
DanuP-2-Gas

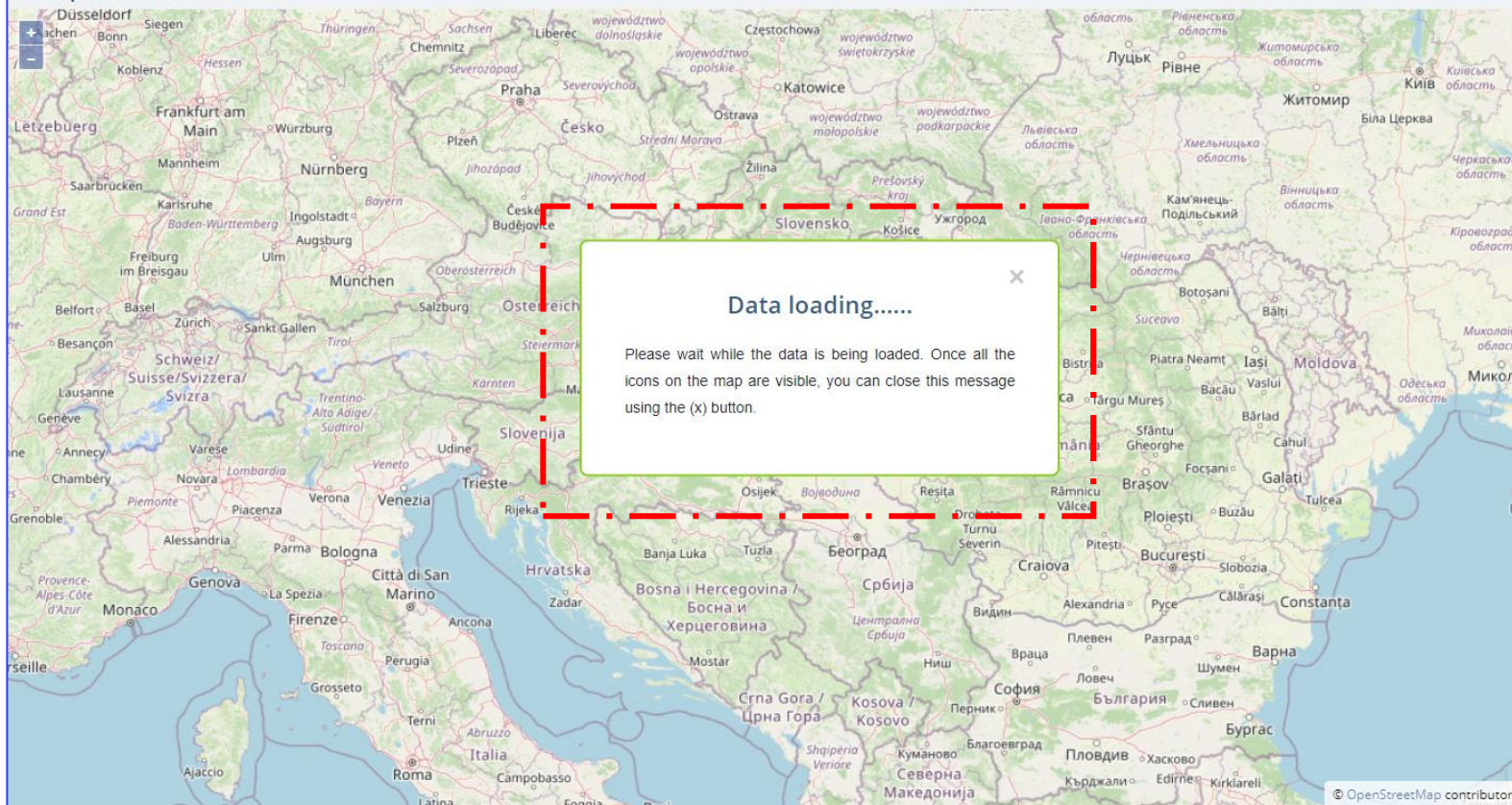
Nacionalna delavnica za prihodnje projekte in financiranje

 24. 11. 2022 | Velenje |








 DanuP-2-Gas projekt

 DanuP-2-Gas | Matevž Šilc, KSSENA

Danup-2-Gas Atlas



TRANSNATIONAL BIOMASS & INFRASTRUCTURE

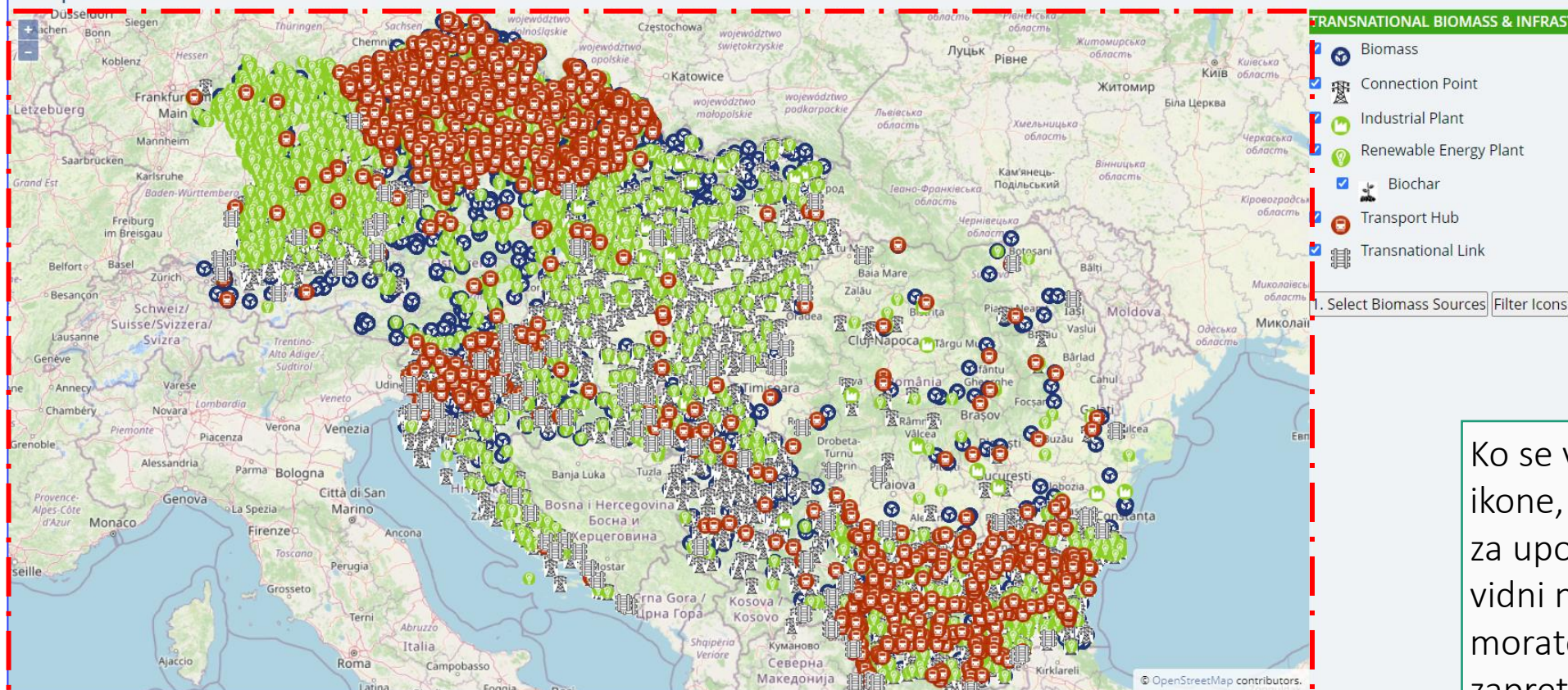
- ☒  Biomass
- ☒  Connection Point
- ☒  Industrial Plant
- ☒  Renewable Energy Plant
- ☒  Biochar
- ☒  Transport Hub
- ☒  Transnational Link

1. Select Biomass Sources

Nalaganje
podatkov traja
nekaj sekund.

<https://www.danup2gas.eu/atlas-test>

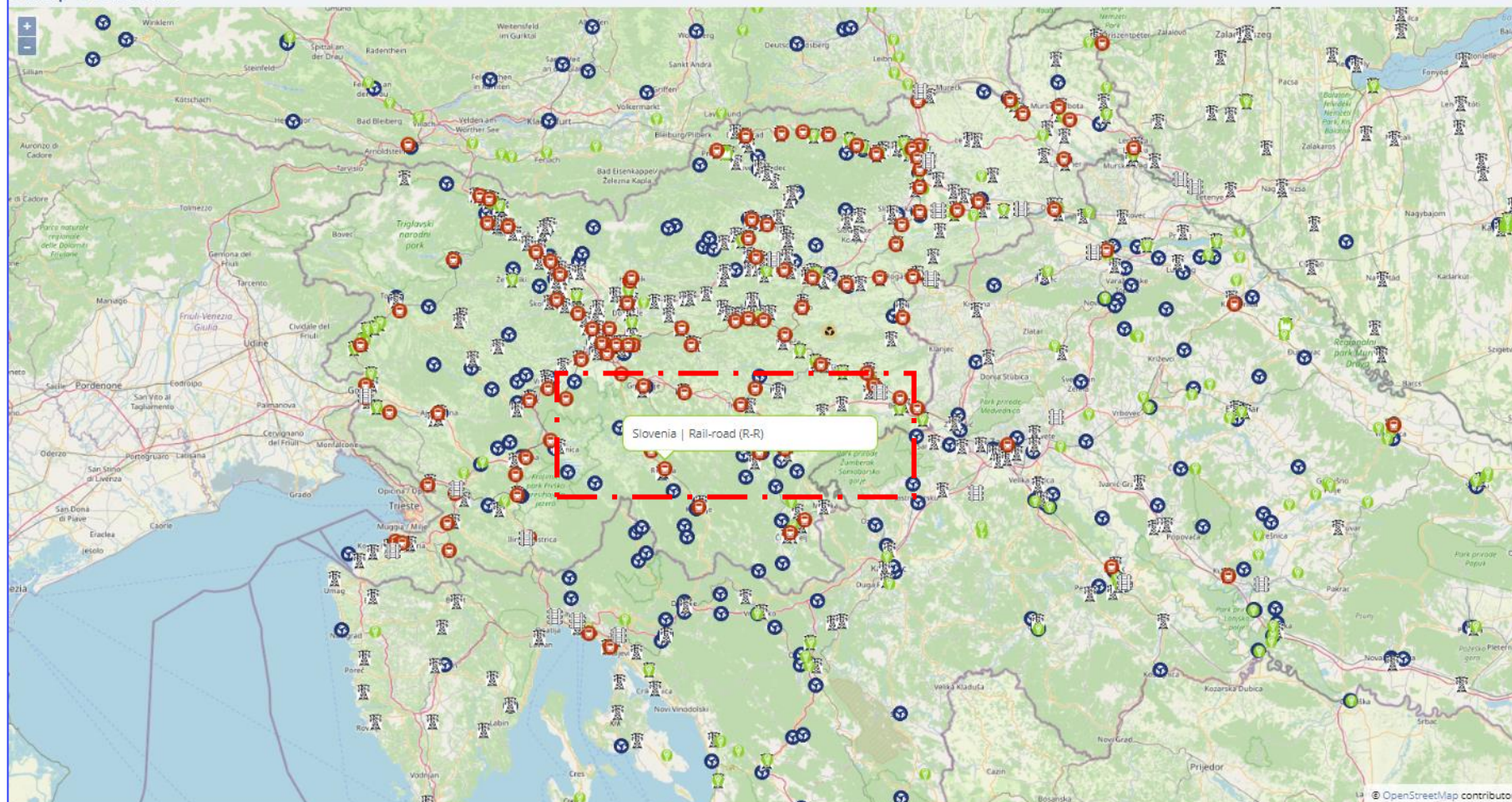
Danup-2-Gas Atlas



Ko se v ozadju prikažejo ikone, je Atlas pripravljen za uporabo. Ko so podatki vidni na zemljevidu, morate pojavno okno zapreti ročno.



Danup-2-Gas Atlas



Povečanje/pomanjšanje:

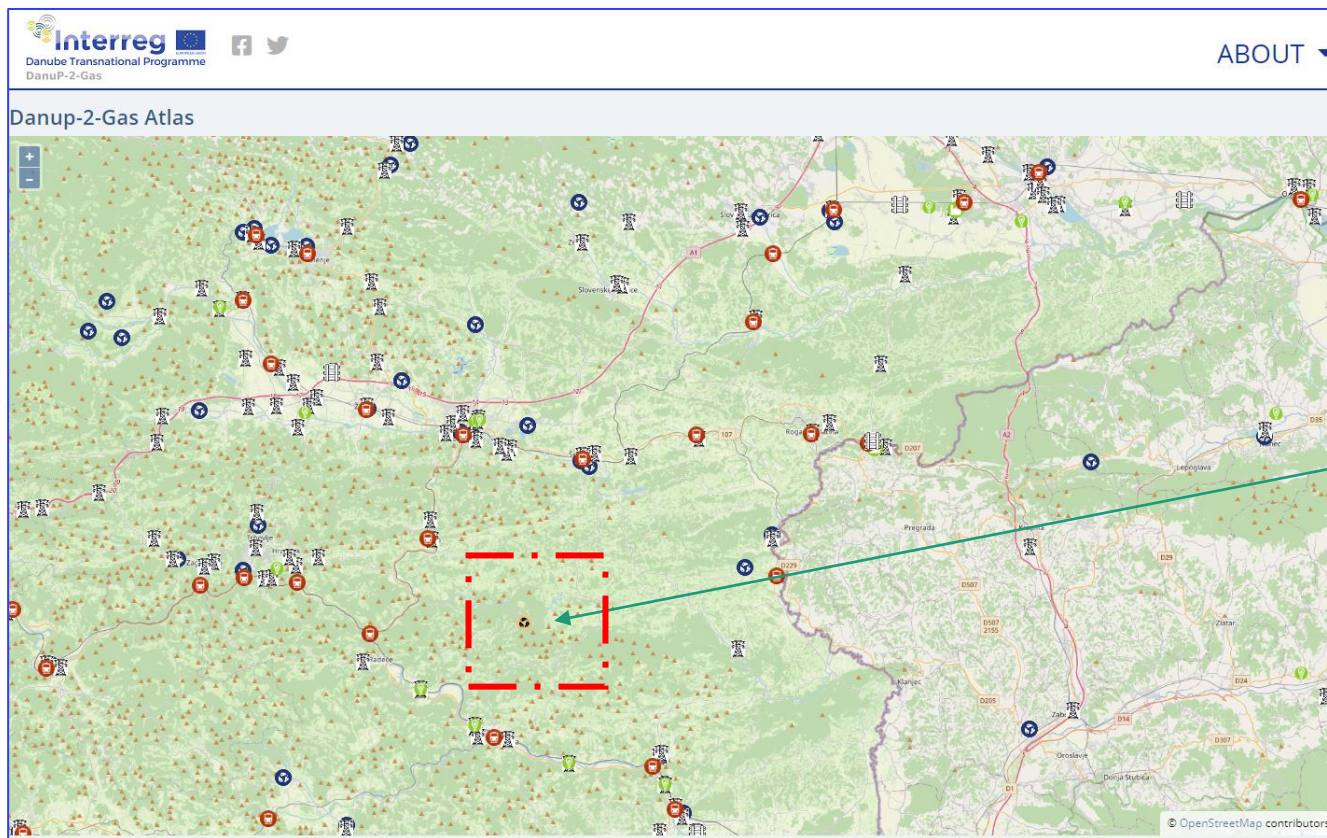
Z vrtenjem kolesčka miške navzgor se zemljevid poveča, z vrtenjem kolesčka miške navzdol pa se zemljevid zmanjša.

Premikanje:

Z levim klikom miške omogočite pomikanje zemljevida v željeno smer.

Če se z miško pomaknete na ikone, se prikažeta država in vrsta podatkov.

TRANSNATIONAL RENEWABLE ENERGY ATLAS



TRANSNATIONAL BIOMASS & INFRASTRUCTURE

- ☒ Biomass
- ☒ Connection Point
- ☒ Industrial Plant
- ☒ Renewable Energy Plant
- ☒ Biochar
- ☒ Transport Hub
- ☒ Transnational Link

1. Select Biomass Sources [Filter Icons](#)

TIMBLES D.O.O.

Biomass Source

Company Type: Wood and woody biomass

Country: Slovenia

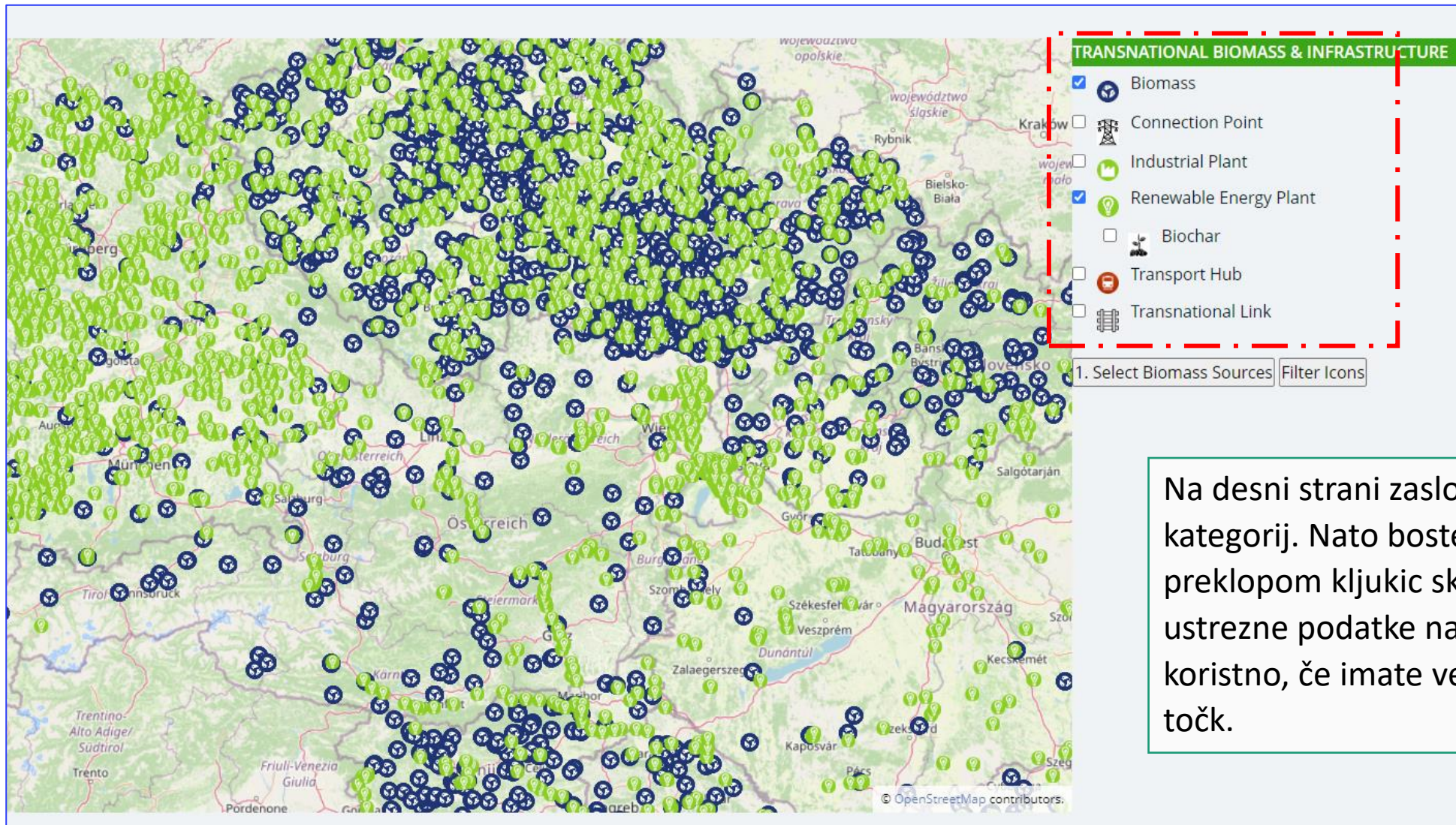
Owner Address: Lahov Graben 5, 3273 Jurklošte

Location: 15.33307834, 46.09299592

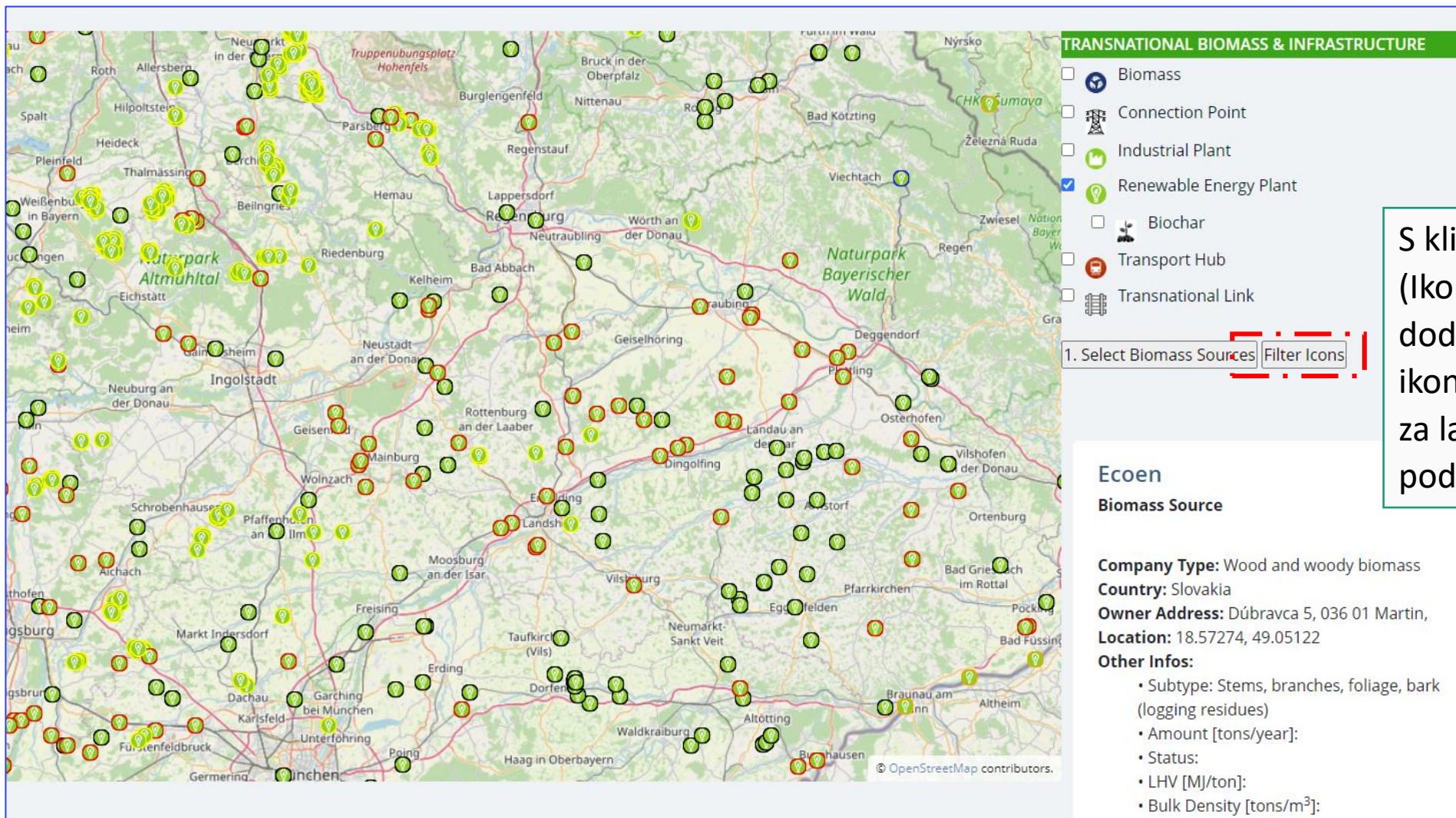
Other Infos:

- Subtype: Stems, branches, foliage, bark (logging residues)
- Amount [tons/year]: 365
- Status: Idle
- LHV [MJ/ton]: 19500
- Bulk Density [tons/m³]: 0.32
- Moisture [%]: 45
- Hemicellulose [% dry]: 0.25
- Lignin [% dry]: 28.5
- Cellulose [% dry]: 42.5
- Ash Content [% dry]: 10
- Contaminants [% dry]: 1
- Carbon [%]: 50
- Price [€]:
- Transport Price [€]: 0.15

S klikom na katero koli ikono na zemljevidu se v spodnjem desnem delu zaslona prikažejo podrobne informacije o tej točki. Vključevali bodo vse informacije, kot so ime, vrsta, lokacija itd.



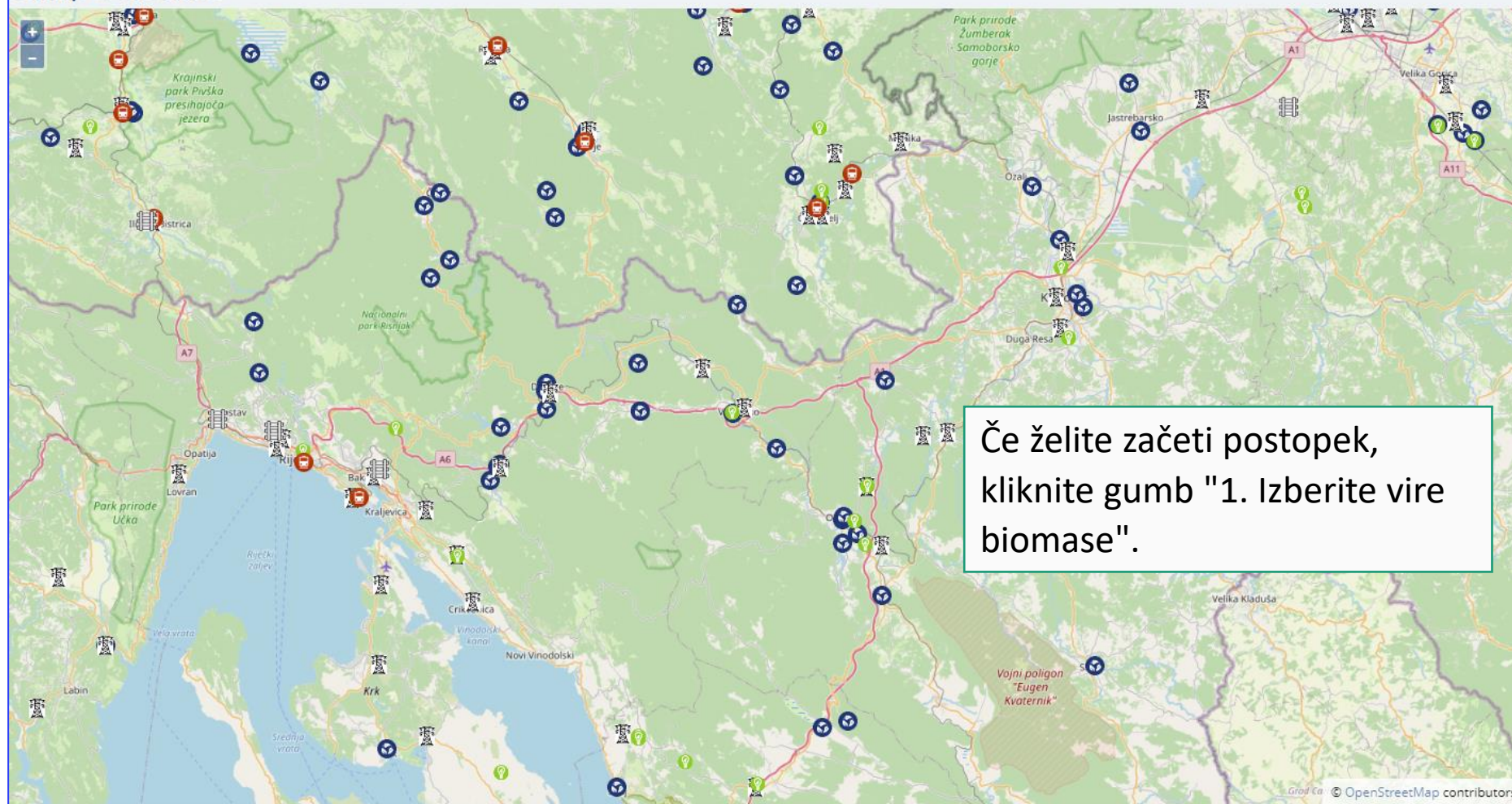
Na desni strani zaslona je navedenih 6 kategorij. Nato boste lahko s preklopom kljukic skrili ali prikazali ustrezne podatke na zemljevidu. To je koristno, če imate veliko podatkovnih točk.



S klikom na "Filter Icons" (Ikone za filtriranje) boste dodali dodatne robove ikon za "IP", "REP" in "CP" za lažje ločevanje njihovih podtipov.



Danup-2-Gas Atlas



TRANSNATIONAL BIOMASS & INFRASTRUCTURE

- ☒ Biomass
- ☒ Connection Point
- ☒ Industrial Plant
- ☒ Renewable Energy Plant
- ☒ Biochar
- ☒ Transport Hub
- ☒ Transnational Link

1. Select Biomass Sources Filter Icons

Če želite začeti postopek, kliknite gumb "1. Izberite vire biomase".

Korenić - pilana i obrada elemenata

Biomass Source

Company Type: Wood and woody biomass

Country: Croatia

Owner Address: Orišje 7, 47251, Bosiljevo

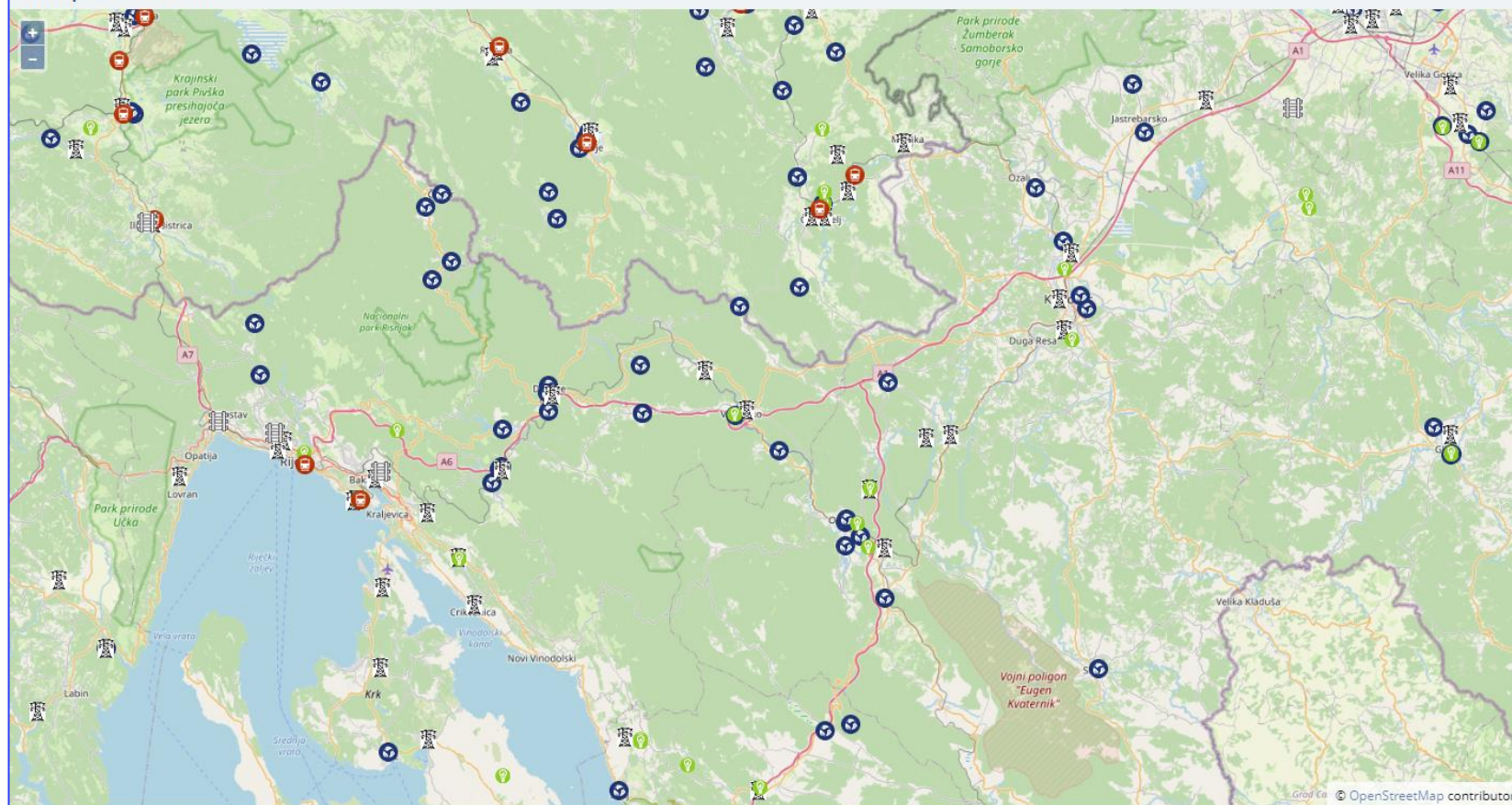
Location: 15.2894428, 45.4059775

Other Infos:

- Subtype: Sawdust, sawmill (industrial)
- Amount [tons/year]: 1323.5005
- Status: in-use
- LHV [MJ/ton]: 12500



Danup-2-Gas Atlas



TRANSNATIONAL BIOMASS & INFRASTRUCTURE

- ☒ Biomass
- ☒ Connection Point
- ☒ Industrial Plant
- ☒ Renewable Energy Plant
- ☒ Biochar
- ☒ Transport Hub
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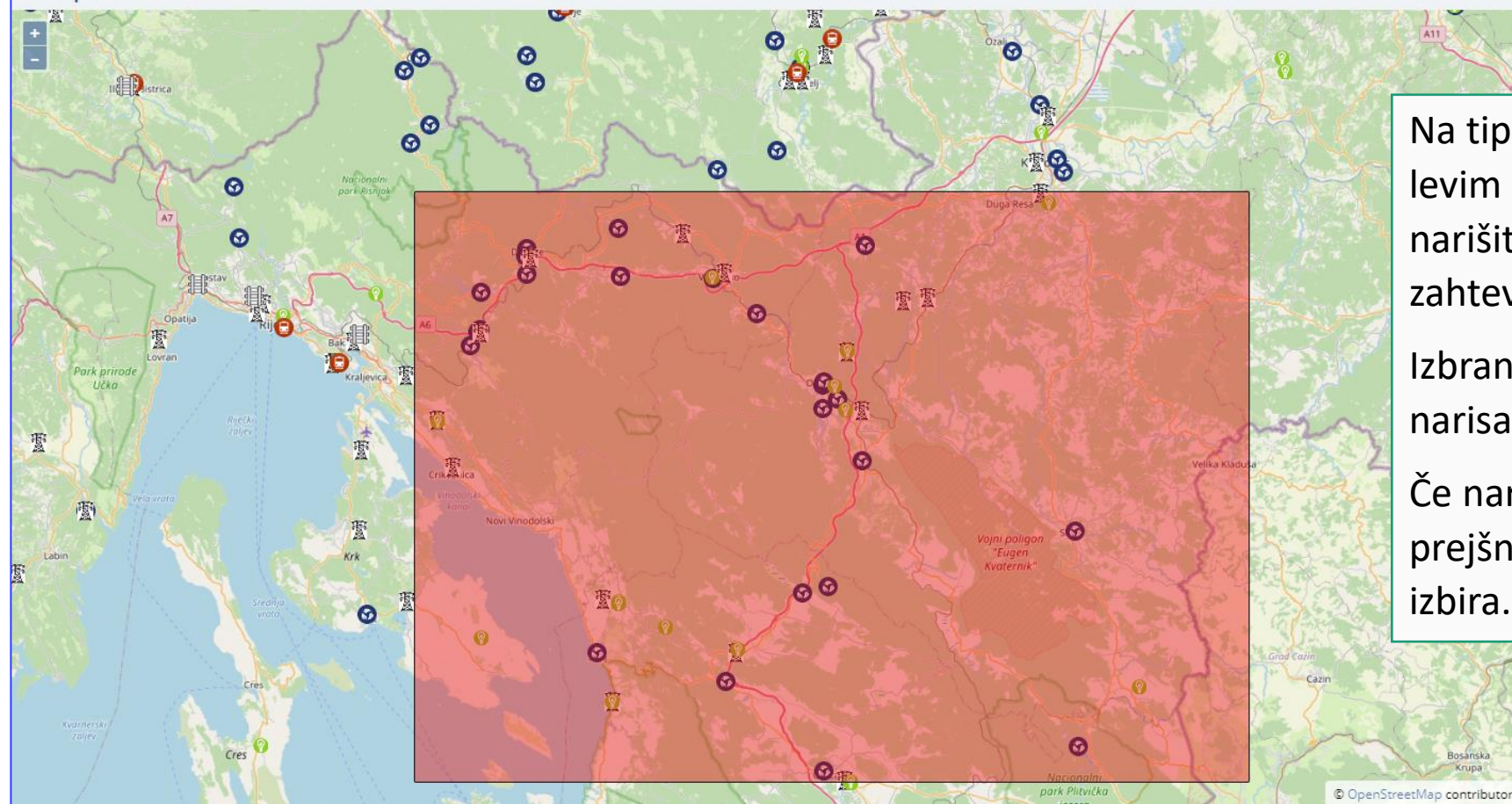
1. Select Biomass Sources

Please press the **'Ctrl'** key (Win / Linux) or **'⌘'** Key (Mac) to draw a box by clicking and dragging on the map.

V tem razdelku so prikazani naslednji koraki, ki jim morate slediti.



Danup-2-Gas Atlas



Biomass Source not selected

Na tipkovnici pridržite tipko ctrl in z levim gumbom miške na zemljevidu narišite pravokotnik, ki pokriva zahtevane vire biomase.

Izbrani bodo vsi viri biomase znotraj narisane pravokotnika.

Če narišete nov pravokotnik, se prejšnja izbira ponastavi in začne nova izbira.



Danup-2-Gas Atlas



TRANSNATIONAL BIOMASS & INFRASTRUCTURE

- ☒ Biomass
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- ☒ Industrial Plant
- ☒ Renewable Energy Plant
- ☒ Biochar
- ☒ Transport Hub
- ☒ Transnational Link

1. Select Biomass Sources
2. new P2G location or 2. co-locate REP/IP

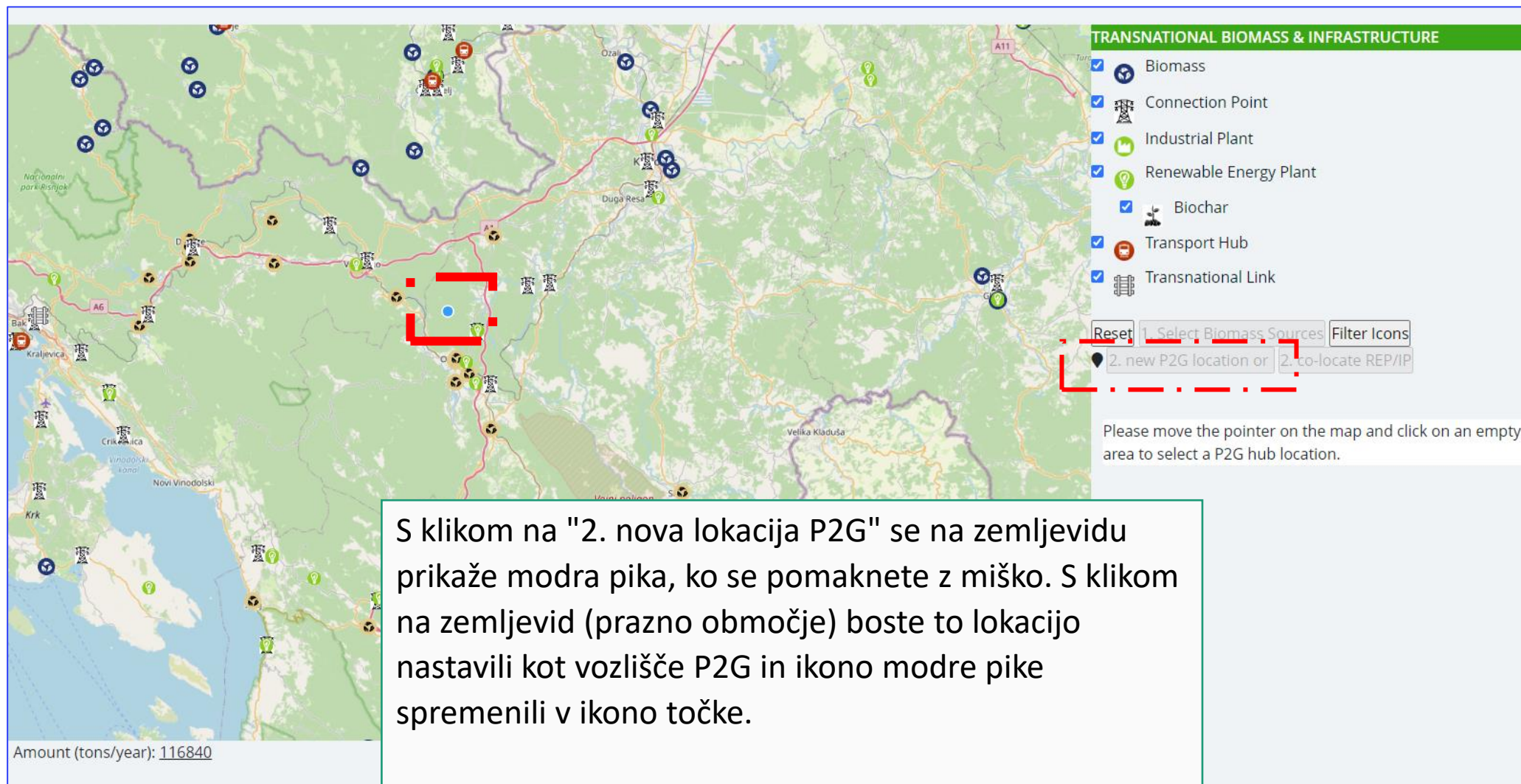
Please select **new P2G location** to select a point on the map for a P2G hub location.

Please select **co-locate REP/IP** to co-locate with existing Renewable Energy Plant or an Industrial Plant.

Število izbranih virov biomase bo prikazano pod zemljevidom skupaj s skupno količino v tonah na leto.

Naslednji korak je izbira lokacije na zemljevidu za lokacijo P2G ali izbira REP ali IP za skupno lokacijo vozlišča P2G.

Selected Biomass Sources: [25] | Total Amount (tons/year): 116840

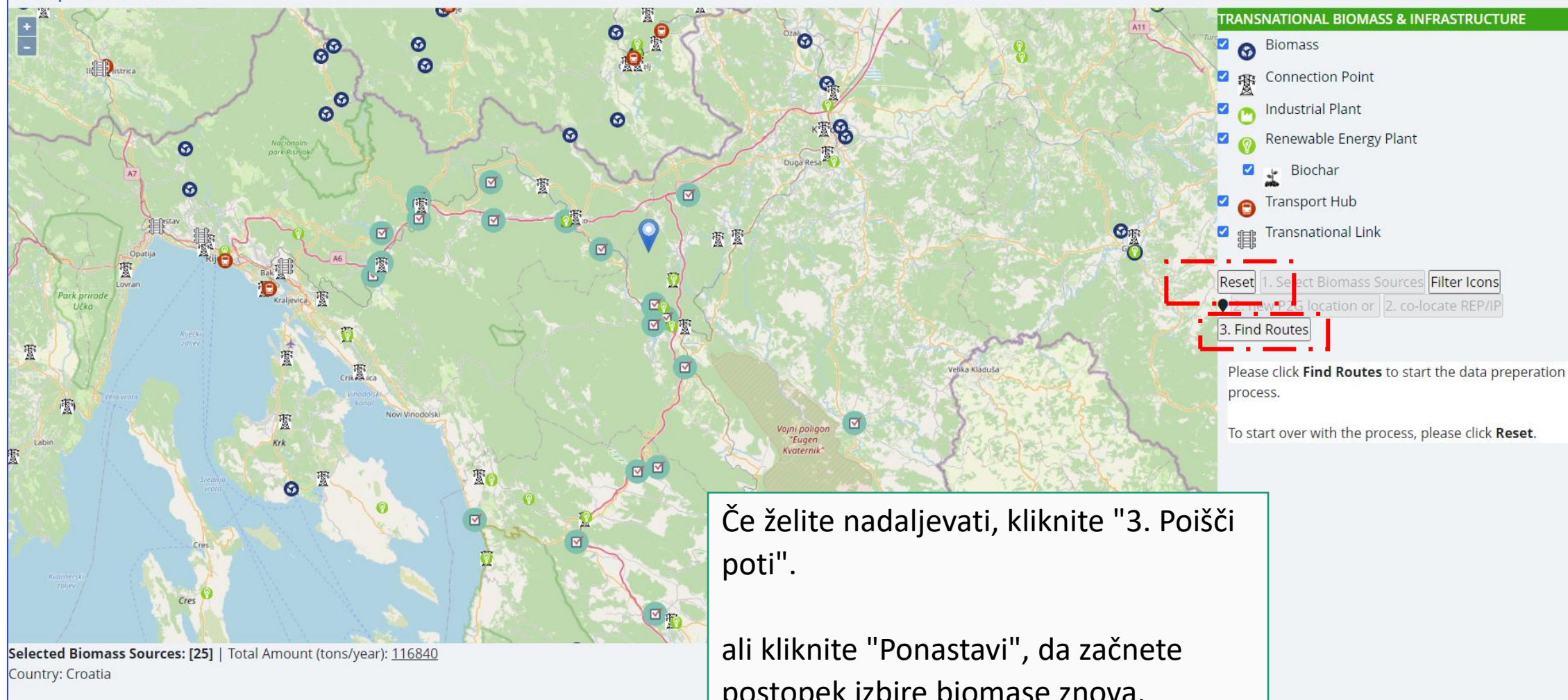


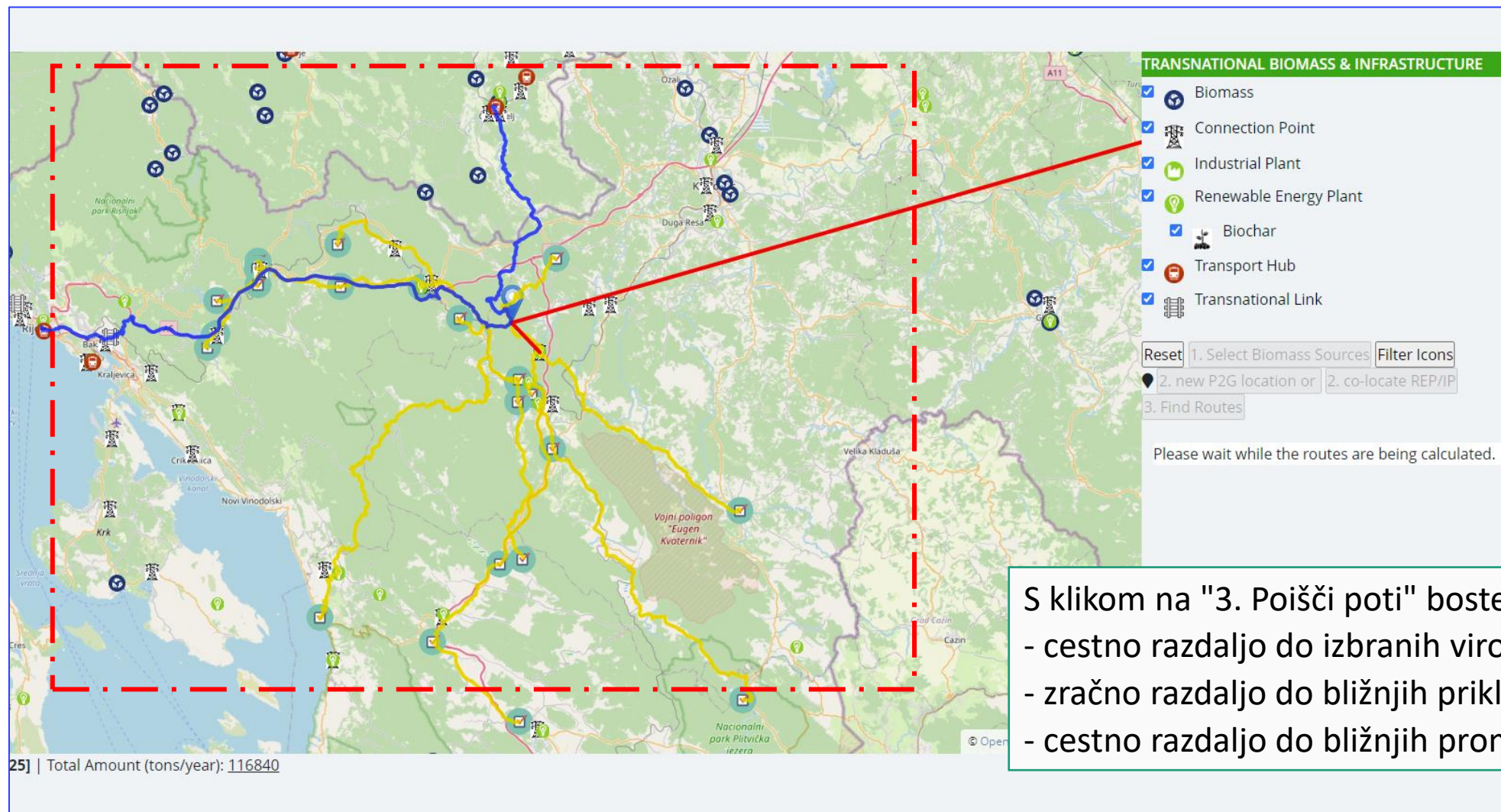
S klikom na "2. nova lokacija P2G" se na zemljevidu prikaže modra pika, ko se pomaknete z miško. S klikom na zemljevid (prazno območje) boste to lokacijo nastavili kot vozlišče P2G in ikono modre pike spremenili v ikono točke.

Ikona vseh predhodno izbranih biomas se bo spremenila v modro/belo potrditveno polje.



Danup-2-Gas Atlas





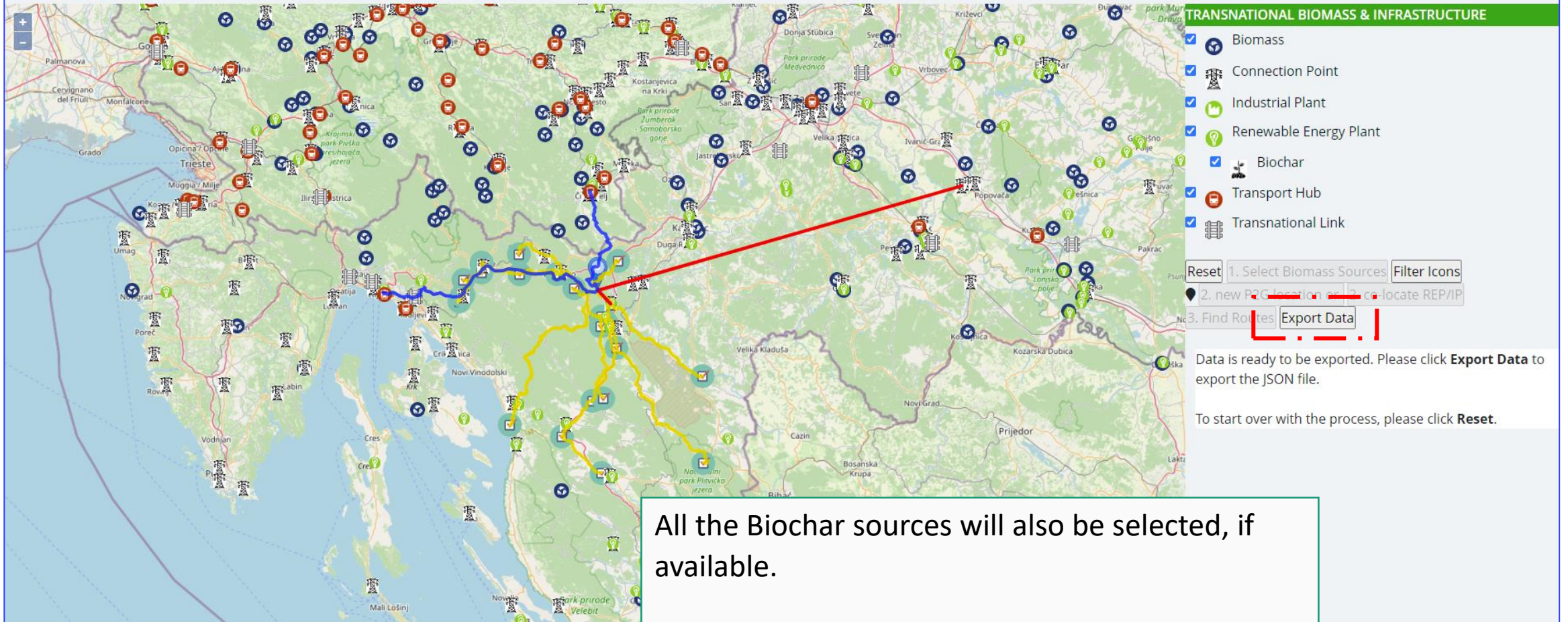
S klikom na "3. Poišči poti" boste izračunali:

- cestno razdaljo do izbranih virov biomase
- zračno razdaljo do bližnjih priključnih točk
- cestno razdaljo do bližnjih prometnih vozlišč

TRANSNATIONAL RENEWABLE ENERGY ATLAS



Danup-2-Gas Atlas



Selected Biomass Sources: [25] | Total Amount (tons/year): 116840

Country: Croatia

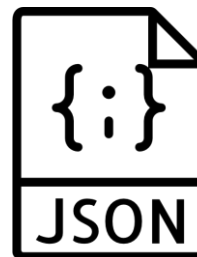
All the Biochar sources will also be selected, if available.

You will then be prompted to export the data as JSON file using the “Export Data” button.



data as JSON file

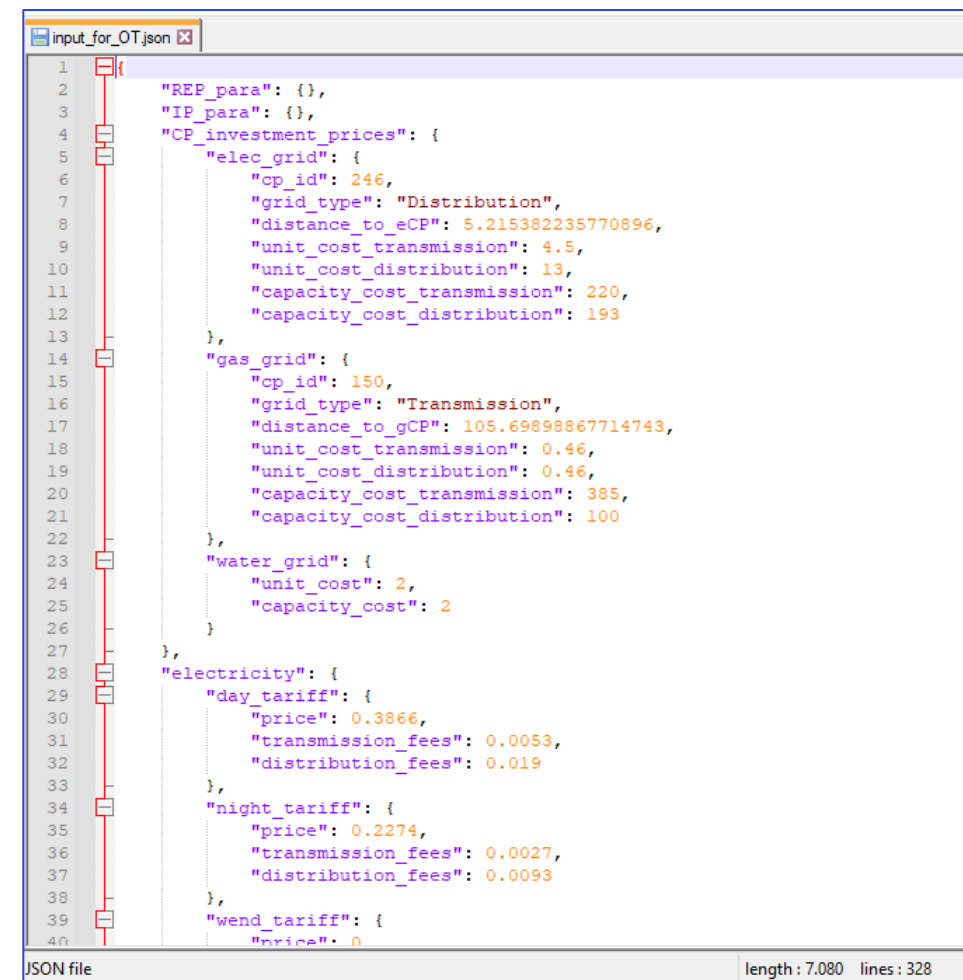
(input_for_OT.json)



Privzeto ime datoteke JSON je
"input_for_OT.json".

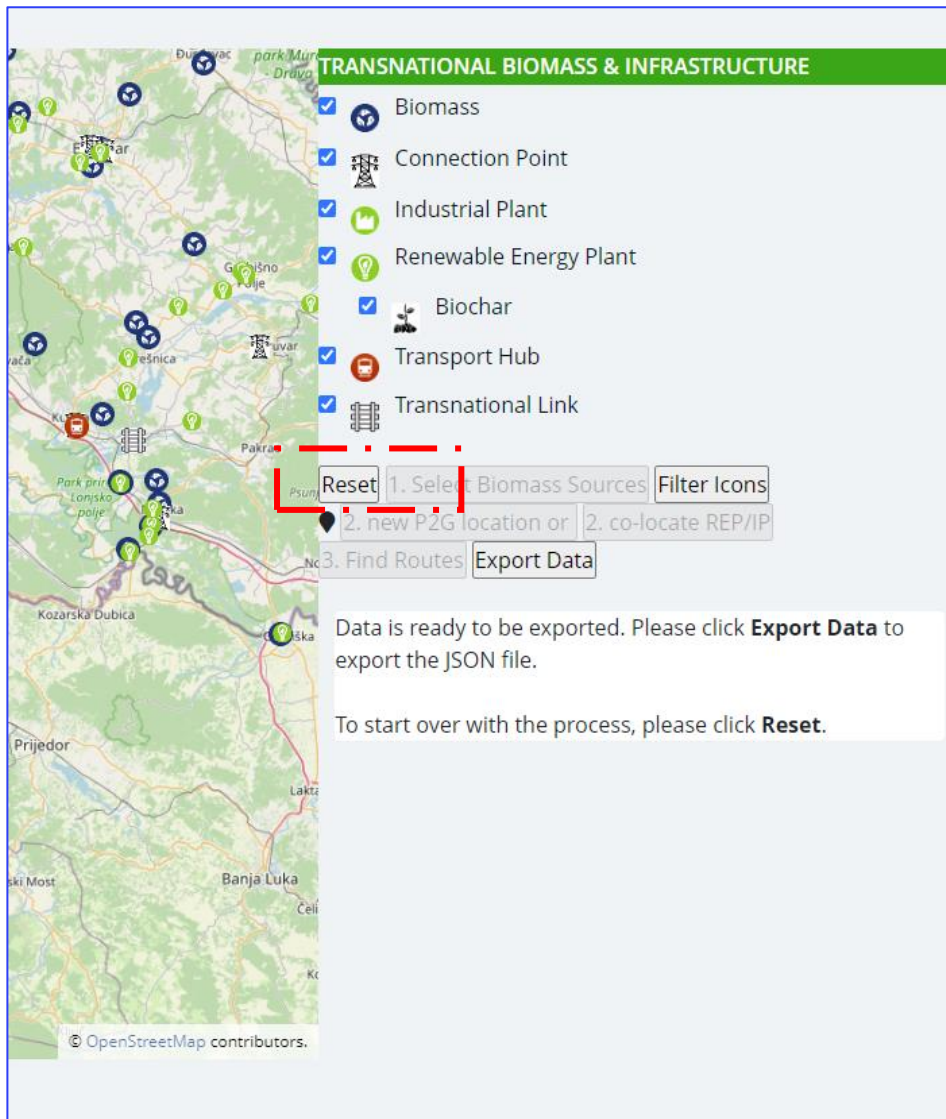
Datoteko lahko odprete v katerem koli
programu za pregledovanje datotek in
preverite podatke.

Naslednji korak je uvoz datoteke v "orodje za
optimizacijo".



```
1 {
2   "REP_para": {},
3   "IP_para": {},
4   "CP_investment_prices": {
5     "elec_grid": {
6       "cp_id": 246,
7       "grid_type": "Distribution",
8       "distance_to_eCP": 5.215382235770896,
9       "unit_cost_transmission": 4.5,
10      "unit_cost_distribution": 13,
11      "capacity_cost_transmission": 220,
12      "capacity_cost_distribution": 193
13    },
14    "gas_grid": {
15      "cp_id": 150,
16      "grid_type": "Transmission",
17      "distance_to_gCP": 105.69898867714743,
18      "unit_cost_transmission": 0.46,
19      "unit_cost_distribution": 0.46,
20      "capacity_cost_transmission": 385,
21      "capacity_cost_distribution": 100
22    },
23    "water_grid": {
24      "unit_cost": 2,
25      "capacity_cost": 2
26    }
27  },
28  "electricity": {
29    "day_tariff": {
30      "price": 0.3866,
31      "transmission_fees": 0.0053,
32      "distribution_fees": 0.019
33    },
34    "night_tariff": {
35      "price": 0.2274,
36      "transmission_fees": 0.0027,
37      "distribution_fees": 0.0093
38    },
39    "wend_tariff": {
40      "price": 0
41    }
42  }
43 }
```

JSON file length: 7,080 lines: 328

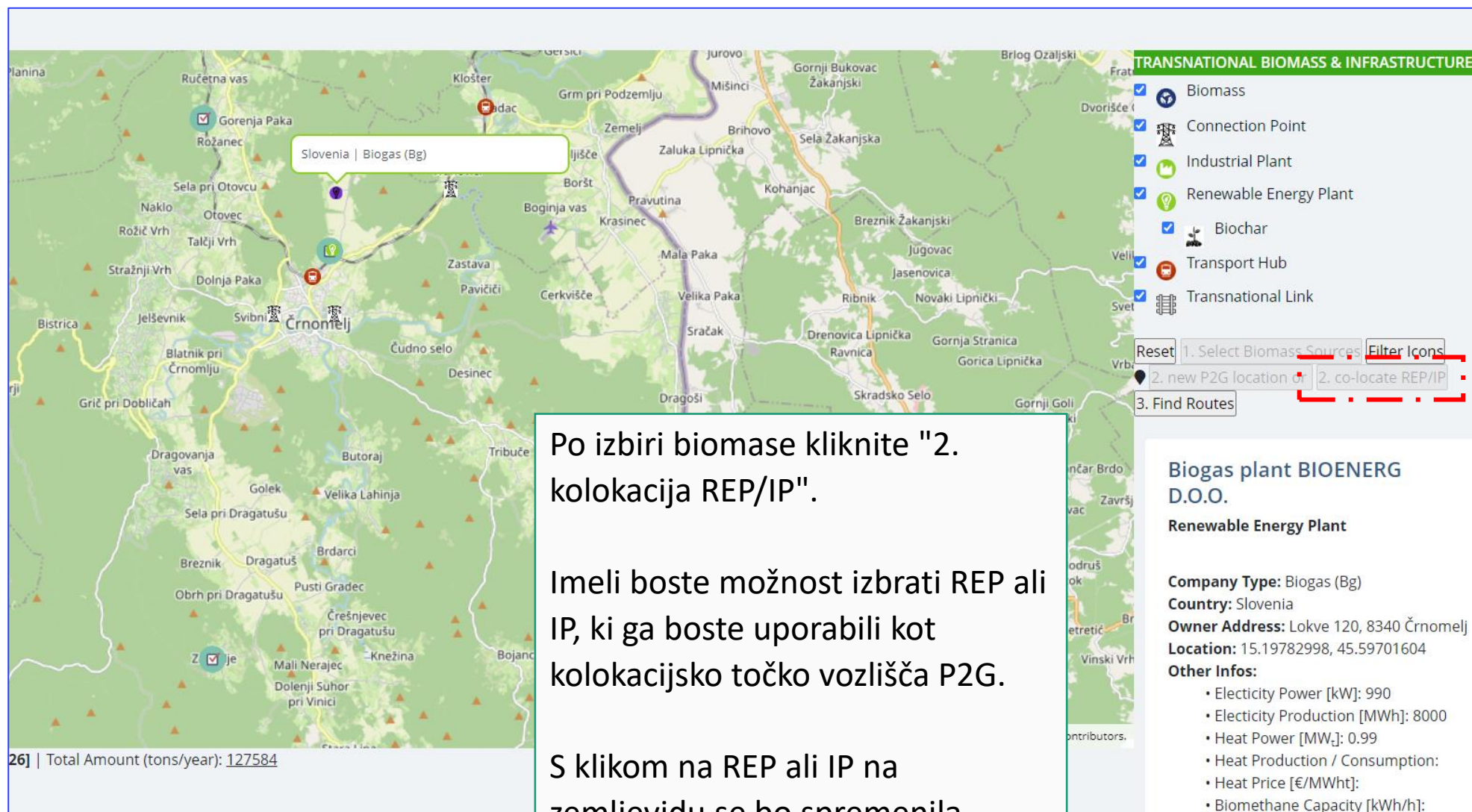


The screenshot shows a map of the Balkan region with various icons representing biomass and infrastructure. A green header bar at the top of the interface reads "TRANSNATIONAL BIOMASS & INFRASTRUCTURE". Below this, a list of icons with checkboxes is visible: Biomass, Connection Point, Industrial Plant, Renewable Energy Plant, Biochar, Transport Hub, and Transnational Link. All checkboxes are currently checked. At the bottom of the interface, there is a "Reset" button and a "Filter Icons" button. A red box highlights the "Reset" button. Below the map, a text box states: "Data is ready to be exported. Please click **Export Data** to export the JSON file." and "To start over with the process, please click **Reset**."

Kliknite "Ponastavi" ali ponovno naložite stran, da ponovno začnete postopek.



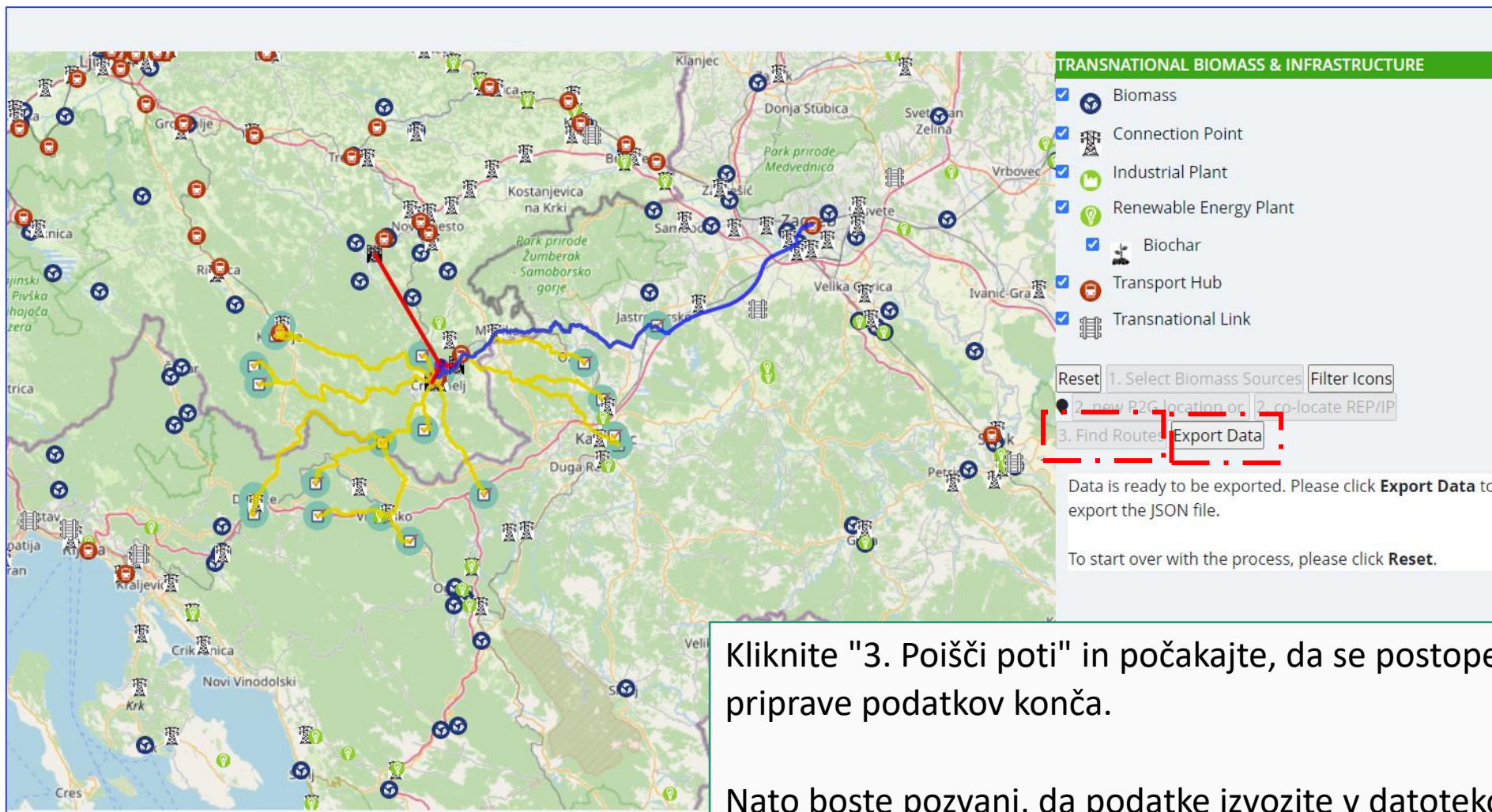
S klikom na
"Ponastavi" boste
morali izbrati vire
biomase kot prej.



Po izbiri biomase kliknite "2. kolokacija REP/IP".

Imeli boste možnost izbrati REP ali IP, ki ga boste uporabili kot kolokacijsko točko vozlišča P2G.

S klikom na REP ali IP na zemljevidu se bo spremenila ikona, ki označuje njegovo izbiro.



Kliknite "3. Poišči poti" in počakajte, da se postopek priprave podatkov konča.

Nato boste pozvani, da podatke izvozite v datoteko JSON z gumbom "Export Data" (Izvozi podatke), tako kot prej.

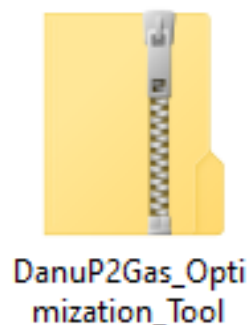


ORODJE ZA OPTIMIZACIJO P-2-G VOZLIŠČ

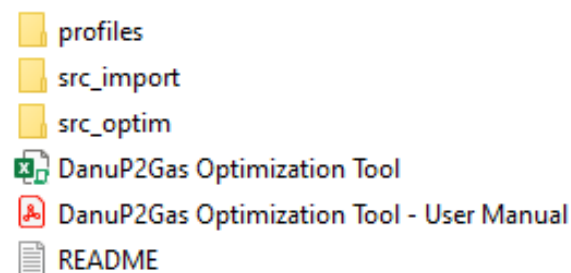
SEDAJ PA POGLEJMO DVA PRIMERA !

ORODJE ZA OPTIMIZACIJO P-2-G JE TRENUTNO NA VOLJO NA TEJ POVEZAVI:

https://danup2gas.fer.unizg.hr/FbgzafLZ/DanuP2Gas_Optimization_Tool.zip



EKSTRAHIRAJ VSE V NOVO MAPO





ČAS ZA KOSILO

Dober tek!

Zavod Energetska agencija za Savinjsko, Šaleško in Koroško

www.kssena.velenje.eu



Interreg



Danube Transnational Programme

DanuP-2-Gas





ORODJE ZA OPTIMIZACIJO P-2-G VOZLIŠČ


Samodejno shranjevanje ☐ DanuP2Gas Optimization Tool

Iskanje (Alt+L)

Datoteka Osnovno Vstavljanje Postavitve strani Formule Podatki Pregled Ogled Pomoč

Razveljavi Prilepi Izreži Kopiraj Preslikovalnik oblik Odložišče Pisava Poravnava Število Pogojno oblikovanje Oblikuj kot tabelo Slogi Vstavi Izbrisi Oblika Celice

H9 : X ✓ fx 20

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T																														
1	 TOOL FOR OPTIMAL SIZING OF POWER-TO-GAS COUPLING HUBS																																																
2																																																	
3																																																	
4																																																	
5																																																	
6																																																	
7	Investment parameters																																																
8	<table><thead><tr><th>Parameter</th><th>Value</th><th>Unit</th></tr></thead><tbody><tr><td>Maximal investment payoff period</td><td>20</td><td>years</td></tr><tr><td>Administration and building period</td><td>5</td><td>years</td></tr><tr><td>Maximal investment</td><td>1.000.000.000</td><td>€</td></tr><tr><td>Use same subsidy for all parts of the P2G hub?</td><td>Yes</td><td></td></tr><tr><td>Investment subsidy</td><td>0,0</td><td>%</td></tr></tbody></table>																			Parameter	Value	Unit	Maximal investment payoff period	20	years	Administration and building period	5	years	Maximal investment	1.000.000.000	€	Use same subsidy for all parts of the P2G hub?	Yes		Investment subsidy	0,0	%												
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14																																																	
15	Additional sales parameters																																																
16	<table><thead><tr><th>Parameter</th><th>Value</th><th>Unit</th></tr></thead><tbody><tr><td>H₂ Price for selling hydrogen</td><td></td><td>€/kg</td></tr><tr><td>Limit of daily hydrogen sale</td><td></td><td>kg/day</td></tr><tr><td>O₂ Price for selling oxygen</td><td></td><td>€/kg</td></tr><tr><td>Limit of daily oxygen sale</td><td></td><td>kg/day</td></tr><tr><td>CH₄ Price for selling methane</td><td></td><td>€/kg</td></tr><tr><td>Limit of daily methane sale</td><td></td><td>kg/day</td></tr><tr><td>BC Price for selling biochar</td><td></td><td>€/kg</td></tr><tr><td>Limit of daily biochar sale</td><td></td><td>kg/day</td></tr><tr><td>Tax on CO2 emissions</td><td></td><td>€/kg</td></tr></tbody></table>																			Parameter	Value	Unit	H ₂ Price for selling hydrogen		€/kg	Limit of daily hydrogen sale		kg/day	O ₂ Price for selling oxygen		€/kg	Limit of daily oxygen sale		kg/day	CH ₄ Price for selling methane		€/kg	Limit of daily methane sale		kg/day	BC Price for selling biochar		€/kg	Limit of daily biochar sale		kg/day	Tax on CO2 emissions		€/kg
Parameter	Value	Unit																																															
H ₂ Price for selling hydrogen		€/kg																																															
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O ₂ Price for selling oxygen		€/kg																																															
Limit of daily oxygen sale		kg/day																																															
CH ₄ Price for selling methane		€/kg																																															
Limit of daily methane sale		kg/day																																															
BC Price for selling biochar		€/kg																																															
Limit of daily biochar sale		kg/day																																															
Tax on CO2 emissions		€/kg																																															
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Parameter	Value	Unit
Starting date of simulation	1.01.2022	Pick date
Last date of simulation	31.12.2022	Pick date
Sampling time for electrical part	24	h
Amount of memory required (cca)	1,37	GB

Month	Value	Unit	Month	Value	Unit
January		mm	July		mm
February		mm	August		mm
March		mm	September		mm
April		mm	October		mm
May		mm	November		mm
June		mm	December		mm

Start Optimization

Optimization output	
Date and time	Message

Optimization tool Plants and sources P2G segments Results Charts

Priljubljen Dostopnost: preverite priporočila



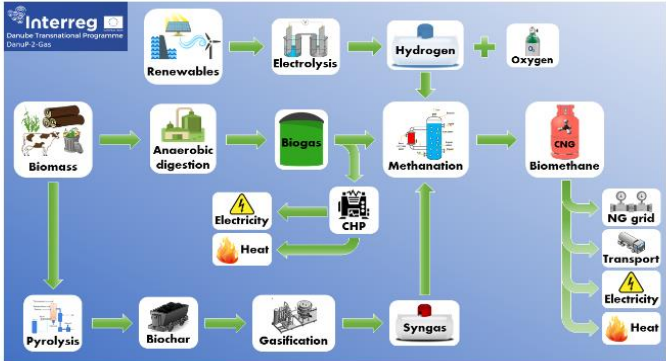
ORODJE ZA OPTIMIZACIJO P-2-G VOZLIŠČ

danup2gas.eu/optimizationtool

DanuP-2-Gas Optimization Tool is a tool for optimal sizing of power-to-gas hubs. P2G hubs can:

- produce biogas and biochar from both dry and wet biomass
- produce electricity from biogas with an addition of hydrogen
- use electrolyser to produce hydrogen
- produce syngas from biochar
- combine biogas, syngas, CO₂, and hydrogen to produce methane (CNG)
- be coupled with an existing renewable energy plant to use its green electricity
- be coupled with an existing industrial plant to provide it with CNG produced in a sustainable way

Optimization result is not only the specification of the obtained P2G hub but also includes time diagrams of consumed and produced energy and material, i.e. the tool also gives optimized scheduling of the P2G hub operation.



Simplified scheme of a P2G hub considered in the tool.

To learn more about the tool, its full scheme, how to use it, and its mathematical background, please read its [User Manual](#).

[You can download the tool here](#) (ZIP file ~90 MB - Windows system required)

After downloading the ZIP file and extracting its content, make sure to read the [README](#) file (also in the ZIP) before using the tool.

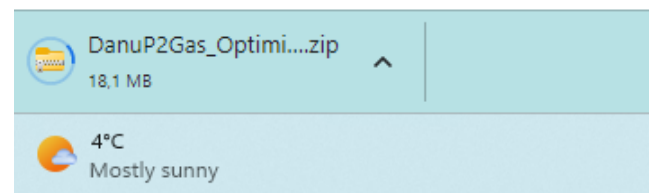
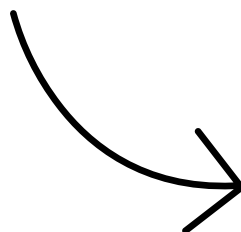
If you have any questions regarding the tool, you can contact the developers:
filip.rukavina@fer.hr; marijo.sundrica@fer.hr; antonio.karneluti@fer.hr; mario.vasak@fer.hr

4°C Mostly sunny 11:03 6.12.2022



ORODJE ZA OPTIMIZACIJO P-2-G VOZLIŠČ

[You can download the tool here](#) (ZIP file ~90 MB - Windows system required)





ORODJE ZA OPTIMIZACIJO P-2-G VOZLIŠČ

» Prenosi » DanuP2Gas_Optimization_Tool

Preišči DanuP2Gas_Optimization_Tool

Ime	Vrsta	Stisnjena velikost	Zaščiten z ...	Velikost	Razmerje	Datum spremembe
profiles	Mapa z datotekami					8. 09. 2022 14:11
src_import	Mapa z datotekami					15. 11. 2022 15:45
src_optim	Mapa z datotekami					15. 11. 2022 17:37
DanuP2Gas Optimization Tool	Microsoft Excelov delovni...	486 KB	Ne	848 KB	43%	15. 11. 2022 15:54
DanuP2Gas Optimization Tool - User Manual	Dokument Adobe Acrobat	957 KB	Ne	1.148 KB	17%	14. 10. 2022 18:15
README	Dokument z besedilom	1 KB	Ne	2 KB	51%	15. 11. 2022 15:56



IZVEDBA ŠTUDIJE IZVEDLIVOSTI

STUDY ON ECONOMIC FEASIBILITY OF LOCAL SECTOR COUPLING

Here you can find a study on economic feasibility of local sector coupling for each project partner country done with the tool for optimising sectoral interconnection nodes created in the project (Optimization Tool). The prefeasibility study for each country presents optimal locations for P2G hub operation. It is based on data inputs from Infrastructure and Biomass databases and reports.

Bulgaria	PDF-Study .zip-Files
Croatia	PDF-Study .zip-Files
Germany	PDF-Study .zip-Files
Hungary	PDF-Study .zip-Files
Romania	PDF-Study .zip-Files
Serbia	PDF-Study .zip-Files
Slovakia	PDF-Study .zip-Files
Slovenia	PDF-Study .zip-Files



IZVEDBA ŠTUDIJE IZVEDLJIVOSTI – ZIP DATOTEKA

STUDY ON ECONOMIC FEASIBILITY OF LOCAL SECTOR COUPLING

Here you can find a study on economic feasibility of local sector coupling for each project partner country done with the tool for optimising sectoral interconnection nodes created in the project (Optimization Tool). The prefeasibility study for each country presents optimal locations for P2G hub operation. It is based on data inputs from Infrastructure and Biomass databases and reports.

Bulgaria	PDF-Study .zip-Files
Croatia	PDF-Study .zip-Files
Germany	PDF-Study .zip-Files
Hungary	PDF-Study .zip-Files
Romania	PDF-Study .zip-Files
Serbia	PDF-Study .zip-Files
Slovakia	PDF-Study .zip-Files
Slovenia	PDF-Study .zip-Files



Slovenia_Pre-feasib....zip
Odpiranje, ko je končano



IZVEDBA ŠTUDIJE IZVEDLIVOSTI – ZIP DATOTEKA

← → ↕ ↑ 📁 Prenosi Slovenia_Pre-feasibility-OT-files_SL 🔍 Preišči Slovenia_Pre-feasibility-OT-files_SL

Osnovno	Ime	Vrsta	Stisnjena velikost	Zaščiten z ...	Velikost	Razmerje	Datum spremembe
Namizje	WP T2_T2.1_1SLO_Study case_SE PRAPRETN0_0sub1gas	Microsoft Excelov delovni...	841 KB	Ne	1.407 KB	41%	12. 10. 2022 09:31
Prenosi	WP T2_T2.1_1SLO_Study case_SE PRAPRETN0_0sub5gas	Microsoft Excelov delovni...	884 KB	Ne	1.412 KB	38%	12. 10. 2022 10:19
Dokumenti	WP T2_T2.1_1SLO_Study case_SE PRAPRETN0_0sub10gas	Microsoft Excelov delovni...	792 KB	Ne	1.347 KB	42%	12. 10. 2022 11:24
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	WP T2_T2.1_3SLO_Study case_GFPROJECT_0sub5gas	Microsoft Excelov delovni...	821 KB	Ne	1.387 KB	41%	14. 10. 2022 08:27
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	WP T2_T2.1_3SLO_Study case_GFPROJECT_50sub1gas	Microsoft Excelov delovni...	730 KB	Ne	1.357 KB	47%	14. 10. 2022 09:09
	WP T2_T2.1_3SLO_Study case_GFPROJECT_50sub5gas	Microsoft Excelov delovni...	735 KB	Ne	1.354 KB	46%	14. 10. 2022 09:22
	WP T2_T2.1_3SLO_Study case_GFPROJECT_50sub10gas	Microsoft Excelov delovni...	679 KB	Ne	1.282 KB	48%	14. 10. 2022 09:29

Št. elementov: 18




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datoteka Osnovno Vstavljanje Postavitev strani Formule Podatki Pregled Ogled Pomoč

ZAŠČITEN POGLED Bodite previdni – datoteke iz interneta lahko vsebujejo viruse. Če je ni treba urejati, izberite zaščiteni način. Omogoči urejanje

H13 : X ✓ fx 0

A B C D E F G H I J K L M N O P Q R S T

1  **TOOL FOR OPTIMAL SIZING OF POWER-TO-GAS COUPLING HUBS**

2 Danube Transnational Programme

3 DanuP-2-Gas

4

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7 **Investment parameters**

Parameter	Value	Unit
Maximal investment payoff period	20	years
Administration and building period	5	years
Maximal investment	1.000.000.000	€
Use same subsidy for all parts of the P2G hub?	Yes	
Investment subsidy	0,0	%

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15 **Additional sales parameters**

Parameter	Value	Unit
H ₂ Price for selling hydrogen	7,50	€/kg
Limit of daily hydrogen sale	1.000,00	kg/day
O ₂ Price for selling oxygen	0,07	€/kg
Limit of daily oxygen sale	1.000,00	kg/day
CH ₄ Price for selling methane	1,50	€/kg
Limit of daily methane sale	1.000,00	kg/day
BC Price for selling biochar	1,50	€/kg
Limit of daily biochar sale	1.000,00	kg/day
Tax on CO2 emissions	0,05	€/kg

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31 **Optimization output**

Date and time	Message	Type
12/10/2022 11:24:21	The tool initiated. Reading parameters...	info
12/10/2022 11:24:21	Parameters read. Checking values of the parameters...	info
12/10/2022 11:24:21	Values of the parameters checked. Reading and generating profiles...	info

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Output T2.2

Pre-feasibility Study (Slovenia)

WP T2: Project main output

May, 2022

Project co-funded by the European Union funds (ERDF, IPA)
www.interreg-danube.eu/danup-2-gas

1. METHODOLOGY

As all the other partners of the consortium, we also used the data, which was investigated, archived, and shared for the biomass and the infrastructure databases development process. The regionally developed biomass and infrastructure databases will also be used for the further use in the Renewable energy Atlas, a part of the Danube energy platform, which will be automatically connected to the optimization tool. Thus, we felt that the use of the data from both databases was almost essential for the full understanding of the operation of the optimization tool. Other data, which was used strictly for the testing activities of the optimization tool, was used as publicly available data, accessible on the wide web. After the selection process, the data was selected and inserted in a shape of different parameters in the optimization tool. For the development of this updated pre-feasibility study version, the 2nd version of optimization tool was used, which was at the time available as the latest available version for the consortium of the DanuP-2-Gas project. The tool was used locally and offline.

The Optimization Tool (OT) V2 was used for all 18 cases, according to the work package. The following cases were selected by predefining three scenarios:

- Implementation of P-2-G system on the location of existing renewable energy plant – SE Prapretno
- Implementation of P-2-G system on the location of existing industrial plant – Industrial plant Talum d.d.
- Implementation of P-2-G hub as a green on-field project

For each of these three cases (IP, REP, and as green on-field project) the results include an investigation of:

- Natural gas price
 - current price
 - 5 times the current price
 - 10 times the current price
- Context of the implementation of the P-2-G hub without the use of non-refundable funds and with the use of a 50% subsidy

The results are described in the following chapters.

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2. CASE STUDIES

As already described in the previous chapter, three locations for the potential P2G investment were considered.

The first case study is an already existing photovoltaic power plant – SE PRAPRETNO, which was constructed on the top of the debris from the coal industry, thus in the degraded area, which was not suitable for any other use. The second one is one of the biggest industrial plants in Slovenia – Talum d.d., which is one of the largest producers of primary aluminium and aluminium alloys in Slovenia. Finally, the third study case was only implemented as a green on-field project, which could be implemented anywhere, at any location, which would be preferably based near the used and available raw biomass sources, water sources, near various transport links, IP's, REP's, close to the end consumers, etc.

The first version of the optimization tool (OT V1) was updated in August of 2022, by its developers - University of Zagreb Faculty of Electrical Engineering and Computing. Thus, all the other partner's prefeasibility studies were also accordingly updated. This document was updated in the October of 2022, representing the last update of the deliverable by the end of the DanuP-2-Gas project.

STUDY CASE 1 - RENEWABLE ENERGY PLANT - SE PRAPRETNO

Solar power plant SE PRAPRETNO is currently the largest operating photovoltaic installation in Slovenia. It is located in the small town of Prapretno near Hrašnik, where it was built in a degraded area, where in the past years the coal ash and other waste materials related to the operation of the nearby thermal power plant and coal mine were layered. Thus, the area will not be useful for any other use (farm, housing etc.), for another few hundred years. In the light of this events, the biggest national energy holding – HSE Group, which is the largest producer and seller of electricity from domestic sources on the wholesale market in Slovenia and the largest Slovenian producer of electricity from renewable sources, constructed the photovoltaic power plant. With the nominal power of 3,036 MWp it is currently the biggest photovoltaic power plant in Slovenia.

The renewable energy plant SE PRAPRETNO has the following characteristics:

Nominal power: 3,036 MWp

Expected annual electricity production: 3,4 GWh

Number of installed panels: 6900

Nominal power of panel: 440 Wp

Average daily electricity production: 10 MWh

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Number of powered households: 800

The total installation capacity of the area: 15 MWp

Estimated number of annual operating hours: 1100



Source: <https://www.hse.si/sl/>

As part of the DanuP-2-Gas project, the PRAPRETNO solar power plant was selected as STUDY CASE no. 1, in which we studied the possibility of establishing a P-2-G hub, next to the already existing power plant, which in theory turned out to be quite an effective, economical, and successful option, as the results were encouraging. The results of the study case are presented in the next chapter. Despite the fact that the studied renewable energy sources power plant was built and is intended for the production of electricity, which the mentioned power plant generates in a very remote area that is not close to water and biomass sources, and has very poor transport connections, the results of the OT theorised the savings in the amount of approx

ately 97 million €, if the future market price would stay as it was by the time of investigation. In that case, the P2G hub would be paid off in just 5.4 years, which is relatively fast and the implementation of the P2G hub in line with the already established photovoltaic power plant, should present quite an effective solution or an advanced

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HVALA ZA POZORNOST !

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