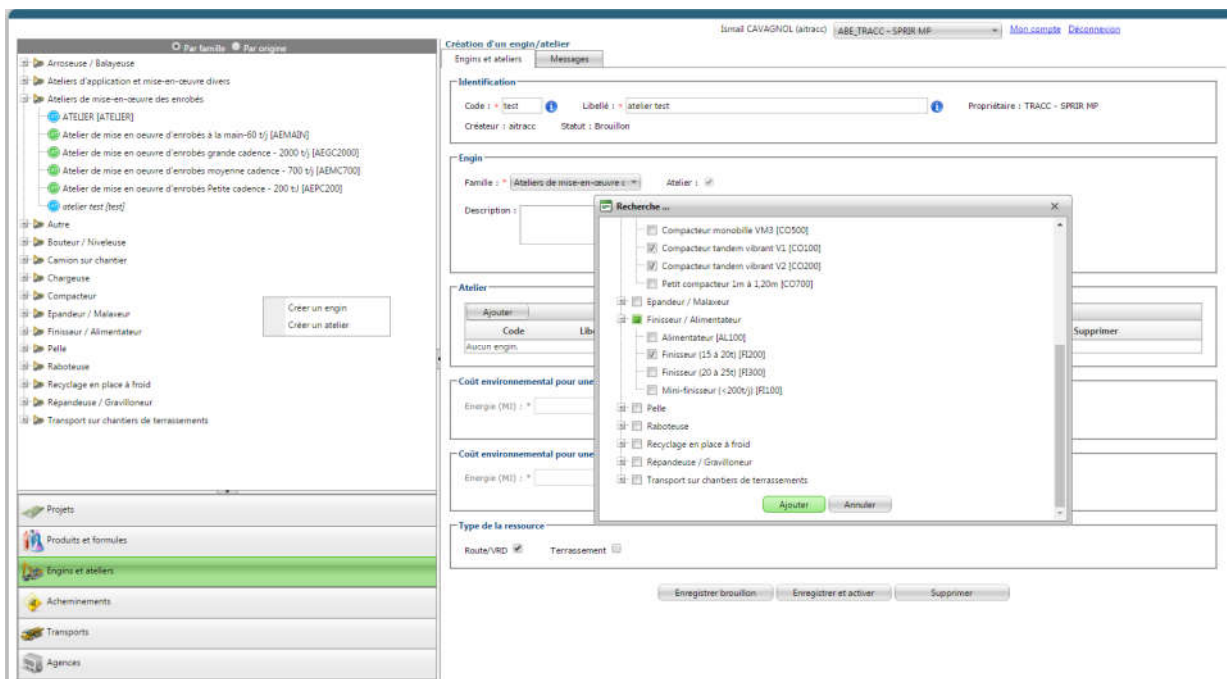


Figure 72 – Machine information in the workshop

- 8- Click on "Edit" (Figure 73) to modify the number of each
- 9- The environmental costs for a day and for an hour are automatically calculated according to the environmental costs of each machine.
- 10- - Click on "Save and activate".

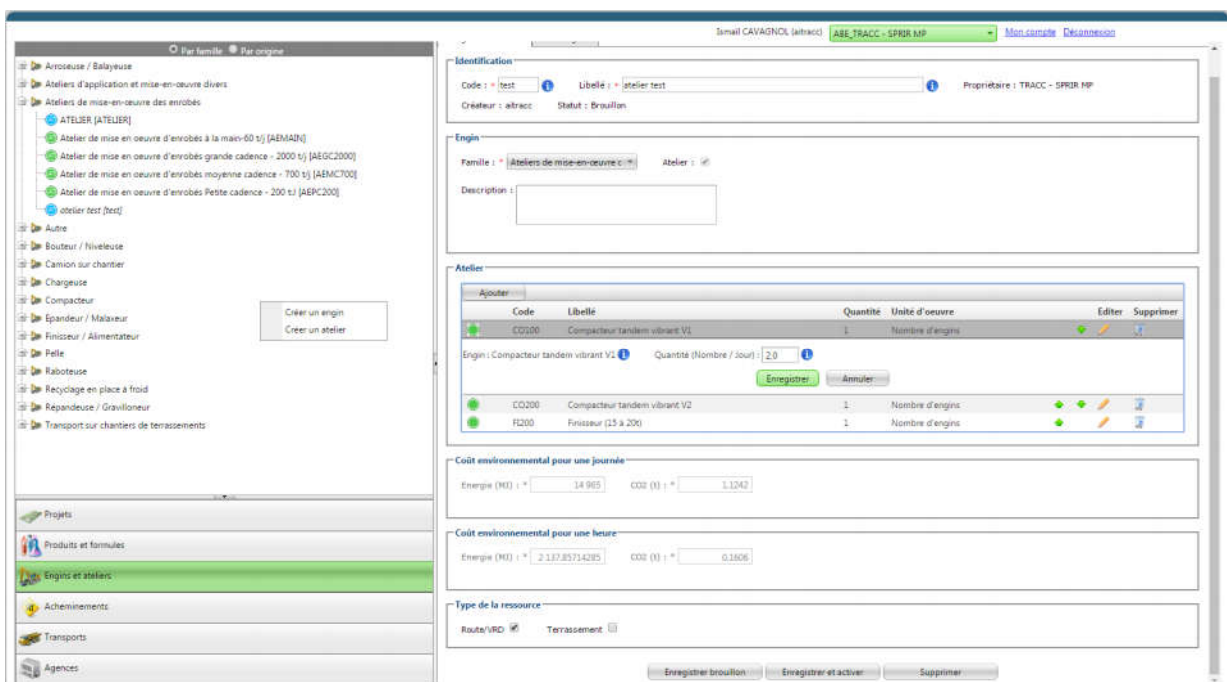


Figure 73 – Choice of machine quantities in the workshop

### 3.5.5 « Routes » tab:

---

The "Routes" tab lists the list of current routes created within the EU.

#### 3.5.5.1 Creating a route

The creation of a routing under the ABE profile works in the same way as under the AI profile (see 3.4.4)

**NB:** In order to better understand the interest of the routing, it is sufficient to take a simple case. Indeed, the percentages to be filled in apply to tonnages and not to distances.

For example, if 80% of the supply (in tonnes) of a raw material is made by "river + rail" transport and 20% by road only, then the creation of a specific routing is extremely useful and simplifying.

### 3.5.6 « Transport » tab:

---

The creation of a transport under the ABE profile works in the same way as under the AI profile (see 3.4.4.5)

### 3.5.7 « Agencies » tab:

---

This tab only displays (Figure 74) the agencies that belong to the EU.



Figure 74 – Viewing agencies with ABE profile



# CI

### 3.6 Connection under a CI profile (Industry Manager)

Once the access email has been received, the Industry Manager (CI) can choose his password and log in again by entering the login that ACEU has assigned to him. He is therefore the head of an industry of an EU. When you arrive on the home page, you will be presented with 4 tabs on the left side of the screen (Figure 75).

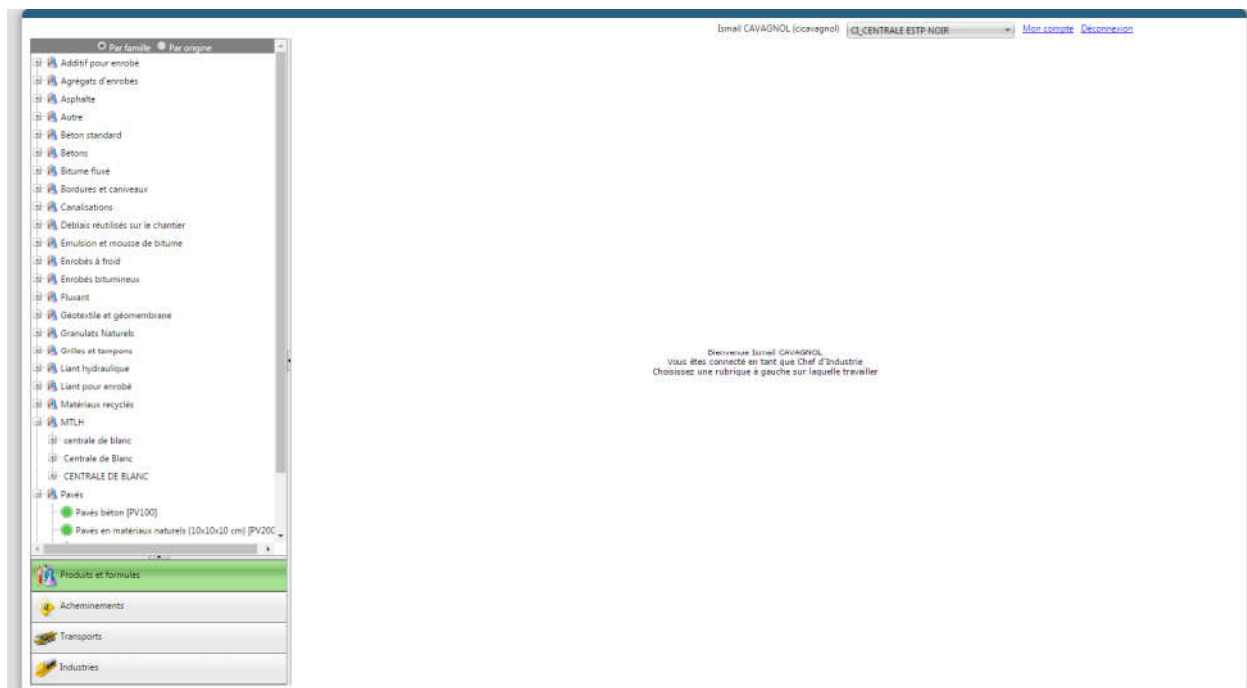


Figure 75 – CI Profile Home Page

#### 3.6.1 « My Account » and « Logout » Options:

The "My Account" and "Logout" options written at the top right of the highlighted window have the same functions as those of the ACD profile (3.2.1)

#### 3.6.2 « Products and formulas » tab:

The "Products and formulas" tab lists the list of products in the SEVE common database. It also lists the specific products and formulas created by the EU's AIs and CIs as well as those shared by other EU countries.

##### 3.6.2.1 Aliasing a product

The "Products and formulas" tab gives the CI the possibility to alias products for its EU. This means copying and renaming a product from the common SEVE database without changing the unit environmental costs of the product. The operation is the same as in 3.4.2.2.2

### 3.6.2.2 *Creating a Bituminous Asphalt Formula*

The "Products and formulas" tab gives the CI the possibility to create formulas specific to the single asphalt plant to which it belongs. The operation is the same as in 3.4.2.3.3.

### 3.6.2.3 *Creating a cold mix, concrete or MTLH formula*

The "Products and formulas" tab gives the CI the possibility to create formulas specific to the single cold workstation, concrete or MTLH to which it belongs. The operation is the same as in 3.4.2.4.

## 3.6.3 « Routes » tab:

---

The "Routes" tab lists the list of current routes created within the EU.

### 3.6.3.1 *Creating of a routing*

The operation is the same as in 3.4.2.3.

NB: In order to better understand the interest of the routing, it is enough to take a simple case. Indeed, the percentages to be filled in apply to tonnages and not to distances.

For example, if 80% of the supply (in tonnes) of a raw material is made by "river + rail" transport and 20% by road only, then the creation of a specific routing is extremely useful and simplifying.

## 3.6.4 Transport » tab:

---

The "*Transport*" tab allows you to view only the list of transports present in the common SEVE database and the transports created within the EU.

## 3.6.5 « Industries » tab:

---

The "*Industries*" tab lists the list of industries belonging to the EU and those shared by the EU. No action to create or share is possible for the IC.

# BE

### 3.7 Connection under a BE profile (Design Office)

Once received the accession email, the Design Office (BE) profile can choose its password and connect by entering the login that ACEU has assigned to it. He is therefore the researcher in charge of studies within an Agency belonging to the EU. When you arrive on the home page, you will be presented with 4 tabs on the left side of the screen (Figure 76).

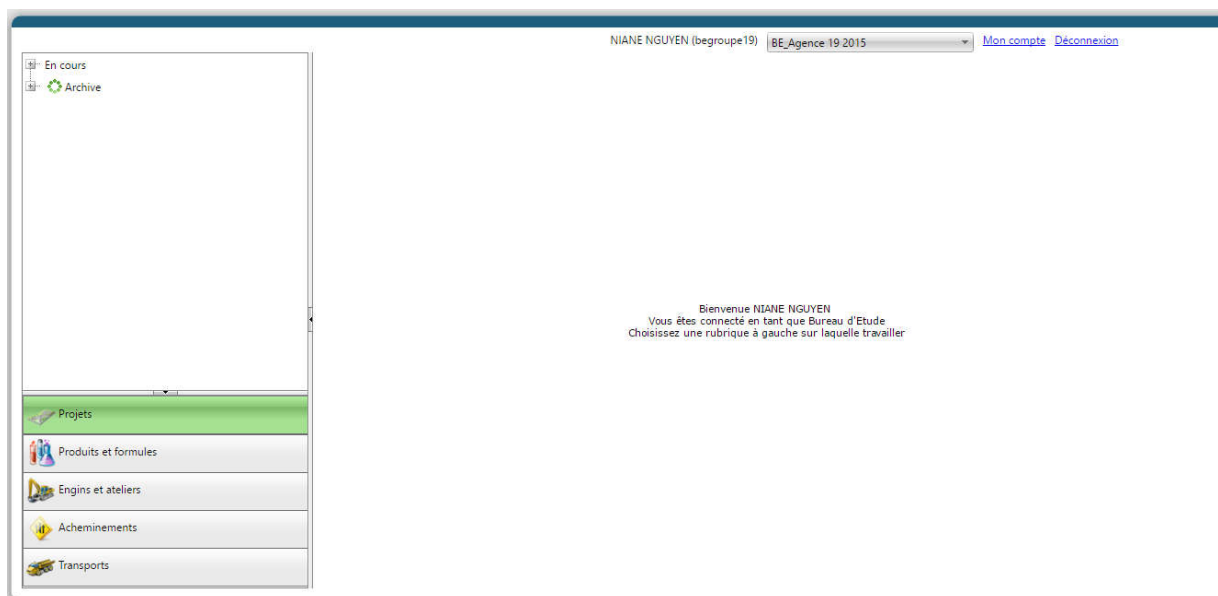


Figure 76 – BE profile home page

#### 3.7.1 « My Account » and « Logout » Options:

The "My Account" and "Logout" options written at the top right of the highlighted window have the same functions as those of the ACD profile (3.2.1)

#### 3.7.2 « Projects » tab:

The "Projects" tab lists all the projects created within the EU. This allows the EBA to access and modify BE projects.

##### 3.7.2.1 *Creating a project*

The creation (Figure 46) of projects is the purpose of the software and all the steps seen previously allow the user with ABE profile to create a project under good conditions. The way to create a project is the same as under an ABE profile (see 3.4.2.3)

### 3.7.3 Products and formulas » tab:

---

This tab only displays the products and formulas listed in the common SEVE database (see Figure 68) and those created by AIs in the EU. The BE profile cannot create products or formulas within its EU, only the AI profile can do so.

### 3.7.4 « Machines and workshops » tab:

---

The "*Machines and workshops*" tab lists the list of machines and workshops in the SEVE common database. It also lists the list of machines and workshops created by the EU EBAs.

#### 3.7.4.1 Creating a workshop

The "*Machines and workshops*" tab allows the BE to create specific workshops for its EU. The operation is the same as in 3.5.4.2.

### 3.7.5 « Routes » tab:

---

The "*Routes*" tab lists the list of current routes created within the EU.

#### 3.7.5.1 Creating a route

Creating a routing under the BE profile works in the same way as under the AI or ABE or CI profile (see 3.4.4)

NB: In order to better understand the interest of the routing, it is sufficient to take a simple case. Indeed, the percentages to be filled in apply to tonnages and not to distances.

For example, if 80% of the supply (in tonnes) of a raw material is made by "river + rail" transport and 20% by road only, then the creation of a specific routing is extremely useful and simplifying.

### 3.7.6 « Transport » tab:

---

The creation of a transport under the ABE profile works in the same way as under the AI or ABE or CI profile (see 3.4.4.5)



## 4 INTERPRETATION OF RESULTS

### 4.1 Interpretation of the results of the « Energy (MJ) » indicator

Concerning the Energy Indicator (MJ), the most virtuous solution will be the least energy consuming solution over the entire partial LCA carried out by SEVE.

The example shows in Figure 77, the difference in terms of energy consumption between the two solutions, 9,298,425 MJ over the entire base solution compared to 5,048,398 MJ for the alternative solution. The alternative solution is more environmentally friendly in terms of energy consumption.


		Energie procédé (en MJ)							Comparaison / Base
		Extraction des matériaux	Transports en amont	Fabrication des mélanges	Fret entrant sur le chantier	Mise en oeuvre	Fret sortant du chantier	Sous-total	
Solution de base	Route/VRD	2029415	53737	2742546	505050	184790	60606	5576144	
	Terrassement	1736500	0	0	858585	1066590	60606	3722281	
	Total	3765915	53737	2742546	1363635	1251380	121212	9298425	
Solution variante	Route/VRD	1217649	32242	1645527	303030	147832	10101	3356382	-39.81 %
	Terrassement	362800	0	0	202020	1066590	60606	1692016	-54.54 %
	Total	1580449	32242	1645527	505050	1214422	70707	5048398	-45.71 %

Figure 77 – Summary of the comparative table on the Energy indicator (MJ)

### 4.2 Interpretation of the results of the "Greenhouse Gas (t CO<sub>2</sub> eq.)" indicator

Concerning the Greenhouse Gas indicator (t CO<sub>2</sub> eq.), the most virtuous solution will be the lowest emitting solution over the entire partial LCA carried out by SEVE.

The example shows in Figure 78, the difference in terms of GHG emissions between the 2 solutions, 674.8 t CO<sub>2</sub>e over the entire base solution compared to 374.9 t CO<sub>2</sub>e for the variable solution. The alternative solution is more environmentally friendly in terms of energy consumption.


		Emissions de gaz à effet de serre (t eq CO2)							
		Extraction des matériaux	Transports en amont	Fabrication des mélanges	Fret entrant sur le chantier	Mise en oeuvre	Fret sortant du chantier	Sous-total	Comparaison / Base
Solution de base	Route/VRD	123,9	4,3	228,5	40,6	13,8	4,9	415,1	
	Terrassement	101	0	0	69,1	83,8	4,9	258,8	
	Total	224,9	4,3	228,5	109,8	97,6	9,8	674,8	
Solution variante	Route/VRD	74,3	2,6	137,1	24,4	11,1	0,8	250,3	-39,84 %
	Terrassement	19,7	0	0	16,3	83,8	4,9	124,6	-51,85 %
	Total	94	2,6	137,1	40,6	94,9	5,7	374,9	-44,45 %

Figure 78 – Summary of the comparative table on the Greenhouse Gas indicator (t CO2 eq.)

### 4.3 Interpretation of the results of the sub-indicators "Preservation of the resource (t)"

There are 4 sub-indicators in the indicator Preservation of the resource :

- Consumption of natural aggregates (t)
- Consumption of recycled materials (t)
- Use of asphalt aggregates (t)
- Consumption of rubble from and reused on the project (t)

The most virtuous solution will be the least greedy solution in natural aggregates while substituting them with alternative materials (recycled materials such as MIDND, recycled aggregates, asphalt aggregates, excavated material from the site...) on all the partial LCA carried out by SEVE.

The example shows in Figure 79, the difference in terms of resource preservation between the 2 solutions:

- 11,450 t versus 5,870 t of natural aggregates consumed
- 30,000 t versus 5,000 t of recycled materials
- 3,150 t versus 1,890 t of asphalt aggregates
- 70,000 t versus 100,000 t of excavated material produced and reused

We see that the alternative solution is less consuming natural aggregates than the alternative solution, which reduces this consumption of natural aggregates by half by using alternative materials significantly.


		Préservation de la ressource (t)			
		Granulats Naturels	Matériaux recyclés	Utilisation d'Agrégats d'enrobés	Débâcles réutilisés au sein du projet
Solution de base	Route/VRD	6450	0	3150	0
	Terrassement	5000	30000	0	70000
	Total	11450	30000	3150	70000
Solution variante	Route/VRD	3870	0	1890	0
	Terrassement	2000	5000	0	100000
	Total	5870	5000	1890	100000
Comparaison / Base	Solution variante	-48.73%	-83.33%	-40.00%	42.86 %

Figure 79 - Summary of the comparative table on the indicator Preservation of the resource (t)

#### 4.4 Interpretation of the results of the sub-indicators "Tonne.kilometre (t.km)".

For the Tonne.kilometre (t.km) indicator, the most virtuous solution will be the one that will allow transport trucks to travel as little distance as possible and as little load as possible on transport upstream, entering and leaving the site.

The example shows in Figure 78, the difference in terms of GHG emissions between the 2 solutions, 674.8 t CO<sub>2</sub>e over the entire base solution compared to 374.9 t CO<sub>2</sub>e for the variable solution. The alternative solution is more environmentally friendly in terms of energy consumption.


		Tonne.Kilomètre (t.km)			
		Transports en amont	Fret entrant sur le chantier	Fret sortant du chantier	Total
Solution de base	Route/VRD	53200	500000	60000	613200
	Terrassement	0	850000	60000	910000
	Total	53200	1350000	120000	1523200
Solution variante	Route/VRD	31920	300000	10000	341920
	Terrassement	0	200000	60000	260000
	Total	31920	500000	70000	601920
Comparaison / Base	Solution variante	-40.00 %	-62.96 %	-41.67 %	-60.48 %

Figure 80 - Summary of the comparative table on the Tonne.kilometre(t) indicator

## 5 GLOSSARY

### **Routing**

A routing is a kind of trip, it is possible to create routings with several modes of transport (e.g. river + road) and several distances.

### **Adherent**

The Member is a perimeter defining the company or organization subscribing to the SEVE software. The member perimeter is administered by the ACD.

### **Director of Design Offices (or ABE)**

He receives user rights through his ACEU, he is the head of the study offices of his subsidiary. As such, it has access to all projects created on its user entity. He can create projects himself.

### **Deputy Central Director (or ACD)**

He is the SEVE manager within the Member perimeter (his company or organisation). It provides access rights to its Central Administrators of User Entities (ACEUs) after entering the names of these User Entities (EU) into the database. He is also the sole and direct contact with the system's SEVE manager (ACU).

### **Central Administrator of the User Entity (ACEU)**

He is the SEVE manager of the User Entity (EU), he receives access rights from his ACD and can himself manage the rights of his AI, ABE, CI or BE users. It creates in the database the agencies included in the EU.

### **Industry Director (or AI)**

The industry administrator receives user rights through his ACEU, he is in charge of the elaboration of the formula catalogues and the technical management of the mobile descending plants that he enters in the database. It then makes all this data available to its design offices.

### **Central Routes de France Administrator (ACU)**

He is responsible for the SEVE application, he creates the Member Perimeters and issues the rights to the DCOs who administer them. It also creates the common resource database for all users and the fixed asphalt plants of each member.

### **Central Administration Routes de France**

The Routes de France Central Administration is the perimeter that manages SEVE, administered by the ACU.

### **Agency**



The Agency perimeter is a perimeter in which BEs can create SEVE projects. Agencies are created by ACEUs, although EBAs are responsible for them (projects and resources created by BEs are managed by EBAs).

### **Asphalt aggregates**

Recovered asphalt granular material obtained from milling, demolition of asphalt mixes or surplus asphalt plants. The recovered material must undergo several recovery steps such as screening and crushing to become an aggregate of asphalt mix. It must be "used" in the software as an incoming product, i.e. it must be incorporated into a bituminous asphalt mix for recycling (not to be confused with reclaimed material from a construction site).

### **Alias**

This function allows you to copy a resource (formula, machines, products, etc.) to change its name without changing the unit environmental costs (to be distinguished from the "Duplicate" function)

### **Life cycle analysis**

It is a method of quantifying environmental impacts. This analysis includes a life cycle inventory providing environmental data; the latter allows the environmental impacts of the product and its use to be assessed during its lifetime.

### **Design Office (or BE)**

He receives user rights through his ACEU, he works on project development only within his agency. The projects it creates are not visible to other EU agencies but are visible to EBAs.

### **Head of Industry (or CI)**

His ACEU gives him user rights, he is the manager of a production plant and can fill in the formula catalogue and make it available to his design office agencies as well as his AI. However, it cannot create a mobile power plant.

### **Duplicate a SEVE resource**

Allows you to copy a resource to change its name and environmental costs (be careful if there is a change, the new environmental costs must be justified by a third party).

### **User Entity (or EU)**

The user entity is in a way the regional directorates of the Member (company), it must be created by the company's SEVE manager (ACD). The person in charge of this 85 entity is the Central Administrator of the User Entity (ACEU). For members of the local authority type, the USA can be assimilated to local delegations.

### **Milling from a construction site**

Granular materials from milling a construction site. Must be "considered" in SEVE as a product leaving the site (not to be confused with asphalt aggregates).

## Industry

The Industry perimeter is an essential perimeter in which AIs and CIs can create asphalt, concrete, MTLH or SEVE cold mix formulas and then make them available to the EU of their choice. Fixed industries are created by ACU, mobile industries can be created by AI.

## Login

User Login identified by a unique user name (login), an email address, and a password. A login created by ACEU can have several profiles (ABE, BE, AI and CI).

## Sharing industries

When a fixed industry (asphalt mixing plant, MTLH...) is owned by several EU countries, it is said that this industry is in G.I.E (Groupement d'Intérêt Economique). Thus the different EU via their AI and CI must have the possibility to create different formulas

within this industry. The IA in charge of CE marking within the industry has the responsibility to share the industry with the other EU countries. "All resources with blue tablets are created by IAs or EBAs within the User Entity (EU) and are therefore data of the User Entity.

## "Blue pastille"

All resources with blue pellets are created by AIs or ABEs within the User Entity (EU) and are therefore data of the User Entity.

## "Orange tablet"

All resources with orange tablets are company-specific (e. g. specific products) and must be accompanied by a document justifying environmental costs.

## "Green tablet"

All resources with green tablets are included directly in the SEVE common resource database. They cannot be modified and are resource data common to all users.

## Scope of consolidation

Entity at the hierarchical level such as the Central Administration, the Member, the EU, the Agency or Industry.

## "Information point"

Informs the user about a key point in the operation of the tool. It is symbolized by a blue "i".

## Publish formulas

In order for a formula to be used on projects by EBAs and/or BEs, the IAs and/or ICs who create the forms must publish (make them available) within their EU.

When a formula is published in a different EU than the one where it was created, it cannot be modified by the person receiving it, only used in a project.



## **Profile**

Right given to the user at different hierarchical levels to use the SEVE application in different ways. The different profiles in SEVE are: ACU, ACD, ACEU, ABE, BE, AI and CI.

## **SEVE Resources**

All databases of common resources and resources created within the EU.

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