

# WALNUT

## D1.6 - Platform user guide

WP1, T1.3 Web-based knowledge platform for agricultural nutrients from secondary resources recovery

[Version 1.0 - 14/11/2022]

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# Abbreviations

Table 1: List of abbreviations

BIO	Biological
BBF	Bio-based fertiliser
EWC	European waste codes
MS	Member states
NACE	Statistical classification of economic activities
NR	Nutrient recovery
WNP	WNP



# Executive Summary

The WNP is a representation of the continuously evolving attempts that the EU-matrix makes towards closing the waste water (WW) and macro & micro - nutrients cycles.

The platform aims 1) to **promote the industrial symbiosis among WALNUT stakeholders** (and EU-27 MS after its publication), and 2) to **provide a structured repository of knowledge** related to agricultural nutrients from secondary resources, covering the entire value chain. WNP is interactive and facilitates the data exchange with regard to the availability, coherence and quality of BBF products. It provides access to key nutrients information within and outside Europe. The platform is linked with the project's website, to be fully accessible to partners and potential users.

To help you navigate through this manual, the **Registration** chapter helps you sign up in the platform. The next 4 chapters (**Homepage, Role selection, Matches & Transactions**) guide you into properly creating your profile and describe how to kick off a transaction with a possible match. While the **Search, Statistics, & Messages/Notes/Announcements/Links** chapters are there to support a seamless journey within the WLP and provide key insights from all the gathered data.

**Keywords:** Industrial symbiosis, Nutrient recovery, Bio-based fertilisers, Online platform





# 1. Registration

When you visit the platform page @ [www.walnutplatform.eu](http://www.walnutplatform.eu), you are directed to the landing page, where you see the login and registration section.

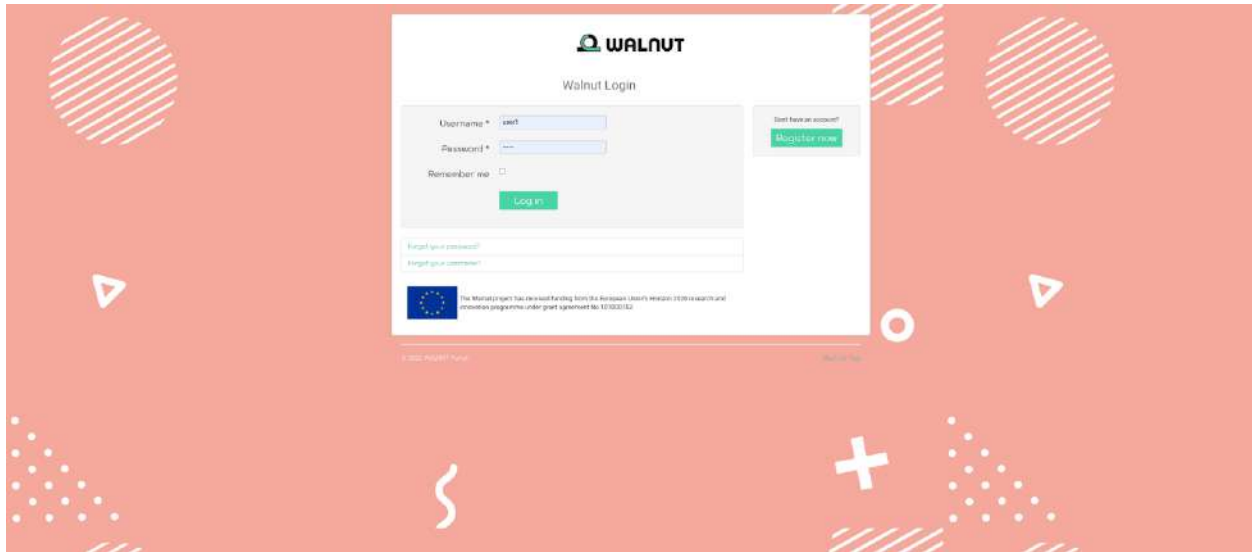


Figure 1-1: Platform landing page

When you click on the “register now” button, you will be asked to create your profile credentials and insert your e-mail (mandatory). Then you enter the details of your company (Name, phone, email and LinkedIn handle). As the last step, you must provide your company’s NACE code. After reading the terms & conditions, tick the consent boxes, and click on the register button.

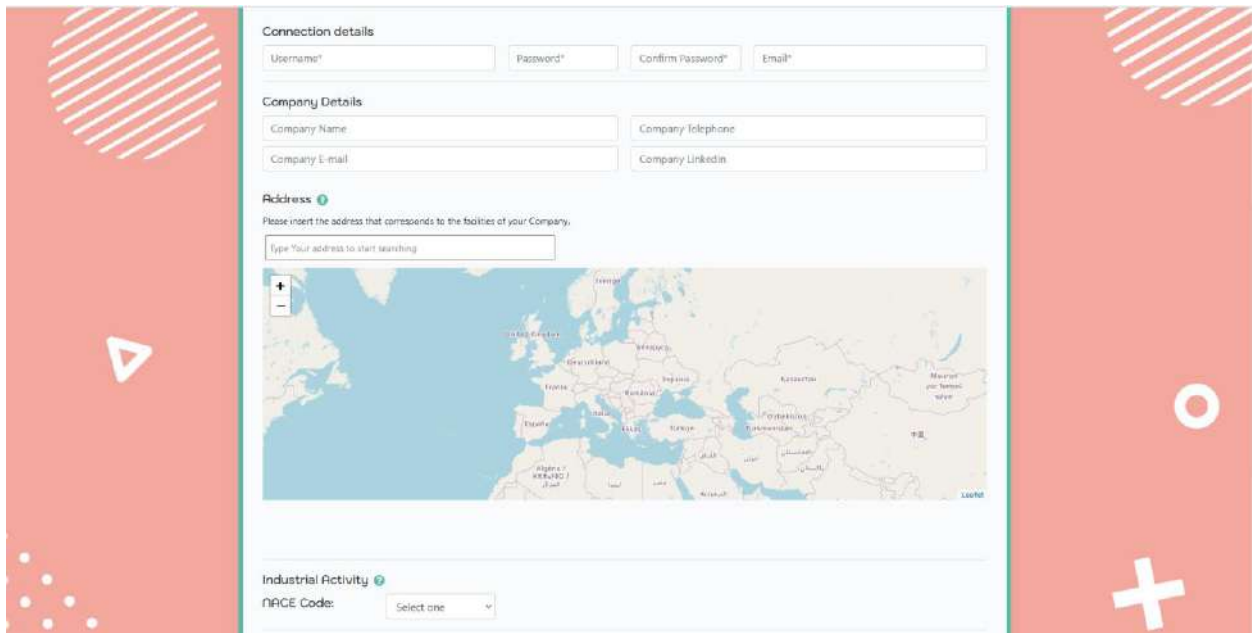


Figure 1-2: Registration page

You will receive a confirmation email at the address you provided. (Remember to check your spam too). Click on the activation link of that email. Now you are ready to login with the credentials you have set.



## 2. Homepage

Once you are logged in, on the homepage you can see an overview of the platform information with news, key metrics, and your inbox on the right. On the left you will find a panel to help you navigate the platform.

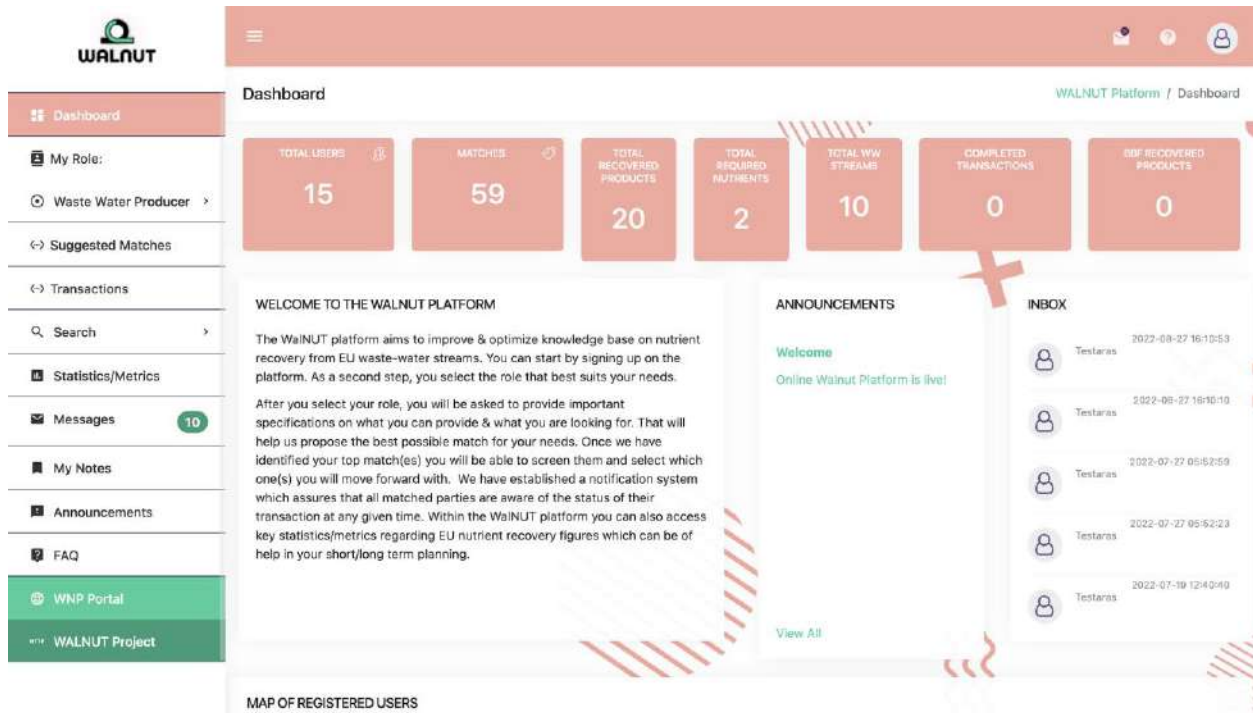


Figure 2-1: Platform's homepage



## 3. Role selection

Click on the “**my role**” tab to start. Here you can choose one or multiple roles that best suit your needs. Each role has different purposes, and you will be asked to provide important specifications.

The available roles & sub-roles are the following:

- **Waste Water Producer**
  - A) You don't apply NR technologies
  - B) You apply NR technologies
  - C) Both
- **End User**
  - A) Farmer
  - B) Agricultural Association
  - C) Bio-based fertiliser producer
- **Waste Water Aggregator**
- **Technology Provider**
- **Consultant**

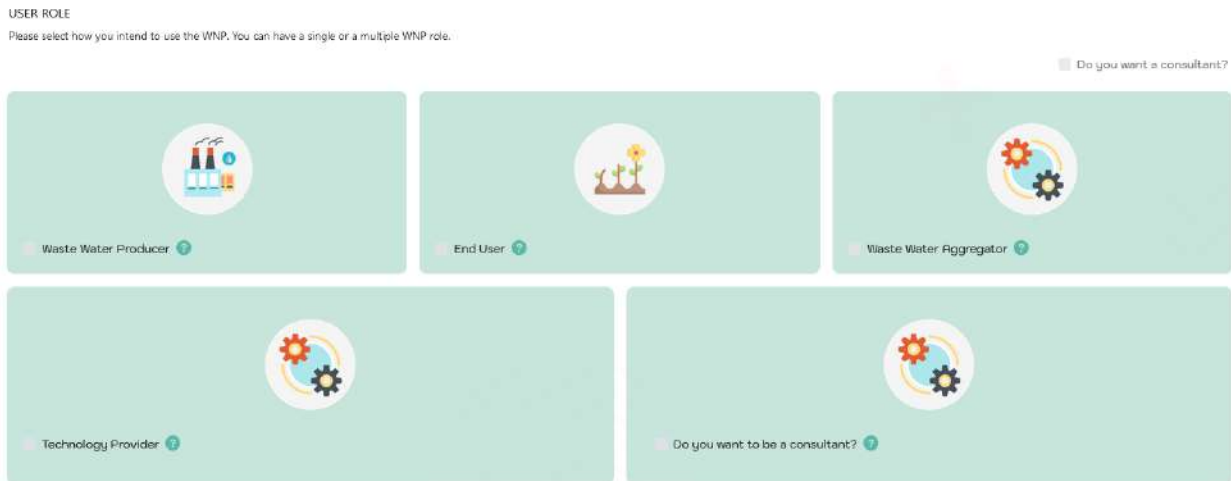


Figure 3-1: Platform roles

### 3.1 Waste Water producer

**Role Description:** You are an industry/company representative working with waste water stream(s) rich in nutrients

- a) which are available for valorisation practices
- b) which applies or not have nutrient recovery practices and is looking for experts in the field.

The Waste water producer role consists of 3 sub-roles:

- A) You who do not apply NR (nutrient recovery) technologies
- B) You who apply NR (nutrient recovery) technologies
- C) Both



### 3.1.1 User doesn't apply NR (nutrient recovery) technologies

**Add Waste Water Stream:** You will be asked to provide

1. Info about the stream (EWC, Quantity, description)
2. The characteristic of the WW stream 1 or more waste water streams your company produces.

The screenshot displays the '1. WW Stream Info' form in the WALNUT platform. The form is titled 'Please provide the physical chemical characteristics of 1 or more WW streams you produce'. It contains the following fields:

- EWC Info:** A dropdown menu with 'Select one' as the current selection.
- Quantity:** A text input field with 'm3/d' as the unit.
- Short Description:** A rich text editor with a toolbar and a text area.

The interface also shows a sidebar with navigation options and a top navigation bar. The user's role is 'Waste Water Producer' and the identifier is 'user1-wwstreams-1'.

Figure 3-2: WW Producer: Stream info

The screenshot displays the 'Composition (Nutrients)' table in the WALNUT platform. The table lists various parameters and their units, including:

- Nitrate Nitrogen ( $\text{NO}_3^-$ )
- Total Nitrogen
- Ammonium ( $\text{NH}_4^+$ )
- Phosphate Phosphorus ( $\text{PO}_4^{3-}$ )
- Total Phosphorus
- Sulfate ( $\text{SO}_4^{2-}$ )
- Potassium ( $\text{K}^+$ )
- Calcium ( $\text{Ca}^{2+}$ )
- Magnesium ( $\text{Mg}^{2+}$ )
- Sodium ( $\text{Na}^+$ )
- Carbonate ( $\text{CO}_3^{2-}$ )
- Bicarbonate ( $\text{HCO}_3^-$ )
- Chloride ( $\text{Cl}^-$ )

The table also includes a 'Short Desc' field for each parameter. The interface also shows a sidebar with navigation options and a top navigation bar.

Figure 3-3: Nutrients Characteristics



**My WW Streams:** You can manage, edit, or delete your streams on this screen.



Figure 3-4: My WW streams

### 3.1.2 User applies NR (nutrient recovery) technologies

**Add Recovered Product:** You will be asked to provide the specifications of the product nutrients they can recover.

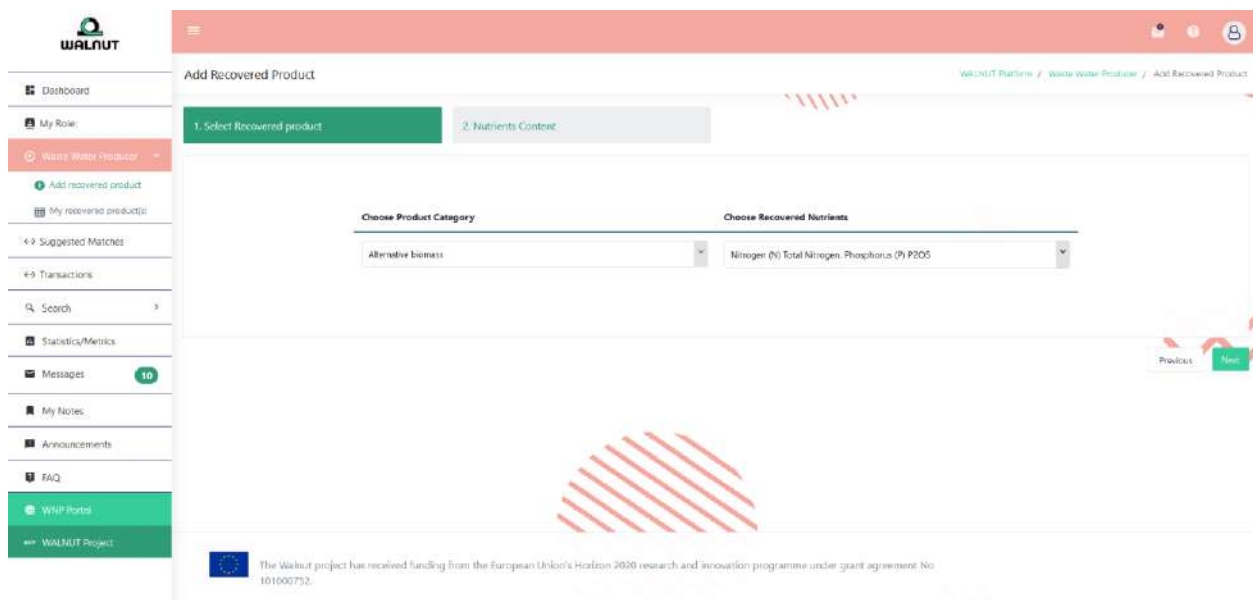


Figure 3-5: Add recovered product



Figure 3-6: Nutrients Characteristics

**Manage Recovered Product:** In this screen, you can manage, edit or delete any inserted products nutrients.

Identifier	Product Category	Nutrient(s)	Quantity	Edit	Delete
user1-recovered-product-1	Alternative biomass	Nitrogen (N)- Total Nitrogen	50 kg/year		

Figure 3-7: My recovered products

### 3.1.3 Both

By choosing this sub-role, you indicate that **part of your WW streams has been exposed to nutrient recovery technologies**, while other parts have not. The following screens are the same as the two previous sub-roles.

## 3.2 End User

**Role Description:** You are looking for cost-efficient bio-based fertilising products such as struvite, biochar, and recovered nitrogen and you seek consultation on how to apply them. You might also be a fertiliser producer looking for specific nutrients.



The End user role has three sub-roles:

- A) Farmer
- B) Agricultural Association
- C) Bio-based fertiliser producer

### 3.2.1 Farmer

**Add Required Nutrients:** As a farmer, you will be asked to provide the quantities of the required nutrients you need.

Figure 3-8: Add Required Nutrients

Figure 3-9: Add Required Nutrients Info



**My required Nutrients:** You can manage, edit, or delete any required nutrients.

The screenshot displays the 'My Required Nutrient(s)' interface. It features a table with the following data:

Identifier	Nutrient	Quantity	Edit	Delete
user1-required-Nitrogen-1	Nitrogen (N)- Total Nitrogen	50 Kg/year	[Edit]	[Delete]
user1-required-Phosphorus-2	Phosphorus (P)- P <sub>2</sub> O <sub>5</sub>	50 Kg/year	[Edit]	[Delete]

The interface also includes a search bar, a 'Show 10 entries' dropdown, and navigation buttons for 'Previous' and 'Next'. The footer contains the text: 'The Walnut project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000752.'

Figure 3-10: My Required Nutrients

### 3.2.2 Agricultural Association

**Add Required Nutrients:** As an Agricultural Association, you will be asked to provide the quantities of nutrients you need.

The screenshot displays the 'Add Required Nutrients' interface. It features a progress bar with two steps: '1. Select Nutrients' (active) and '2. Nutrients'. A dropdown menu is open, showing the following options:

- Nitrogen (N) Total Nitrogen
- Phosphorus (P) P<sub>2</sub>O<sub>5</sub>
- Potassium (K) K<sub>2</sub>O

The interface also includes a 'Previous' button and a 'Next' button. The footer contains the text: 'The Walnut project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000752.'

Figure 3-11: Add required nutrients





Figure 3-12: Add required nutrients info

**My required Nutrients:** You can manage, edit, or delete their required nutrients.

Identifier	Nutrient	Quantity	Edit	Delete
user1-required-Nitrogen--1	Nitrogen (N)- Total Nitrogen	50 Kg/year		
user1-required-Phosphorus--2	Phosphorus (P)-P <sub>2</sub> O <sub>5</sub>	50 Kg/year		

Figure 3-13: My required nutrients

### 3.2.3 Bio-based fertiliser producer

**Add BBF Products:** As a Bio-based fertiliser producer, you will be asked to provide the specifications of the BBF products (nutrients) you can produce.



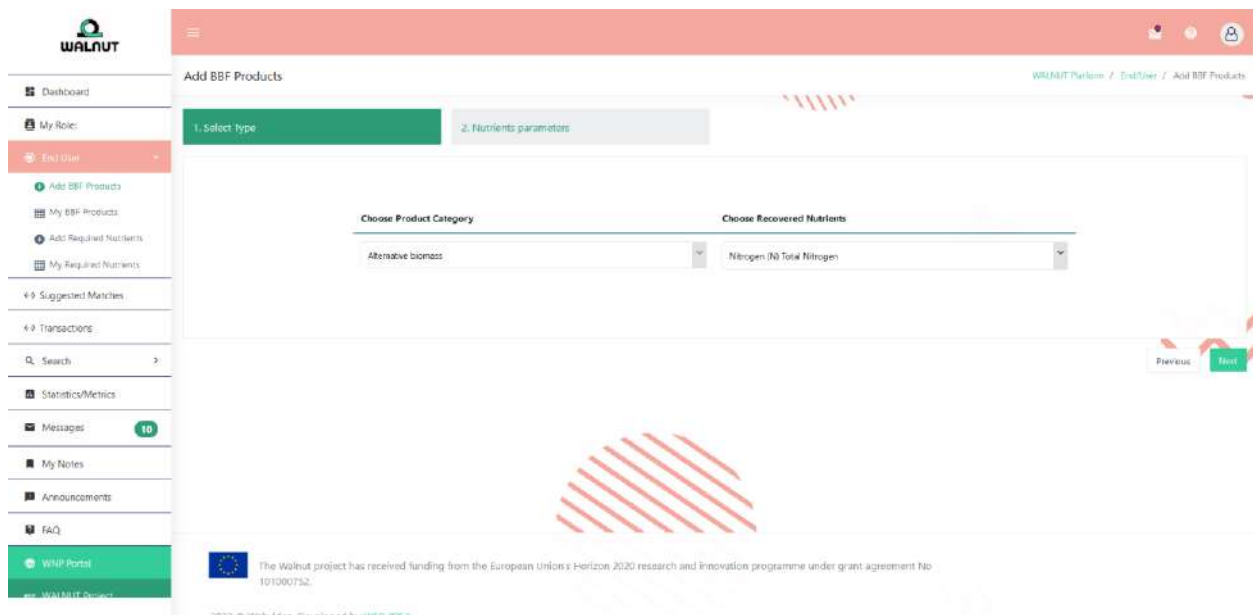


Figure 3-14: Select the BBF product's type

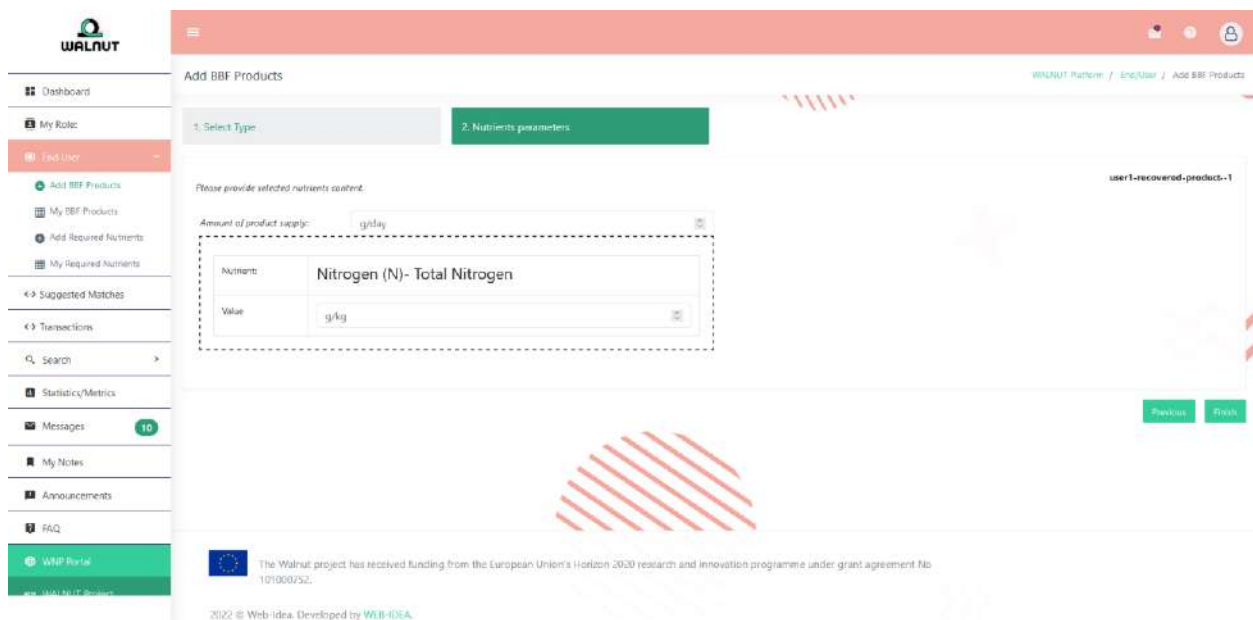


Figure 3-15: Add nutrients parameters of the BBF product

**My BBF Products:** On this screen, you can manage, edit, or delete any inserted Bio-based fertiliser produced products.



My BBF Product(s)

WALNUT Platform / EnqUser / My BBF Product(s)

Show 10 entries

Identifier	Product Category	Nutrient(s)	Quantity	Edit	Delete
user1-recovered-product-1	Alternative biomass	Nitrogen (N): Total Nitrogen	5045 g/year		

Showing 1 to 1 of 1 entries

Previous Next

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Figure 3-16: My BBF products

**Add Required Nutrients:** As a BBF producer, you will also have the option to provide the quantities of the required nutrients you possibly need.

Add Required Nutrients

WALNUT Platform / EnqUser / Add Required Nutrients

1. Select Nutrients 2. Nutrients

Choose Required Nutrients

Nitrogen (N) Total Nitrogen, Phosphorus (P) P2O5, Potassium (K) K2O

Previous Next

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Figure 3-17: Add Required Nutrients

**Manage Required Nutrients:** On this page, users can manage, edit, or delete all their previously requested nutrients.



WALNUT Platform / EndUser / My Required Nutrients

Show 10 entries

Identifier	Nutrient	Quantity	Edit	Delete
user1-required-Nitrogen--1	Nitrogen (N)- Total Nitrogen	35 Kg/year		
user1-required-Phosphorus--2	Phosphorus (P)-P <sub>2</sub> O <sub>5</sub>	35 Kg/year		

Showing 1 to 2 of 2 entries

Previous 1 Next

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Figure 3-18: My recovered products

### 3.3 Aggregator

**Role Description:** You are an entity that collects, treats, and recovers nutrients from waste water streams.

**Add EWC(s):** On this page, you will be asked to provide the quantities of all the potential EWC codes of the waste water producers whose stream can be treated with the waste water technology treatment you acquire.

WALNUT Platform / WW Aggregator / Add EWC(s)

WW Stream Info

Select all the potential EWC codes of the WW producers whose effluent can be treated with the WWTf you acquire:

EWC Code:  Quantity:

EWC Code	Quantity	Action
----------	----------	--------

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Figure 3-19: Add EWC(s)

**Manage EWC(s):** You can manage, edit or delete any inserted EWC codes.



My WWTT(s)

WALNUT Platform / WW Aggregator / My WWTT(s)

Show 10 entries

Ewc Code	Quantity	Edit	Delete
01.01.01	50		
09.01.01	50		
10.01.14	5		
01.01.02	9		

Showing 1 to 4 of 4 entries

Previous Next

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Figure 3-20: My EWC(s)

**Add Recovered Products:** As a waste water aggregator, you will also have the option to provide the specifications of the recovered products.

Add recovered product(s)

WALNUT Platform / WW Aggregator / Add recovered product(s)

1. Select Recovered product

2. Nutrients Content

Choose Product Category

Alternative biomass

Choose Nutrients

Nitrogen (N) Total Nitrogen

Previous Next

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Figure 3-21: Add recovered product(s)



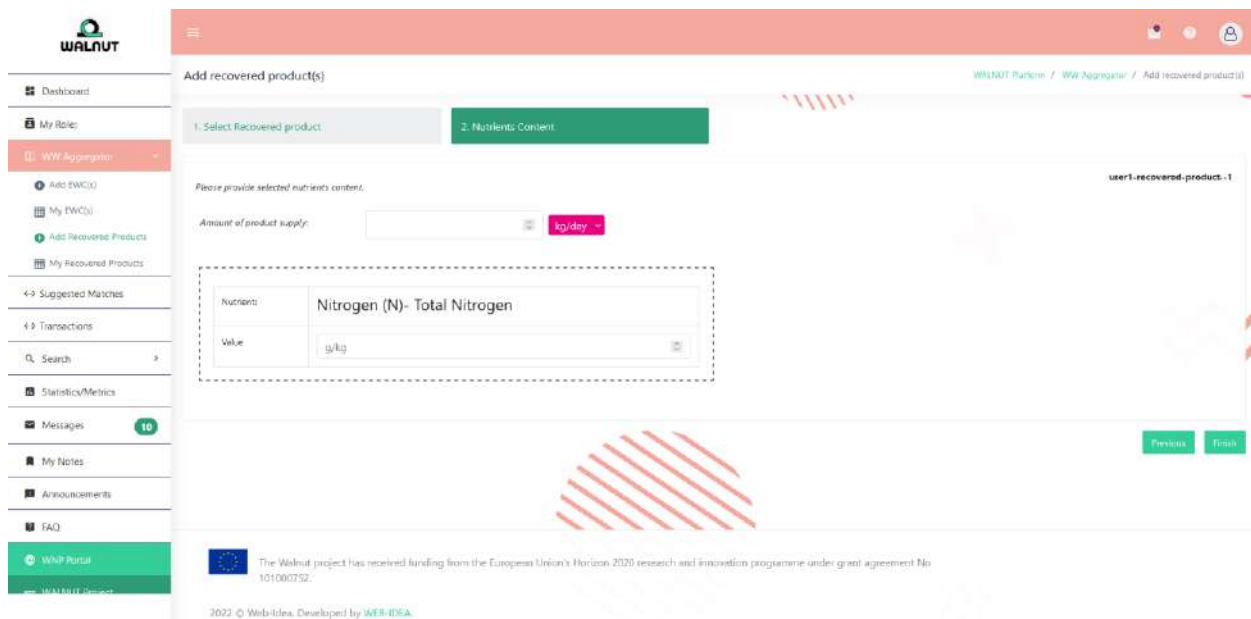


Figure 3-22: Add nutrient content

**My Recovered Products:** You can manage, edit, or delete any inserted recovered products.

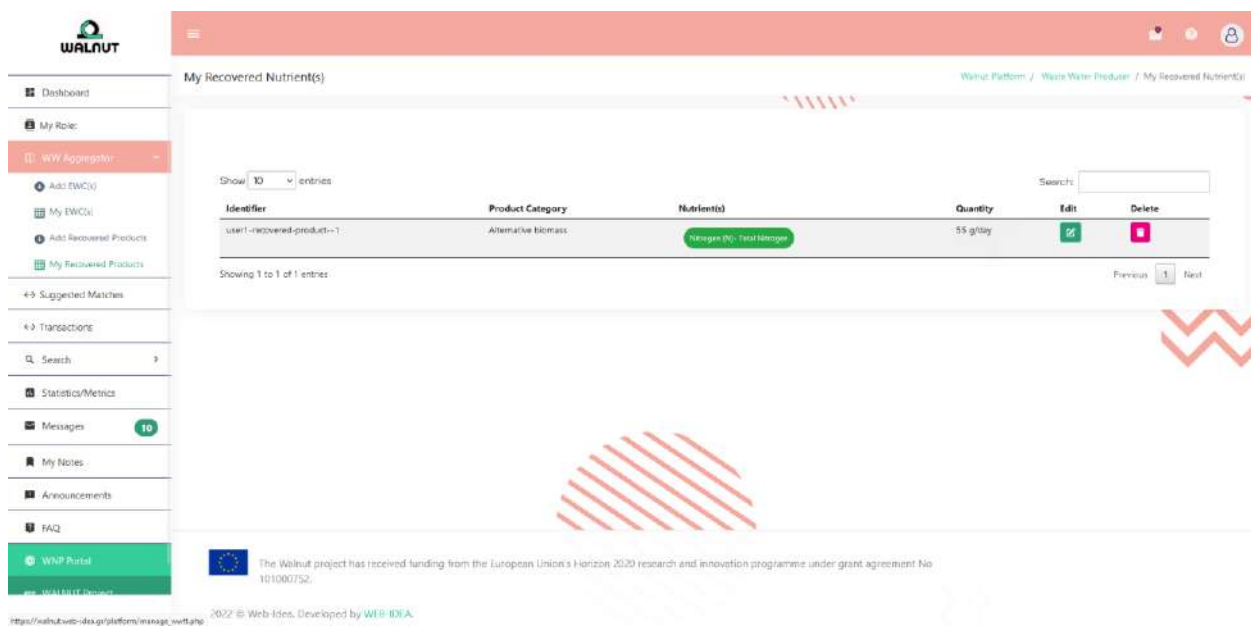


Figure 3-23: My required nutrient

### 3.4 Technology Provider

**Role Description:** You offer expertise in nutrient recovery technologies/processes.

**Add EWC(s):** As a Technology Provider, you will be asked to select all the potential EWC codes that you can treat with the waste water treatment technology your matches (WW Producer that doesn't apply NR technologies & Waste Water Aggregator) acquire.



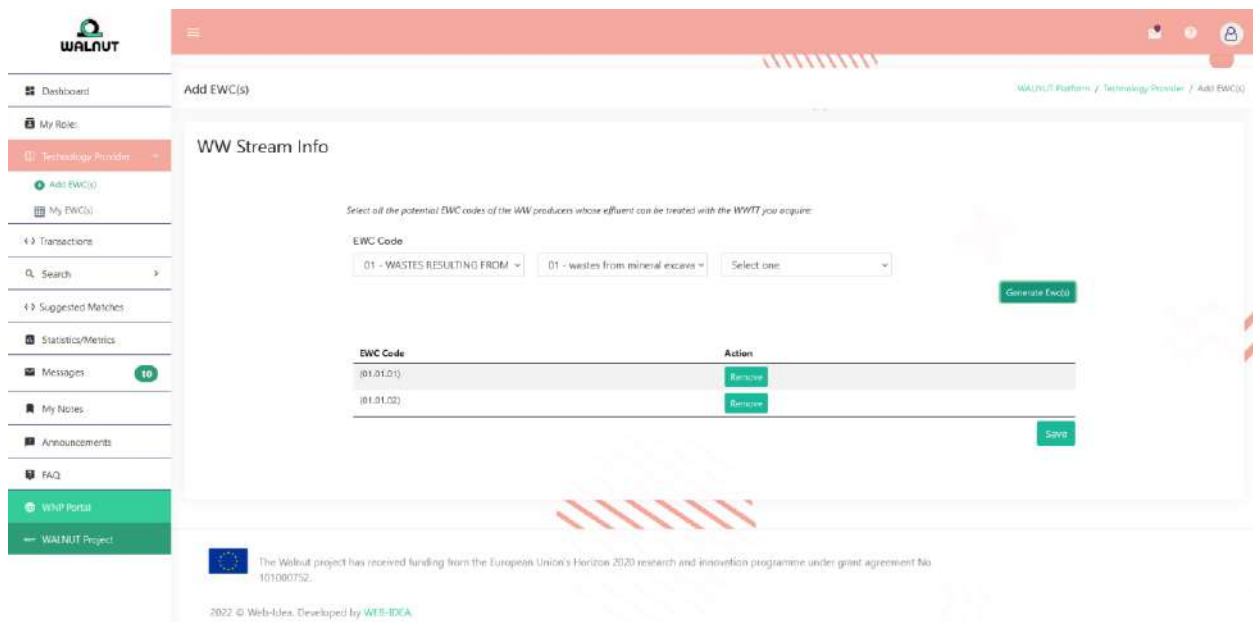


Figure 3-24: Add EWC(s)

**My EWC(s):** On this page, you can manage your inserted EWC(s) codes.

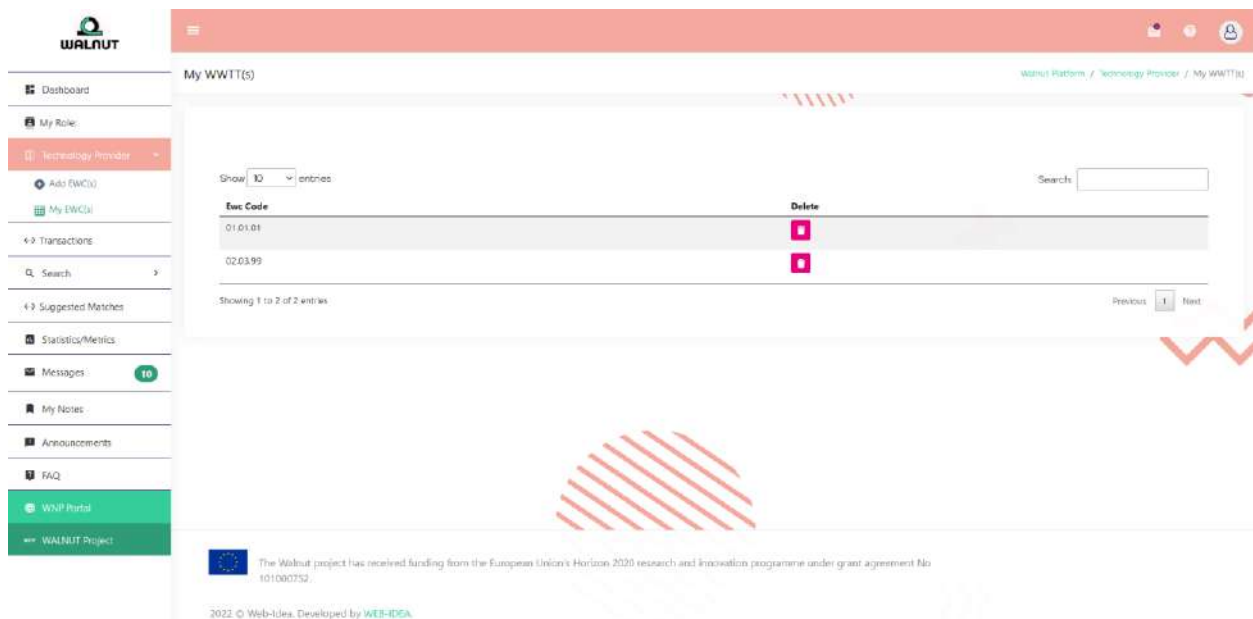


Figure 3-25: My EWC(s)

### 3.5 Consultant

**Role Description:** Users facilitate the knowledge gaps regarding policy affairs, economic sustainability & bio-based fertilisers production/application

Consultants will be asked to choose what role(s) they can support – consult. After their selection, the WNP will match them with other users who need a consultant for their business or company.



The screenshot displays the WALNUT platform's user interface. On the left is a navigation sidebar with the WALNUT logo at the top and menu items: Dashboard, My Role (highlighted), Technology Provider, Transactions, Search, Suggested Matches, Statistics/Metrics, Messages (10), My Notes, Announcements, FAQ, WNP Portal, and WALNUT Project. The main content area has a top navigation bar with 'Waste Water Producer', 'End User', and 'Waste Water Aggregator' tabs. Below this, there are three panels: 'Waste Water Producer', 'End User', and 'Waste Water Aggregator'. The 'End User' panel is active and contains a form titled 'Do you want to be a consultant?'. The form includes a checked checkbox for 'Do you want to be a consultant?' and a section 'Please specify what role(s) you can consult:' with two sub-sections: 'Waste Water Producer' (with checkboxes for 'WW producer that does not treat WW' and 'WW producer that treats WW/Recovers nutrients') and 'End User' (with checkboxes for 'Farmer', 'Agricultural association', 'Fertilizer producer', 'Waste Water aggregator', and 'Technology Provider'). A note at the bottom right of the form states: '\*Notice: As a consultant you can't have another role'. At the bottom left of the form is an 'Update User' button.

Figure 3-26: Select consultant role



## 4. Matches

Once matching roles are registered into the platform, the algorithm considers 3 main variables to suggest a match: The quality and quantity of the nutrient/product, and the distance between the related parties. Once the platform has identified a user's top matches, they will be able to screen them and select which one they will move forward with within the Suggested Matches Page. On this page, they can view important details about their matches and contact them.

Matching

WALNUT Platform / Suggested Matches / Matching

ENDAUZER (Fertiliser producer) => ENDAUSER

My BIP Product	Matched Recovered Nutrient(s)	Matched Required Nutrient(s)	Username	Sufficient Quantity	Distance	Match Rate	Action	Details	Contact
user1-recovered-product-1	Mineral (N), Total Nitrogen	Nitrogen (N), Total Nitrogen	user2	✓	1902 km	100%	Transaction		

Previous 1 Next

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Figure 4-1: Suggested matches tab



## Possible Matches

Table 2: List of possible matches

Waste Water producer – Does not apply NR technologies	< == >	Waste Water Aggregator Tech Provider
Waste Water producer – Applies NR technologies	< == >	End Users (all)
Waste Water producer - both	< == >	End Users (all) Waste Water Aggregator Tech Provider
End Users (Farmer, Agricultural Association)	< == >	Consultant The end user (BBF Producer) Waste Water Aggregator
End Users (BBF Producer)	< == >	WW Producer that doesn't apply NR technologies Waste Water Aggregator End Users (Farmer, Agricultural Association)
Waste Water Aggregator	< == >	Tech Provider WW Producer that applies NR technologies End Users (all)
Tech Provider	< == >	WW Producer that doesn't apply NR technologies Waste Water Aggregator
Consultant	< == >	All roles



## 5. Transactions

Within the WNP, you can contact other matched users by starting a transaction. To start a transaction you must click on the transaction button in the suggested matches page. You must wait for their matches to accept the invitation to begin the transaction.

You can view pending approval transactions under the **My transactions** page:

The screenshot displays the 'My Transactions' interface. It is divided into two main sections:

- My Pending Transaction(s):** Contains one transaction with the identifier 'pending-transaction-1'. The participants are 'user1' and 'user2'. The status is 'Pending'. A green 'Transaction' button is visible, along with an 'Info' icon and a 'Started By' field showing 'user1'.
- My Active Transaction(s):** Contains one transaction with the identifier 'started-transaction-1'. The participants are 'admin' and 'user1'. The status is 'Starting'. A green 'Transaction' button is visible, along with an 'Info' icon and a 'Started By' field showing 'admin'.

The interface includes a sidebar on the left with various navigation options and a footer at the bottom with funding information and copyright details.

Figure 5-1: Transactions tab



## 6. Search

You can use the **search tab** to find a specific user within the WNP. Select the type of user from the drop-down list in the navigation panel. All the users under that role should appear in a table format on your screen. Type in the name of the user you are looking for on the search field at the top right of the page. All relevant results should appear as you type your search.

The screenshot shows the WALNUT platform interface. On the left is a navigation sidebar with the WALNUT logo at the top. The sidebar contains several menu items: Dashboard, My Role, End User (selected), Suggested Matches, Transactions, Search (highlighted in red), All Waste Water Producers, All End Users, All Aggregators, All Technology Providers, All Consultants, Statistics/Metrics, Messages (with a 10 notification badge), and My Notes. The main content area is titled 'Waste Water Producers' and includes a breadcrumb trail: 'WALNUT platform / Search / Waste Water Producers'. Below the title, there are filter controls: 'Filters Active - 0', 'Collapse All', 'Show All', and 'Clear All'. A 'Filter by subroles:' field is present with a search icon and a dropdown menu. Below this is a 'Show 10 entries' dropdown and a 'Search:' input field. A table with columns 'Username', 'Role', 'Company Name', 'NACE', and 'Contact' is displayed, but it is empty with the message 'No data available in table'. At the bottom of the table, it says 'Showing 0 to 0 of 0 entries' and has 'Previous' and 'Next' navigation links. The footer of the page features the European Union flag, a text block stating 'The Walnut project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000752.', and a copyright notice '2022 © Web-Idea. Developed by WEB-IDEA.'

Figure 6-1: Search tab



## 7. Statistics

The WNP also offers key statistics/metrics regarding EU nutrient recovery. They can be visualised as charts, supporting users in their short/long-term planning.

Some of the charts include insights about:

- Registered users per role
- Registered users per country
- Register users per NACE
- Register users per EWC
- Total matches & completed transactions
- Bio-based fertiliser recovered products

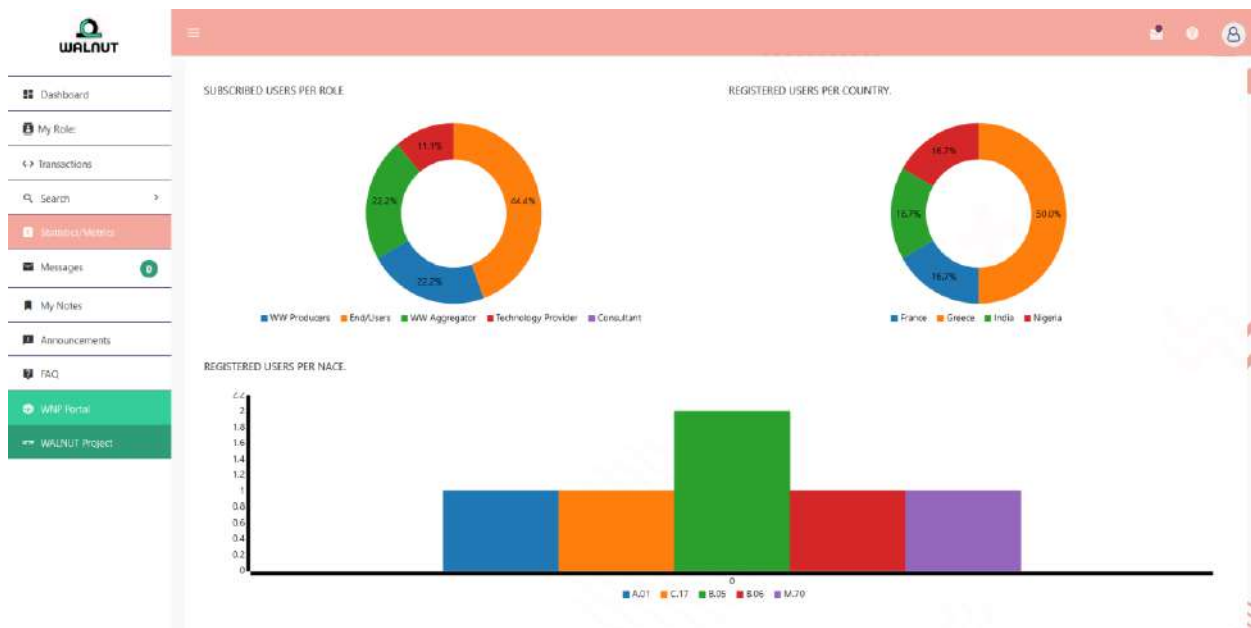


Figure 7-1: Statistics/Metrics



## 8. Messages/Notes/Announcements/Links

You can view and send messages to other users (“Messages” tab).

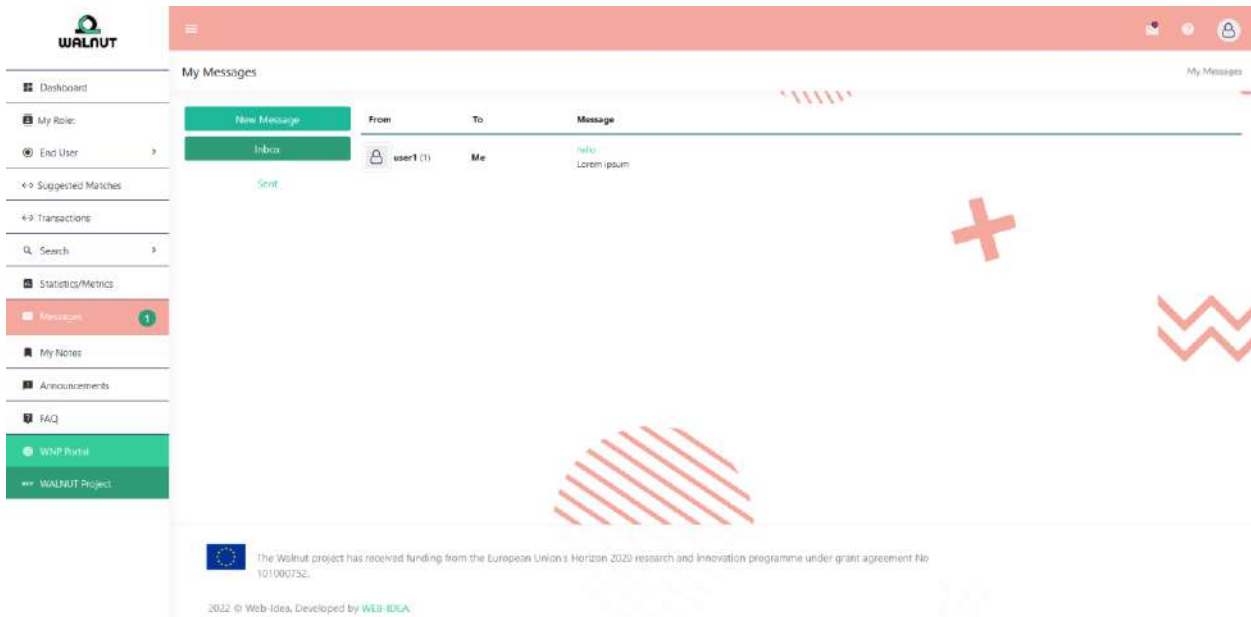


Figure 8-1: Messages tab

You can add/view notes (“My notes” tab).

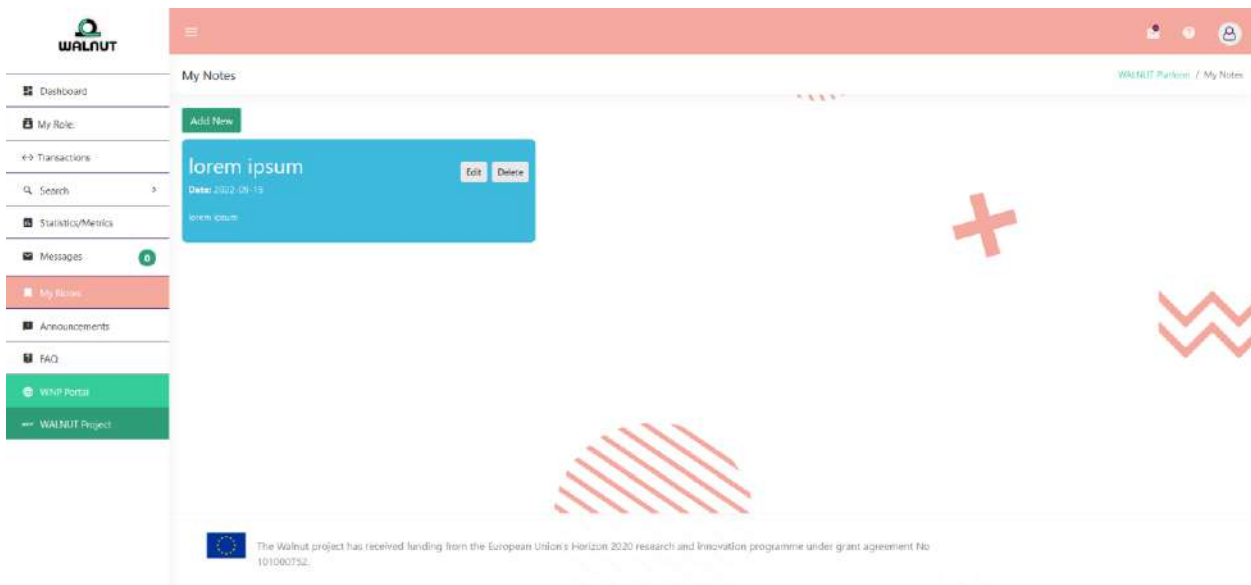


Figure 8-2: Notes tab



You can view announcements about the WNP (“Announcements” tab).

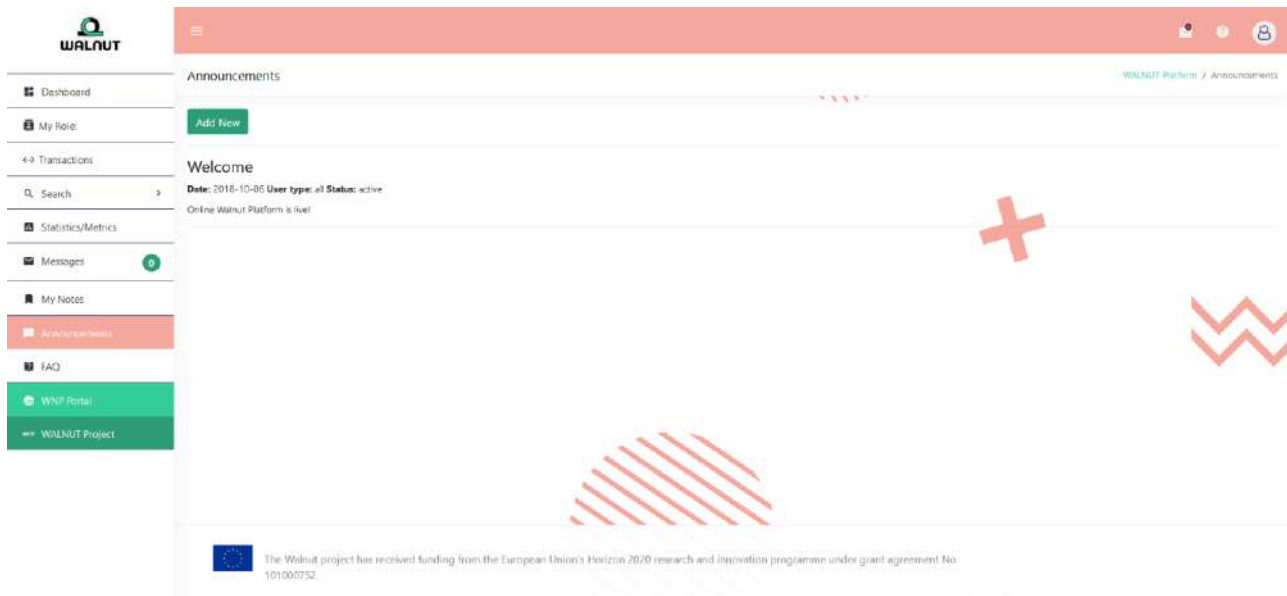


Figure 8-3: Announcements tab

The last two tabs from the navigation panel (“WNP Portal” and “WALNUT Project”) are quick links to the WNP portal and/or the Walnut project website.

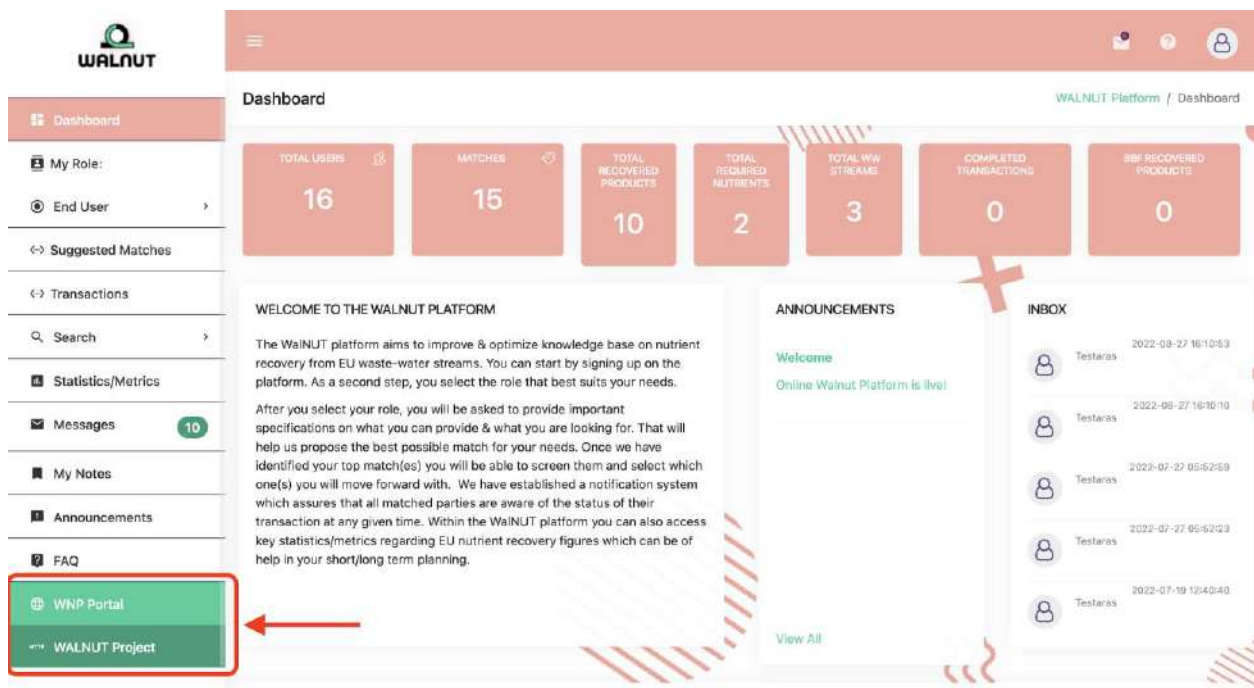


Figure 8-4: Links to WNP Portal & Walnut Project



## 9. Conclusions

This manual helps users to navigate and interact with the WNP. Through this platform, WalNUT will help to close the waste water cycle bringing together problem owners, technology providers, intermediate users and policymakers.

The same content of this guide can be found in our video tutorial ([here](#)).

In case questions arise or assistance is needed with the platform, users can contact the NTUA team. ([kyriazimaria@mail.ntua.gr](mailto:kyriazimaria@mail.ntua.gr))





## 10. Next steps

We plan on releasing a new version of the platform on M27 which will incorporate stakeholders feedback that will be gathered until then. The final version of the platform will be released on M54, as mentioned in the grand agreement. In the meantime, the consortium of Walnut will be scheduling special workshops with stakeholders for the demonstration of the WNP, the registration of as many as possible users as well as the creation of industrial symbiosis clusters. It is the scope of Walnut partners and the NTUA team (developer of the WNP) to receive any comment that could improve the platform and elaborate on it

