Svaz moderní energetiky

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From Plans to Reality

Renewable Chance for Future

Maja Bratko, DOOR / May 7, 2025.

Basic information on the project

Funded by EUKI programme

Lead partner:

- Solar Association, Czech Republic

Project partners:

- Alliance for Energy Self-Sufficiency – Czech Republic
- Slovak Association of Sustainable Energy(SAPI) –Slovakia
- Association for nature and environment conservation and sustainable development promotion Argonauta – Croatia

Duration:

- 12/2023 – 11/2025

Project value:

- 619,929.65 EUR

Project impacts

IMPACT 1

Key stakeholders and experts will be involved in the development of Green Scenarios in three countries (Slovakia, Czech Republic and Croatia) with the aim of updating national NECPs

IMPACT 2

Relevant decision-makers will be introduced to the developed Green Scenarios and recommendations for removing obstacles to improving and implementing NECPs with the aim of formulating and adopting effective measures to facilitate the use of renewable energy sources.

IMPACT 3

Awareness of key stakeholders and the general public will be raised through continuous communication and exchange of good practices about the possibilities of more ambitious decarbonization goals.

Main activities:

Activity 1 - Round tables, development of data models, development of green scenarios for NECP revision, development of opposition studies

Activity 2 - **Identification and analysis of key obstacles to the development of RES**, development of **recommendations for improvement of national policies**, development of policy papers according to key obstacles and recommendations

Activity 3 – Site visits, Heroes of renewable energy competition, informational campaigns

Identification and analysis of obstacles to the development of renewable energy sources

Strategic Framework – Gaps Between Plans and Practice

- Croatia adopted **several national strategies** with ambitious RES goals:
  - Energy Development Strategy to 2030 with the overview to 2050
  - Low-carbon Development Strategy to 2030 with the overview to 2050 (nLTS)
  - Integrated Nacional Energy and Climate Plan (NECP)

- **nLTS has 3 scenarios, neither leads Croatia to be climate neutral until 2050:**
  - Referent scenario (NUR)
  - Gradual transition scenario (NU1)
  - Strong transition scenario (NU2)

	NU1 SCENARIO (%)			NU2 SCENARIO (%)		
Energy share from renewable sources in gross direct energy consumption	2030	2040	2050	2030	2040	2050
	36.6	44.1	53.2	36.6	45.8	65.6

- **NECP has the goal of 42,5% of RES in final consumption by 2030**
  - Several measures still support use of fossil fuels!

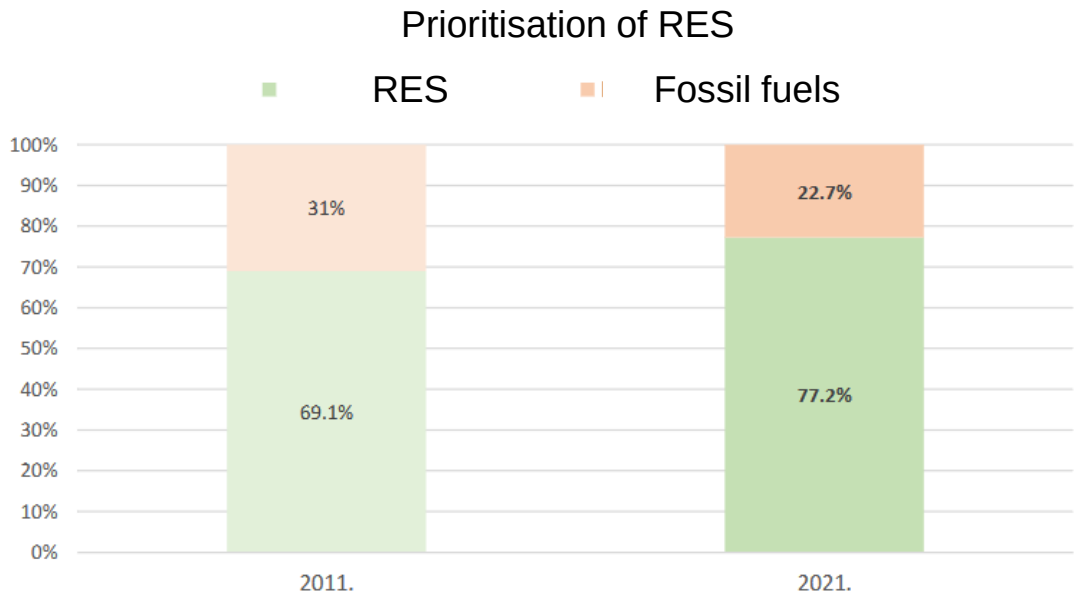
Strategic Framework – Gaps Between Plans and Practice

Main obstacles:

- implementation remains limited due to **slow adaptation of regulatory and policy frameworks**
- **slow permitting process**
- an **insufficiently developed model for encouraging citizen energy communities** and renewable energy communities, which slows down the establishment of these communities
- **flawed by-laws** that do not enable energy sharing in practice - insufficiently developed practice of energy sharing,
- **inefficient tariffs** for the use of the distribution network,
- **outdated rules and the possibility of accessing metering or accounting data** that would enable the performance of energy activities, provision of services and energy sharing.

Social and Psychological Barriers

- Public opinion is **increasingly favourable toward energy transition**
  - Research within project METAR (by DOOR and IDIZ)
- **Persistent myths about RES**
  - Like inefficiency of solar in cloudy conditions, danger from wind turbines, smell from biogas powerplants…
- Need for **more education and knowledge raising for public**, myth-busting, and inclusive participation



Legislative and Procedural Barriers

Fragmented Legal Framework	Key energy and climate laws adopted but implementation hindered by delayed or inconsistent adoption of by-laws and secondary legislation.
	The Law on RES was adopted in 2021, but its full operationalization has been slow.
Lengthy and Non-transparent Permitting Processes	Investors face long and unpredictable administrative procedures with overlapping jurisdiction between ministries and agencies.
	Spatial planning and environmental permitting procedures are especially burdensome and vary significantly by region.
Lack of Strategic Project Prioritization	The absence of clear criteria for identifying and prioritizing “projects of strategic interest” for renewable energy leads to administrative bottlenecks
	This undermines investor confidence and delays project implementation.

Legislative and Procedural Barriers

Grid Connection Complications

- Croatian DSO and TSO have been criticized for lacking transparency and for slow and complex procedures in granting grid connection permits.
- There is no clear framework for grid capacity allocation, especially for prosumers and small RES developers.

Insufficient Administrative Capacity

- Local and regional authorities often lack the expertise and human resources to manage complex energy permitting and planning procedures.
- Coordination between national and subnational levels is weak.

Digitalization and Transparency Deficiencies

- Limited use of digital tools for application tracking and permit processing contributes to inefficiency.
- A unified and publicly accessible digital registry for RES projects is lacking.

Economic Barriers and Financing Gaps

High investment needs

- 50–61 billion EUR by 2050 across generation, grid infrastructure, storage, building renovations, and workforce development

Overreliance on EU funds

- **no long-term national financial mechanism** dedicated solely to RES development

Insufficient mobilization of private capital

- **Limited use of innovative financing mechanisms** such as energy cooperatives, crowdfunding, ESCO models, and community ownership.
- **Financial risk perception** among investors **remains high** due to administrative delays and regulatory uncertainty.

Economic Barriers and Financing Gaps

Inadequate incentives for citizens, SMEs, and energy communities.	Existing schemes are often too complex or limited in scale for small actors.
	Lack of accessible micro-financing and tailored grant schemes for households and local RES initiatives.
Unbalanced Incentive Structures	Current subsidies and tax benefits are often more favorable to large-scale developers.
	Citizens and small investors face relatively higher transaction costs and lack streamlined access to incentives.
Regressive Impact of Fossil Fuel Subsidies	Continued public subsidies for fossil fuels (e.g., gas, heating oil) distort the market and disincentivize investment in RES.
	These subsidies undermine price signals and the competitiveness of clean technologies.

Technical Barriers in Energy Infrastructure

Outdated Transmission and Distribution Networks

- A significant portion of Croatia’s grid infrastructure is outdated and unable to accommodate the increased variability and decentralisation of renewable energy sources.
- Rural and island regions face particularly weak grid capacity, limiting local RES deployment.

Limited Grid Flexibility and Capacity Allocation

- The grid lacks sufficient flexibility, automation, and real-time management tools needed for integrating variable sources like solar and wind.
- No transparent or strategic allocation of grid connection capacities, especially disadvantaging small and citizen-led projects.

Lack of Smart Grid Development

- The rollout of smart meters and demand response systems remains slow, hindering energy efficiency and prosumer participation.
- Absence of grid-balancing mechanisms, such as dynamic pricing or time-of-use tariffs, reduces system responsiveness.

Technical Barriers in Energy Infrastructure

Grid Connection Delays	Lengthy and complex grid connection procedures managed by DSO and TSO discourage new RES investments.
	Lack of digitalisation and transparency in connection queue management further contributes to uncertainty.
Insufficient Energy Storage and Backup Capacity	Croatia lacks a coherent strategy and support framework for deploying energy storage systems, both centralized and distributed.
	This gap reduces the system’s ability to balance supply and demand and manage peak loads.
Shortage of Skilled Technical Workforce	The renewable energy sector faces a deficit of trained electricians, engineers, and installers.
	Educational systems and vocational training have not adapted fast enough to meet growing labour market needs.

Recommendations for increasing renewable energy sources

Introduction to the document

Based on the identification and analysis of obstacles to the development of renewable energy sources in Croatia, **recommendations** were made **for decision-makers** at the national and local levels

Croatia has adopted **three key documents for the energy transition**: Energy Development Strategy, Low-Carbon Development Strategy, National Energy and Climate Plan (NECP)

All identify common challenges: outdated regulations, poor grid access, lack of funding, slow permitting, low public awareness.

Foreign experiences and examples of good practice can be good indicators of the integration and development of RES, but also indicators of social development that has accepted and participated in the energy transition

Legislative and Procedural Recommendations

Simplifying Legal and Administrative Barriers

- Harmonize conflicting laws (energy, construction, RES legislation)
- Enable energy sharing within energy communities (REC/CEC)
- Simplify registration and permitting processes
- Introduce centralized digital platform for RES project applications
- Publicly publish clear and transparent grid connection rules
- Establish stable, long-term incentive schemes
- Support access to capital via green banks and credit lines
- Invest in grid modernization, especially in rural areas

Technical Prerequisites and Grid Modernization

Strengthening Technical Capacity for RES Integration

- Modernize transmission and distribution systems
- Invest in smart grids, voltage regulation, and predictive analytics
- Increase storage capacity to enhance grid flexibility
- Roll out smart meters and FACTS devices (reactive power compensation)
- Standardize voltage to 20kV to reduce losses and improve quality
- Connect islands to the mainland via cables for better energy security
- Train technical workforce to design, install, and maintain RES systems

Engaging and Empowering Citizens

Raising Awareness and Promoting Citizen Energy

- Conduct nationwide information campaigns on RES benefits and processes
- Combat misinformation through collaboration with trained media
- Integrate RES education from preschool to adult learning
- Use digital media and influencers for outreach, especially to youth
- Promote public participation through consultations and participatory budgeting
- Provide financial incentives for vulnerable groups (100% financing if needed)
- Lead by example: public institutions should adopt RES systems

Institutional Cooperation and International Exchange

Coordination and Learning for a Just Transition

- Foster inter-ministerial and cross-sectoral cooperation on RES projects
- Align spatial planning with RES development
- Strengthen local capacities and technical assistance
- Support creation and functioning of energy communities
- Engage in international projects and study visits
- Learn from EU best practices and avoid common implementation pitfalls
- Promote inclusive, multisectoral transition models in line with RED and NECP

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Thank you!

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