

A jointly developed technological pilot solution tested in parallel in operating energy communities

NRGCOM Output O3.2

June 2026

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This document was prepared as part of the NRGCOM project, an Interreg Danube Region Programme project co-funded by the European Union.

Executive summary

Output 3.2 of the NRGCOM project (Interreg Danube Region Programme) is a jointly developed technological pilot solution – ETMEC, delivered in its production version as the ETMEC Community Advisor – designed to assess and strengthen the readiness of renewable energy communities (RECs) and to make their operation more resource- and cost-efficient. It was tested in parallel in operating communities in Austria, the Czech Republic, Slovakia and Slovenia. The output combines the software developed under Activity A3.3 (deliverable D.3.3.1) with the parallel implementation and testing carried out under Activity A3.4 (deliverable D.3.4.1 – Efficiency report of the targeted energy communities).

ETMEC was developed by project partner NEK (Slovakia) with inputs from the participating partners. The pilot testing applied a standardised territorial readiness methodology scoring communities across technical, economic and institutional/legal dimensions on a 0–60 scale. Testing in real environments validated both the methodology and the operational logic of the tool and produced a uniquely broad comparison of REC maturity across the region (readiness scores ranging from 25 to 53 out of 60). The methodology and pilot feedback were then further developed into the production version – the ETMEC Community Advisor – a browser-based, open-source self-assessment application (8 sections / 38 questions across seven dimensions, weighted scoring, automatic readiness levels, interactive charts and PDF/Excel export) designed for all 14 Danube Region countries and aligned with EU Directives 2018/2001 (RED II) and 2019/944.

This report consolidates the foundations, development process, activities and results of Output 3.2, demonstrates its use and impact, and outlines its sustainability and transfer. The underlying deliverables D.3.3.1 and D.3.4.1, together with the ETMEC Community Advisor web application, are provided as annexes. The findings feed directly into the project's final White Paper (Output 3.3). Output 3.2 fully delivers Programme Output Indicator 2.1.3 'Pilot actions developed jointly and implemented in projects' (target value 1.00).

Introduction and context

The NRGCOM project – 'Creating appropriate operational conditions for renewable energy communities in the Danube Region' – is co-funded by the European Union through the Interreg Danube Region Programme. Its overall goal is to support the transition of European regions towards sustainable, decentralised energy systems by improving the environment for the creation and development of energy communities.

Output 3.2 is delivered under Specific Objective SO3, 'Enhancing production and use of renewables through pilot testing in potential and existing RECs'. The output brings together two complementary activities: Activity A3.3, in which a

technological software solution for RECs was developed (led by partner NEK), and Activity A3.4, in which the solution was adapted to different national environments and tested in parallel in operating energy communities (led by JAIP). Together they constitute one jointly developed and implemented pilot action.

The output is closely linked to Output 3.3, the project's White Paper on the successful creation and more sustainable functioning of renewable energy communities: the data, barriers and good practices generated by the pilot testing provide direct, evidence-based input to that final synthesis. The present document is an umbrella report that summarises the background, the technological solution, the pilot activities, and the results and impact of Output 3.2, and that gathers the supporting documentation in its annexes.

Background and baseline

The technological solution was built on the project's earlier analytical work. Under Activity A1.2 the partners analysed the business models and stakeholder management of renewable energy communities, and under Activity A1.4 they assessed possible low-cost infrastructure investments. These findings were evaluated to identify a software solution applicable to the target energy communities that would help them overcome technical barriers and enhance their effective operation.

The analysis confirmed a recurring need among existing and emerging RECs: while many communities have strong local engagement, they often lack the tools and data to manage energy flows efficiently, to evaluate their own readiness, and to make informed operational and investment decisions. A shared, transferable management tool – combined with a structured method for assessing territorial readiness – was therefore identified as a high-value, jointly developed response to these needs.

At programme level, Output 3.2 corresponds to Programme Output Indicator 2.1.3, 'Pilot actions developed jointly and implemented in projects' (measurement unit: pilot actions; target value: 1.00; delivery in Period 4). The Application Form foresees parallel testing of the solution in operating energy communities in Luče (Slovenia), the Burgenland region (Austria), South Bohemia (Czech Republic) and the Bratislava region (Slovakia). These commitments form the baseline against which the activities and results described below are reported.

The technological solution: ETMEC Community Advisor

Objective and concept

Activity A3.3, led by NEK (Slovakia), developed an innovative technological software solution to improve the resource and cost efficiency of RECs and to simplify their everyday operation; the tool was originally named the Expert Tool for the Management of Energy Communities (ETMEC). Building on the pilot testing, it has since been consolidated into its production version, the ETMEC Community Advisor (version 1.0, 2024–2026) – a structured digital tool that evaluates the readiness of an energy community and helps municipalities, organisations and community leaders identify strengths, gaps and priorities before or during the establishment of their EC.

Functional description

The ETMEC Community Advisor guides the user through eight assessment sections comprising 38 questions across seven readiness dimensions (including technical, economic, legal, financial, governance and social aspects). Each section carries a weight reflecting its strategic importance; the tool computes a weighted readiness score and automatically classifies the community as High ($\geq 70\%$), Medium (40–69%) or Low ($< 40\%$). Results are visualised through interactive radar, bar and stacked-bar charts and can be exported as a formatted PDF report or a two-sheet Excel workbook. The production version incorporates the readiness assessment logic and data from the pilot testing, and its assessment criteria are aligned with EU Directive 2018/2001 (RED II) and Directive 2019/944 on the Internal Electricity Market.

Access, installation and user guidance

The deliverable of Activity A3.3 is D.3.3.1, delivered in its updated final version as the combined material “Software solution with installation instructions and user manual”, with an expanded chapter detailing the updated software functions. In its production version, the ETMEC Community Advisor runs entirely in a web browser, with no installation, login or server required, works offline after the first download and keeps all data on the user’s device, and is provided as open source and free of charge. The application can be downloaded via the project’s shared link (<https://drive.google.com/file/d/14UQEMU7LQXrLcwcrnCb037Vml6y8PKgx/view>), while the official documents are publicly hosted on the partner’s website: the D.3.3.1 report (www.nek.sk/wp-content/uploads/2026/06/PP12-NEK-D3.3.1-Software-solution-with-installation-ETMECManual-project-NRGCOM.pdf) and the user manual (www.nek.sk/wp-content/uploads/2026/06/ETMEC-Community-

Advisor-Comprehensive-User-Manual.pdf). The application and both documents are also included in this package (Annexes 1 and 3).

Development process and partner roles

NEK was the activity leader, drawing on its experience in developing software for the enhancement of energy efficiency in institutions. The participating partners assisted in the design of the solution, taking into account the specific circumstances, conditions and expenditures of the target countries and regions. The ideas developed in the earlier analytical activities were transformed into a final, usable tool, which was then refined iteratively on the basis of feedback from the parallel pilot testing under Activity A3.4.

Pilot implementation and testing

This chapter summarises the parallel implementation and testing of the solution; the full evidence, data and per-community analysis are provided in the Efficiency Report (Deliverable D.3.4.1, Annex 2).

Methodology

The pilot sites were evaluated with a standardised Methodology for Verifying the Readiness of the Territory, part of the Pilot Readiness Package. The framework assesses readiness across three interlinked dimensions – Technical, Economic, and Institutional/Legal – using specific indicators scored on a 0–5 scale, for a maximum of 60 points, classifying communities into low, medium or high readiness levels. This pilot methodology was subsequently developed into the production version of the tool, the ETMEC Community Advisor.

Pilot sites and readiness results

The solution was tested in parallel in four project countries. The readiness assessment produced the following headline results:

Country / Community	Readiness score	Level
Austria – Neudörfel	48 / 60	High
Slovenia – Municipality of Velenje (Luče area)	49 / 60	High
Czech Republic – Enerkom Šumavsko / Růž	25 / 60	Low

Slovakia – Energetický Holding, Prešov region	53 / 60	High
Slovakia – ES Ivanka	41 / 60	Medium
Slovakia – SOM_EKO & TEEK, Petržalka (Bratislava)	evaluated (urban context)	–

Key results and comparative analysis

The harmonised methodology revealed significant regional disparities in REC maturity. Advanced pilot sites such as Velenje (SI) and Neudörfel (AT) demonstrated that once the core technical infrastructure – in particular 15-minute smart metering – is in place, communities can readily move to automated, dynamic energy sharing, with ETMEC acting as a refinement tool to optimise midday and weekend solar surpluses. The rural Czech pilot (Šumavsko) illustrated the limits of 'enthusiasm without infrastructure': despite a strong institutional base driven by Local Action Groups, the lack of continuous metering and energy management systems prevented the deployment of dynamic sharing. Across almost all communities, economic indicators – especially rate stability and price predictability – emerged as a universal weakness. In Slovakia, the contrast between a mature community settling shared electricity through OKTE/EDC (Prešov) and an early-stage, recently registered community (Ivanka) isolated the institutional and legal dimension as today's binding constraint for well-prepared communities, rather than technical readiness.

Identified barriers and adopted solutions

The pilots identified a consistent set of barriers and corresponding solutions: limited smart-metering and energy-management coverage (addressed by targeted national subsidies for metering and basic EMS); inequitable grid-capacity allocation under 'first come, first served' rules (addressed by guaranteed reserved-power thresholds for active community customers); weak rate stability and price predictability (addressed by clear, long-term guarantees on distribution fees and renewable-support charges); and administrative and legal complexity (addressed by standardised, GDPR-compliant governance and membership templates).

Results, use and impact

The primary users are municipalities, local authorities, energy agencies, cooperatives, NGOs and community leaders establishing or scaling a renewable energy community, together with operating RECs and their managers. Using the ETMEC Community Advisor, they self-assess their readiness across the seven dimensions, obtain a weighted readiness score with interactive charts and export

a structured report (PDF/Excel) that highlights strengths, gaps and priorities. Energy experts, advisors and public authorities can use the comparative results to identify barriers and target support.

The benefit for these groups is better-informed, evidence-based preparation and decision-making and a transferable diagnostic framework available free of charge in any web browser. The parallel pilots produced concrete impact: advanced communities used the tool to optimise solar surpluses, while rural communities were able to pinpoint the precise technical and legal gaps – such as smart metering and energy management systems – that they must close to reach readiness. Importantly, the testing also directly informed the further development of the tool into its production version, the ETMEC Community Advisor.

In programme terms, the output delivers Output Indicator 2.1.3 with one jointly developed and implemented pilot action, contributes to Specific Objective SO3 and to Priority Area 2 of the EU Strategy for the Danube Region, and supports the result on increased institutional capacity of cooperating organisations, as partners and pilot communities jointly developed and applied the tool and methodology across borders. The evidence generated feeds directly into Output 3.3 (White Paper).

Sustainability and transfer

The ETMEC Community Advisor is maintained and operated by project partner NEK (Slovakia), which will continue to run and further develop it beyond the project lifetime; a more advanced version with additional system-level and energy-sharing data is already in preparation. The tool is provided as open source, free of charge and without licensing restrictions; it runs in any web browser (including macOS), requires no installation or server and works offline after the first download.

It is available to all partners and pilot communities and, as part of the capitalisation of project results and in line with programme conditions, to third parties beyond the partnership. The readiness methodology and good practices are transferable to other energy communities, regions and sectors across the Danube Region and beyond, and are disseminated through the project White Paper (Output 3.3) and the NRGCOM communication channels. The output is provided as a standalone web application, with the original software and installation documentation delivered in D.3.3.1.

Conclusions

The Activity A3.4 pilot actions successfully validated the readiness methodology and the operational logic of the ETMEC tool, which has since been consolidated into its production version, the ETMEC Community Advisor. The tool proved capable of diagnosing readiness gaps across diverse real-world settings. To ensure the successful transferability of these models, the findings of the pilot testing directly inform the project's final White Paper (Output 3.3). The following evidence-based recommendations are emphasised:

1. **Mandate and subsidise smart metering.** High operational readiness is not possible without quarter-hourly data; targeted national subsidies for smart meters and basic energy management systems in rural and emerging communities are a feasible, high-leverage early move.
2. **Reform grid-allocation policies.** Regulatory frameworks should move away from strict 'first come, first served' models towards equitable capacity distribution, e.g. guaranteed reserved-power thresholds for active community customers.
3. **Enhance financial predictability.** Policymakers should provide clear, long-term guarantees on distribution fees and renewable-support charges for community-shared electricity, to reduce the universal weakness of rate instability.
4. **Standardise legal and governance templates.** Standardised, GDPR-compliant templates for member agreements – defining investor returns, supplier-switching rights and dispute-resolution mechanisms – would help overcome administrative complexity.

By addressing these areas, the technical solutions and operational models tested in Austria, the Czech Republic, Slovakia and Slovenia can be effectively scaled, accelerating the transition to robust, decentralised green energy across the Danube Region.

Annexes

The following documents form part of the Output 3.2 package and are provided as separate files:

- Annex 1 – D.3.3.1 Software solution with installation instructions and user manual (ETMEC).
- Annex 2 – D.3.4.1 Efficiency report of the targeted energy communities.
- Annex 3 – ETMEC Community Advisor - web application (HTML).