



Toolkit – Tools study template

JUNE, 2021



www.becoop-project.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 952930.

Programme:	HORIZON2020
Topic:	LC-SC3-RES-28-2018-2019-2020
Type of Action:	Coordination and Support Action
Grant Agreement number:	952930
Start day:	01/11/2020
Duration:	36 months
Contact:	contact@becoop-project.eu

Document information

Document Factsheet	
Full title	
Work Package	WP2 – Developing the BECoop support tools and services for the uptake of community bioenergy
Task(s)	T2.2 – Development of the BECoop toolkit
Authors (Organisation)	Jaime Guerrero Belza (CIRCE), Sebastián Zapata Habas (CIRCE)
Reviewers (Organisation)	
Date	

Document dissemination Level


Dissemination Level	
	PU - Public
	PP - Restricted to other programme participants (including the EC)
	RE - Restricted to a group specified by the consortium (including the EC)
	CO - Confidential, only for members of the consortium (including the EC)

Document history

Version	Date	Main modification	Entity
v0.1		Draft version distributed for partners' review	

V1.0		Final version submitted to the EC	
------	--	-----------------------------------	--

1. Template for selected tools

Name of the tool	Handbook on Investment schemes for REScoop projects
Logo	
Link	BIOPLAT-EU webGIS Tool
Brief Description	<p>MUC lands are considered lands that cannot be used for agricultural and recreational purposes but can still be productive to grow biomass for bioenergy purposes. The challenge to issue biomass production on underutilized land in Europe raises agronomic, technological and environmental consideration on top of economic considerations. Land with potential use for production of additional bioenergy must be statistically and technically assessed taking into account sustainability considerations. Furthermore, since biomass supply chains and bioenergy pathways vary depending on the type of feedstock, the establishment of bioenergy value chains and the evaluation of their sustainability is a complex task. The STEN tool enables users to conduct sustainability assessments on defined value chains on MUC lands destined for bioenergy production.</p>
Type of tool	Technical
Subtype	Geographic information system
Related to	Useful lands
Most valuable information that can be obtained	<p>The BIOPLAT-EU WebGIS Tool provides a comprehensive online platform for supporting the decision-making process for new bioenergy investment and activities that rely on biomass from MUC lands, promoting sustainable use of underutilized lands for bioenergy production through a web-based Platform for Europe. WebGIS Tool provides a constant assessment of the sustainability of the bioenergy production, integrating economic, social, environmental and institutional considerations. Tailored set of sustainability indicators can be applied by countries when planning investments in bioenergy sector.</p>

How does the tool work / manual of the tool

The STEN tool is part of the BIOPLAT-EU Web Platform. The tool, in parallel with the Geographic Information System (GIS) maps, completes the WebGIS tool to assess the sustainability of selected bioenergy investments on marginal and underutilized lands in Europe and Ukraine. Its indicators have been created starting from the methodologies of the Global Bioenergy Partnership (GBEP) Sustainability Indicators (GSI). The STEN provides for two levels of analysis.

Standard User:
The standard user is the basic form of user who is granted access to the system. This user type can search for marginal, underutilized

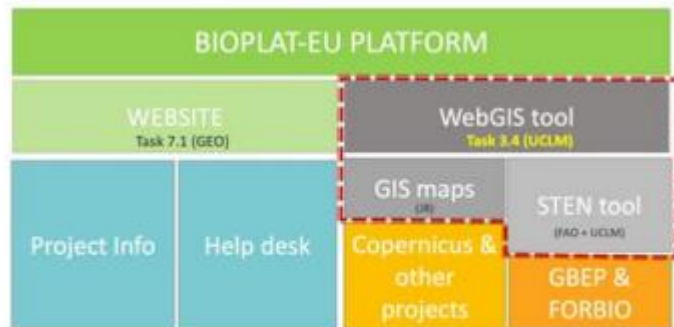
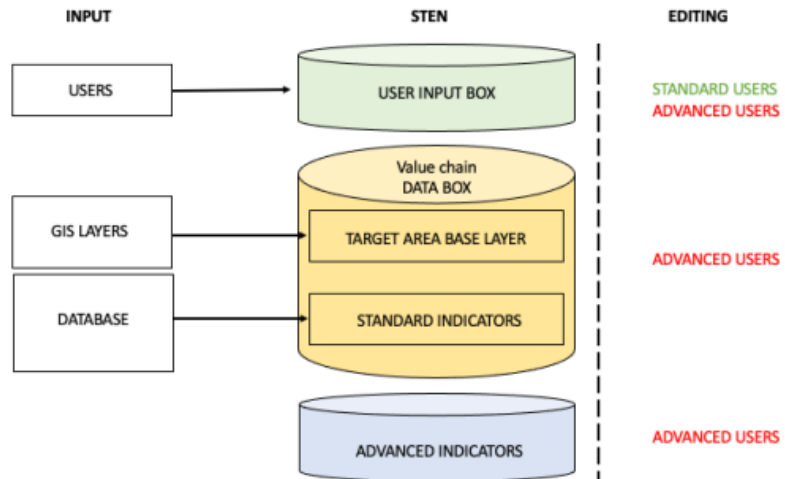


Figure 1. Structure of the BIOPLAT-EU Platform

and contaminated (MUC) land plots, view layers and MUC areas with the webGIS tool, add plots to their list of favourites to perform biomass sustainability simulations with STEN, display the available layers of the viewer and generate reports on screen with the results of the sustainability simulation.

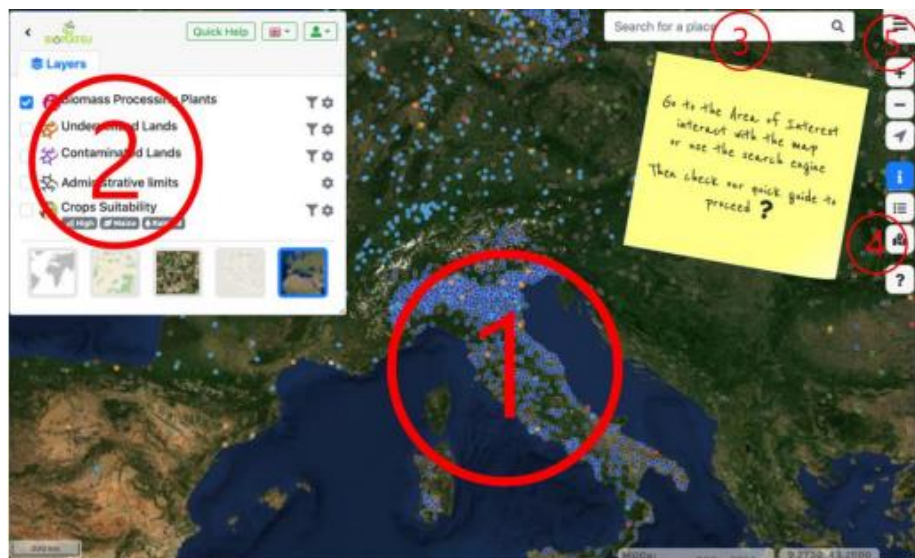
Advanced (AD) user: The Advanced users are registered users who, in addition to the functionalities of the standard users, have the ability to edit values listed by default in the value chain DATABOX, where Standard users can only use default values for their simulations. Moreover, advanced users have the possibility to unlock the measurement of additional indicators for which Europe-wide representative data was not found in the context of BIOPLAT-EU and include those indicators provided that they can retrieve the necessary data.

In order to ensure comprehensiveness and reliability of the operations, the starting point for the production of the BIOPLAT-EU set of indicators was the most broadly accepted tool for bioenergy sustainability analyses: the GBEP sustainability indicators for bioenergy. Specifically, the set of indicators developed in the context of BIOPLAT-EU is thought to support the assessment of bioenergy value chains' sustainability. It was clear from the inception of BIOPLAT-EU then, that a solid starting point was represented by the GBEP Indicators that though needed a specific adaptation to produce valuable results.



Main interface:

The system revolves a map viewer where the user can perform the main functionalities of the system. The user would have a geographic representation base map of the reference countries and layers with the information which is related to the BIOPLAT project where the user can view and search for interesting areas for performing simulations. Once the user opens the WebGIS link, he will be directed to the main interface where one can navigate the map, visualize a number of different layers and decide to start a new project simulation. The main interface includes 5 sections: 1) the 2D viewer; 2) the action panel; 3) the search for a place bar; 4) convenient buttons; 5) information panel



1) In STEN, Users can see Europe and its terrain in the 2D viewer. Furthermore, users can navigate through this 2D view of the EU by moving the mouse

2) The action panel is composed by a series of items which characterise the visualisation of the 2D viewer. The following picture lists them in numerical order:

A) Hide-show button – Users can use this button to hide and show the action panel.

B) Layers tab – Users can use this window to interact with the STEN’s layers.

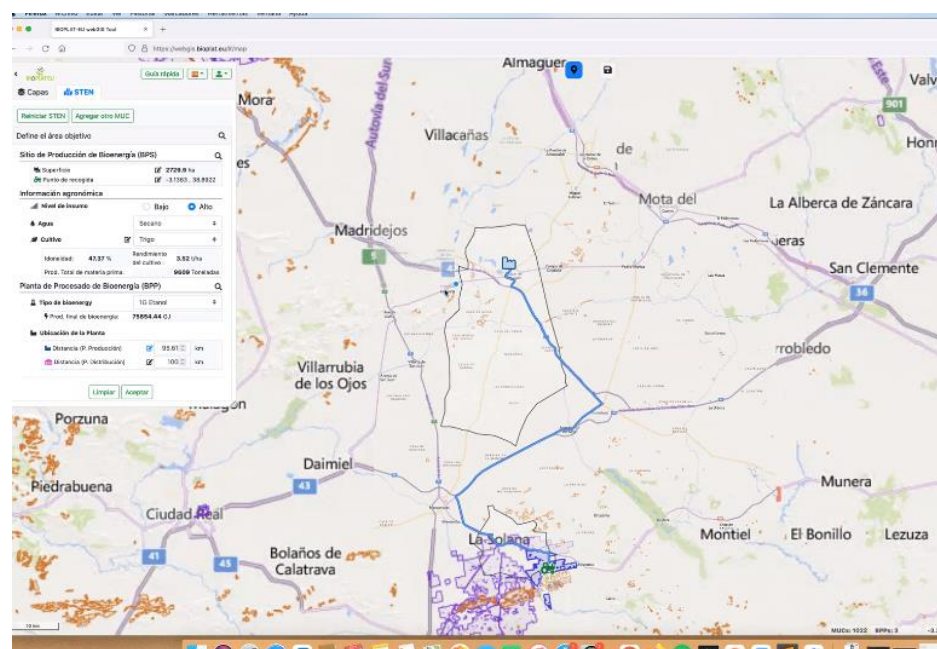
C) Quick help – User can use this window to visualise and interact with the quick help.

D) Language – User can use this button to select one of the languages provided for the interface

E) Login – By accessing the BIOPLAT-EU webGIS platform, the anonymous users can get access to the login page by pressing the login button in the top-right part of the webpage

F) Map visualization:

- Empty Map
- Layers /no background – This setting only shows the layers selected in the layers window
- Layers/OpenStreetMap – Using OSM, the user can visualize roads and directions, official names and labels of places, etc for better orientation in the viewer
- Layers/Bing aerial– Using this option, the user can visualize the selected layers on a satellite image
- Layers/Bing roads – Using this option, the user can visualize the selected layers on a detailed maps which contains administrative and natural borders, roads, names, terrains



3) Users can search for specific locations using the search for a place bar. To do this, enter the location in the input box and click on the Search button.

4) Convenient buttons: easy plugins for manipulating the map

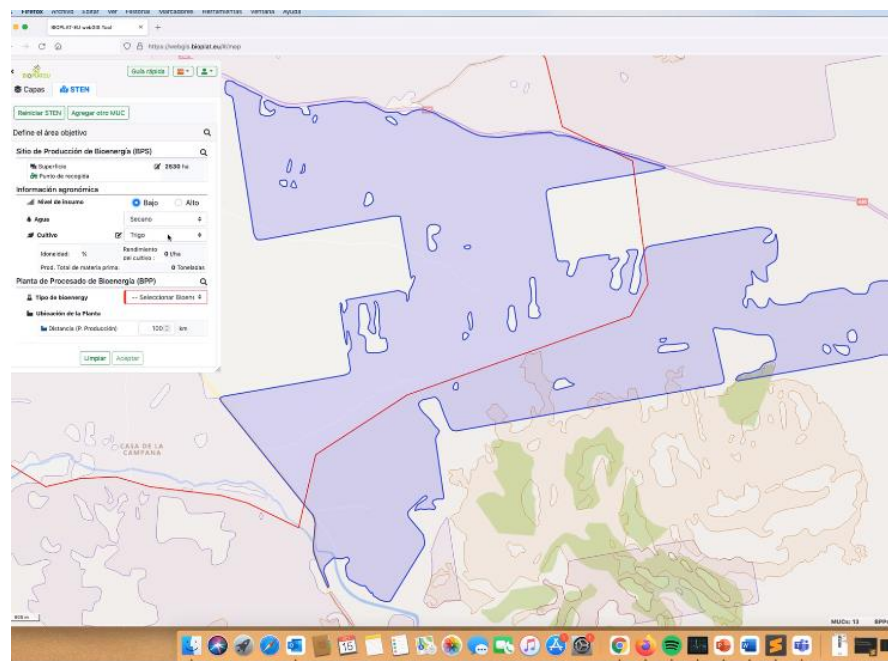
5) Information Panel: This button allows to hide and show the information panel connected with the convenient buttons.

Layers:

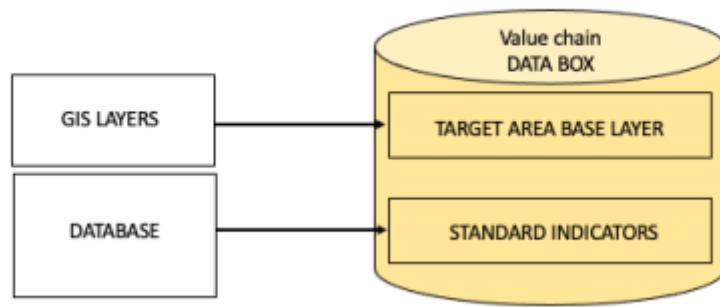
As described above, the viewer is composed by a set of layers with which the user can interact. Some of the actions the user can perform include: enable or disable the visualization of a specific layer, visualize the map key and consult the layer information available in the system. These functionalities are described in the following paragraph.

List of available layers:

- Bioenergy plants layer
- Underutilized lands layer
- Contaminated lands layer
- Administrative limits layer
- Crop suitability layer

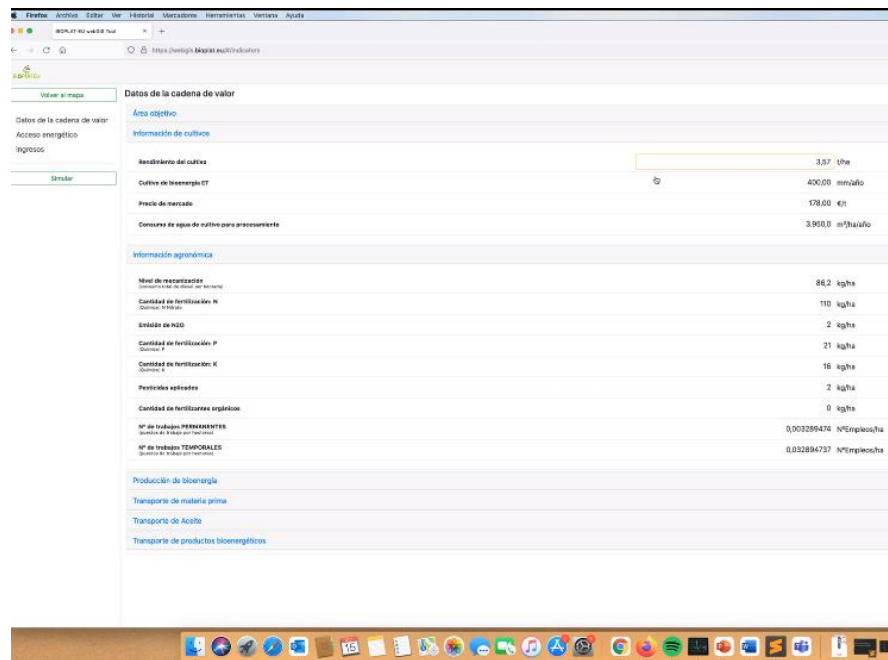


All information needed to measure the standard indicators is directed to the value chain DATABOX.



However, advanced users may filled out specific sections with indicator modules of the the STEN. The data used by these modules does not flow in from the pre-existing databases or other repository (GIS maps, etc.) internal to the STEN, but is entirely provided by the users. The STEN, however, provides the algorithms that link the data provided with the indicator’s value. The list of additional indicators includes:

- Change in Income
- Change in Energy Access



Results:

After all these, simulation may be generated, with two different outputs for the sustainability assessment:

- 1) A summary of the values considered into the Value Chain Data Box for the measurement of the indicators

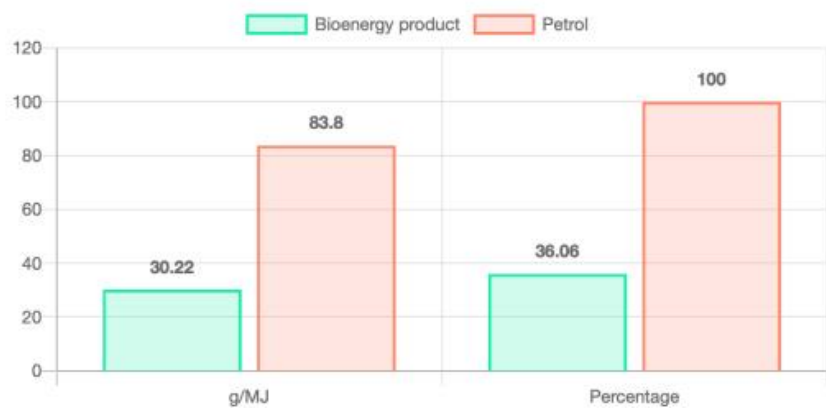
Ex:

AIR QUALITY INDICATOR

The GHG emission intensity is expressed in grams of carbon dioxide equivalent per megajoule of bioenergy produced (gCO₂eq/MJ)

Emission Factor	Total (tonnes of CO ₂ eq)	Allocated (tonnes of CO ₂ eq)	g/MJ of bioenergy prod.
CO ₂ -eq	33.87	16.83	30.2217
CO	0.05	0.01	0.0188
NO _x	0.15	0.03	0.0614
SO _x	0.02	0.00	0.0088
PM _x	0.01	0.00	0.0029

Comparison with Fossil Fuel (Petrol) g/MJ CO₂eq



WATER USER AND EFFICIENCY INDICATOR

Water withdrawn from watersheds within the target area for the production and processing of bioenergy feedstock

Unit	W _{bioenergy} /E _{total}	Production
m ³ /MJ	0.29	
l/MJ	291.07	
m ³ /tfeedstock		972.5

	INCOME		
	Yearly Gross and Net margin at farm gate for the production of bioenergy feedstock		
	Unit	Annual Gross Profit	Annual Net Profit
	€	41,477.97	37,997.55
	€ ha-1 yr	1,717.36	1,693.36
	ENERGY ACCESS		
	Change in energy access		
	Parameter	Unit	Value
	Electricity for lighting, communication, healthcare, education and other uses	GWh/yr	0
	Liquid biofuels for transport	GJ/yr	0
Gaseous biofuels for transport	GJ/yr	0	
Thermal Energy (district heating and cooling)	BTU/yr	513	
Target area			
<p>2) A final report which presents, for each sustainability indicators, a series of tables and charts containing the final results. These reports are downloadable in pdf format</p>			

<p>Who is this tool destined to (potential users)</p>	<p>Investors at local or european level, policy makers, to every economic actor participating at any bioeconomy activity (producers, corporation...) willing to be first assessed towards their value chain.</p>
<p>How can this tool affect/benefit or help a relevant stakeholder?</p>	<p>Improve economic profits of MUC lands (abandoned or contaminated marginal lands) which do not compete with food crops at European level. It can facilitate preliminar and cheaper viability studies, funding. Prefeasibility assessment for policy makers to guide sensible objectives.</p>
<p>Additional information of the tool</p>	<p>BIOPLAT-EU provides further guidance to users of the platform through the dedicated Helpdesk.</p> <p>https://webgis.bioplat.eu/assets/docs/quickGuide.pdf</p> <p>You can reach out to our experts and send them your questions regarding any project's topic of your interest. Here below a link to the website</p> <p>Helpdesk BIOPLAT-EU</p>

<p>Organisation/project that developed/manages the tool</p>	<p>BioPlat European H2020 Project. The overall objective of the project is to promote the market uptake of sustainable bioenergy in Europe using marginal, underutilized, and contaminated lands for non-food biomass production through the provision of a web-based platform that serves as decision support tool. In order to achieve the overall goal, the work has been structured for achieving the following specific objectives:</p>
<p>Responsible for the study of the tool and organisation</p>	<p>CIRCE</p>