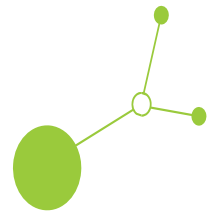# JETforCE - Solution 1

Mapping energy transition challenges with citizens

**D.2.2.2
(= O.2.3)**

Version 1
11 / 2024

Specification of the Deliverable in the Application Form:

Deliverable Number	Deliverable title	Deliverable description	Delivery Period
D.2.2.2	JETforCE solution 1 – "Mapping energy transition challenges with citizens"	Web-based solution for Challenge Mapping (app and connected database, using block-chain), where a challenge reporting data structure assesses initiatives in a given area and identifies potentially adverse effects on vulnerable communities. It comes with instructions for use. It is O2.3.	Period 4, 19 - 24

IAAI-GloCha Global Challenges Mapping

A.   The Big Picture

> "*JETforCE addresses the need for energy transition in Central Europe (CE), without disproportionate negative socio-economic impacts on certain vulnerable territories or demographics: Just Energy Transition. This common challenge affects multiple actors across CE. Public Authorities and Energy Agencies need **new capacities and solutions** to ensure that energy policies and investments achieve JUST Energy Transition. **Citizens need the chance to contribute** to measures affecting their life, work and opportunities, but this requires **knowledge**, **understanding** and **equal access to appropriate digital tools**.*
>
> *JETforCE harnesses digitalisation as a means to **co-design and co-implement Just Energy Transition in CE**.*"
>
> JETforCE Application Form – Page 3

The JETforCE Challenges Mapping is a novel solution for digital citizens' engagement, which is designed to help regions to better involve their citizens digitally in the assessment of existing Just Energy Transition programs and as co-creators of future energy policies and investments.

The focus of the Challenges Mapping Tool in the EU INTERREG CE Project JETforCE is on knowledge, communication and civic engagement. With the Challenges Mapping Tool we are creating a communication mechanism through which citizens can communicate with public stakeholders on a regional level with regard to identification and specification of challenges of Just Energy Transition programs and corresponding action potentials with a focus on vulnerable groups of society.

As the social cohesion and public sector innovation dimensions are essential for the impact of the CMT, the tool can be regarded as a social innovation, enabled by digital innovation. Citizens, and especially vulnerable groups have with the CMT a specific communication channel to interact with Just Energy Transition Alliances of various JET stakeholders, so that they can identify, localize and specify challenges and action potentials in relation to regional JET programs, with digital ambassadors representing an important additional communication channel to those who might not be reached though the digital tool alone. (see Figure 1)
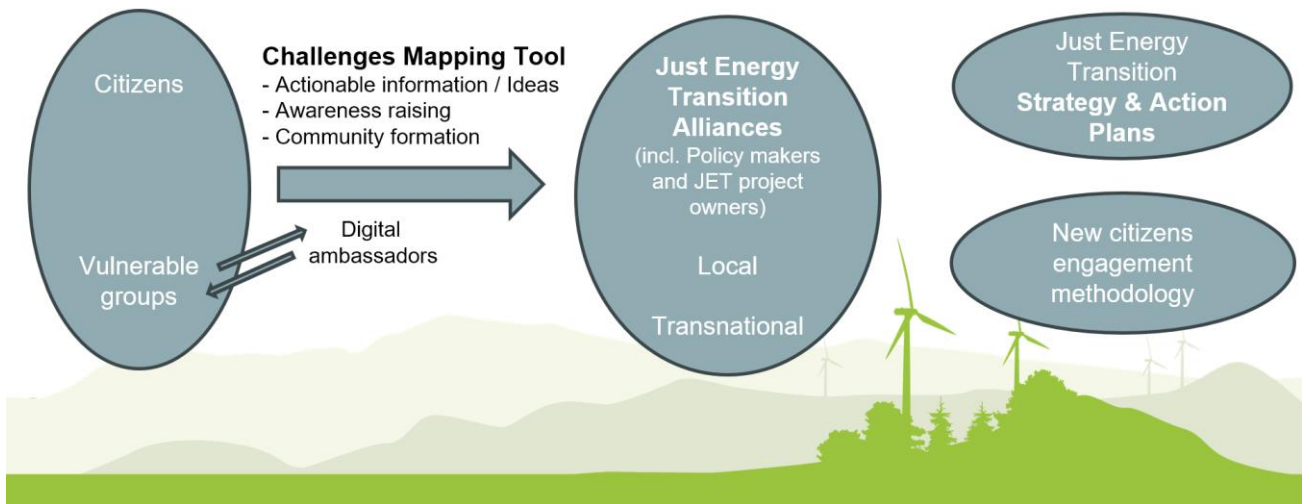
Figure 1 – The function of the JETforCE Challenges Mapping Tool in the JETforCE project logic

B. Adaptation of the tool to the needs and capacities of project partners and targeted vulnerable groups

The CMT has initially been envisioned (1) as a **downloadable app** and (2) based on a data and transaction architecture which would use blockchain technology for secure transactions.

Following the initial plan, the IAAI GloCha tech team, led by dr. Hossein Hassani, has developed a beta version of the app for both, the Android operating system as well as for iOS/Apple. The beta version of the app worked very well, but it became clear during following steps of registering the app on the app stores and with the need for numerous updates of installed apps due to different language versions and other regional needs adaptations, that a **web-browser based solution (https://glocha-challenges-mapping-iaai.web.app/) would be the most comfortable, cost-effective and appropriate solution**, especially also in light of the lack of dedicated resources for software maintenance and other IT costs in the JETforCE project design.

In light of (1) limited IT development resources in the project design, (2) a very tight timeline for the delivery of the beta version of the app, but also (3) with a view to the capacity of the target group of JETforCE – vulnerable societal groups – regarding digital literacy, it was decided by IAAI after consultations with the PP consortium and the LP, not to use blockchain based solutions at this stage as adding complexity to the tool would not lead to better results as the need for digital skills in relation to Web3 wallets would be an access hurdle for our target group and affect negatively social inclusion outcomes of the project.

Determined to deliver on the vision of Web3 technology enabled CMTs, IAAI GloCha is actively pursuing to set up consortia for future project initiatives which will build on the outcomes and digital solutions of JETforCE and upgrade the JETforCE CMT with additional digital tools and fucntionality, like self-sovereign digital identities, unique identification of challenges, localization of challenges, action and impact in the context of the One Map initiative of the UN Geospatial Information Network et al..

UN STI Forum 2024 Side Event: Citizen Science, Governance Innovation, Challenges Mapping and Local Pacts for the Future, 8th May 2024, https://www.glocha.org/citizen-science-web3-technology-for-governance-innovation/, **video:** https://webtv.un.org/en/asset/k1k/k1k139ki7g?kalturaStartTime=2025

C. CMT Delivery Highlights

- Presentation of the CMT and co-design session at the Miskolc PP meeting, May 2023, see photo above) (Powerpoint presentation, video), followed by online co-design sessions in June 2023
- Beta version launch at the Bologna PP meeting, Sept 2023
- Presentation of the JETforCE CM at the UN Climate Conference COP28 in Dubai, Dec. 2023 (video)
- Launch of the Transnational Pilot 1 "Mapping energy transition challenges with citizens" - Testing JETforCE Digital Challenge Mapping for Just Energy Transition – internal session (slides) – Presentation CMT tool URL: **https://glocha-challenges-mapping-iaai.web.app/** & public presentation at the 10. Bautzener Energieforum https://www.youtube.com/live/q19ZgSh2dR4?si=PN1ShVZwbkk59DQ_&t=9295
- CMT Side Event to the UN STI Forum 2024 - Citizen Science & Web3 Technology enabled Governance Innovation: Challenges Mapping and Local Pacts for the Future https://www.glocha.org/citizen-science-web3-technology-for-governance-innovation/ (article on JETforCE homepage: https://www.interreg-central.eu/news/challenges-mapping-tool-presented-at-un-sti-forum-2024-side-event/)
- Implementation of challenges mapping through JETforCE partners through Transnational Pilot Action 1, collection and discussion of learnings and suggestions for improvement of the CMT at the PP meeting in Ptuj in June 2024 (Activity 2.1. Monitoring, Evaluation and continuous improvement of Transnational Pilots)
- Implementation of improvements and finalization of the tool in July and August 2024
- Presentation of the CMT at the GlobalGoals2024 conference https://globalgoalsproject.eu/globalgoals2024/ at the University of Utrecht on 29th August 2024 (Miroslav Polzer, "Global Conceptual Framework and Reporting Standard for the Identification, Localization and Specification of Challenges with Citizen Science and Web3 Technology Tools" Panel SCIENCE & KNOWLEDGE III: 'The Science-Policy Interface-II') and
- Presentation of the Challenges Mapping methodology and the JETforCE CMT at the GloCha conference at the UN headquarters in New York on 18th September 2024 and at a corresponding exhibit with the UN Environment Early Warning and Data Analytics branch and UN Habitat at UN HQ from 6th till 13th of September https://www.linkedin.com/posts/miropolzer_un-summitofthefuture-generalassembly-activity-7239792769135718400-6u3O?utm_source=share&utm_medium=member_desktop
- Implementation of the second phase of the Transnational pilot action 1 and collection of results(Activity 2.2. "Mapping energy transition challenges with citizens" - Testing JETforCE Digital Challenge Mapping for Just Energy Transition
- Evaluation of the performance of the PA1 2nd (final) phase at PP meeting, Weiz, Dec 2024

D.   Some Learnings

- CMT is primarily a social innovation, enabled by digital innovation – in addition to the tool the user needs guidance, community and incentives
- Citizen Engagement is a learning process (for the institutions as well as for the citizens) – Good project design requires planning of citizens' engagement capacity building
- Project partners should have an idea of what programs or investments they would like to implement with the help of the citizens' knowledge that the CMT is expected to deliver
- Challenges mapping reports need to be recognized as a valuable intellectual asset for which the participating citizens/youth get rewarded
- Potentially adding gamification as incentive mechanism
- Data governance & GDPR compliance is important and resource intensive
- Unique identification of challenges, partners, reports, actions & impact (CMT 2.0 functionality)
- Social networking / Challenges communities formation functionality will add significant value (CMT 2.0 functionality)
- The system needs to be as easy as possible and as complex as necessary (Blockchain technology to be introduced only in CMT 3.0 with a citizen science entrepreneurship module, for users to opt-in if they wish)
- AI for reporting support & analysis of good practice cases / high impact solutions and (CMT 3)
- Synergies with EU Climate Pact https://climate-pact.europa.eu/get-involved/host-group-activity/quick-start-tools-citizen-engagement_en, EU Mission Cities https://netzerocities.eu/ and EU Mission on Adaptation https://climate-adapt.eea.europa.eu/en/mission

E.   CMT Delivery Progress over time

Beta Version Launch

The IAAI Global Challenge Mapping App, ahead of schedule, launched its beta version during the Bologna Meeting in September, a move that aimed to streamline partner workflows and accelerate progress toward achieving the project's objectives and goals. This proactive step allowed all attending partners to gain early access to the app's full functionality, marking a significant milestone. The partners who experienced the beta version were quick to provide positive feedback, acknowledging its seamless functionality and alignment with the project's overarching objectives.

During discussions, the groundbreaking nature of this initiative was highlighted, underlining its potential to transform the way citizens, policy makers, and higher authorities collaborate in addressing climate change. This innovative app serves as a bridge, facilitating a closer and more meaningful connection between citizens and decision-makers.

The significance of citizen engagement in driving impactful change was a central theme in these discussions. The app's role in this regard was underscored as it empowers individuals not only to document and share their observations but also to voice their concerns and propose viable solutions, akin to the proactive participation demonstrated during the meeting. Moreover, the app offers a platform for others to rally behind shared perspectives, concerns, and proposed solutions.

The app's approach embodies a bottom-up philosophy that amplifies citizen voices, ensuring they resonate with authorities and policymakers. In essence, the IAAI Global Challenge Mapping App stands

as a testament to the power of inclusive citizen engagement in fostering a brighter and more sustainable future, where collaborative efforts are at the heart of effective climate action and energy transition.

Language Versions

During the Bologna PP meeting in September 2023 and in line with the IAAI-GloCha mandate, the English version of the app was initially presented, with the intention that partners would utilize the web version and take on the task of translating it into their respective local languages. However, recognizing the importance of inclusivity and accessibility, IAAI-GloCha took a proactive step by deciding to incorporate all partner languages directly into the app.

During project implementation the development team diligently working to implement all 12 partner languages seamlessly.

The collaborative spirit of the project was evident as all partners actively participated in ensuring the accuracy and appropriateness of the translated versions. Their valuable contributions not only guarantee linguistic precision but also reflect a commitment to making the app accessible and user-friendly to a diverse global audience. This inclusive approach underscores the project's dedication to fostering meaningful engagement and collaboration across borders and languages, ultimately strengthening its impact and reach.

Improvement of the CMT during Transnational Pilot 1

In the project period 3 the Focus of the JETforCE activities of IAAI has been on leading A2.2, designing the transnational pilot in close coordination with Monitoring and Evaluation results of activity A2.1 (Monitoring, Evaluation and continuous improvement of Transnational Pilots 1 and 2). Within A2.2 IAAI is on an ongoing basis coordinating PP work regarding the use of the Challenges Mapping Tool (**https://glocha-challenges-mapping-iaai.web.app/**), for data gathering and continuous improvement of the Challenges Mapping Tool.

In terms of the finalisation of the Challenges Mapping Tool, the project partners meeting in Ptuj in June 2024 has been a crucial milestone of the project as the IAAI team got an opportunity to receive feed-back from the CMT deployment in JETforCE partner regions in transnational pilot phase 1. The received feed-back has been summarised by A2.1. leader IRENA in section 4 (Conclusions) of (D.2.1.2 Transnational pilot 1 – Interim monitoring, evaluation and improvement report) as follows:

"As the most relevant improvements, project partners have proposed the following:

- Minimisation of technical issues (response time etc).
- Add the possibility to modify reported challenges.
- Add the possibility of sorting challenges by countries/regions.
- Provide instructions on what type of challenges should be reported.
- Add the Possibility to use the app without sharing users' location.
- Play/App store availability.
- Motivation for the end users (incentives, rewards).
- Inclusion of Universities."

IAAI implemented in reporting period 3 all listed recommendations that were related to technical aspects of the CMT (except App store availability, as the tool is designed now as desk-top application as reported in previous reports).

The recommendations on ".. What type of challenges should be reported", "Motivation for the end users (incentives, rewards)", "Inclusion of Universities." are well received by IAAI, but they can't be implemented by IAAI alone and there are no provisions in the Application form for additional activities and resources, so we suggest to consider the recommendations for implementation in future CMT project initiatives in the INTERREG Central Europe programme and beyond.

The Role of CMT in regional and transnational strategies for citizens engagement in Just Energy Transition

As regards WP3, IAAI is strongly committed to supporting the utilisation of CMT outcomes for the development of local, regional and transnational strategies for citizens engagement in just energy transition. In reporting period 3 we have therefore actively participated in several calls, especially the T-JETA Meeting 17/09/2024 at which Miroslav Polzer presented the CMT tool with its latest updates included.

F. App Functionality

Functions of the GloCha JETforCE Challenges Mapping Tool:

- Sign-in and profile generation
- Challenges mapping (integrated with google maps)
- Localization of a challenge
- Specification (Who, What, When, Where, How?)
- Voting
- Commenting
- Multi-lingual

Login page and New User Registration

https://glocha-challenges-mapping-iaai.web.app/

The login page of the app serves as the gateway to a world of active participation and engagement in climate change action. It's your key to unlock the app's full suite of features and functionalities, designed to empower citizens and promote meaningful collaboration with decision-makers.

For existing users, the login process is straightforward and user-friendly. Simply enter your registered email address and password, and you'll gain immediate access to your personalized dashboard, where you can document observations, voice concerns, and propose solutions related to climate change and sustainability.

But what if you're new to the app and eager to join this global movement for change? We've got you covered with a seamless registration process. Just click on the "New Registration" button, and you'll be

guided through a few quick steps to set up your account. Provide your essential details, create a secure password, and you're all set to embark on your climate action journey.

We understand the importance of security and data protection, which is why we've implemented robust measures to safeguard your information. Rest assured that your personal data will be treated with the utmost confidentiality and used solely for the purpose of enhancing your app experience.

Once you're logged in, you'll discover a vibrant community of fellow citizens, policy makers, and experts, all driven by a shared passion for addressing climate change. Through the app, you can document environmental changes in your area, share your insights, and collaborate on actionable solutions. Your voice matters, and the app provides a platform for it to be heard and amplified.
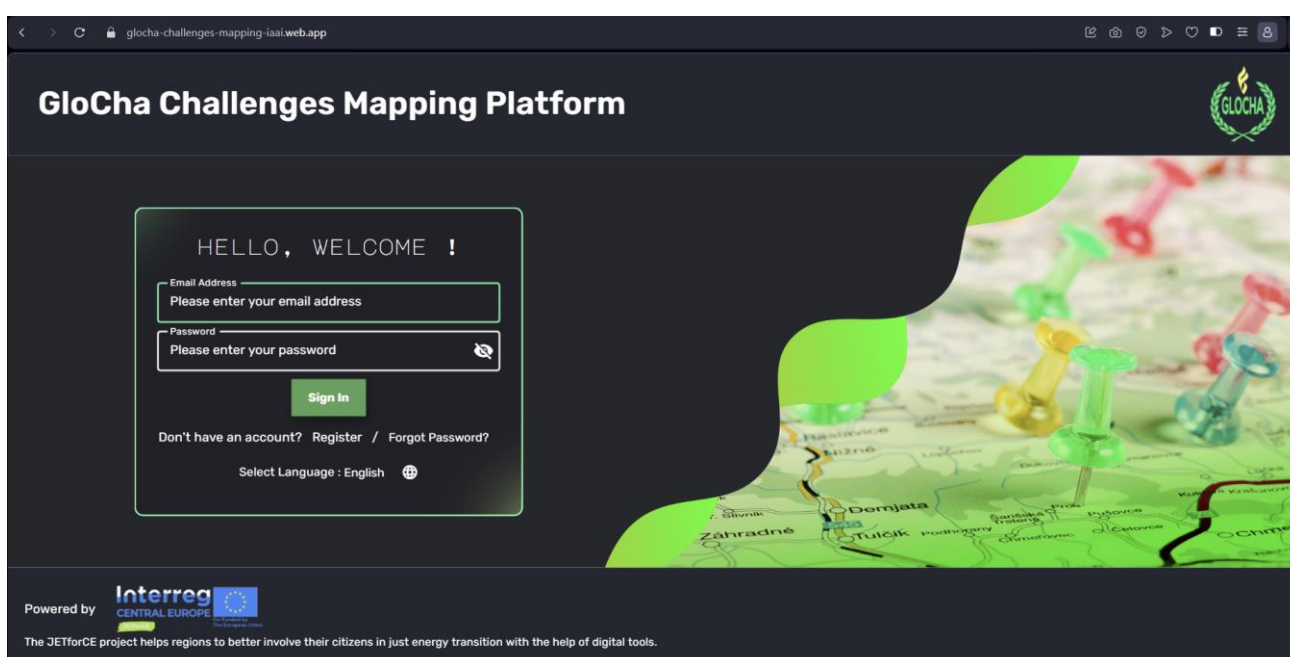
Main Home Page

The app's main home page is your central hub for staying informed and engaged with the challenges and climate-related issues that matter most to you. This dynamic and user-friendly interface offers a chronological list of challenge reports, providing you with a real-time overview of ongoing concerns and the progress made in addressing them.

The chronological order of challenge reports ensures that you can easily track issues as they are reported and follow their journey towards resolution. This timeline feature helps you stay up-to-date on the latest developments, fostering transparency and accountability within the community.

But we understand that sometimes, users may want to focus on specific challenges or filter reports based on various criteria. That's why we've empowered users to tailor their experience. With the app's filtering options, you can zero in on the exact challenges that interest you the most. Whether you're looking for reports related to a particular environmental issue, want to explore detailed information about a challenge, or need to find reports from a specific time and location, the app's versatile filtering capabilities have you covered.

In addition to accessing challenge reports, the home page provides quick and intuitive navigation to various sections of the app, allowing you to seamlessly explore and contribute to climate action efforts. It's a space where citizens, policy makers, and experts converge to collaborate, share insights, and drive impactful change.

With the app's user-friendly design and powerful features, your journey towards making a difference in climate change action starts right here on the home page. It's your gateway to a world of knowledge, engagement, and collective action, all aimed at creating a more sustainable and resilient future for our planet.

Presentation of Challenges according to categories of challenges or countries:
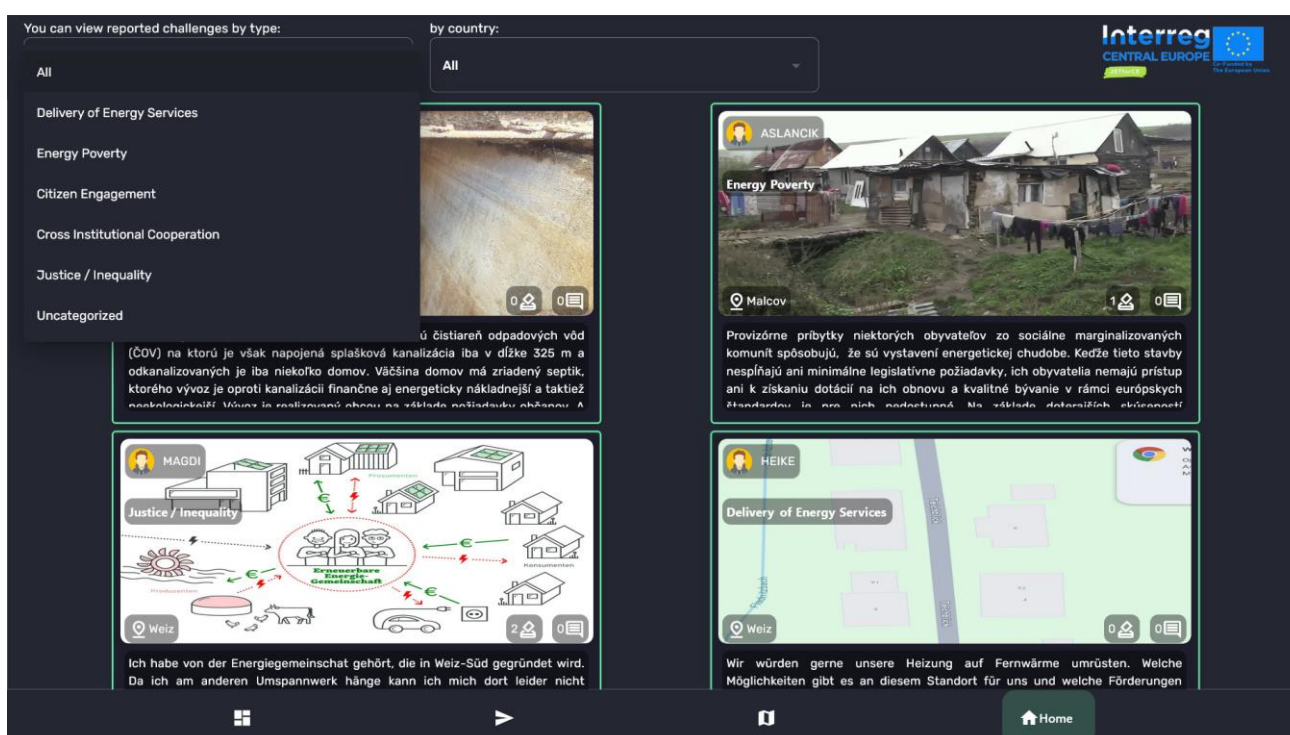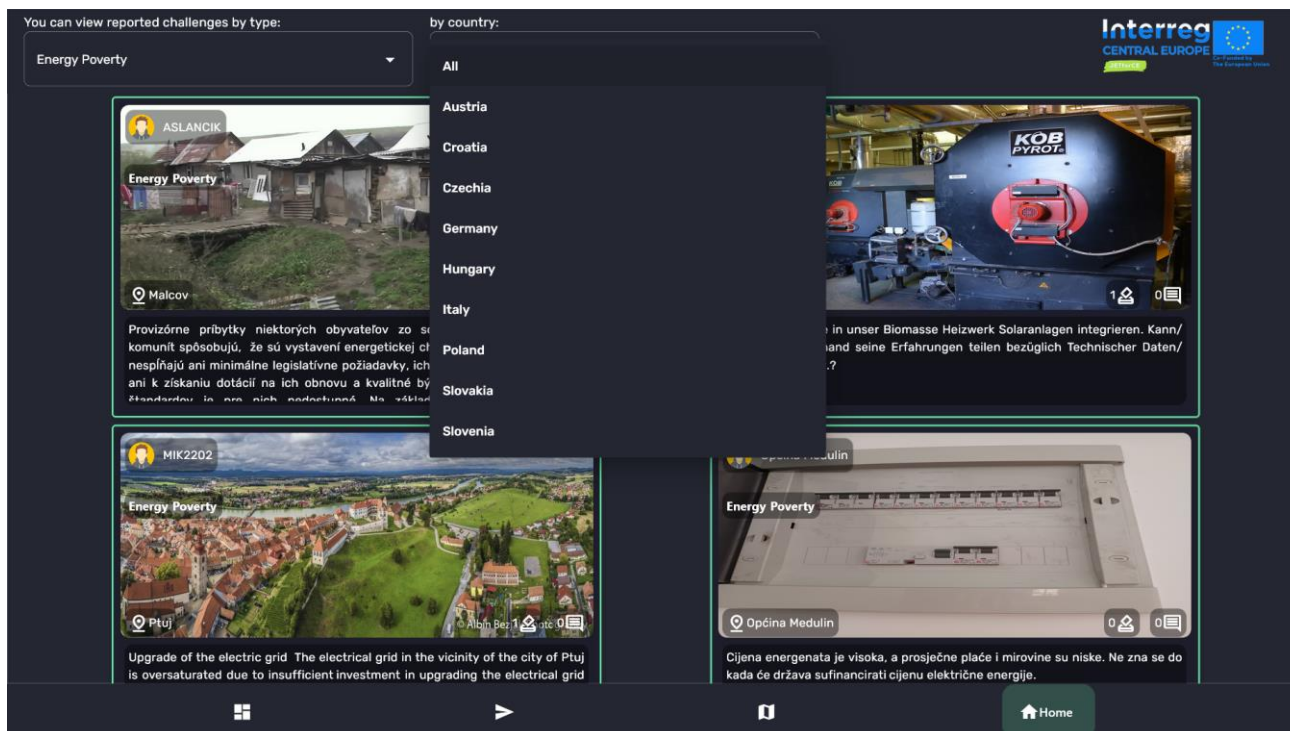
Challenge Reporting Page

The Challenge Page is your gateway to in-depth information about a specific challenge, offering a comprehensive view of the issue at hand. Here, you can delve into the details and gain a deeper understanding of the challenges affecting your community and the world.

When it comes to reporting a challenge, the app puts the power in your hands. You have the flexibility to upload various forms of media, including photos, videos, and even voice recordings. This multi-media approach not only enriches the reporting process but also ensures that the full scope of the challenge is captured.

In addition to media uploads, users can select from a predefined category list when reporting challenges. This categorization system brings order and structure to the reported challenges, making it easier for users to find and engage with issues that align with their interests or expertise. It also enables efficient sorting and analysis of challenges for more effective climate action planning.

Furthermore, the app encourages users to provide context and insights into the challenges they've observed. By adding a short text description, users can articulate the nuances of the challenge and propose potential solutions. This added layer of information empowers users to not only identify problems but also contribute to the collective brainstorming of solutions, fostering a sense of proactive involvement.

One of the app's standout features is the ability for users to participate in other challenges and offer support by voting. This interactive and democratic aspect of the app enables individuals to have their say and influence the prioritization of challenges. By casting their votes, users contribute to the communal decision-making process, ensuring that the most pressing issues receive the attention they deserve.

But the engagement doesn't stop at voting. Users also have the opportunity to engage in meaningful discussions by commenting on already reported challenges. This social interaction component of the app promotes dialogue, knowledge sharing, and collaboration among citizens. It's where ideas are exchanged, solutions are refined, and a sense of community is fostered.

In summary, this app is more than a reporting tool; it's a platform for social interaction among citizens with a shared goal of addressing climate challenges. It empowers individuals not only to report issues but also to actively participate in finding solutions, all while fostering a sense of community and collective responsibility for our planet's well-being.
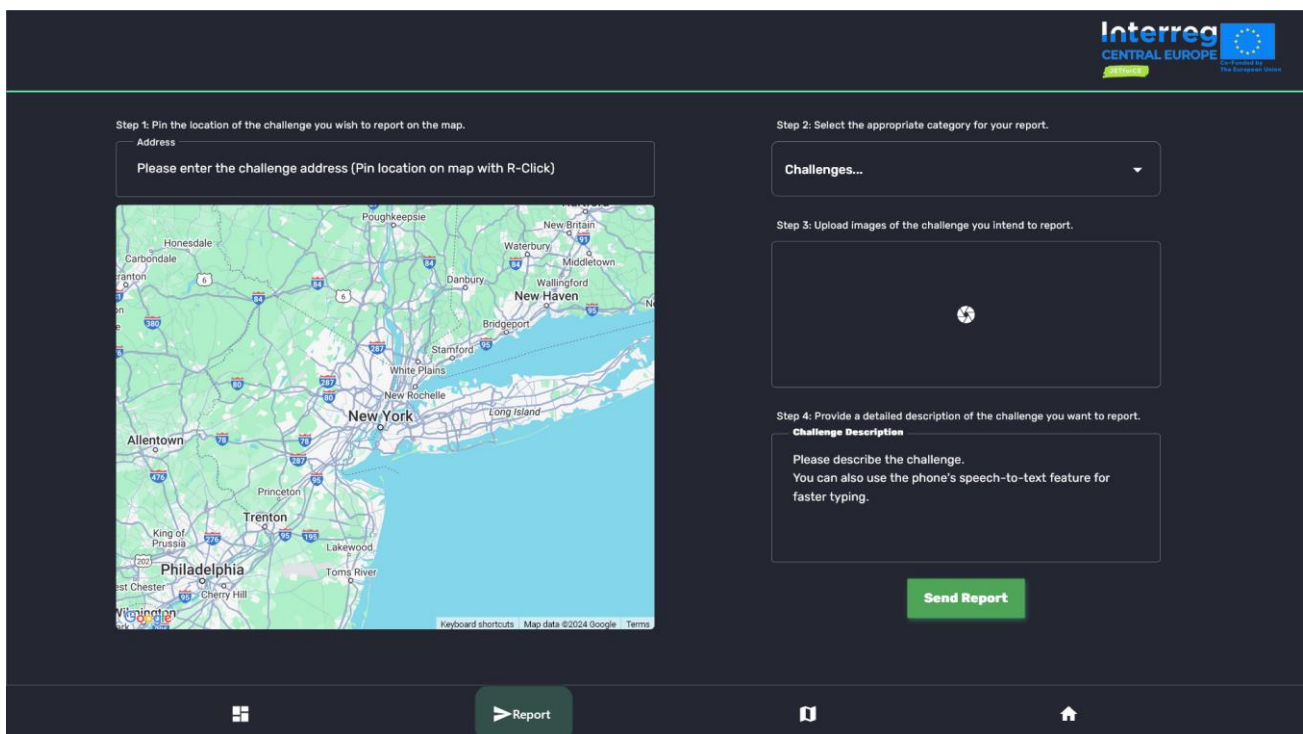
Map Page

One of the app's pivotal features is its capability to map the reported challenges, providing users with a powerful visual tool to better understand the distribution and prevalence of various issues. This spatial representation adds an extra layer of insight into the challenges facing communities and the world as a whole.

To enhance the clarity of the mapping feature, each category of reported challenges is assigned a distinct color. This color-coded system ensures that users can easily identify and distinguish between different types of challenges, allowing for quick and intuitive navigation of the map. Whether it's environmental concerns, infrastructure issues, or matters related to public health, the color scheme provides a visual guide, making the data more accessible and actionable.

The frequency at which challenges are reported and mapped serves as a crucial indicator of local citizens' priorities and concerns. The more frequently a specific challenge appears on the map, the greater the level of community engagement and concern surrounding that issue. This data-driven approach helps policy makers and authorities gain valuable insights into which challenges resonate most strongly with the public.

By analyzing the map's visual data, decision-makers can make more informed choices about resource allocation, policy adjustments, and intervention strategies. It enables them to align their efforts with the genuine needs and concerns of the local population, fostering a more responsive and citizen-centric approach to climate change action.

In essence, this mapping feature transforms data into actionable intelligence, helping bridge the gap between citizens and decision-makers. It empowers local communities to have a direct influence on the policy agenda by highlighting the issues that matter most to them. Ultimately, this visual representation of challenges and priorities amplifies the impact of citizen engagement in the fight against climate change.

Figure 4. An illustration of the Map Page.
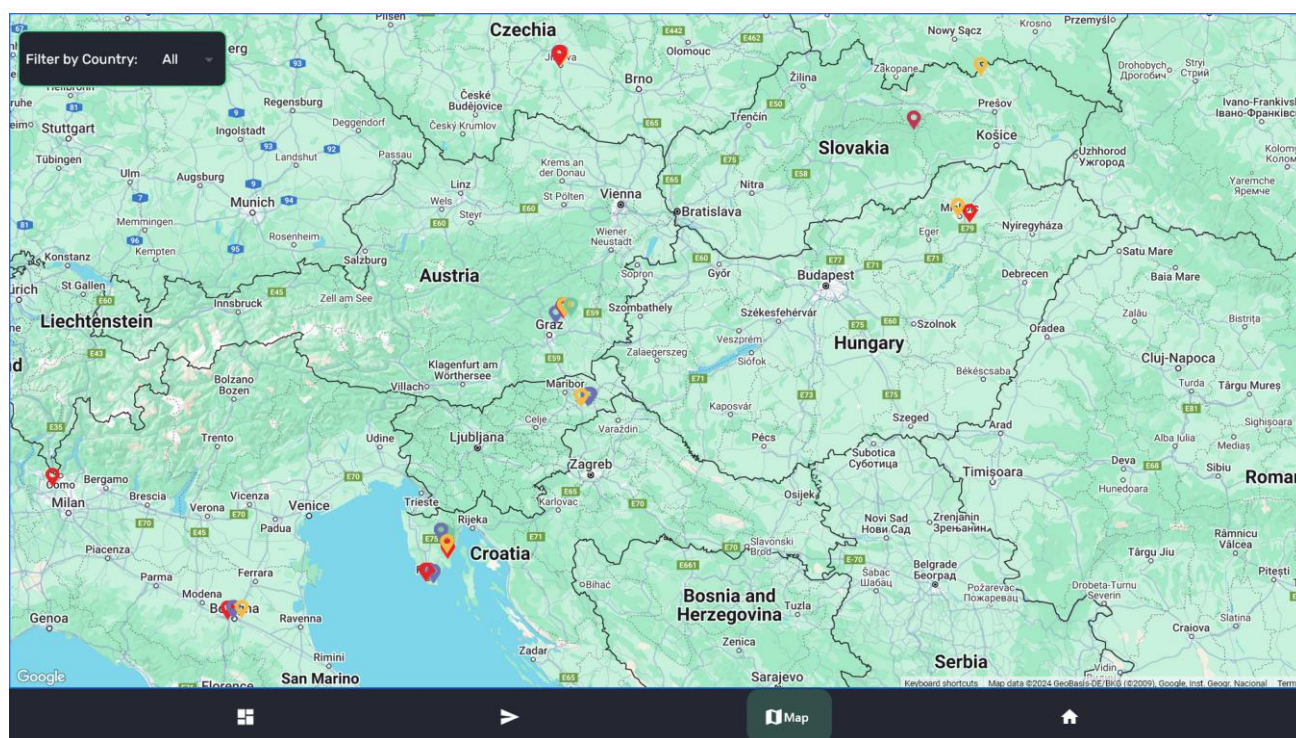
Dashboard

The app boasts an intuitive and informative dashboard feature, providing users with a comprehensive overview of their activity within the platform. This dashboard serves as a personal command center, offering insights into the user's contributions and interactions within the community.

Users can easily track and manage their engagement through the dashboard, gaining a clear understanding of their impact on the platform. Here are some key elements and functionalities of the dashboard:

Reported Challenges: The dashboard displays a count of challenges that the user has reported. This feature helps users keep track of their contributions to the platform's database of challenges. It's a quick and efficient way to monitor the issues they've brought to the community's attention.

Comments Made: Users can see how many comments they've made on challenges reported by others. This metric reflects their level of engagement and participation in discussions surrounding various challenges. It encourages meaningful dialogue and collaboration.

Participation in Challenges: The dashboard provides an overview of challenges in which the user has actively participated. This could include voting for challenges, showing support for specific solutions, or engaging in conversations. It allows users to gauge their involvement in the community's decision-making processes.

The dashboard serves as a motivational tool, encouraging users to stay engaged and take an active role in addressing climate change challenges. By visualizing their contributions, users can feel a sense of accomplishment and see how their actions align with their commitment to creating positive change.

Furthermore, the dashboard reinforces the social aspect of the app by highlighting the user's interactions with others in the community. It underscores the importance of collective efforts and collaboration in tackling climate change challenges. In essence, the dashboard is a reflection of a user's journey towards making a meaningful impact and contributing to a more sustainable future.
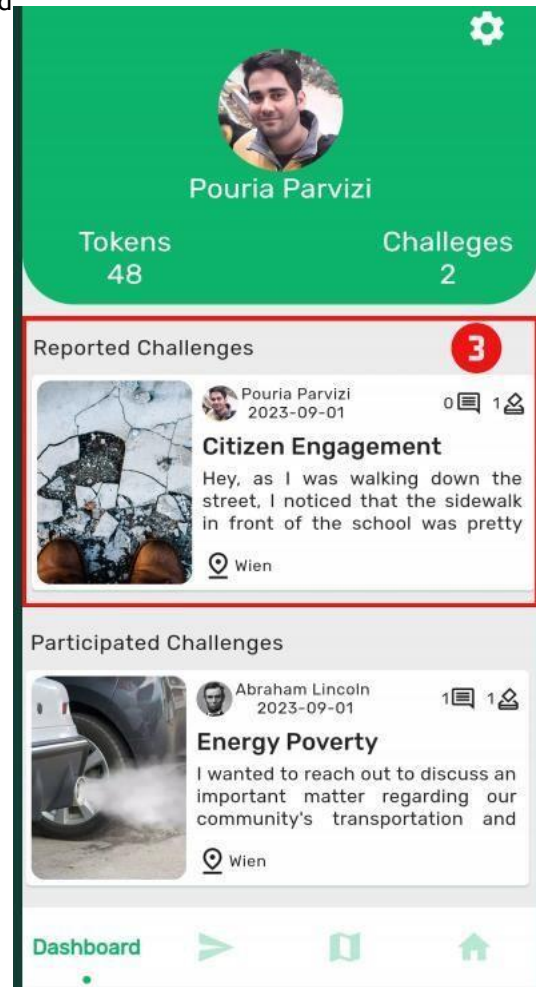
Figure 5. An illustration of the Dashboard Page.

G. User Manual

(as prepared by JETforCE PP IRENA – Istarska Regionalna Energetska Agencija d.o.o.)

JETFORCE – CHALLENGE MAPPING TOOL

Mapping energy transition challenges with citizens

1. Download link:

https://glocha-challenges-mapping-iaai.web.app/

The app can be installed on a mobile device or on a computer.

2. Login page

First you should register your account.

3. App sections

The application has 4 main sections (indicated by numbers in the picture):

1. **Home page** – it contains all the reported challenges.
2. **Map** – the section contains markings on the map of all reported challenges.
3. **Report** – in this tab there is a form to report challenges.
4. **Dashboard** – contains a list of all reported challenges in which you have participated, or by reporting a challenge or by providing comments or votes.
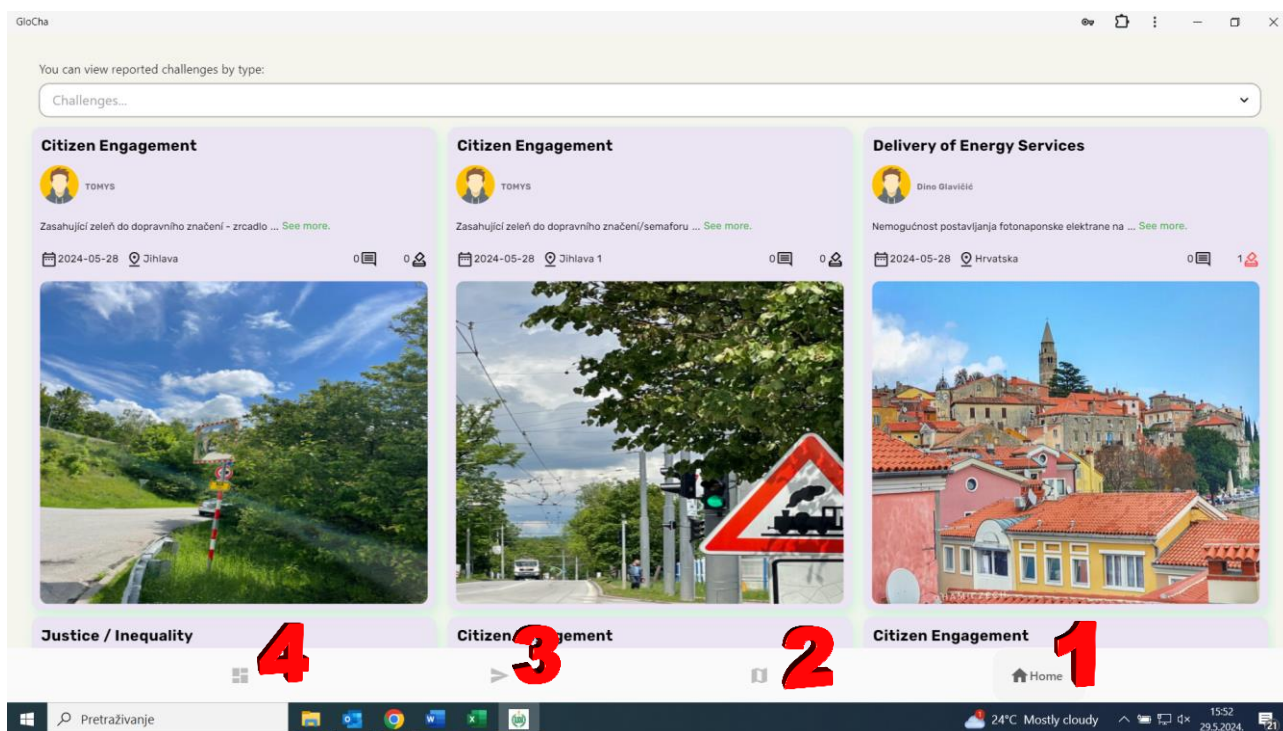
4. Reporting

The main purpose of the app is to detect and report challenges/issues/doubts faced by citizens in the energy transition process. The challenges are divided into 5 main categories:

a) **Delivery of energy services** – in this section, you can report the issues you face concerning the availability of energy services (electricity, gas, district heating…), cost of services, and others.

b) Energy Poverty – in this section, the aim is to collect challenges/issues that are related to the risk of energy poverty, especially for vulnerable groups (pensioners, unemployed people, people with disabilities, etc.).

c) **Citizen Engagement** – the aim is to collect/detect challenges related to the need to involve citizens in decision-making processes at the local/regional level.

d) **Cross-Institutional Cooperation** – it can be used for challenges that citizens face when they are solving problems for which they need help from multiple institutions. Also, this section can be chosen by representatives of local and regional authorities, public bodies who want to highlight the problems/challenges encountered in the process of implementing policies related to the green energy transition.

e) **Justice/Inequality** – this section serves to report challenges related to detected inequalities in society, lack of transparency, fairness...

For each registered challenge, it is necessary to select on the map the location for which the specific challenge is being reported, as well as at least one associated photo. To select a location, the easiest way is to mark the desired location by right-clicking on the attached map.
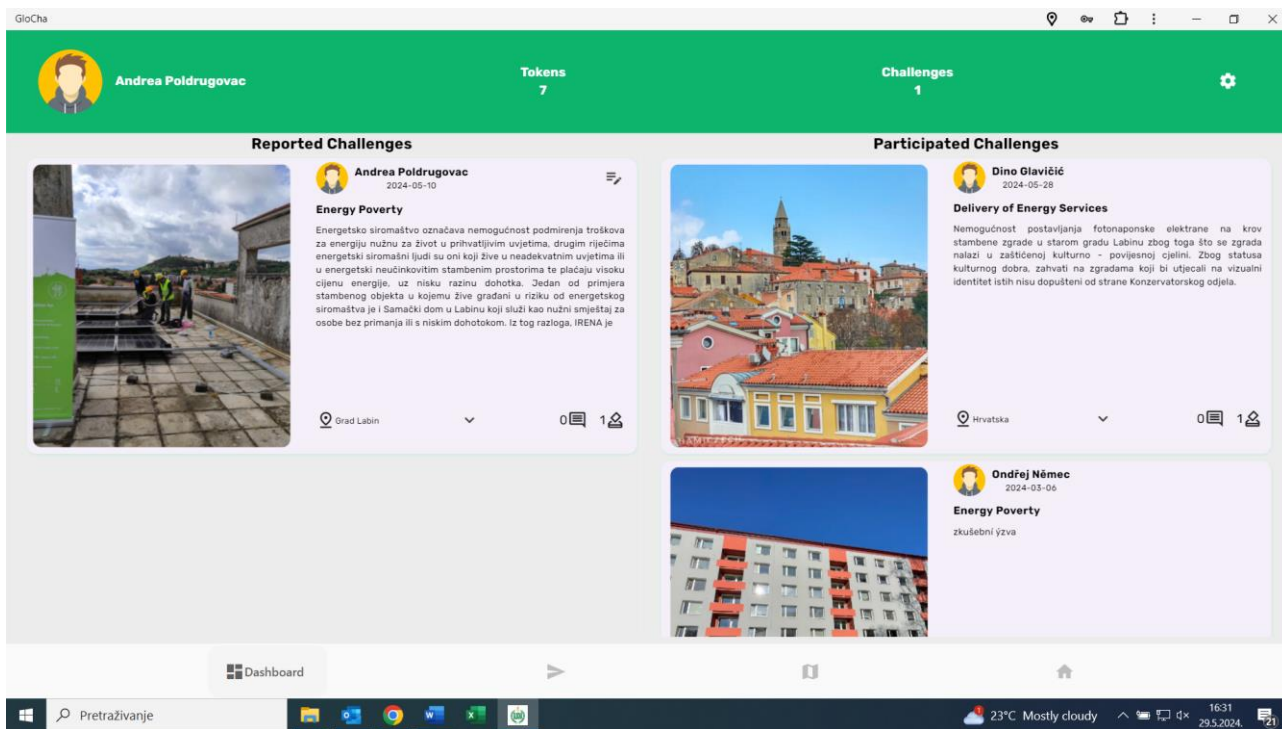
5. **Monitoring of reported challenges -** users can track all reported challenges. Other users of the application can comment and vote on submitted challenges.

Contact:

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