ARV

CLIMATE POSITIVE CIRCULAR COMMUNITIES

D9.4 DESIGN PLATFORM BASED PROSUMER BUSINESS MODELS WITH CLEAR POLICY AND REGULATORY RECOMMENDATIONS

WP9 BUSINESS MODELS, FINANCIAL INSTRUMENTS, POLICY AND EXPLOITATION

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31.12.2025

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036723

PROJECT INFORMATION

Project acronym	**ARV[1]**
Project title	Climate Positive Circular Communities
Project number	101036723
Coordinator	Norwegian University of Science and Technology / Inger Andresen
Website	www.GreenDeal-ARV.eu

DOCUMENT INFORMATION

Deliverable Number and Title	**D9.4 Design Platform Based Prosumer Business Models with clear policy and regulatory recommendations** **Type:** Demonstrator			
Due Month	Month 48 (December 2025)			
Work Package Number and Title	WP9 Business models, financial instruments, policy and exploitation			
Task number and Title	T9.3 Design new bankable business models for energy positive neighborhoods (Subtask T9.3.2 Design Platform Based Prosumer Business Models)			
Dissemination Level	PU = Public, fully open			
Date of Delivery	31.12.2025			
Lead Author	Jannika Aalto (Green Digital Finance Alliance)			
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Reviewers	Inger Andresen (NTNU)			
Status	V0.5 Final			
Revision Log	Version	Author	Main changes	Date
	V.01	Jannika Aalto	First draft: outline and methodology	31.03.25
	V.02	Shahab Tohidi, Amin Moazami, Jannika Aalto	First version of assessment tool	15.06.25
	V.03	Shahab Tohidi, Amin Moazami	Demo assessment: Oslo and Sønderborg	15.09.25
	V0.4	Jannika Aalto, Shahab Tohidi, Amin Moazami	Scoring matrix	30.10.25
	V0.5	Jannika Aalto	Chapters 3, 4 and 5	2.12.25

[1] ARV is a Norwegian word meaning "heritage" or "legacy". It reflects the emphasis on circularity, a key aspect in reaching the project's main goal of boosting the building renovation rate in Europe.

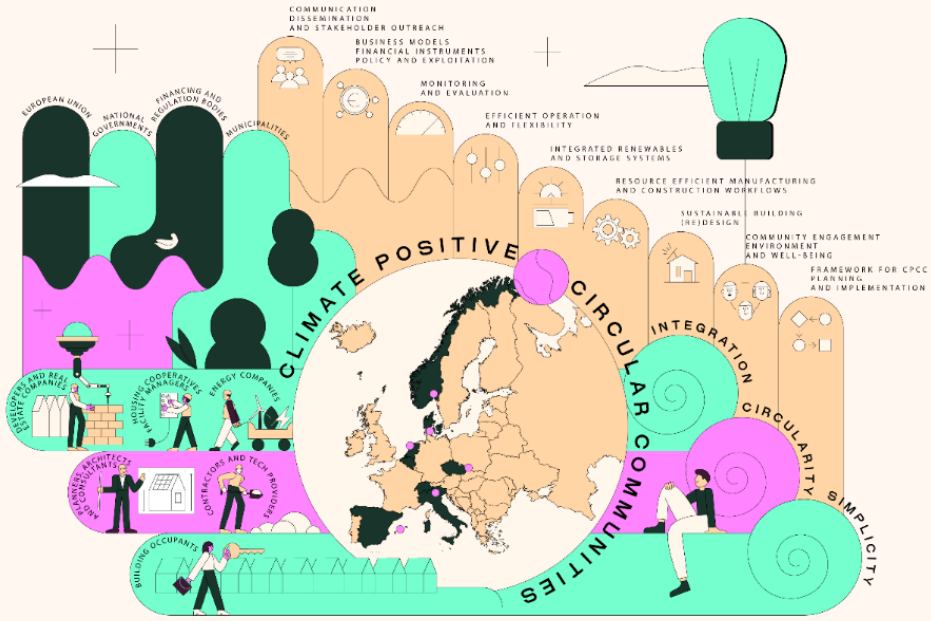
ABOUT THE ARV PROJECT

The vision of the ARV project is to contribute to speedy and wide scale implementation of Climate Positive Circular Communities (CPCC) where people can thrive and prosper for generations to come. The overall aim is to demonstrate and validate attractive, resilient, and affordable solutions for CPCC that will significantly speed up the deep energy renovations and the deployment of energy and climate measures in the construction and energy industries. To achieve this, the ARV project will employ a novel concept relying on a combination of 3 conceptual pillars, 6 demonstration projects, and 9 thematic focus areas.

The 3 conceptual pillars are integration, circularity, and simplicity. **Integration** in ARV means the coupling of people, buildings, and energy systems, through multi-stakeholder co-creation and use of innovative digital tools. **Circularity** in ARV means a systematic way of addressing circular economy through integrated use of Life Cycle Assessment, digital logbooks, and material banks. **Simplicity** in ARV means to make the solutions easy to understand and use for all stakeholders, from manufacturers to end-users.

The 6 demonstration projects are urban regeneration projects in 6 locations around Europe. They have been carefully selected to represent the different European climates and contexts, and due to their high ambitions in environmental, social, and economic sustainability. Renovation of social housing and public buildings are specifically focused. Together, they will demonstrate more than 50 innovations in more than 150,000 m² of buildings.

The 9 thematic focus areas are 1) Effective planning and implementation of CPCCs, 2) Enhancing citizen engagement, environment, and well-being, 3) Sustainable building re(design) 4) Resource efficient manufacturing and construction workflows, 5) Smart integration of renewables and storage systems, 6) Effective management of energy and flexibility, 7) Continuous monitoring and evaluation, 8) New business models and financial mechanisms, policy instruments and exploitation, and 9) Effective communication, dissemination, and stakeholder outreach.



The ARV project is an Innovation Action that has received funding under the Green Deal Call LC-GD-4-1-2020 - Building and renovating in an energy and resource efficient way. The project started in January 2022 and has a project period of 4 years, until December 2025. The project is coordinated by the Norwegian University of Science and Technology and involves 35 partners from 8 different European Countries.

EXECUTIVE SUMMARY

Prosumer models, where energy consumers also generate, sell and trade electricity, are gaining traction in Europe and are key to accelerating the energy transition and decarbonisation of cities. These models take diverse forms, from community-owned cooperatives and municipal solar-sharing schemes to aggregator-led flexibility markets and peer-to-peer trading platforms, each reflecting local policies, regulation and market. Across the EU, these models are often not for profit. Prices and tariff structures are not always geared to create sufficiently high margins to increase the attractiveness of local energy market trading, and many building related "abilities" such as energy efficiency or demand side management are underutilised. Additionally, the diversity of regulatory and market conditions across Europe is vast, and while successful policies and market practices can be adapted and expanded, inconsistencies between countries can limit scalability and hinder widespread replication.

This report describes the development of a tool developed within the ARV project and in the context of the Oslo and Sønderborg demo sites. It is designed to support decision-making for policymakers and market actors involved in prosumer business model development. It provides a structured and comparable assessment of the readiness and implementation of revenue and value creation mechanisms across demonstration sites.

By visualising the availability of enabling conditions ("readiness") and the degree of practical uptake ("implementation"), the tool helps identify policy–practice gaps and market opportunities. Policymakers can use it to target supportive regulation and incentive design. Market actors can use it to identify viable business opportunities and project partners can use it to benchmark demonstrations and inform European level recommendations for scaling prosumer solutions.

In future iterations, this tool could evolve from a qualitative readiness and implementation assessment into a quantitative decision-support tool capable of estimating the economic value of prosumer policy - practice gaps. By integrating the financial simulation approach developed in this project, the framework could assign indicative revenue or cost-saving potentials to both the implementation gap (where solutions are available but remain underused) and the regulatory gap (where enabling policies are absent or incomplete). This would allow policymakers as well as market infrastructure providers and investors both where barriers exist as well as what value is being lost or unused due to delayed uptake or limited regulatory design.

Furthermore, an AI integration might be considered to more sophisticatedly and automatically analyse readiness and implementation data, draw on successful mechanisms from other locations and generate pilot site, context-specific recommendations.

TABLE OF CONTENTS

1. INTRODUCTION

Across Europe, cities and regions are developing and testing new ways for citizens, housing providers, businesses, and public institutions to take part in the energy transition. Prosumers (those who consume but also generate and potentially sell or trade electricity) have emerged as a new kind of actor in this landscape. Their participation promises to make local energy systems more flexible, affordable, and resilient.

In practice, this transition is not evenly distributed. Prosumers in many European cities have the technical ability to produce, store, and share renewable energy locally, but the market and policy frameworks are still catching up. Most often, tariff structures, taxation and the ability to sell and trade electricity do not reward or encourage prosumerism. Many potential revenue or value streams are not optimised or remain unutilised, and regulations differ between countries, creating uncertainty for investors and making it difficult to scale promising models. Many existing models are not designed to allow profit generation, and are therefore constrained by regulations that restrict financial returns or reinvestment potential. Pricing and tariff structures often fail to create sufficient margins to make local energy trading attractive, and in many cases, regulatory frameworks are incomplete or absent, meaning that key functions such as peer-to-peer energy trading remain legally restricted. Even where viable technical and organisational mechaninsms exist, their implementation is patchy and inconsistent across regions. Together, these gaps result in an implementation deficit: prosumer participation remains below its potential, despite the availability of technologies and growing policy ambition and community buy-in.

At the same time, the future of prosumer participation will not depend on isolated technologies or single revenue mechanisms, but on platform-based ecosystems that connect them. Most emerging business models already rely on digital platforms to coordinate energy flows, transactions, and data exchange between diverse actors, such as prosumers, aggregators, utilities and grid operators. From this perspective, value is not tied to a single mechanism such as self-consumption or tariffs - or even their aggregate, but emerges from how these elements interact within a broader ecosystem. This is also the space where future business model innovation can emerge, including models that tie together household flexibility, digital aggregation, and community-level trading into one coordinated service.

In the ARV project, we examine the gaps between ambition and implementation. This is done by reviewing existing and potential future revenue and value streams connected to local prosumer systems (from demand side management (DSM) and flexibility services to energy storage services and capacity market payments, and assessing to what extent the enabling conditions are in place to a) enable these functions in the first place and b) monetise them in an attractive way.

The outcome is a tool developed to capture these systematically for the demonstration sites. It highlights where enabling conditions already exist, where barriers remain, and what kinds of policy or market adjustments could make prosumer participation more financially viable and attractive.

The tool is developed and tested for two project demo sites: in Oslo, Norway and in Sønderborg, Denmark. The Oslo demonstration focuses on the new Voldsløkka school and cultural area, which combines education, sports, and community facilities with ambitious energy goals. Designed as Oslo's first plus-energy school, the site integrates 1,556 m^2 of solar PV producing an estimated 192 MWh annually, alongside renovation and citizen engagement activities with the students of the school. The Sønderborg demonstration focuses on SAB Department 22 Kløvermarken/Hvedemarken, a social housing complex of 19 apartment blocks renovated for energy efficiency and smart heat management. Operating under an Energy Service Company (ESCO) model, the site produces and sells solar electricity through integrated PV and battery systems, covering 37% of total electricity use. Together with AI-

based district heating controls, it serves as a model for combining renewable generation, intelligent energy management, and financially sustainable operation in social housing.

2. OBJECTIVES

This tool maps both available enabling conditions ("readiness") and actual uptake ("implementation") across several categories: grid-driven, market-driven, regulatory, and investment and operational costs. This way, it helps highlight where enabling environments are already in place, where gaps persist, and where new opportunities for boosting uptake of prosumer installations through enabling business models in a particular geography can emerge.

This tool supports evidence-based decision-making on prosumer business models by visualising both the readiness of enabling conditions and the actual implementation of revenue or value creation mechanisms across demonstration sites.

For policymakers

- Help identify gaps where enabling conditions exist but uptake remains limited
- Target regulatory updates or incentive schemes to support local energy markets
- Benchmark national or city-level progress against other EU demonstrations to guide policy learning

For market actors and platform providers

- Discover market opportunities in high-readiness but low-implementation areas
- Assess where business models or digital platforms could unlock underused value streams
- Use readiness and implementation insights to design or refine scalable energy services and identify market or business opportunities

Lastly, the work makes clear policy and regulatory recommendations to improve the scalability and replicability of prosumer business models across the EU.

3. METHODOLOGICAL APPROACH

The methodology combines a structured stocktake of different mechanisms that have a direct or indirect impact on the profitability, savings or revenue potential of a prosumer business model based on an energy installation with an implementation gap analysis and insights generation. Two ARV project pilots are assessed: Sønderborg and Oslo for the potential of prosumer business models across demonstration sites.

The following sections provide a step by step description of the methodological development and application of the excel based tool. Results and key findings are described in the following chapter.

3.1 ASSESSED MECHANISMS

As the first step, a comprehensive list of revenue and value creation mechanisms was identified. The mechanisms were dived into categories, sub-categories, as seen in the following example.

Category	Subcategory	Revenue / value mechanism type	Description	City readiness (Available=1 Not available=0)	Pilot uptake (Implemented=1 Not implemented=0)
Grid driven services	Demand-Side Management (DSM) and Flexibility Services	Load Shifting	Scheduling high-use activities (e.g., EV charging) to off-peak times signaled by grid needs.	1	1
		Demand Reduction	Reducing consumption during grid stress periods (e.g., efficiency measures).	1	1
		Capacity Charges	Reduced costs for lowering peak demand (peak shaving) when signaled by the grid.	1	1
		Flexibility Services	Payments for demand response during grid-requested events.	1	1
		Congestion Relief Payments	Earnings from DSOs for reducing load during local grid constraints.	1	1
	Increasing Smart Readiness Level	Smart Controls / IoT	Automated responses to grid signals (e.g., adjusting appliances during peaks).	1	1
		Advanced Metering	Real-time data enabling grid-responsive actions.	1	1

Figure 1. *Example of revenue and value mechanism categorisation in the tool.*

Overall, 4 categories, 16 subcategories, and 37 mechanisms were identified. Below, the categories and subcategories are listed. Appendix B shows the full list of mechanism assessed.

A Grid driven services

Rationale: This category captures various revenue and value creation mechanisms tied to prosumer responses to grid-specific conditions (e.g., peak demand, congestion), focusing on actions they can take independently or with minimal market intermediation to optimize revenue or reduce costs.

- Demand-Side Management (DSM) and Flexibility Services
- Increasing Smart Readiness Level

B Market driven services

Rationale: This category includes various revenue and value creation mechanisms driven by market dynamics (e.g., price fluctuations, trading opportunities), where prosumers respond to economic incentives beyond direct grid needs, often involving market participation or intermediaries.

- Dynamic Tariffs & Pricing Structures
- Energy Storage Services
- Peer-to-Peer (P2P) Trading & Energy Communities
- Aggregator / Virtual Power Plant (VPP) Participation
- Prosumer-Specific Feed-in Premiums (FiPs)
- Capacity Market Payments
- Self-Consumption / On-Site Generation

C Regulatory driven services
Rationale: This category groups policy - and regulation-driven factors that impose costs or provide incentives, shaping the financial environment in which prosumers operate, independent of real-time grid or market signals.

- Taxes, Levies, & Incentives
- Network Charges & Grid Access Fees
- Carbon Pricing & Green Certificates
- Consumer Behavioral Incentives & Engagement

D Investment and operational economics driven services
Rationale: This category focuses on the financial feasibility of prosumer projects, covering upfront investments, ongoing costs, and support mechanisms that determine ROI, independent of immediate signals.

- Energy Efficiency & Renovation Incentives
- Investment, Maintenance & Financing Costs

E Other
Rationale: Capture any other mechanism present in demos but not listed above

- Other

3.2 ASSESSMENT

Each mechanism was assessed for readiness as well as implementation in the following manner.

- "**Available/not available**" → assessed at the demo city level to show the city's readiness across the four categories. This would show how many of the services are available for prosumers in the demo.
- "**Implemented/not implemented**" → assessed for the actual demo to show uptake, meaning if the pilot is actually using (implementing) the available services.

This assessment was done separately for both demonstration sites, Oslo and Sønderborg (see figure 1). These scores were first entered into a mechanism-level table in Excel, with each mechanism listed under one of the four high-level categories (Grid driven services, Market driven services, Regulatory driven services and Investment and operational economics driven services).

3.3 SCORE

Results were then aggregated for both categories and site using the AVERAGEIF formula, producing a single average score per category. An example of the formula is shown below to aggregate and average results of Grid driven services in the Sønderborg demo.

Readiness: =AVERAGEIF('Assessment Sønderborg'!B2:B100;"Grid driven services";'Assessment Sønderborg'!F2:F100)
Implementation: =AVERAGEIF('Assessment Sønderborg'!B2:B100;"Grid driven services";'Assessment Sønderborg'!G2:G100)

A radar chart was used to visualise the relative readiness and implementation of prosumer business model mechanisms across each demonstration site. Each mechanism was scored on a scale from 0 to 1,

based on whether enabling conditions are available and whether they are implemented in practice. The chart allows users to identify at a glance where the local enabling environment is strong and where gaps persist between potential and uptake. This visual comparison supports a more nuanced understanding of how technical, regulatory, and market conditions interact, helping both policymakers and market actors to prioritise actions that strengthen prosumer participation.

3.4 ENHANCED DATA VISUALISATION

For enhanced visualisation, custom made graphs can be generated with free third party tools such as Figma. Figures 2 and 3 below show the tool results for both Sønderborg and Oslo demos, respectively, in a polar chart created by Figma[2].

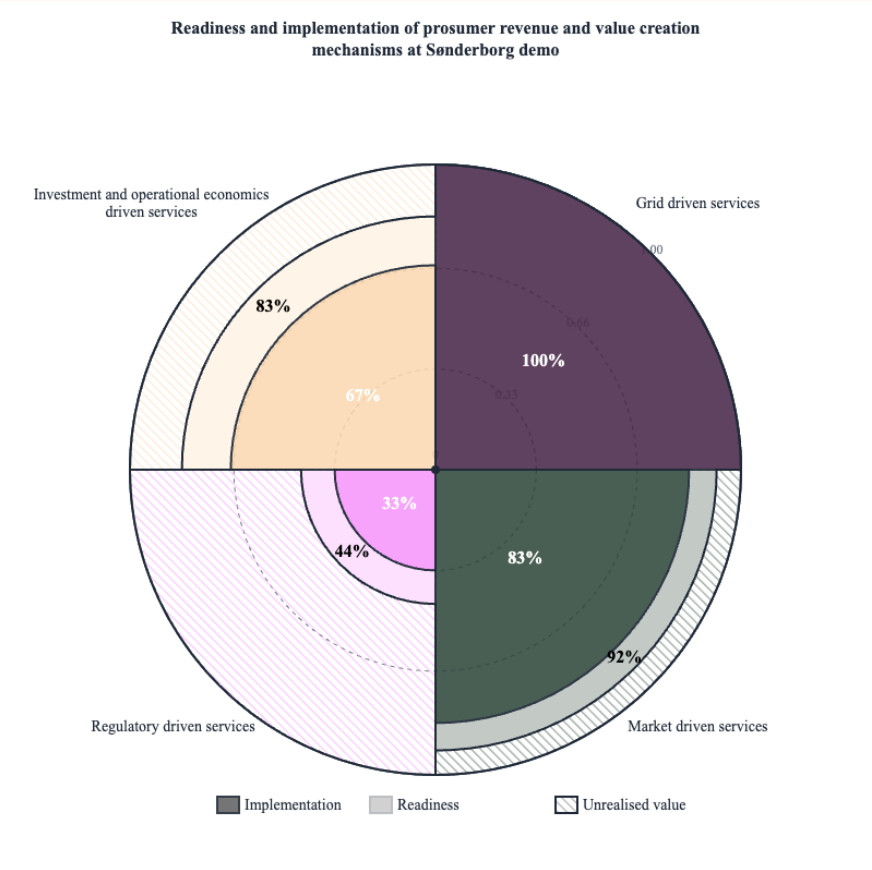


Figure 2. *Figma polar chart of Readiness and implementation of prosumer revenue and value creation mechanisms at Sønderborg demo.*

[2] www.figma.com

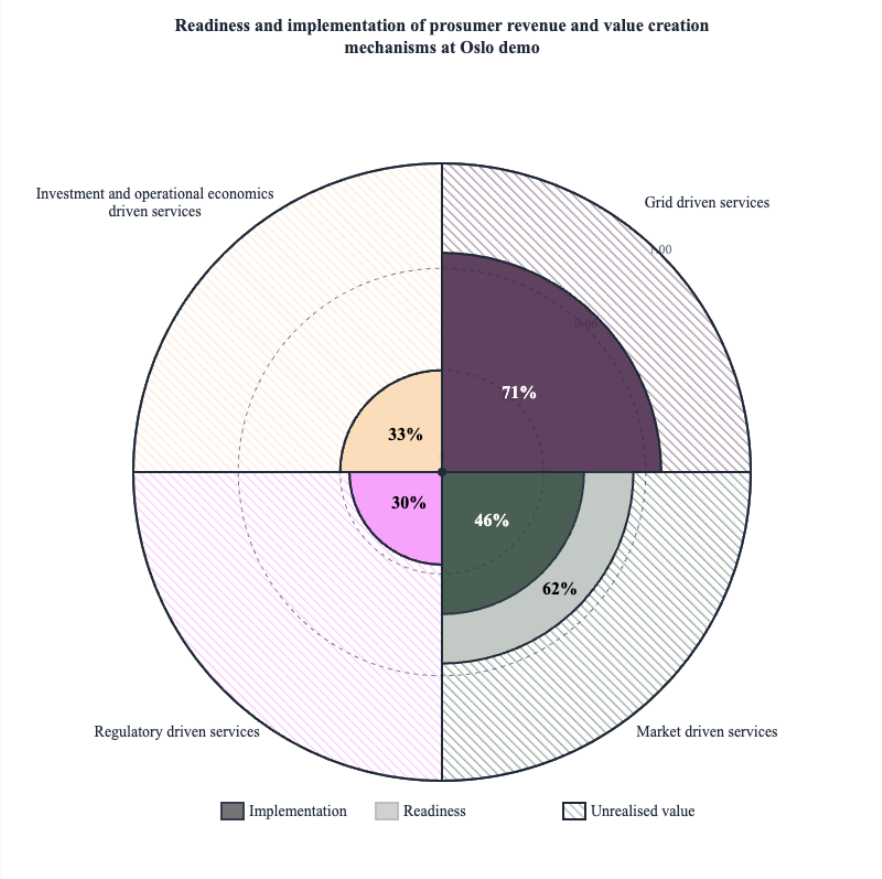


Figure 3. *Figma polar chart of Readiness and implementation of prosumer revenue and value creation mechanisms at Oslo demo.*

To replicate the results, the following AI promt was used to generate the graph with Figma.

--START PROMPT—

Create a polar segment chart visualization tool with the following specifications:

Overview

Build an interface with the following view:

1. "[City][3] Demo" - Readiness vs Implementation chart for [City]

Design Requirements

General Styling

- Background: notebook paper aesthetic with sketch-like elements
- Font: Times New Roman throughout
- All charts are full polar/pie charts starting from center (no donut hole)
- Each chart should have PNG export functionality

Chart Structure

Each polar chart displays 4 segments (quadrants) representing service categories in ARV brand colours:

- Grid driven services (0-90°, color: #4d2d4d)
- Market driven services (90-180°, color: #364d41)

[3] Insert here and any subsequent sections where **[City]** is displayed the name of city assessed.

- Regulatory driven services (180-270°, color: #f699fc)
- Investment and operational economics driven services (270-360°, color: #fbd9b3)

Layer System

Each segment has three visual layers:

2. **Implementation layer** (darkest, opacity 0.9) - shown from center to minimum value
3. **Readiness layer** (medium, opacity 0.3) - shown between min and max values
4. **Unrealised value layer** (striped pattern) - shown from max value to outer edge

The striped pattern uses diagonal lines (-45° rotation) of the segment color over white background.

[City] Demo Data

Title: "Readiness and implementation of prosumer revenue and value creation mechanisms at [City] demo"

Category	Readiness	Implementation
Grid driven services	xx[4]%	xx%
Market driven services	xx%	xx%
Regulatory driven services	xx%	xx%
Investment and operational economics driven services	xx%	xx%

Chart Elements

Grid circles: Three concentric circles at 0.33, 0.66, and 1.0 with scale labels at 45° angle

Radial lines: Dashed reference lines at 0°, 90°, 180°, 270°

Segment labels: Positioned horizontally outside each segment

- "Grid driven services" (single line, top)
- "Market driven services" (split into "Market driven" / "services")
- "Regulatory driven services" (split into "Regulatory driven" / "services")
- "Investment and operational economics driven services" (split into "Investment and operational economics" / "driven services", shifted 20px left)

Percentage labels inside segments:

For [City] Demo:

- Grid driven: xx% (white text, centered) and xx% (black text, outer area)
- Market driven: xx% (white text, inner area) and xx% (black text, outer area)
- Regulatory driven: xx% (white text, inner area) and xx% (black text, outer area)
- Investment and operational economics driven services: xx% (white text, inner area) and xx% (black text, outer area)

Legend (centered, below chart):

Three boxes showing:

1. Dark box (opacity 0.9) - "Implementation"
2. Light box (opacity 0.3) - "Readiness"
3. Striped box - "Unrealised value"

Data table: Below chart showing all category data with color indicators

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[4] All demo data fields are marked "xx%" in the prompt. For correct data, refer to demo site specific Summary tab in the excel tool and copy the correct data to "**[City] Demo Data"** and "*Percentage labels inside segments".*

Technical Details

- SVG-based rendering at 800x860px viewBox
- Center point at (400, 430)
- Maximum radius: 280px
- Inner radius: 0 (starts from center)
- Export button in top-right corner of each chart card
- All percentage labels: 16px, font-weight 600, Times New Roman
- Category labels: 14px, font-weight 400, Times New Roman
- Title: 16px, font-weight 600, Times New Roman, centered, split into 2 lines

The detailed view chart should include curved text labels along segment arcs and overlaid radial bars showing implemented mechanisms (this is the more complex interactive version).

--END PROMPT—

3.5 SUMMARY

Corresponding to each demo assessment, the tool includes a demo site specific summary page. It includes a brief overview of the demo to provide context, as well as calculated averages for readiness and implementation across the four sub-categories and a radar chart to visualise the readiness and implementation status (see figure 4).

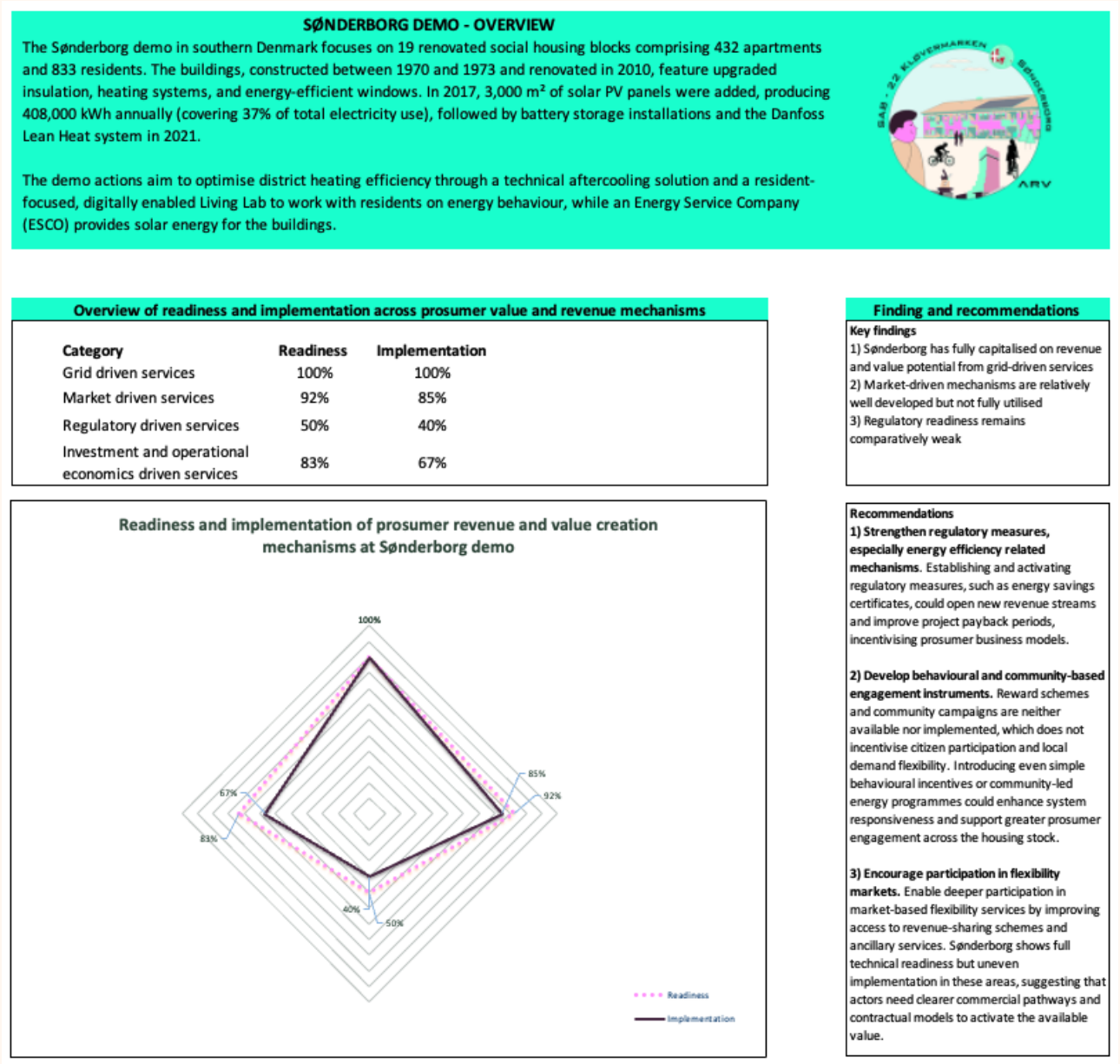


Figure 4. *An example of a summary tab for the Sønderborg demo in the tool.*

Based on the readiness and implementation assessment, each summary page includes a section for key insights and recommendations to support further advancement of both the enabling conditions and the practical capacity required for full implementation of prosumer solutions and business models.

4. LESSONS LEARNED AND FUTURE OPPORTUNITIES

The tool provides a practical way to make the often abstract discussion around prosumer business models more concrete by providing a systematic framework for mapping where enabling conditions exist and where implementation still lags behind. By assessing both readiness and uptake across a broad set of revenue and value creation mechanisms, and clearly separating the two, the tool supports policymakers in identifying good practices and new policy measures to be introduced, while helping market actors recognise realistic entry points for action and emerging business opportunities.

A key shortcoming of the current version of the tool is its inability to capture the magnitude of the implementation gap and the lack of readiness in monetary terms. While it successfully maps the presence or absence of enabling conditions, it does not quantify the potential economic value lost due to underimplementation or missing policy frameworks. This limits its usefulness for investment planning or cost–benefit prioritisation, as it cannot show which gaps matter most in financial terms. In future iterations, integrating a quantitative valuation layer could address this limitation, linking readiness and implementation scores to estimated revenue, savings, or avoided costs. Such an enhancement would transform the tool from a descriptive mapping exercise into a more strategic decision-support resource for policymakers, investors and market actors.

Future iterations of the tool could move beyond manual insights by an AI integration to generate evidence-based recommendations grounded in real examples of successfully implemented mechanisms across demonstration sites such as Oslo and Sønderborg. Through automated analysis of readiness and implementation data provided in the tool, the tool could identify emerging patterns and extract transferable lessons for other cities and contexts. This would enable a shift from static assessment to a self-learning system that continuously refines its recommendations, supporting more precise decision-making and accelerating the implementation of effective prosumer models across diverse contexts.

REFERENCES

[1] https://greendeal-arv.eu/

[2] www.figma.com

ACKNOWLEDGEMENTS AND DISCLAIMER

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036723.

APPENDIX A – GLOSSARY OF TERMS

Table A.1 *Abbreviations used in the report.*

Abbreviation	Description	References
CPCC	Climate Positive Circular Communities	See ARV Deliverable D2.1 for a detailed definition of CPCC
DSM	Demand-Side Management	https://www.carboncollective.co/sustainable-investing/demand-side-management-dsm
FiPs	Prosumer-Specific Feed-in Premiums	https://energypedia.info/wiki/Feed-in_Premiums_(FIP)
P2P	Peer-to-Peer	https://www.sciencedirect.com/science/article/abs/pii/S1755008423000091
VPP	Virtual Power Plant	https://www.next-kraftwerke.com/vpp/virtual-power-plant

APPENDIX B – COMPLETE LIST OF PROSUMER REVENUE AND VALUE CREATION MECHANISMS INCLUDED IN THE TOOL

A GRID DRIVEN SERVICES

Demand-Side Management (DSM) and Flexibility Services

- *Load shifting:* Scheduling high-use activities (e.g. EV charging) to off-peak times signaled by grid needs.
- *Demand reduction:* Reducing consumption during grid stress periods (e.g. efficiency measures).
- *Capacity charges:* Reduced costs for lowering peak demand (peak shaving) when signaled by the grid.
- *Flexibility services:* Payments for demand response during grid-requested events.
- *Congestion relief payments:* Earnings from DSOs for reducing load during local grid constraints.

Increasing Smart Readiness Level

- *Smart controls / IoT:* Automated responses to grid signals (e.g. adjusting appliances during peaks).
- *Advanced metering:* Real-time data enabling grid-responsive actions.

B MARKET DRIVEN SERVICES

Dynamic Tariffs & Pricing Structures

- *Time-of-use / real-time pricing:* Adjusting consumption or generation based on market price signals.
- *Critical peak pricing:* Responding to rare, high-price events in the market.
- *Emissions intensity signals:* Shifting consumption or generation to periods when the grid has a lower carbon intensity.

Energy Storage Services

- *Arbitrage:* Storing energy when market prices are low, using or selling when high.
- *Ancillary services:* Selling stored capacity for frequency regulation based on market demand.

Peer-to-Peer (P2P) Trading & Energy Communities

- *Local market platforms:* Selling energy to neighbours at market-negotiated rates.
- *Community models:* Shared generation responding to local market opportunities.

Aggregator / Virtual Power Plant (VPP) Participation

- *Bundling resources:* Aggregating flexibility or generation for wholesale market sales.
- *Revenue sharing:* Earnings from market participation split with aggregators.

Prosumer-Specific Feed-in Premiums (FiPs)

- *Market-linked bonuses:* Premiums atop market prices for exported renewable energy.

Capacity Market Payments

- *Availability payments:* Earnings for guaranteeing capacity, set by regulatory market design.

Self-Consumption / On-Site Generation

- *Maximising on-site use:* Using local generation (e.g. PV) to reduce grid draw during signaled high-demand periods.
- *Surplus sales:* Exporting excess energy at market rates (e.g. spot prices).

C REGULATORY DRIVEN SERVICES

Taxes, Levies, & Incentives

- *Reduced VAT / excise taxes:* Tax breaks for self-generated or energy efficiency measures.
- *Energy / carbon taxes:* Higher costs on carbon-intensive grid energy.

Network Charges & Grid Access Fees

- *Fixed vs. variable charges:* Grid cost allocation affecting prosumer economics.
- *Location-based tariffs:* Charges varying by regional grid conditions.

Carbon Pricing & Green Certificates

- *Carbon tax / emissions trading:* Costs or savings based on energy carbon intensity.
- *Renewable energy certificates (RECs):* Revenue from tradable clean energy credits.
- *Energy savings certificates:* Revenue from certified energy savings achieved after implementing energy efficiency measures.
- *Carbon credit generation:* Issuing tradable carbon credits for avoided emissions through renewable generation or energy efficiency measures.

Consumer Behavioural Incentives & Engagement

- *Reward schemes:* Discounts, motivation tariffs or gamification mandated by regulators to encourage efficiency.
- *Community campaigns:* Policy-driven collective efforts.

D INVESTMENT AND OPERATIONAL ECONOMICS DRIVEN SERVICES

Energy Efficiency & Renovation Incentives

- *Building envelope and other energy efficiency improvements:* Reduced operational costs via retrofits.
- *Public subsidies & grants:* Financial support for efficiency and onsite storage and generation technologies.

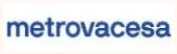
Investment, Maintenance & Financing Costs

- *Capital expenditure (CAPEX):* Upfront costs for PV, batteries, or smart tech.
- *Operating expenses (OPEX):* Maintenance, insurance, and fees.
- *Financing conditions:* Interest rates and loan terms affecting ROI.
- *Residual asset value:* Potential or quantified resale value or second-life potential of materials or assets (e.g. for batteries).

E OTHER

- *Other parameters or mechanisms not currently included:* Please describe any mechanism not included above.

PARTNER LOGOS

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