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klima+ energie fonds

Synergizing PV and Wind-Energy Infrastructure with Biodiversity Conservation (PV-Wind-Biodiv)

Florian Danzinger | 24. Österreichischer Klimatag | 04.04.2024

BASIC INFORMATION

Project title:	Synergizing PV and Wind-Energy Infrastructure with Biodiversity Conservation
Acronym:	PV-Wind-Biodiv
Call:	Austrian Climate Research Programme (ACRP) 15th Call
Project duration:	09/23 – 06/25
Project team:	**Umweltbundesamt -** Environment Agency Austria • Dr. Peggy Macaigne (Surface Waters) • Dr. Stefan Schindler (Biodiversity & Nature Conservation) • Marc Sztatecsny (Air Pollution Control & Buildings) • Florian Danzinger, MSc (Remote Sensing)

INTACT ECOSYSTEMS …

- safeguard the **conservation of biodiversity**
- represent **carbon sinks** and support **climate protection**
- regulate the **water balance**
- are the basis for the production of **sustainable food** and **raw materials**
- offer protection against **natural hazards**

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CONFLICT OF OBJECTIVES?

Biodiversity loss

- Species populations and the natural areas they inhabit are **shrinking and degrading**
- Despite EU's efforts in protecting nature, the most recent assessments (EEA, 2020) found:
  - 80% of habitats in poor condition | 10% of bee and butterfly species risk extinction | 70% of soils in unhealthy condition
- Austrian Red Lists (Zulka, 2005 & 2007)
  - 32% of native breeding birds | 27% of mammals 64% of amphibians | 60% of reptiles are endangered
- Along with **habitat loss, fragmentation and degradation**, **climate change** is one of the key drivers of the dramatic decline in biodiversity

Climate change – Energy transition

- EU: Climate neutrality in EU by 2050
- AT: 100% energy from renewable sources by 2030
  Climate neutrality by 2040
  - +11 TWh PV | +10 TWh WE by 2030 (EAG, 2021)
  - +31 TWh PV | +18 TWh WE from 2030-2040 (NIP, 2024)
- Substantial expansion expected until 2050
- RED III (Renewable Energy Directive): acceleration areas

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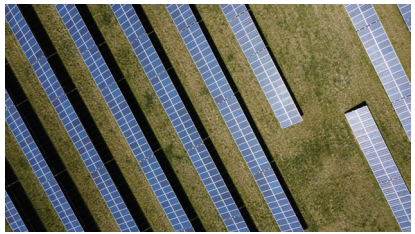
ECOLOGICAL EFFECTS OF ENERGY TRANSITION

- Due to their nature, **WE plants** and **ground-mounted PV installations** have an undeniable **spatial and ecological impact**, whether visually in the landscape or in terms of their **influence on local habitats and ecosystems** as well as **species and populations** (Chiabrando et al., 2009; Adeyeye et al., 2020)
- Interactions between different rural land uses such as **energy production, agriculture, and nature protection** are becoming a **growing source of conflict** (Meller et al., 2015; Sacchelli et al., 2016)
- These impacts must be thoroughly analysed, especially when **sensitive habitats** of conservation value **without protection status** and **valuable semi-natural habitats** are **considered as potential sites**

SYNERGIES WITH BIODIVERSITY PROTECTION



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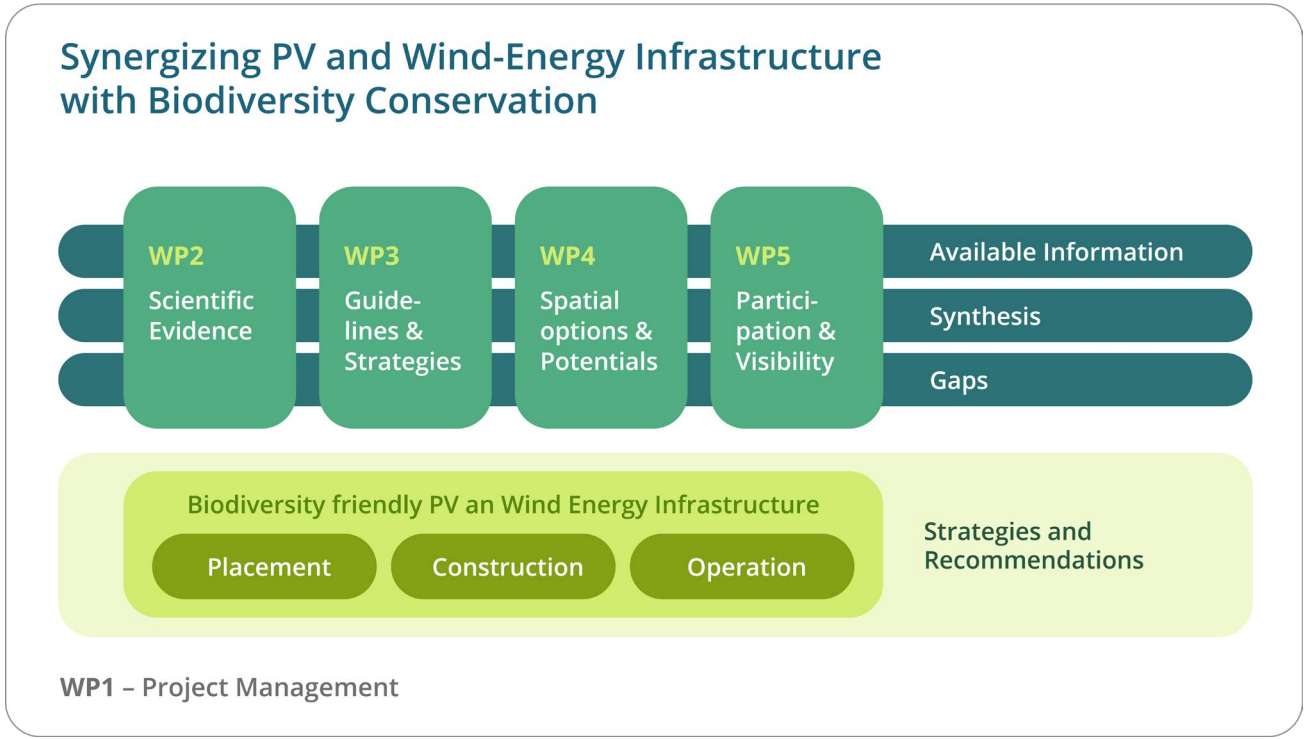
- There is a current **lack of evidence-based assessments** of the impacts of renewable energy sources on **Austrian natural areas** and particularly sensitive ecosystems as well the **Austrian animal and plant species and habitat types**
- Comprehensive **strategies and recommendations for policy makers** and infrastructure providers are needed to **minimize negative impacts** of the expansion of PV and WE infrastructure on biodiversity and to effectively **capitalize on potential synergies**
- Especially in agriculturally intensively used areas, PV and WE infrastructure plants have the **potential to enhance biodiversity** by providing **additional habitats** for fauna and flora (Blaydes et.al. 2021, Uldrijan et al. 2021).
- The **Austrian Biodiversity Strategy 2030+** advocates a **synergetic approach** to the expansion of **renewable energies and the protection of biodiversity**

METHODS AND GOALS

PV-Wind-Biodiv addresses the effects of the expansion of PV and WE systems on species and habitats by …

1. **reviewing scientific evidence** of the effects of PV and WE infrastructure on organisms, habitats and ecological networks,
2. **evaluating** national, European and international **guidelines and strategies** for a biodiversity-friendly use of PV and WE infrastructure and
3. **developing spatial options** for action and area potentials for renewable energy sources in Austria on the basis of a **GIS approach. Strategies and recommendations** for the **placement, construction and operation** of PV and WE infrastructure will be developed and passed on to **political decision-makers, energy suppliers** and other interested **stakeholders**.

PROGRESS



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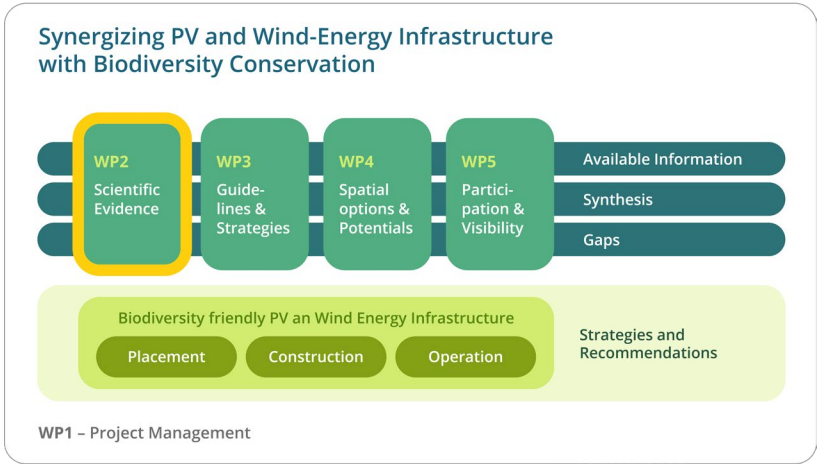
WP 2: Scientific evidence

Evidence-based compilation of negative, neutral, and positive impacts of PV and WE infrastructure and necessary transmission infrastructure on biodiversity, based on international meta-studies as well as national and international key peer-reviewed studies.

- **Development of search terms and strings** to reach the best search comprehensiveness and accuracy
- Definition of systematic **screening and review process**



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= ((photovoltaic$ OR "solar panel$" OR "solar array$" OR "solar development$" OR "solar power" OR "solar park$" OR "solar installation$" OR "solar facilit*" OR "solar plant$" OR "utility-scale solar energ*" OR "utility scale solar energ*" OR biosolar OR "float* solar" OR floatovoltaic$) AND (biodiversity OR ecolog* OR ecosystem$ OR wildlife OR "natural habitat$" OR species OR flora OR vegetation$ OR animal$ OR fauna OR vertebrate$ OR mammal$ OR bird$ OR reptile$ OR amphibian$ OR invertebrate$ OR arthropod$ OR insect$ OR arachnid$ OR crustacean$ OR mollus* OR microbi* OR bacteri* OR microorganism$ OR fung*))

Lafitte et al (2023)

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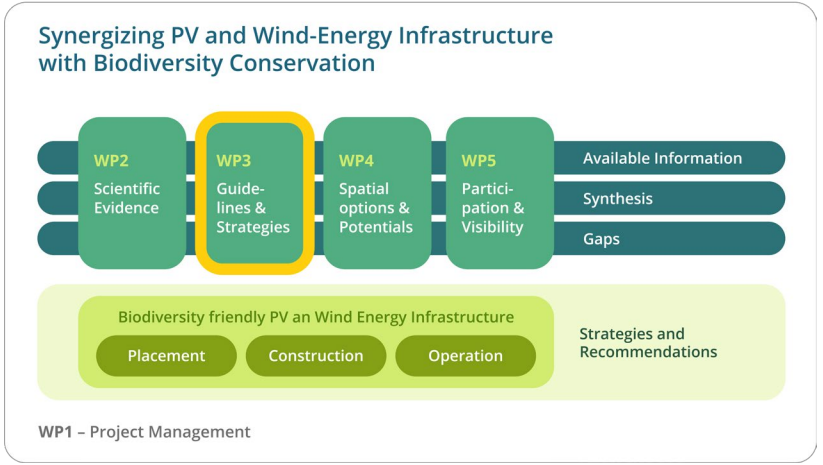
WP 3: Guidelines and Strategies

Synthesized national, European, and international guidelines and strategies on synergies and minimizing the negative impacts of PV and WE infrastructure on biodiversity

- **Literature research** of available national and international guidelines and practical strategies
- Definition of **criteria for evaluation and comparison**



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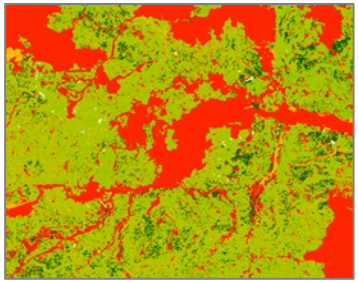
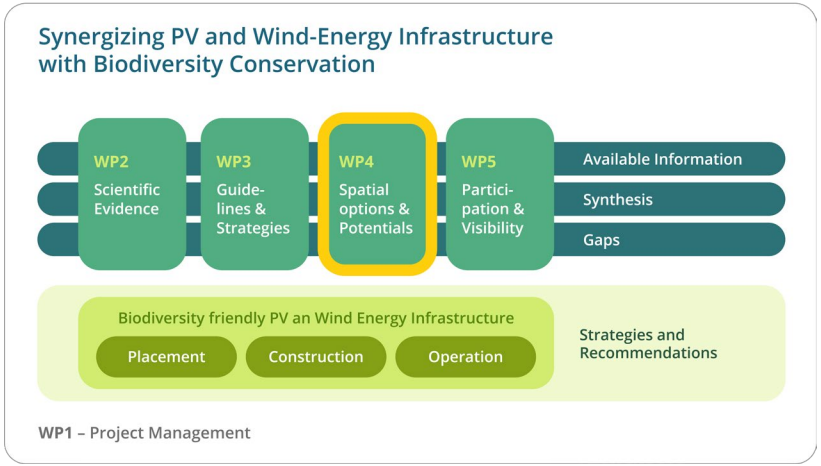
WP 4: Spatial Options and Potentials

Providing a map-based assessment of risk associated with designated and potential areas for PV and WE infrastructure on biodiversity in Austria.

- **Selection and classification of relevant geodata** regarding the suitability for placing PV and WE infrastructure with regard to the impact on species, species groups, habitats, and the integrity of the ecological network

	PV	WE
Bericht nach Artikel 17 der FFH-Richtlinie	4	3
Biodiversitätshotspots	4	4
Natura-2000: EU-Vogelschutzgebiete	2	4
Natura-2000: FFH-Gebiete	4	3
FFH-Schutzgutvorkommen außerhalb von Natura 2000	4	2
Naturschutzgebiete	3	2
Nationalparke	4	4
Flächige Naturschutzdenkmäler	2	2
Geschützte Landschaftsteile	3	3
Landschaftsschutzgebiete	3	3
Naturparke	2	2
Wildnisgebiete	4	4
Biosphärenreservate: Kernzone	4	4
Biosphärenreservate: Pflegezone	3	3
Biosphärenreservate: Entwicklungszone	2	2
Ramsar-Gebiete	4	4
Korridore Lebensraumvernetzung	3	2
High Nature Value Farmland	3	2
Feuchtgebietsinventar	4	3
Moorschutzkatalog	4	3





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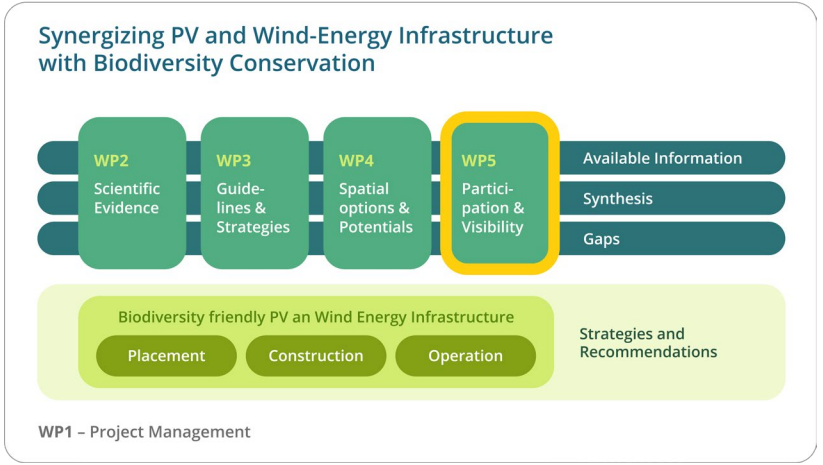
WP 5: Participation and Visibility

Involve relevant stakeholders in the development of the ‘Strategies and Recommendations’, produce practical and scientifically sound results, and disseminate project outputs.

- Planning of first **co-creation workshop** in May



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CONTACT & INFORMATION

Florian Danzinger

Team Remote Sensing

florian.danzinger@umweltbundesamt.at

www.umweltbundesamt.at

twitter.com/umwelt_at

www.linkedin.com/company/umweltbundesamt

24. Österreichischer Klimatag

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