

LOCATION, LOCATION, LOCATION:

HOW SPATIAL PLANNING CAN ACCELERATE RENEWABLE ENERGY UPTAKE IN SOUTHEAST EUROPE



Pilot project:

Integrated planning for sustainable wind and solar siting in Zadar country (Croatia)

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**Energy Community
11th Renewable Energy Coordination Group
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The Nature Conservancy

Since 1951, The Nature Conservancy has worked to protect the lands and waters on which all life depends.

Grounded in Science

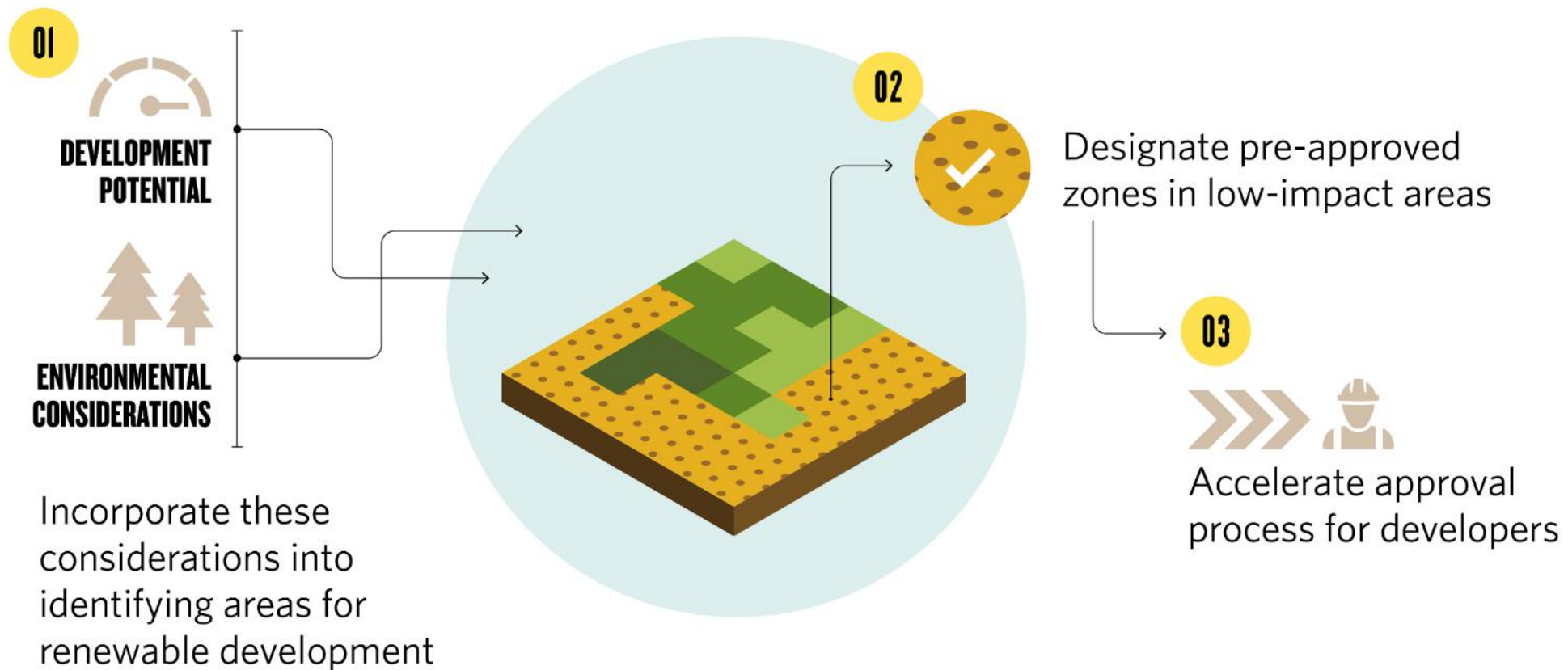
400 scientists and 3,600 staff

A Lasting Legacy

Millions of acres protected, thousands of miles of rivers conserved, and 100+ marine projects

Place-Based

72 countries and all 50 United States



Pilot project for Zadar county (Croatia)

Aims and objectives

- **Aims**
 - Implementation of the measures related to RES siting defined by *NECP(OIE-2, MEN-17)* and *Strategy and action plan for nature protection 2017-2025*
 - Support national climate and sustainable development policies
 - Facilitate investments in solar and wind power plants
- **Objectives**
 - To define a methodology for development of wind and solar sensitivity maps
 - a baseline for spatial planning and strategic impact assessment
 - sustainable use of natural resources and nature conservation
 - To implement the methodology on the national scale
 - upon endorsement and verification of the piloting results by the relevant stakeholders



Photo credit

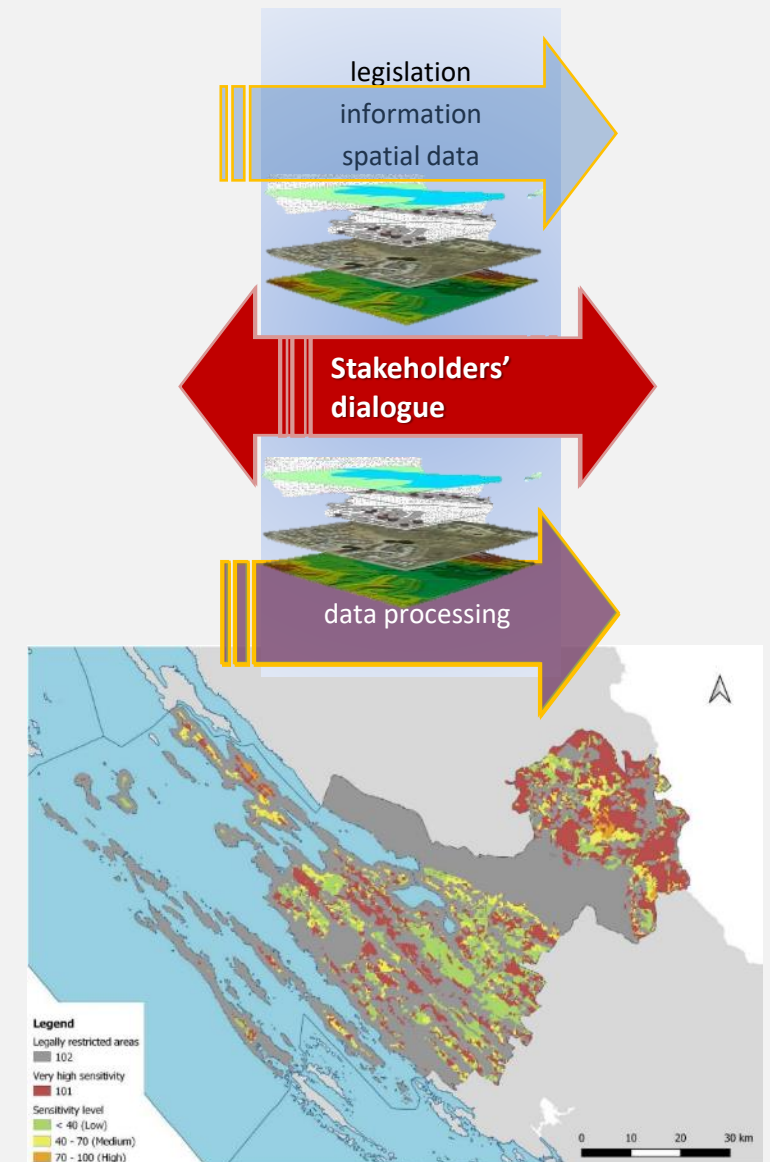
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The integrated planning approach....

- **Analysis of existing approaches based on scientific evidence**
 - Country specific status of the environment (biodiversity, natural resources, land use principles)
 - Indicator based-approach
 - Potential environmental impacts related to the technology
- **Collection and analysis of the existing/available data**
 - Legal constraints
 - Biodiversity data
 - Environmental data
 - Infrastructure
- **Stakeholder consultation**
 - Relevant public authorities on the national and county level
 - Experts in specific fields (birds, large carnivores, bats, habitats, technology experts...)
 - NGOs active in biodiversity conservation and nature protection



Development of WPP and SPP sensitivity maps – 3 steps

STEP 1 – EXCLUSION ZONES

Based on legal constraints related to spatial planning, nature protection, agriculture, forestry, water management and infrastructure laws and regulations (e.g. national parks, infrastructure corridors, municipalities...)

STEP 2 – HIGH SENSITIVITY ZONES (PRECAUTIONARY PRINCIPLE)

Based on the vulnerability of species and habitats to potential impacts arising from solar PV and wind power plants

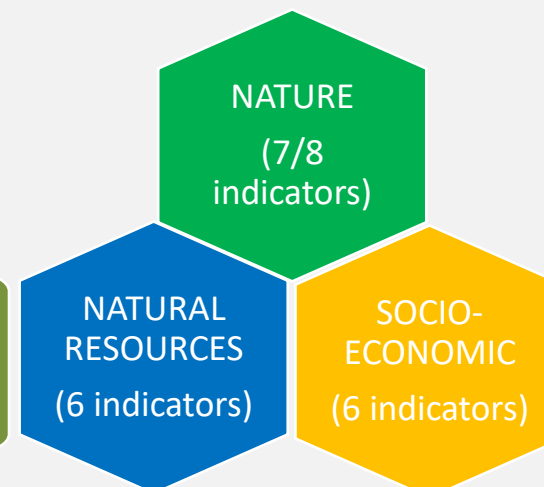


STEP 3 – SENSITIVITY LEVEL OF THE REMAINING AREA

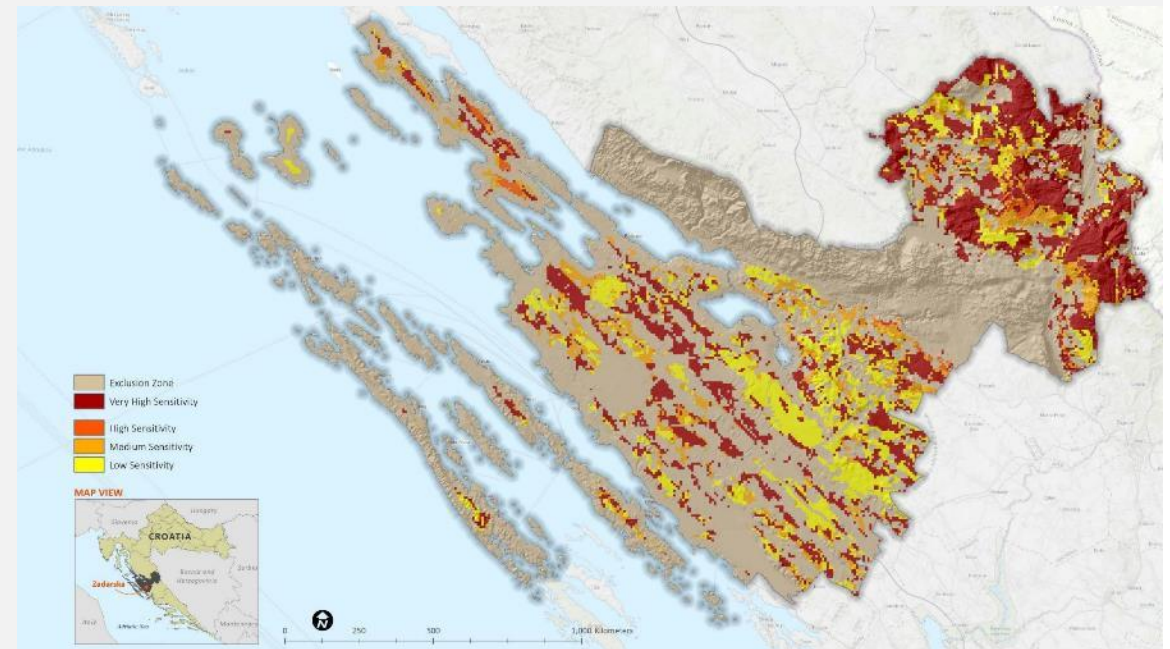
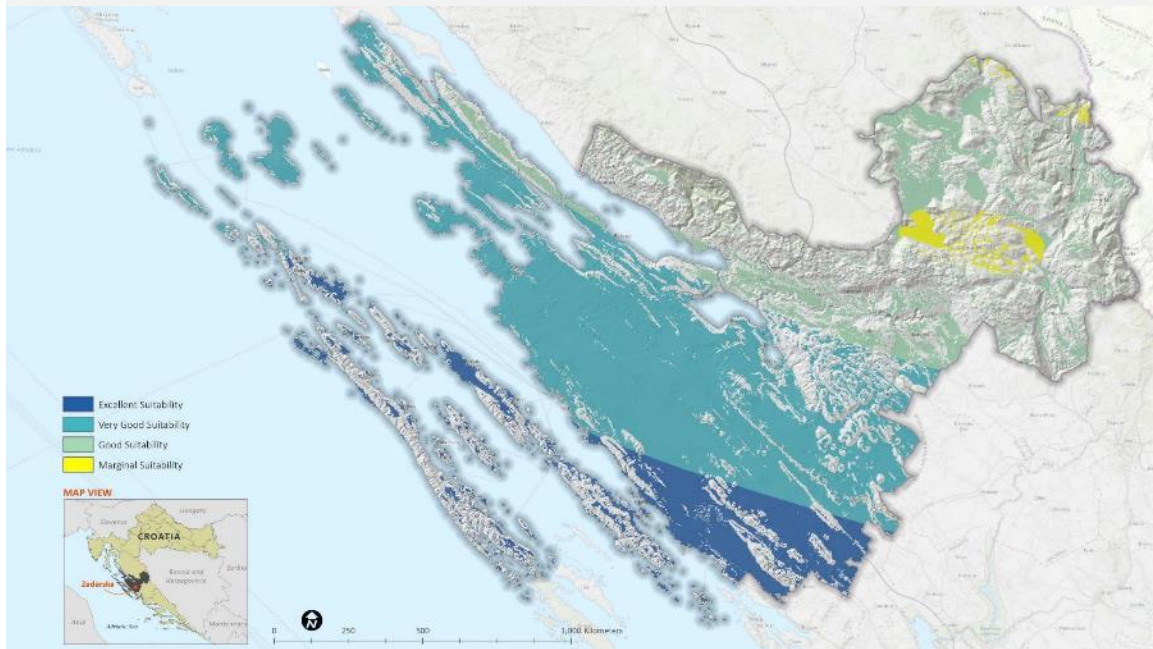
Based on the MCA using sensitivity indicators in 3 main categories: biodiversity, natural resources, socio-economic aspects



Source: BIOPORTAL, © 2019 Ministarstvo gospodarstva i održivog razvoja / Zavod za zaštitu okoliša i prirode



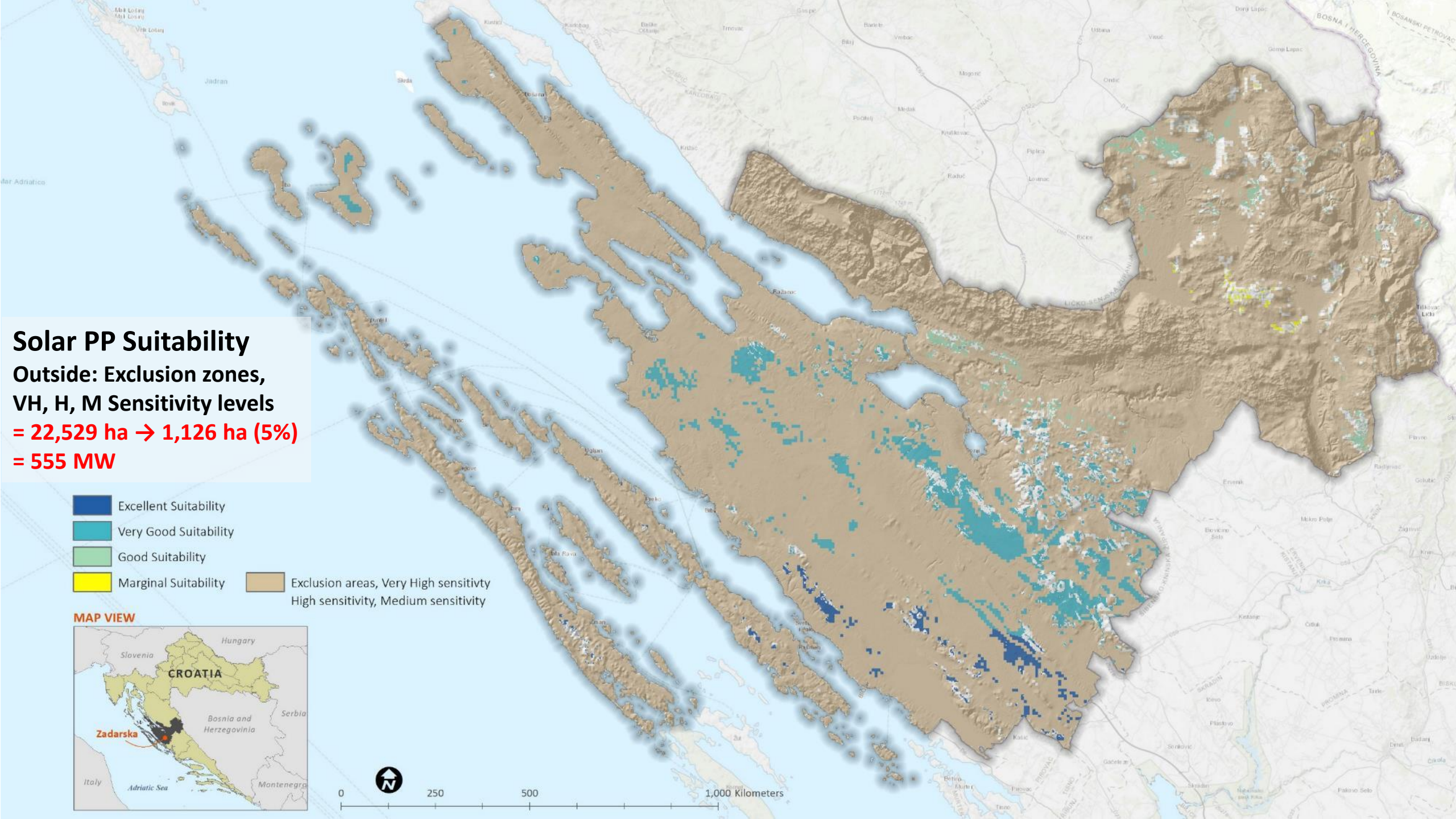
Solar PV Plants: Suitability and Sensitivity



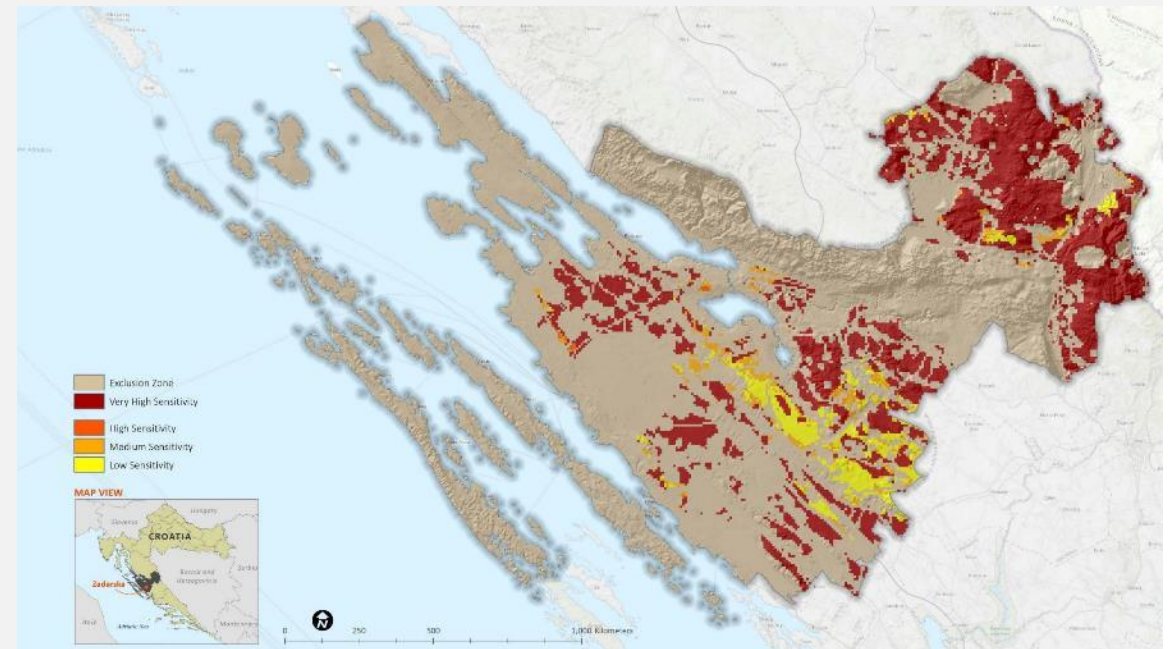
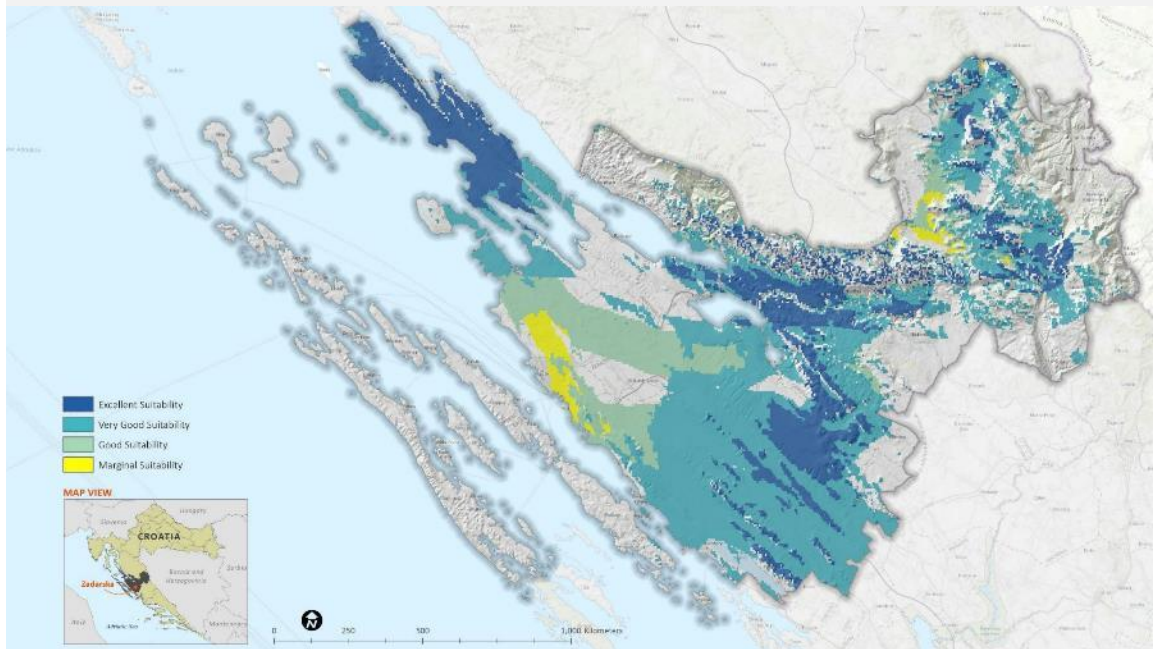
Solar PP Suitability

Outside: Exclusion zones,
VH, H, M Sensitivity levels
= 22,529 ha → 1,126 ha (5%)
= 555 MW

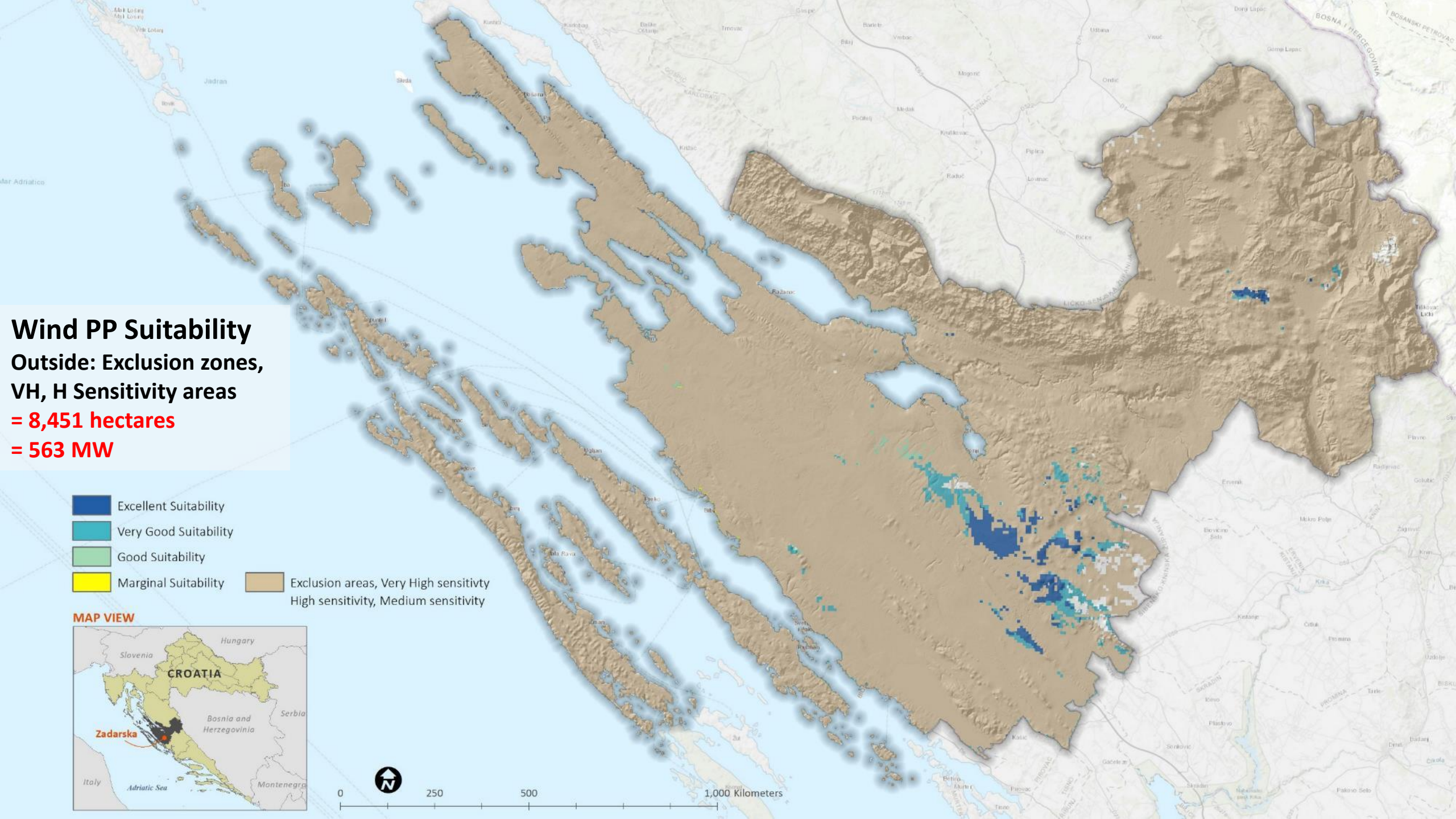
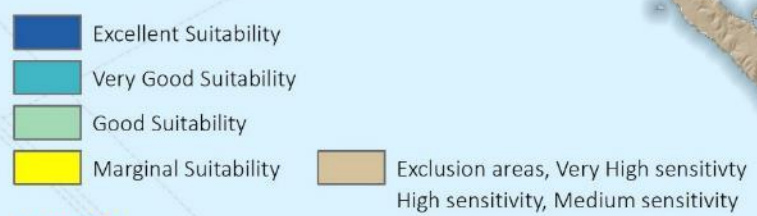
- Excellent Suitability
- Very Good Suitability
- Good Suitability
- Marginal Suitability
- Exclusion areas, Very High sensitivity
High sensitivity, Medium sensitivity



Wind Power Plants: Suitability and Sensitivity



Wind PP Suitability
Outside: Exclusion zones,
VH, H Sensitivity areas
= 8,451 hectares
= 563 MW





Zadar County's potential

1,118 MW

Suitable solar 555 MW
Suitable wind 563 MW



Croatia's target

2,132 MW

Solar target 768 MW
Wind target 1,346 MW

VS

52%

of Croatia's 2030 solar and wind targets can be met in Zadar County only.



72% of the solar target
41% of the wind target



500,000

households could be powered

1/3 of all Croatian households

8X all of Zadar County's households



431,350

metric tonnes of CO₂ emissions could potentially be avoided annually

...can be achieved with a sustainable siting of WPP and SPP

Lessons learnt and recommendations

Challenges

- Data
 - Part of the spatial data not up-to date
 - Different spatial resolution of datasets
 - Lack of, or partial availability, of certain data
- Limited engagement of external experts
 - Institutional and/or formal reasons
 - Limited budget
 - COVID - 19

Limitations of results

The sensitivity maps are guidance...

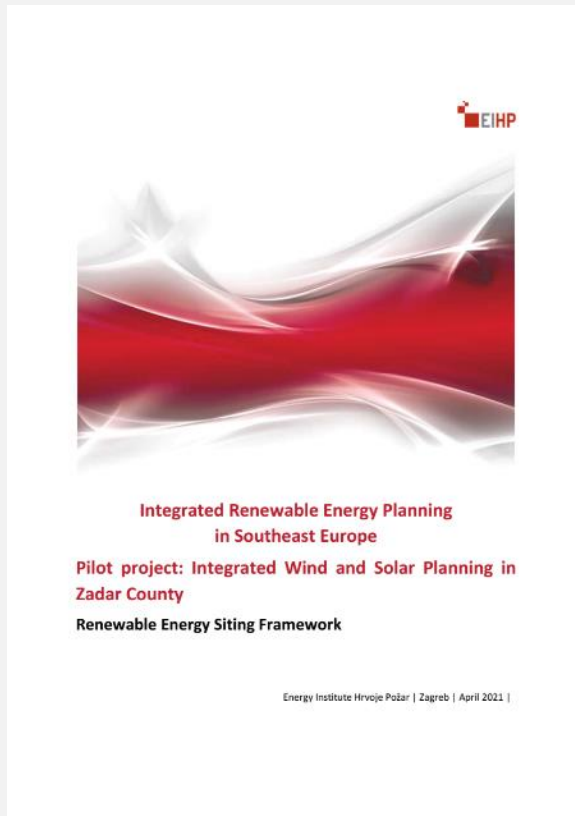
- Zones of high sensitivity
- Spatial resolution of sensitivity maps (9ha raster)
- Maps can be used as guidance – in field verification needed

Recommendations for the next steps

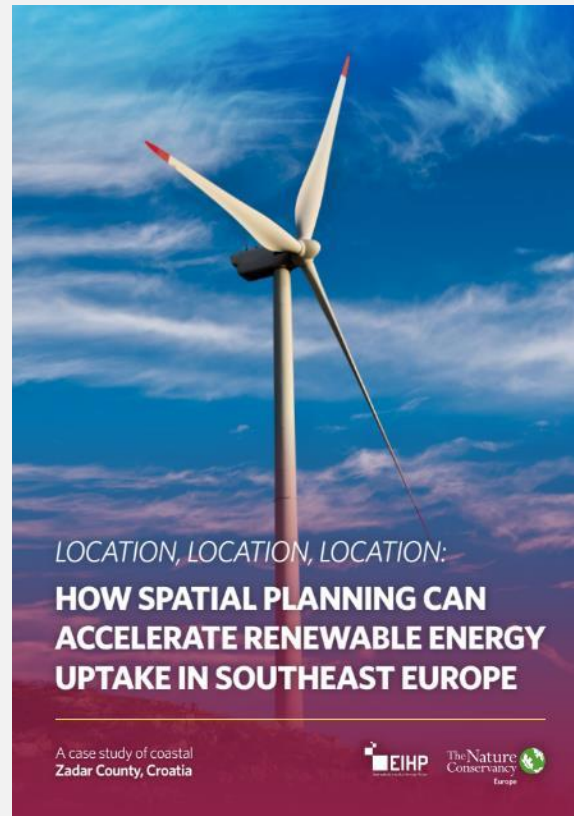
- **Institutionalization**
 - Formal endorsement of the methodology by the relevant authorities (MESD, MPPCSA)
 - Strengthening of stakeholder engagement (public and local authorities, scientist, NGOs/CSOs, private sector – WPP and SPP operators and developers)
 - Establishment and maintenance of the information database
 - Upscaling – implementation of the NECP and Biodiversity Strategy measures: development of national sensitivity and suitability maps
- **Technical upgrades**
 - Verification of the sensitivity maps (e.g. monitoring data, on-site/field check points)
 - Increased resolution of the maps (e.g. 1 ha raster)
 - Program for targeted field research and data collection

Thank you for your attention!

More information is available from.....



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[Briefing paper](#)



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