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SMART ENERGY

Renewables Self-Consumption in Slovenia

Regulatory Framework and Best Practice

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Energy Community Workshop on Renewables Self-Consumption

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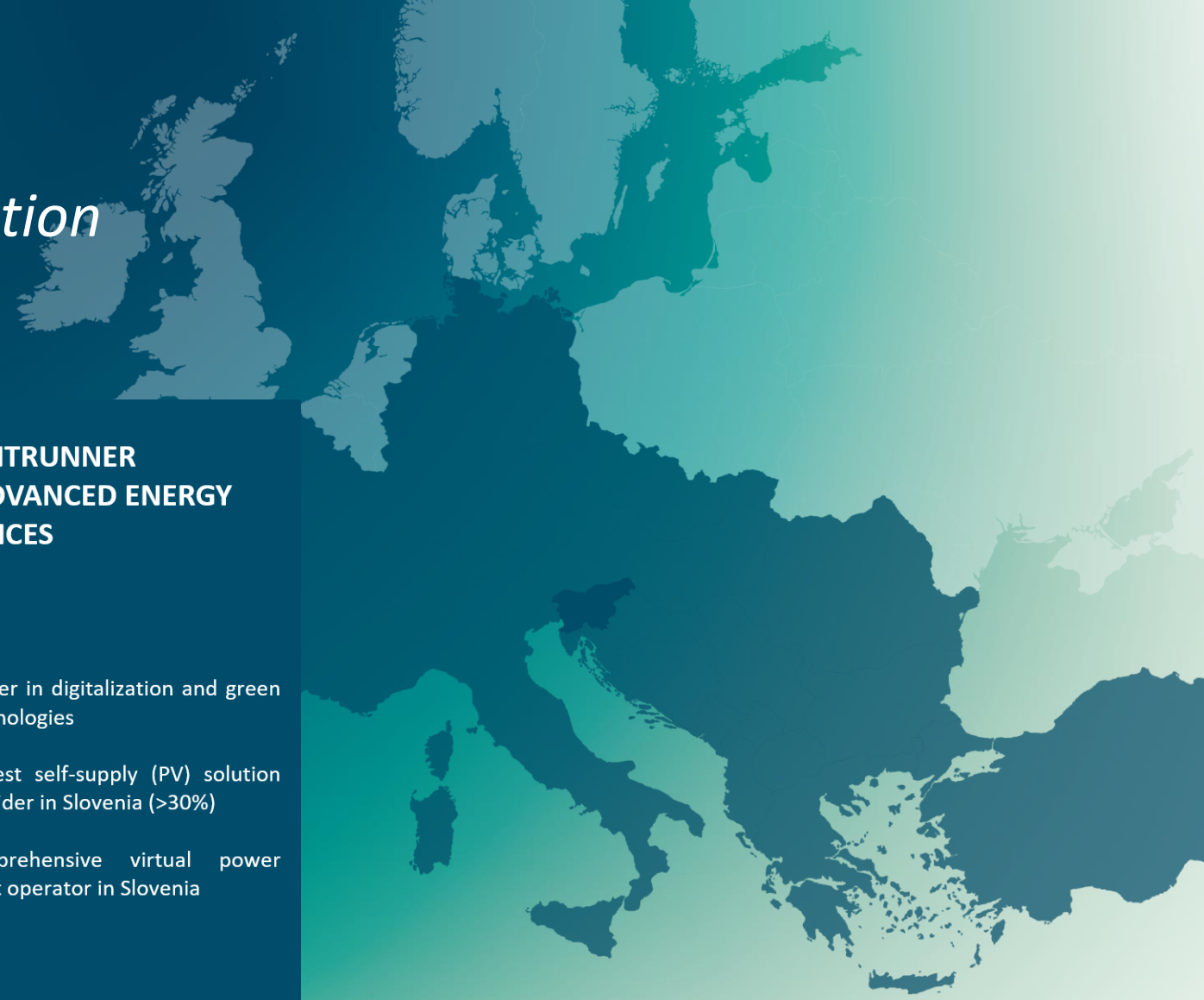
The GEN-I Group
Success based on Strategy, Innovation and Long-Term Vision



LEADING WHOLESALE ENERGY TRADER IN SEE FOR OVER A DECADE

- Operating in over 22 countries
- Present on 21 regional energy exchanges
- Further immersing into established Western energy markets

PREDOMINATING ENERGY SUPPLIER IN SLOVENIA

- Disruptor turned into a leading household supplier
- Leading end-customer market share on Slovenian electricity market
- Second largest end-customer market share on Slovenian natural gas market

FRONTRUNNER IN ADVANCED ENERGY SERVICES

- Leader in digitalization and green technologies
- Largest self-supply (PV) solution provider in Slovenia (>30%)
- Comprehensive virtual power plant operator in Slovenia

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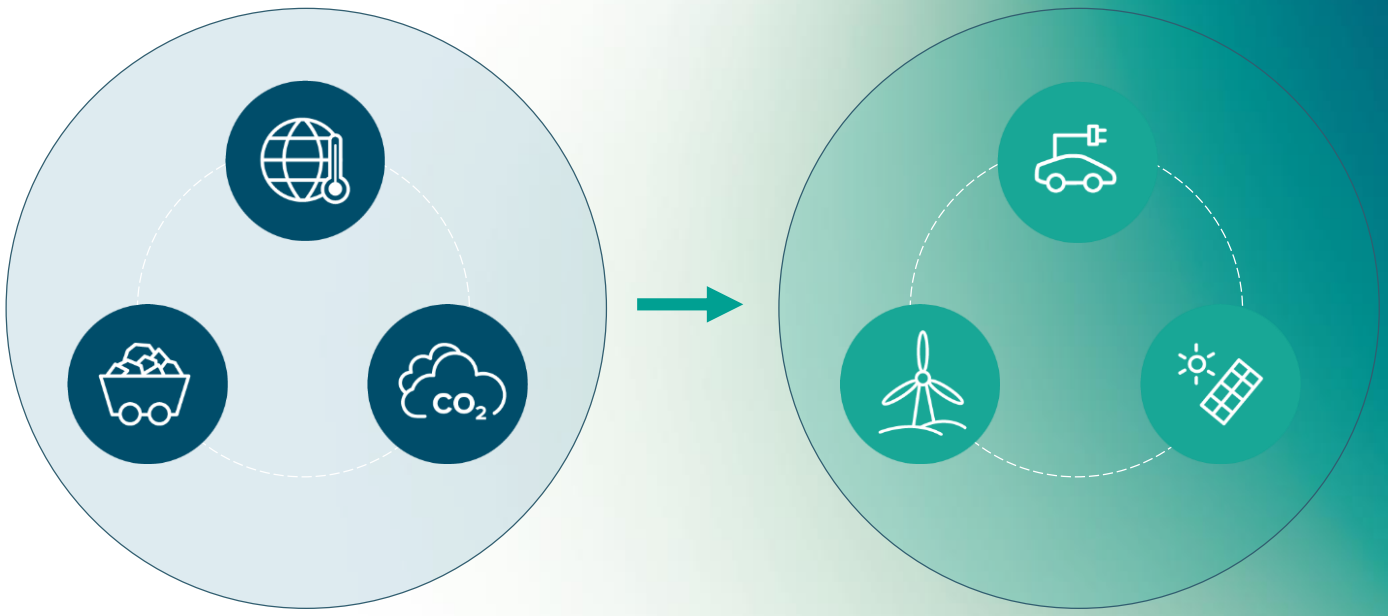
The GEN-I Group and the Green Transformation

- **Driver of the Green Transformation** through:
  - **Solarification via PV** (rooftop, ground-mounted):
    - Individual self-consumption in Slovenia with >2,000 rooftop Solar PV installed
    - Pioneer in collective self-consumption in Slovenia
    - Utility-scale solar (17 MW PV development in Republic of North Macedonia)
  - **CO_2-free electricity supply**
    - to all end-customers in Slovenia as of 01.01.2021 → reducing the carbon footprint of an average household by 40%
  - **Demand response and aggregator** in Austria and Slovenia
    - Over 60 MW flexibility in Slovenia
  - **Energy monitoring and management services**
    - Development of comprehensive ‚Sustainable Energy Circle' solutions
  - **Customer-friendly electromobility**
    - Access to charging stations in Slovenia and Croatia with a single card



FOSSIL, CO_2-INTENSIVE, POLLUTING, CENTRALIZED ENERGY

RENEWABLE, SUSTAINABLE, EFFICIENT AND CLEAN, CENTRALIZED AND DECENTRALIZED ENERGY FOR EVERYONE

The Regulatory Framework for Renewables Self-Consumption in Slovenia
Timeline of Legislative Developments

Energy Law (EZ-1)

2014 — 2015 — … — 2019

Regulation on Self-Consumption 1.0

Regulation on Self-Consumption 2.0

The Regulatory Framework for Renewables Self-Consumption in Slovenia
Regulation on Self-Consumption 1.0 (12/2015)

- The Regulation on Self-Consumption 1.0 adopted in 2015 introduced the **activity of renewables self-consumption at *individual* level**, as a concept including but not limited to the following key features/definitions:
  - **‚Device owner‘:** households or small enterprises who also own metering point
  - **‚Own consumption‘:** net energy produced and off-taken from grid used for consumption
  - **‚Contract on self-consumption‘:** contract between supplier and device owner for self-consumption, for offsetting electricity fed into grid with electricity off-taken from grid, within the settlement interval
  - **‚Settlement interval‘:** calendar year
- **Key provisions for energy balance and grid charges:**
  - The device owner only **pays for electricity and grid charges for net quantities consumed** (difference between energy fed into grid and energy off-taken from grid) within a settlement interval
  - If in a given settlement interval, more energy has been fed into the grid than off-taken from the grid**, excess quantities are transferred to the supplier**
  - The supplier is responsible for imbalances
- The Regulation on Self-Consumption 1.0 was **amended in 2018**; changes include expansion of „device owner“ to include not only direct owner of metering point(s) but also other persons who have concluded a contract on mutual relations for supply of electricity produced by devices for self-consumption with owner(s) of metering point(s)

  → **including owners of metering points in multi-unit residential buildings!**

The Regulatory Framework for Renewables Self-Consumption in Slovenia
Regulation on Self-Consumption 2.0 (03/2019)

- The Regulation on Self-Consumption 2.0 adopted in **2019 expands the possibilities for renewables self-consumption** by including, in addition to *individual* self-consumption, **also *collective* self-consumption** which covers self-consumption in a **multi-unit residential building as well as RES communities**:

Aspect	Multi-Unit Residential Building	RES Community
Participation	End-customers with two or more metering points for own consumption within a single multi-unit residential building	End-customers with two or more metering points connected to the low-voltage grid within the same substation area as the device for self-consumption; More than one RES community can be located within a single substation area
Ownership	Ownership can be by the relevant end-customers *or a third party* (!)	
Production Share	Defines share of produced electricity allocated to a given metering point; shares must add up to 1 and be defined to 5 decimal places	
Limitations	Any given metering point cannot be part of more than one collective self-consumption grouping	
	Any given device for self-consumption cannot be part of more than one collective self-consumption grouping	

- **Definitions of ‚device owner' are replaced by ‚consumer with self-consumption'**, which cover households or small enterprises holding either grid connection approval for the metering point *or* consent of the holder of the grid connection approval for the metering point

→ Key provisions for energy balance and grid charges adapted to encompass also collective self-consumption

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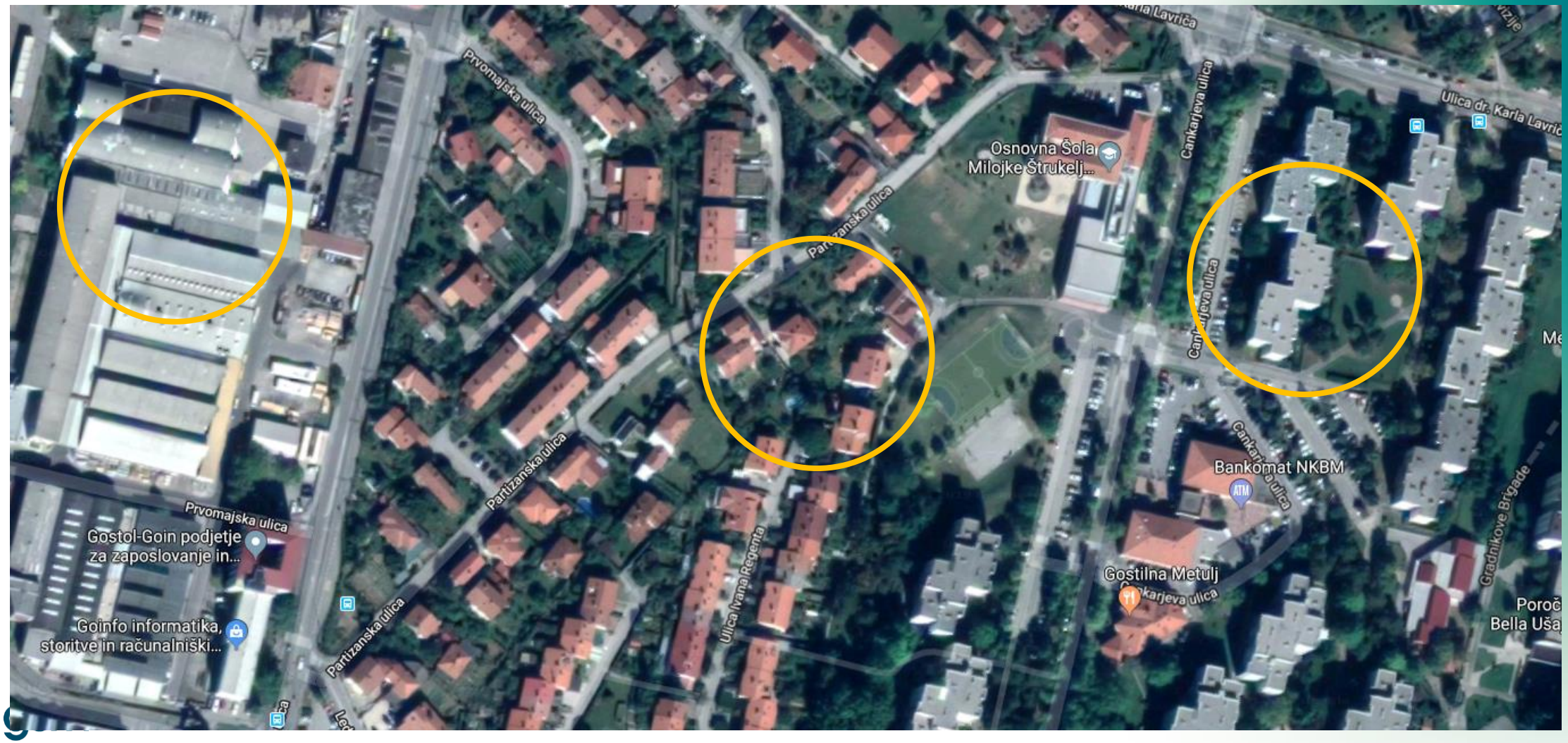
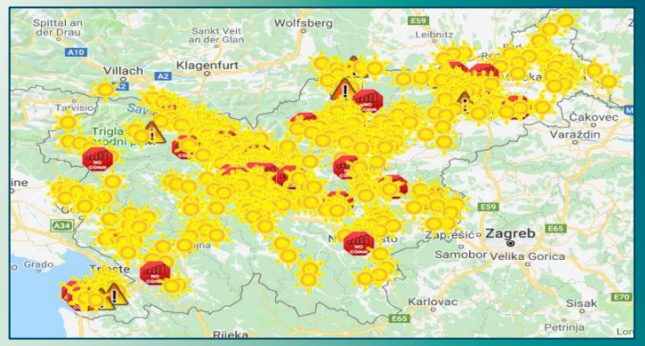
Significant – and significantly underutilised – Solar Potential

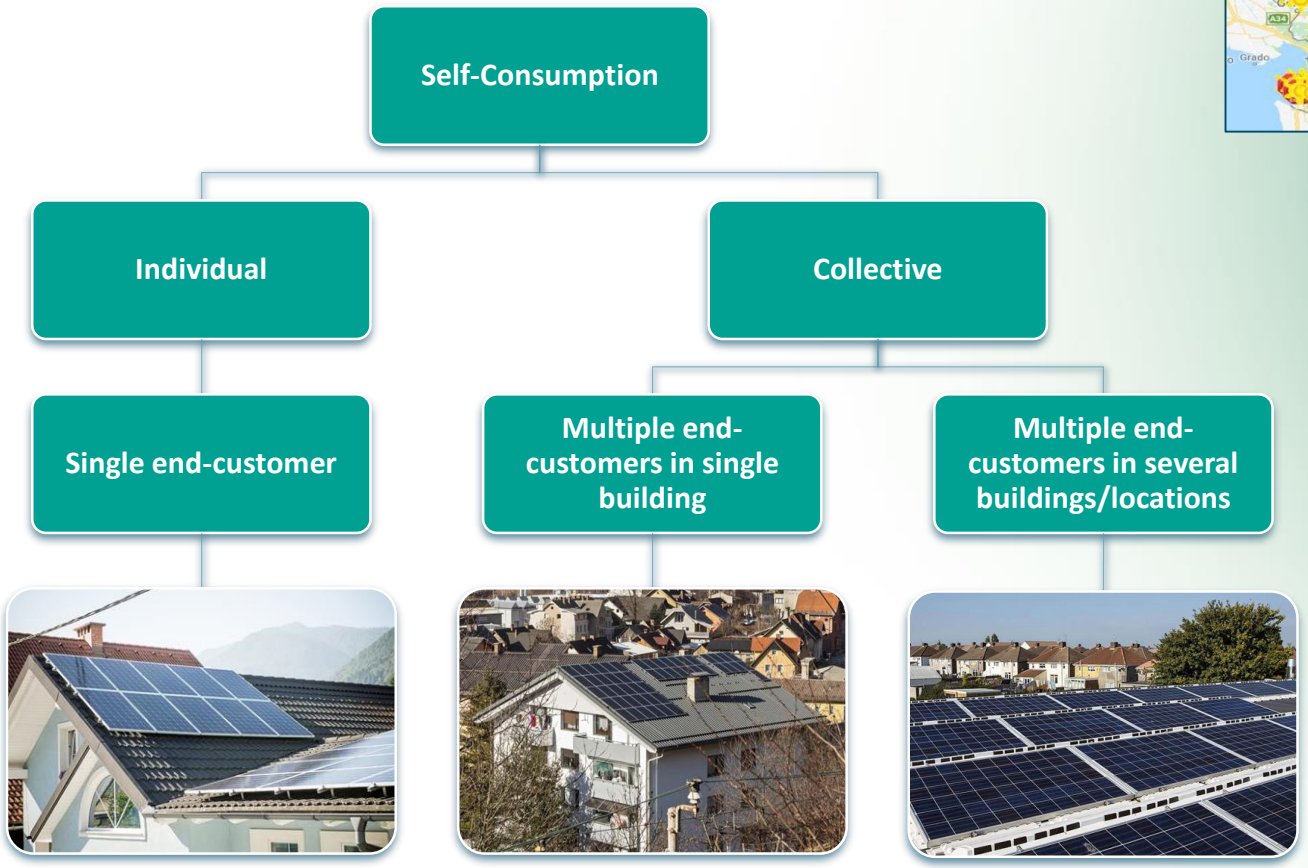


Driving the Green Transformation in Slovenia

GEN-I SONCE, energetske storitve, d.o.o.

- GEN-I Sonce as the pioneer and **leading provider of Renewable Self-Consumption Solutions in Slovenia**, offering the **full spectrum of individual (household, enterprise) and collective (multi-unit, RES community) solar PV self-consumption**:





Type

No. of End-Customers

Example of Construction

Best Practice from GEN-I Sonce: Individual Renewables Self-Consumption – Households and Enterprises

- **HOUSEHOLDS***:
  - Over 2,000 individual self-consumption solar PV installations to date
    **possible also for small enterprises up to 43kW*
  - Turn-key solution with option for heat pump and EV charging station
  - Financing solutions available: short-term 7-year interest-free payment and up to 15-year consumer loan
    - Financing enabled also through Green Bond issue → GEN-I Sonce Green Bond awarded by International Climate Bonds Initiative
  - Stylised savings example (*without financing*):

Installed Power	Monthly Electricity Costs (EUR)		Payback Period
	Before PV Installation	After PV Installation	
11 kW	147	14	11 years

- **ENTERPRISES:**
  - Wide variety of enterprises, including factories, hotels, shopping centers, and other larger end-customers
    NOTE: enterprises above 43 kW are not eligible for netting approach and are connected under a different scheme

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Best Practice from GEN-I Sonce: Collective Renewables Self-Consumption

- **MULTI-UNIT RESIDENTIAL BUILDING – JESENICE**
  - Residential apartment building in Jesenice (north-west Slovenia) as **Slovenia's first collective self-consumption in a multi-unit residential building**
  - Apartment block with **23 apartments with 55 inhabitants**, with overall 36.7 kW PV capacity for:
    - 15.1 kW for common usage/spaces
    - 21.6 kW for individual apartment consumption
  - Solar PV investment of 36,400 EUR to be recovered in full within 7 years (84 monthly installments; average monthly payment 15 EUR) → expected savings of 4,500 EUR per year

  - **Establishment timeline:**
    - 05/2018 – amendments of Regulation on Self-Consumption 1.0 enabling multi-unit apartment collective self consumption
    - 08-09/2018 – location selection and discussions with inhabitants on project participation
    - 10-11/2018 – location evaluation, planning, and documentation preparation
    - 12/2018 – all necessary administrative approvals and permits secured
    - 02/2019 – solar PV on rooftop connected to grid

Solar power plant on an apartment building in Jesenice

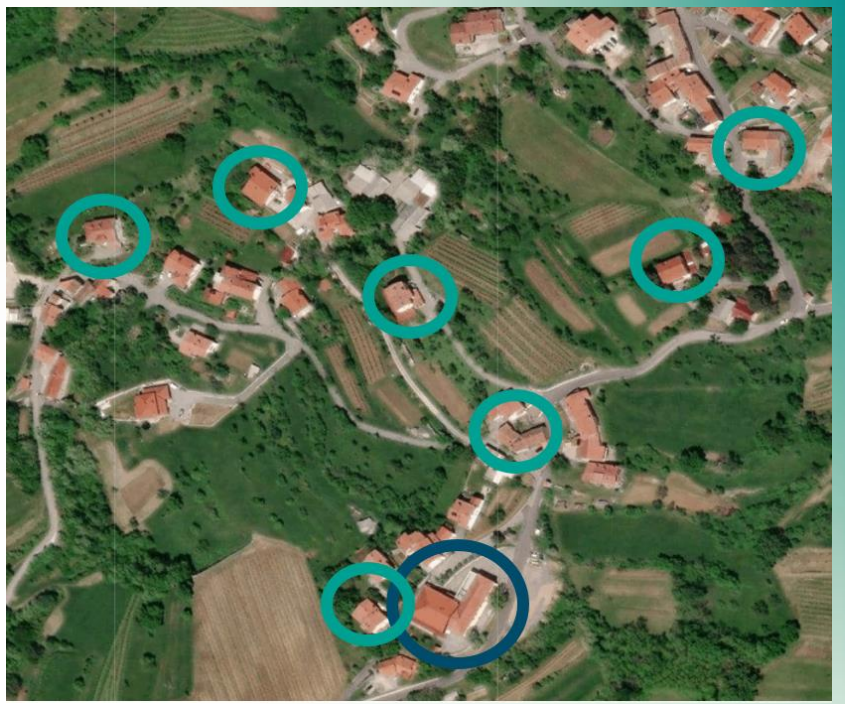
- Start of operation: February 2019
- Installed capacity: 36.7 kW
- Planned annual electricity production: 37,000 kWh
- Reduction of carbon footprint: 18,882.15 kg CO_2 a year

Best Practice from GEN-I Sonce: Collective Renewables Self-Consumption

- **RES COMMUNITY – BUDANJE**
  - Solar PV installed on **roof of local elementary school** in Budanje (Slovenian Littoral) and **seven residential houses** as **Slovenia‘s first collective self-consumption as a RES Community**
  - First example of PV installed on rooftop of building in public ownership (elementary school) with electricity produced for consumption by local residents
    - School has little-to-no consumption in summer, so roof space utilised for benefit of local population

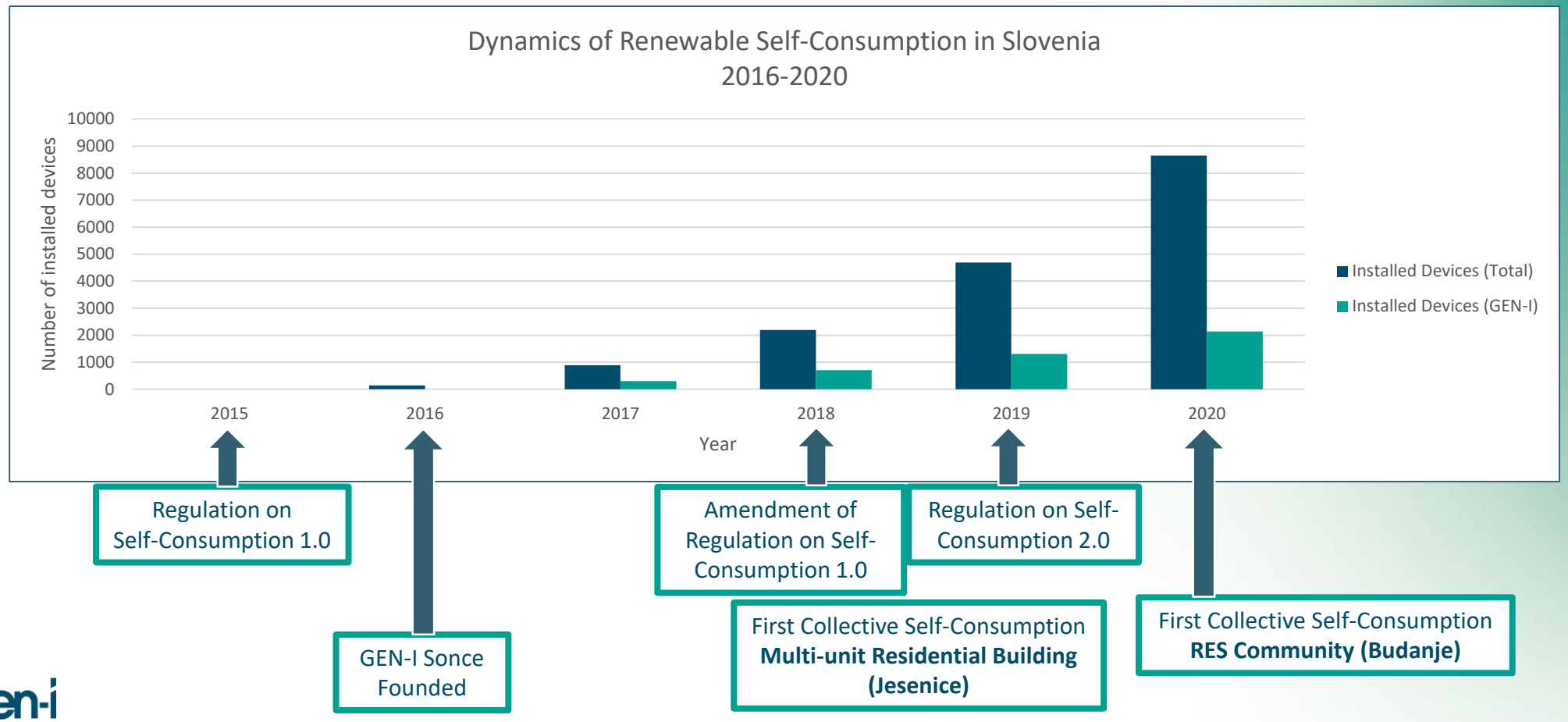
    → *„distance self-consumption for municipalities“*
  - No additional infrastructure investments → DSO handles quantity settlement according to community distribution shares
  - Key figures:
    - Solar PV capacity of 55.68 kW and annual production of app. 58,500 kWh
    - Expected CO_2 reductions of 28,500 kg per year
    - Expected savings for participants app. 100 EUR/year/participant

Establishment timeline app. 1 year

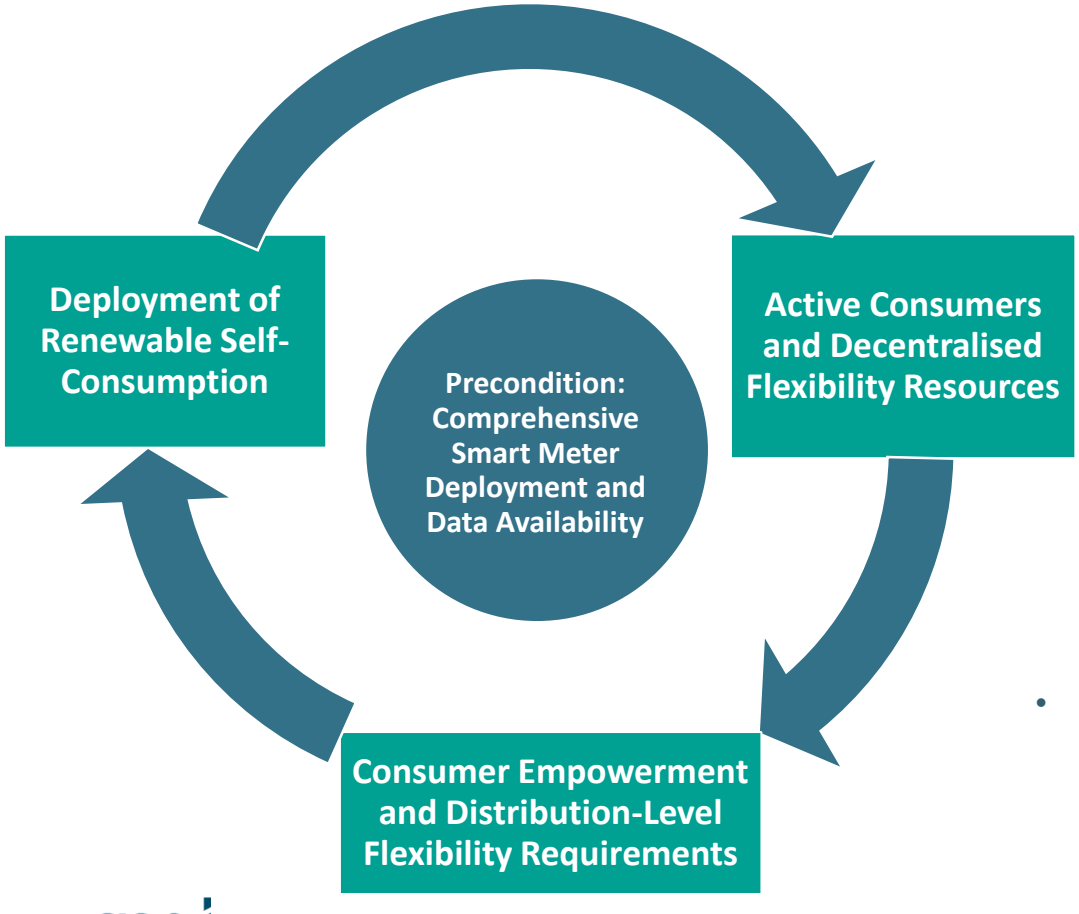


The Regulatory Framework as an Enabling – not Limiting (!) – Factor

- A supportive and enabling regulatory framework leads to rapid expansion of renewable self-consumption and **significant growth in actively engaged consumers who have direct ownership in the green transformation**:



Democratisation of Energy:
From Centralised Monopolies to Decentralised Active Participation



- Unlocking of participatory consumer potentials is crucial to **kick-start a self-reinforcing virtuous cycle of consumer empowerment** as:
  - **Increasing renewables deployment, especially through self-consumption, gives consumers an (initial) ownership stake in the green transformation**
  - **Interest in active participation, spurred by increased awareness of *tangible* benefits through *tangible* experiences, expands to encompass other sources of decentralised flexibility**
  - **Appropriate monetization of the value of flexibility and prosumers at local level drives further (long-term) development of active consumer empowerment and decentralised decarbonisation through renewables self-consumption**
- Convergence of these dynamics results in a mutually reinforcing increase in renewables deployment enabled by increasing activation of decentralised flexibility resources, as **passive consumers become not only active consumers but active renewables self-consumers, both at individual and collective levels through citizen and renewable energy communities**

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Thank you for your attention!