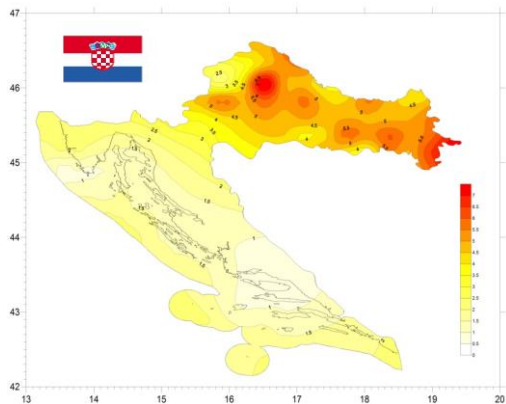


# CROATIA GEOTHERMAL POTENTIAL



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***Distrikt Heting Decarbonization***  
*Workshop, 05 October, 2023 - Zagreb*



**REPUBLIC of CROATIA**  
Ministry of Economy and  
Sustainable Development

# LEGAL BASIS

## Croatian strategic documents @ Energy field

**Strategies** are adopted by the Croatian Parliament at the Government of the Republic of Croatia proposal

Ministry of Economy and Sustainable Development, Department for Energy – **competent authority**



- National Development Strategy until 2030
- Climate Change adaptation Strategy until 2040 with an outlook on 2070
- Integrated Energy and Climate Plans (NECP) for the period 2021-2030
- Energy Development Strategy until 2030 with a view to 2050
- Low-Carbon Development strategy until 2030 with an outlook to 2050
- Recovery and Resilience Plan 2021 - 2026

# FOUNDATION – GEOTHERMAL POTENTIAL

- **HYDROCARBON EXPLORATION AND EXPLOITATION ACT** (OG 52/18, 52/19, 30/21)
  - Geothermal Potential Development Plan of the Republic of Croatia by 2030 – **adopted** May 2023 – with Strategic environmental impact assessment
- ENERGY ACT (OG 120/12, 14/14, 95/15, 102/15, 68/18)
- ACT ON RENEWABLE ENERGY SOURCES AND HIGH-EFFICIENCY COGENERATION
- ELECTRICITY MARKET ACT (OG 177/04, 76/07, 152/08)
- HEAT MARKET ACT (OG 80/13, 14/14, 102/14, 95/15, 76/18, 86/19)

# LICENSING PROCEDURE

- 1. Ministry Initiative** - if Ministry assesses that there is a need to determine individual reserves of geothermal waters in an area
- 2. Investor's Request** - Investor can express an interest in a particular area submitting request to Ministry
  - **Croatian Hydrocarbon Agency** conducts all preparatory actions for the announcement of the bid round, including conditions and criteria for the bid round
  - In both cases bid round is **publicly announced**
  - **GTW Exploration License** - after fulfilling obligation
  - **GTW Exploitation License** - Exploitation Contract - max 25, years, with the possibility of renewal

# EUROPEAN GREEN DEAL

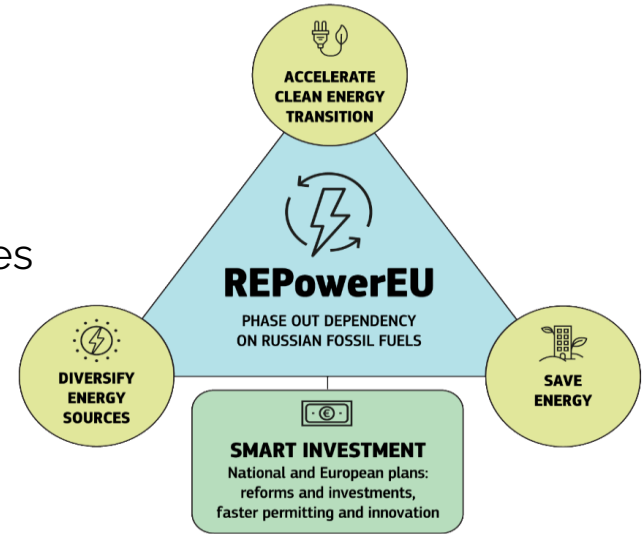
New technology development supported by CRO & EU  
-accelerate clean energy transition, increase renewables and energy efficiency

**Fit to 55** - achieving at least -55 % net GHG emissions by 2030 and climate neutrality by 2050

**REPowerEU** - speed-up and scale-up procedure

- slow and complex permitting processes are a key obstacle

Commission presents a Recommendation on permitting – future Renewable Energy Directive



Geothermal energy - 24/7

# RES TARGETS

- The introduction of **renewable energy sources** into the heating, cooling and transport sectors is **crucial for decarbonization**; represent a huge **opportunity** for further growth in the renewable energy sector
- Electricity and heating production – in place – where (or close to) a consumers
  - Power system relief
  - Transmission system relief – in place of significant consumption
- On GTW project – recommendation – **cascade use** – increase energy efficiency

# EDUCATION & RESEARCH & DEVELOPMENT

- ✓ Experts – new programs on the University
- ✓ General public inclusivity
- ✓ Concept of lifelong learning development
- ✓ Development & commercialization new technology in the production of renewable energy sources
- ✓ Connection with innovative products and services which will provide new technology commercialization and wider application
- ✓ Every solution and every innovation has great potential in CRO, EU and worldwide



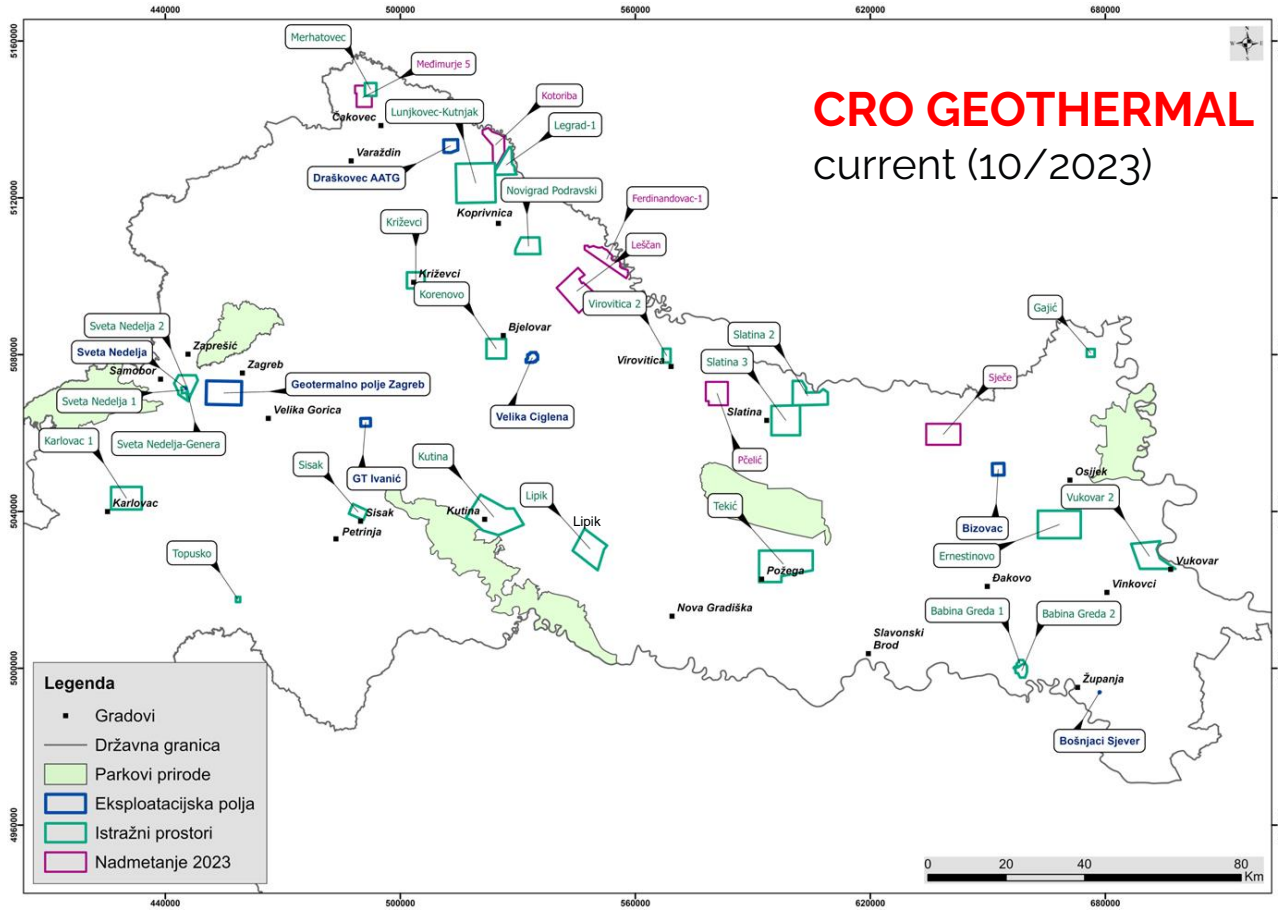
# CRO GEOTHERMAL

current (10/2023)

**7 GTW** exploitation fields

**28 GTW** exploration blocks

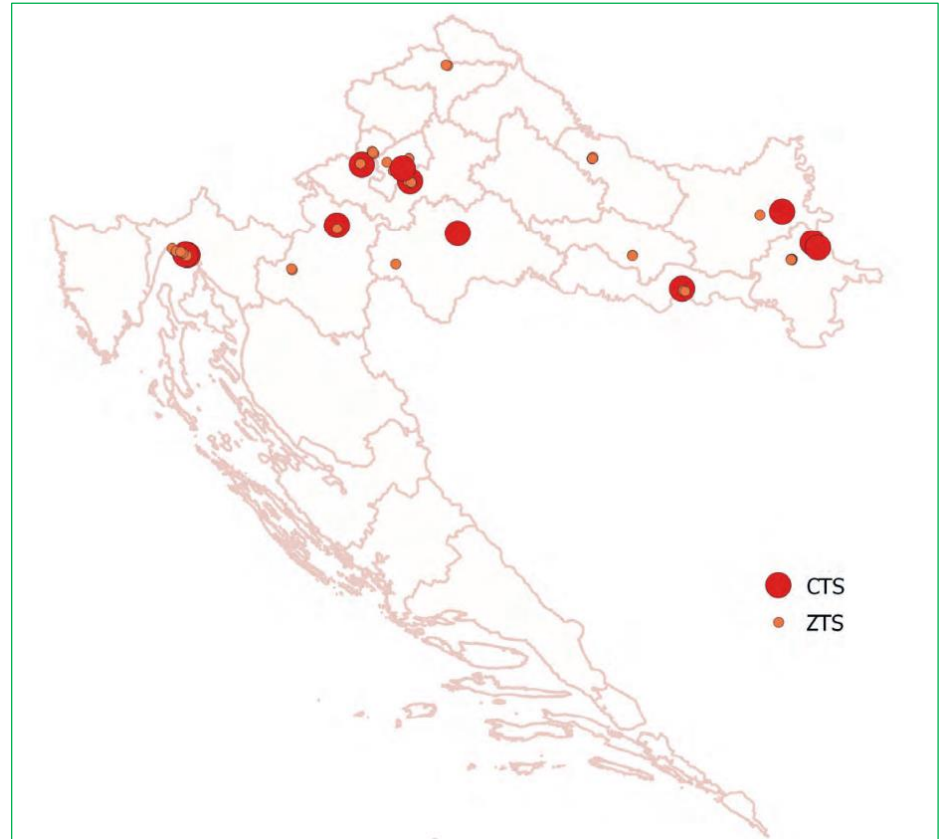
**3 GTW** exploration blocks—in **preparation**





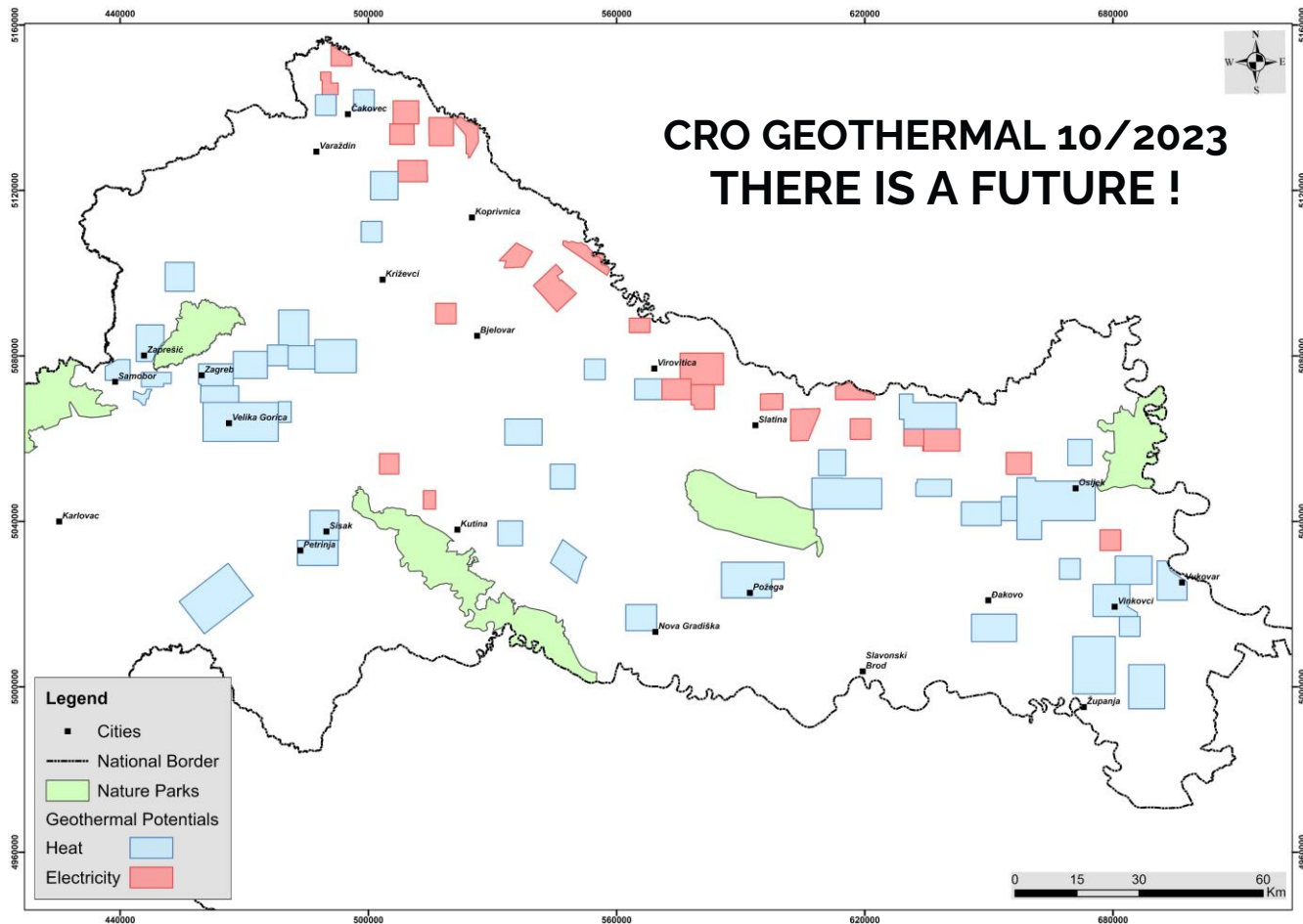
# DISTRICHT HEATING

- **16 Districht Heating Systems (DHS)**  
(centralne toplinske stanice = CTS,  
zatvoreni toplinski sustavi = ZTS)
- 13 Cities with existing DHS –**could be**  
potentially swiched to be geothermal  
users
- Few other Cities with **possibility of  
development geothermal DHS**  
(Bjelovar, Križevci, Prelog, Čakovec,  
Lipik, Kutina, Sv. Nedjelja, Slatina ...)



# CRO GEOTHERMAL 10/2023

## THERE IS A FUTURE !



New prospects -  
additional existing GTW  
potential

**41** heat generation  
**27** electricity generation

Targets:  
carbonate & clastic  
reservoirs of O&G fields  
after its depletion, with  
 $T > 120$  oC,  
deeper aquifers

# Thx for your attention !

Sretno !



REPUBLIKA HRVATSKA / REPUBLIC OF CROATIA

Ministarstvo gospodarstva i održivog razvoja

Ministry of Economy and Sustainable Development

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