

ABSCHLUSSVERANSTALTUNG 27. MAI 2026

Bezirksregierung Arnsberg, Walter-Lübcke-Saal





Tagesordnung

Projektabschluss & Transfer KNOWING: Ergebnisse für Südwestfalen

Ergebnisse aus dem KNOWING Projekt (10:30 – 12:00 Uhr)

Erkenntnisse, Ergebnisse aus den Projektregionen und Übertragbarkeit

- **KNOWING im Überblick:** Wie übersetzt das Projekt Klimaforschung in konkretes regionales Handeln? Mit einem Einblick in das Partnerprojekt NEVERMORE.
- **Von Klimarisiken zu wirksamen Maßnahmen:** Wie lassen sich Klimaanpassung, Klimaschutz, Katastrophenschutz, Lebensqualität und Artenvielfalt zusammendenken? Südwestfalen als eine von neun Projektregionen in Europa.
- **Ergebnisse, Verwertung und Übertragbarkeit:** Was wurde in den Projektregionen erreicht – und welche Ansätze lassen sich skalieren oder auf andere Regionen übertragen?
- **Diskussion:** „Was können europäische Verbundprojekte bewirken?“

Mittagspause (12:00 -12:45 Uhr) - *Zeit für Austausch und Vernetzung*

- für das leibliche Wohl ist gesorgt -

Ergebnisse für die Projektregion Südwestfalen (12:45 – 14:15 Uhr)

Spezifische Lösungen und Umsetzung in der Region

- **Energieregion Südwestfalen:** Was sagen die Ergebnisse der für Südwestfalen entwickelten Klimamodelle über die Zukunft unserer Projektregion aus?
- **Fokus „Wind im Wald“:** Wie kann der Ausbau von Windenergie im Wald mit besonderer Rücksicht auf Natur und Umwelt vollzogen werden?
- **KNOWING SWF-Broschüre „Windenergie im Wald“:** Eine Übersicht über die relevanten Genehmigungsverfahren und erforderliche Schutz- und Kompensationsmaßnahmen.
- **WirkungsWerkstatt:** Folgeprojekt aus KNOWING zur Stärkung von ehrenamtlichen Gruppen und Initiativen im Rahmen von Klimaschutz und Nachhaltigkeit.
- **Abschluss:** Austausch und Diskussion über die Ergebnisse und Erkenntnisse des Projekts.

Das Projekt www.knowing-climate.eu

- ⚙️ EU Horizont Projekt, GA Projekt 101056841
- ⚙️ Fördersumme 6.204.910,00 €
- ⚙️ Koordination: Austrian Institute of Technology AIT Wien
- ⚙️ Laufzeit 2022 – 2026 (48 Monate)
- ⚙️ 19 Partner aus 8 Ländern (6 EU, UK, Vietnam)



Funded by
the European Union





KNOWING – Aufgabenstellung



Framework for defining Climate Mitigation Pathways based On Understanding and Integrated Assessment of Climate Impacts, Adaptation Strategies and Societal Transformation

KNOWING entwickelte einen

- **Rahmen** zur Definition von **Klimaschutzpfaden**, in dem
- **Klimafolgen, Anpassungsstrategien** und
- **gesellschaftliche Transformationsprozesse** durch
- **integrierte Analysen, Modellierungen** und
- praktisches **Umsetzungswissen**

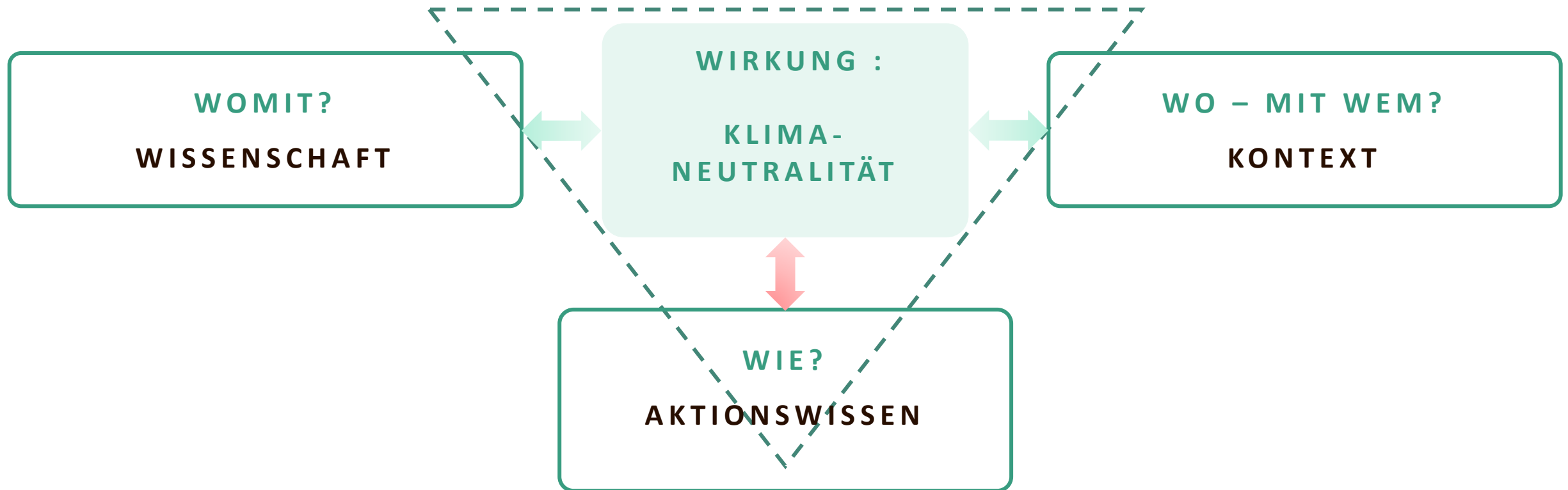
zusammengeführt wurden.





Transformationsprojekt

Rahmenwerk für sektorenüberschreitende **Auswirkungen**
und **Interaktionen**

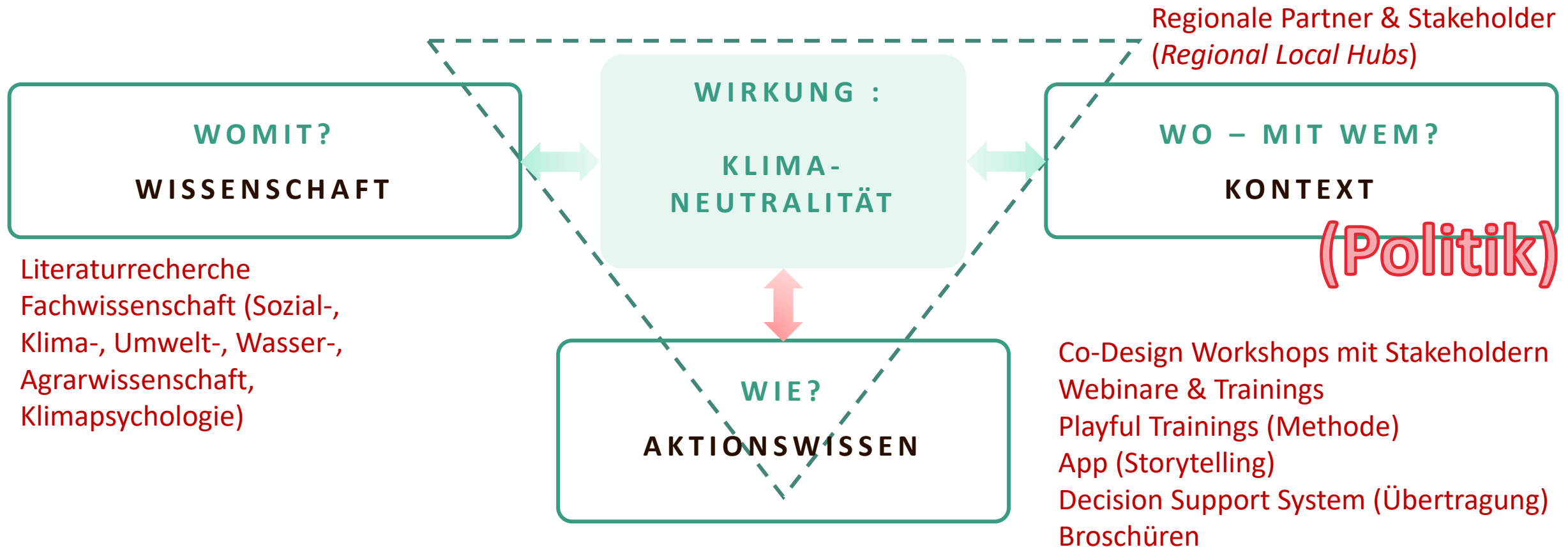




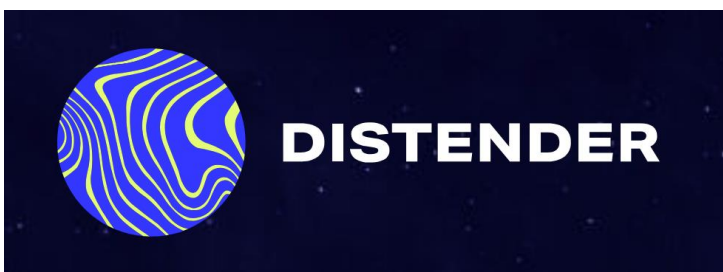
Transformationsprojekt



Rahmenwerk zur **Modellierung** sektoren-
überschreitender **Auswirkungen und Interaktionen**



Partnerprojekte



to distend - ausstrecken

2022 - 2026

<https://www.nevermore-horizon.eu/>

New Enabling Visions and tools for End-useRs and stakeholders thanks to a common **MO**deling appRoach towards a climatE neutral and resilient society

Neue Visionen und Instrumente für Endverbraucher und Interessengruppen dank eines gemeinsamen Modellierungsansatzes für eine klimaneutrale und resiliente Gesellschaft

2022 - 2025

<https://distender.eu/>

DevelopIng **ST**ratEgies by integrating mitigation**N**, a**D**aptation and participation to climate changE Risks

Strategien zur Minderung und Anpassung an Klimawandelrisiken



„Wicked Problem“ – verflixtes Knäuelproblem

- „Aus der wissenschaftlichen muss eine soziale Realität werden“
- „Bei einem Konflikt zwischen Fakten und Werten werden die Fakten verlieren“

„wicked problems“

- verflixt, unauflösbar komplex und mehrdeutig

„Komplexe Probleme sind nicht nur schwierig – sie sind schwer zu definieren und zu lösen“

Luciano Floridi, Ethics of Artificial Intelligence 2025)

„super- wicked problems“

- Zeitdruck, Solutionismus (Glaube an künftige Lösungen), keine zentrale Autorität, unscharfe Grenzen zwischen Problemverursachern und –lösern



Herausforderungen

wie sie im Projekt definiert werden

- ⚙️ Es gibt zahlreiche **sektorübergreifende Strategien**
 - ⚙️ Wie SECAP*, urbane / regionale Entwicklungsstrategien, Pläne für nachhaltige Mobilität,...
- ⚙️ **Mangelnde Kohärenz** zwischen den Strategien (oder sogar Widersprüche)
 - ⚙️ **Auswirkungen** der Maßnahmen unbekannt
 - ⚙️ Maßnahmen werden für einen Sektor (z. B. Verkehr) definiert => **sektorübergreifende Abhängigkeiten** werden nicht berücksichtigt
 - ⚙️ Maßnahmen sind definiert, werden aber nicht **umgesetzt**
 - ⚙️ Risiko, dass Anpassungsbemühungen den Klimawandel weiter vorantreiben (**Rebound-Effekte**)

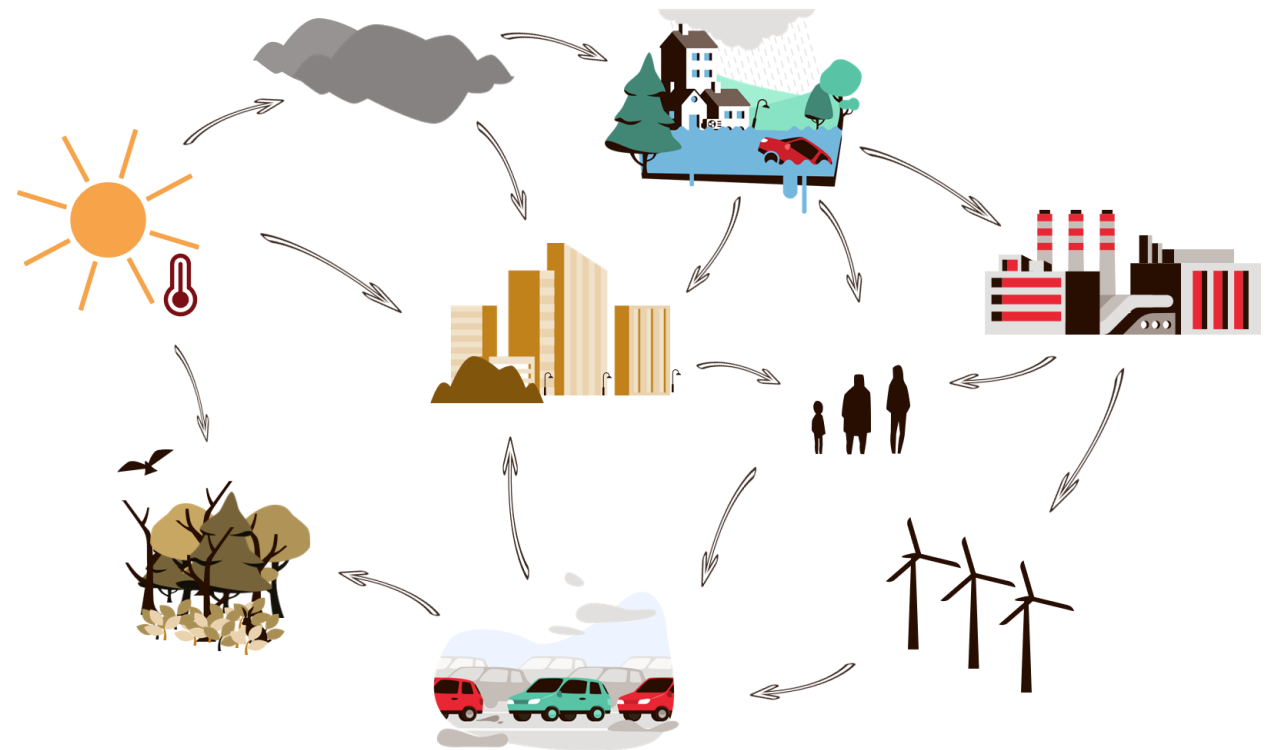


*Sustainable Energy and Climate Action Plan – Aktionsplan für nachhaltige Energie und Klima

Vermeidung sektoraler Klima-Nebeneffekte

Der KNOWING-Ansatz

- ⚙️ **Systemischer** Ansatz
- ⚙️ Sektorübergreifende **Modellierung**
- ⚙️ **Regionaler** Fokus
- ⚙️ **Übertragbare** Emissionsminderungsstrategien



Demonstratoren und Follower



- Follower
- 1 – Herzogtum Lauenburg
 - 2 – Valencia
 - 3 – Tirol
 - 4 – Zagreb County
 - 5 – Mekong Delta





Was macht KNOWING?



1. Unterstützung von Städten und Regionen, den Klimawandel besser **zu verstehen und darauf zu reagieren**
2. Entwicklung eines **Frameworks** zum Verständnis und zur Quantifizierung der Wechselwirkungen zwischen **den Auswirkungen des Klimawandels, Klimaschutzmaßnahmen und Anpassungsstrategien**
3. Fokus auf **drei Klima - Interaktionskontexte (CICs)**: Hitzewellen & Gesundheit, Landwirtschaft & Forste sowie Hochwasser & Infrastruktur (Fluss & Küste) in vier Demonstrationsregionen und fünf Follower-Gebieten
4. Identifizierung von **Klimaschutz- und Anpassungspfaden** anhand optimierter Kombinationen von Maßnahmen in verschiedenen Sektoren
5. Befähigung von Akteuren im öffentlichen, privaten und akademischen Sektor sowie von Bürgern durch **Sensibilisierung, Aufklärung und Tools zur Entscheidungshilfe**





Projektlaufzeit 2022 - 2026



Wissenschaft und Modellierung

- ⚙ Bestandsaufnahme der CIC*-bezogenen Maßnahmen
- ⚙ Typologie der psychologischen Bewältigungsstrategien zum Klimawandel
- ⚙ Sektorenmodelle u.a. Energie, Landnutzung, Hitze, Transport, Überflutungsrisiken
- ⚙ Modell zur Abschätzung von Wechselwirkung von Auswirkungen
- ⚙ Übertragbarkeitskonzept
- ⚙ CIC-Modellierungspfad

Tools, Methoden und Services

- ⚙ **KNOWING-App** – Gestalte deine Zukunft
- ⚙ **Playful Trainings** für Verständnis und Konfliktbewältigung
- ⚙ **Wissensdatenbank** für Klimainteraktionen
- ⚙ **Decision Support System** mit Pfaden zu Klimaschutz und Klimaanpassung und Übertragbarkeitsanalyse

*Climate Interaction Context – Interaktionsmuster in typisierten Klimaregionen

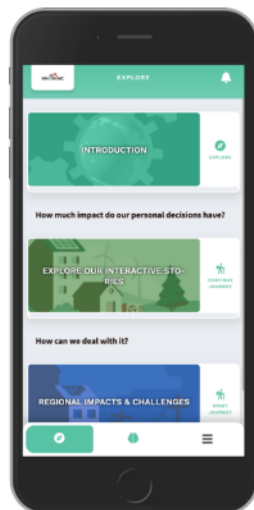


KNOWING – Tools und Zielgruppen



Wissensdatenbank

ALLE



Gestalte deine Zukunft - App



Zivilgesellschaft



Playful Trainings



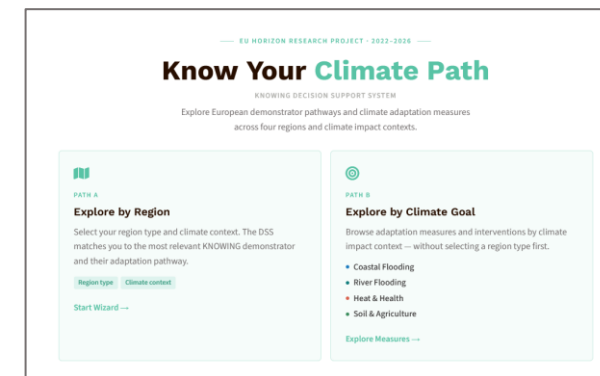
Wissenschaft & Bildung



Politische Entscheidungsträger & Verwaltungen



Zivilgesellschaft



Entscheidungshilfesystem



Politische Entscheidungsträger & Verwaltungen





Weitere Ergebnisse

- ⚙️ **Website** (www.knowing-climate.eu) – bis 2029 aktiv
- ⚙️ **22** (von 38) öffentlich verfügbare **Deliverables** zur KNOWING Forschung und den Ergebnissen wie Modellen, Tools und Services (<https://knowing-climate.eu/resources/>)
- ⚙️ **Blueprint** für das Stakeholder Engagement (<https://knowing-climate.eu/tools-and-services/>)
- ⚙️ **Broschüre SWF** „Windenergie im Wald“
- ⚙️ **Policy Briefs** - Hintergrundinformationen für die Politik (noch in Fertigstellung)
- ⚙️ **Blogs** zu Klimafragen
- ⚙️ Sehr viele **Posts** auf LinkedIn, Instagram, Bluesky, Fediverse
- ⚙️ Teilnahme an **Konferenzen** und Kongressen
- ⚙️ Austausch mit **Partner Projekten**



Partner Projekt NEVERMORE - 1

The project NEVERMORE

TOPIC: HORIZON-CL5-2021-D1-01-05
“Better understanding of the interactions between climate change impacts and risks, mitigation and adaptation options”

16 partners from 8 European Countries

Budget: €6.687.425,00

Length: 4 years
(June 2022 → May 2026)



ADVANCING: NEVERMORE Case Studies

- CS1 - Sitia Municipality, Crete (GR) - Island
- CS2 - Trentino Province (IT) - Mountain Region
- CS3 - Norrbotten County (SE) - Boreal Region
- CS4 - Murcia Region (ES) - Mediterranean Region
- CS5 - Danube Delta (RO) - Wetland

Relevant activities






- Identifying vulnerable sectors
- Defining climate hazards under different scenarios
- Calculating and understanding climate risks
- Selecting adaptation measures

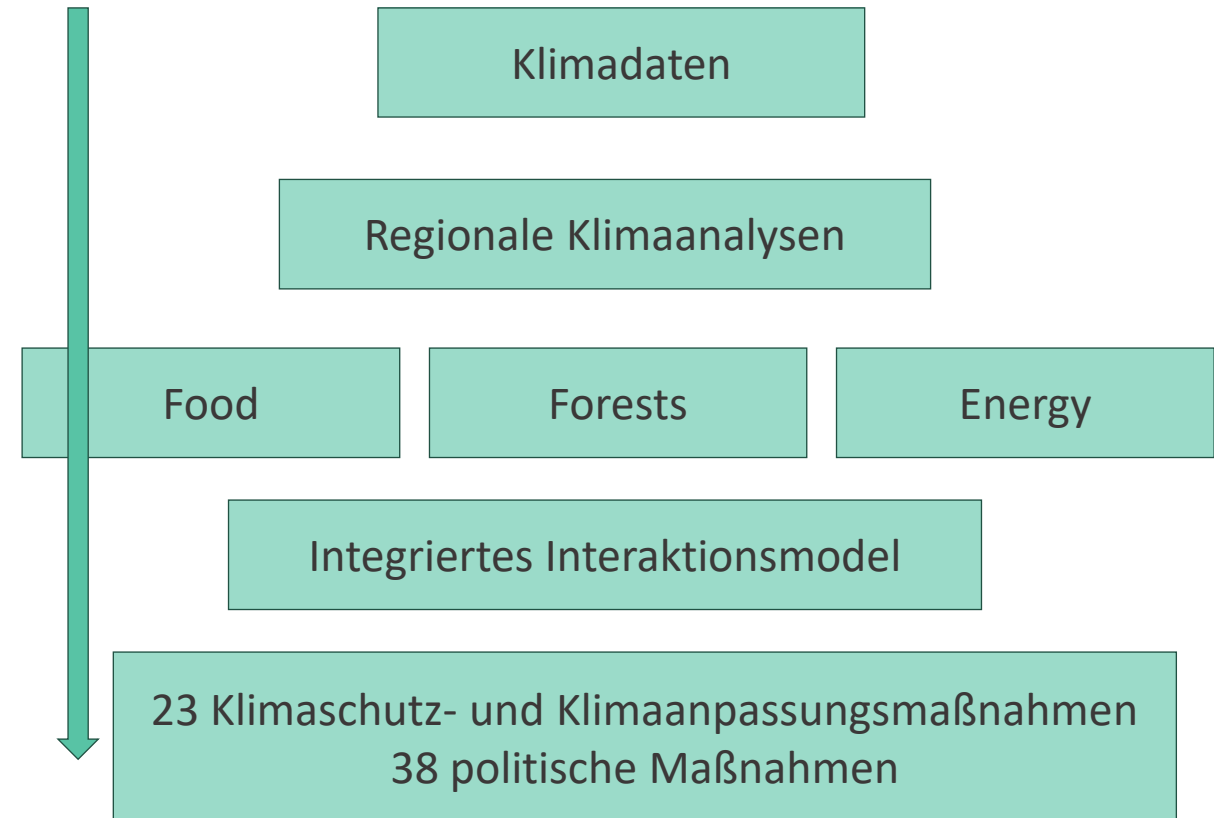




Partner Projekt NEVERMORE - 2

NEVERMORE-Säulen

-  **FÖRDERUNG** der Erarbeitung **gemeinsamer und interdisziplinärer Erkenntnisse zur Klimawissenschaft** unter Einbeziehung **zahlreicher Interessengruppen** in die wissenschaftliche Diskussion.
-  **BEWERTUNG** der durch den Klimawandel verursachten Auswirkungen, Risiken und Anfälligkeiten mithilfe ein **globalen/EU-IAM (WILIAM) und lokaler Modelle**.
-  **Unterstützung** von Entscheidungsträgern in ihrem **Entscheidungsprozess** durch die Bereitstellung **1. technologischer und benutzerfreundlicher** , um die Ergebnisse der Modellierungsaktivitäten zu visualisieren, sowie **technische und politische Empfehlungen auf globaler/EU- und lokaler Ebene**, damit fundiertere Entscheidungen getroffen werden können.
-  **INFORMIERUNG** der Bürger über die **Ursachen des Klimawandels** und Bereitstellung **technologischer und benutzerfreundlicher Werkzeuge** zur Visualisierung der Auswirkungen und Zukunftsszenarien.
-  **VERBREITUNG** der Forschungsergebnisse durch die Förderung **internationaler Zusammenarbeit** und den **Aufbau von Partnerschaften** mit anderen EU-Forschern, Interessengruppen und Endnutzern.





KNOWING und NEVERMORE

Klimaschutz, Klimaanpassung, Katastrophenschutz, Lebensqualität, Artenvielfalt & Wirtschaft

Zusammen 9 Demonstratorregionen



EU Ziel: Klimaneutralität 2050

- Regionale Herausforderungen
 - Auswirkungen des Klimawandels
 - wirtschaftliche Herausforderungen
 - politische Verschiebungen

Aktivierung und Empowerment

- Government & Governance
- Verwaltung & Politik
- Stakeholder
- Zivilgesellschaft



Diskussion zur Übertragbarkeit

⚙️ Quantitative Methode

- ⚙️ „**Push – Methode**“ (Schaut mal, was wir zu bieten haben!)
- ⚙️ „**Pull – Methode**“ (Ich schau mal, wessen Erfahrung uns helfen kann.)

Push - Methode

- Konferenzen veranstalten und Zielgruppen definieren
- Projektpartner finden
- Region international bekanntmachen

„fordernd“

Pull - Methode

- Strategien entwickeln
- Erfahrungswerte sammeln
- Umsetzungsstrategien beschleunigen
- Barrieren abbauen

„einladend“

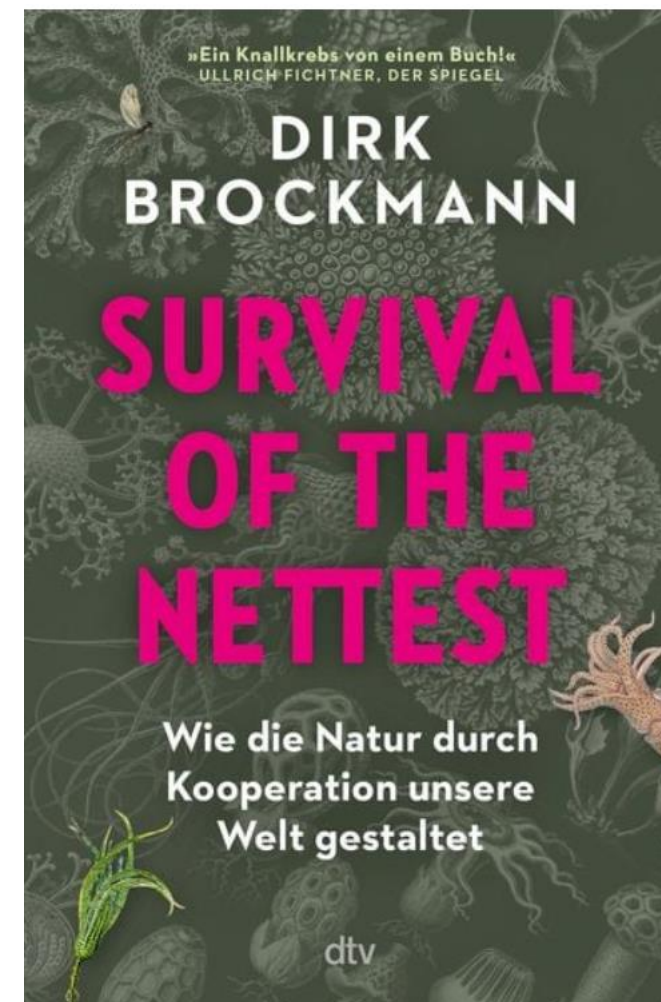
Lernen als Gesellschaft

Biophysiker **Dirk Brockmann** in seinem Buch (2025):

Außerirdische beobachten das Leben auf unserem Planeten und sind von einer bestimmten Spezies besonders fasziniert:

Diese Spezies wirkt äußerst gut organisiert, sozial und technologisch versiert. Sie lebt in riesigen Kolonien, kommuniziert intensiv, teilt die Arbeit in spezialisierte Rollen auf, errichtet komplexe Infrastrukturen, kümmert sich um ihren Nachwuchs, züchtet andere Lebensformen und hält sogar Haustiere. Gleichzeitig ist sie geprägt von strengen Hierarchien, Militarisierung, territorialer Expansion und extremer Gewalt gegenüber rivalisierenden Gruppen...

... und beschreibt dabei Ameisengesellschaften!



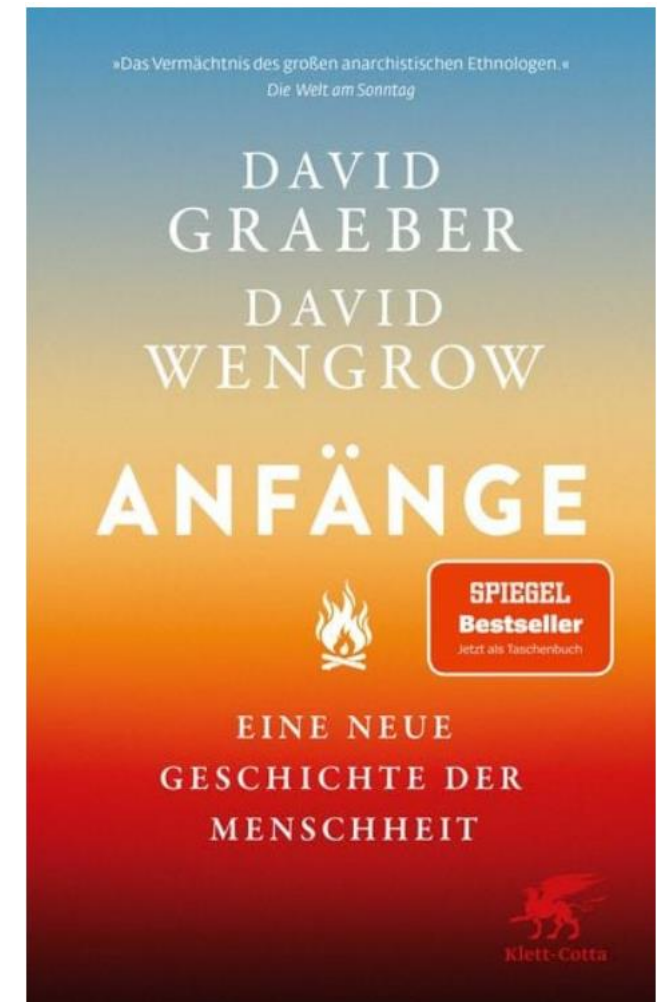
Survival of the Nicest – how nature creates our world through cooperation



Anthropologie David Graeber and Archäologe David Wengrow (2021):

Menschlichen Gesellschaften haben nicht alle denselben Weg von „primitiven“ Anfängen hin zu komplexen Zivilisationen eingeschlagen. Im Laufe von Zehntausenden von Jahren probierten die Menschen viele verschiedene Formen der sozialen Organisation aus: kleine und große Gruppen, nomadische und sesshafte Gemeinschaften, egalitäre und hierarchische Ordnungen, saisonale Wechsel zwischen Autorität und Autonomie...

... was unseren Glauben an den linearen Fortschritt zutiefst erschüttert!





Das Not-Invented-Here Syndrom

HERAUSFORDERUNG: Externe Projektergebnisse stoßen auf Widerstand, da sie nicht innerhalb der Empfängerregion oder -institution entwickelt wurden (falsche chemische Marker)

WARUM?

Zweifel an der Eignung für den jeweiligen Kontext, Bevorzugung eigener Lösungen, unzureichender Nachweis des lokalen Nutzens

EFFEKT:

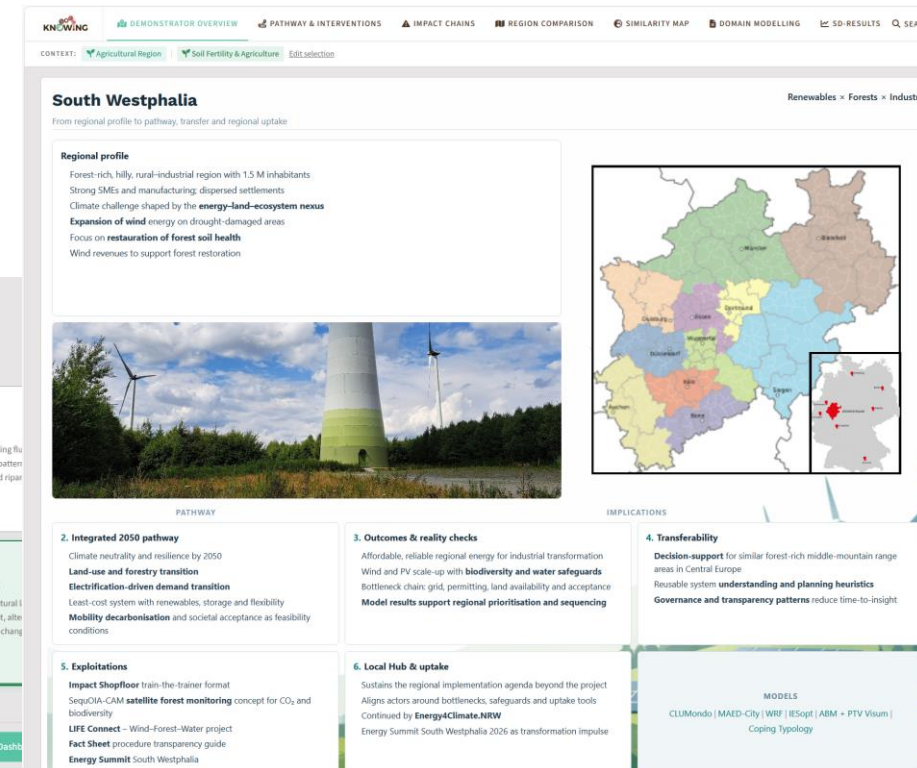
- Geringe Akzeptanz
 - Duplizierung statt Wiederverwendung
 - Schlechtere Skalierbarkeit und Replikation
- „Schismogenese“ (Gregory Bateson): „sei anders!“



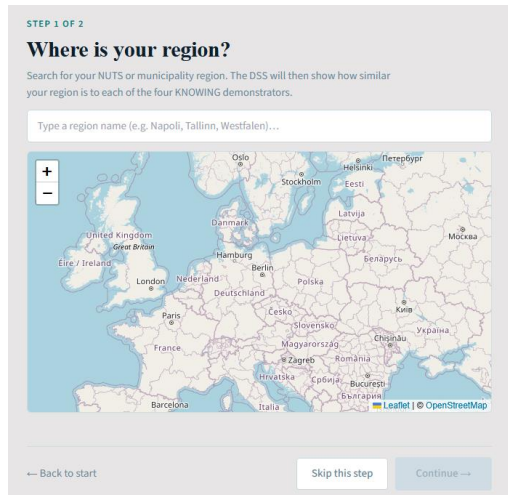
Übertragbarkeit „quantitativ“ „q- 1

Decision Support Service - DSS <https://knowing-climate.eu/tools-and-services/decision-support-service/>

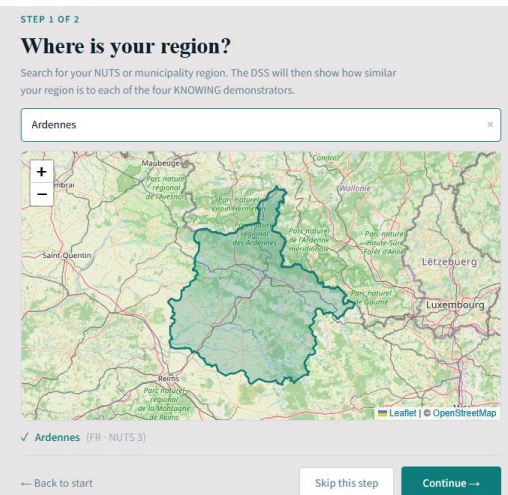
Schnelle Identifikation der wichtigsten Bausteine des KNOWING-Projekts zur Unterstützung eigener Klimainitiativen und –strategien.



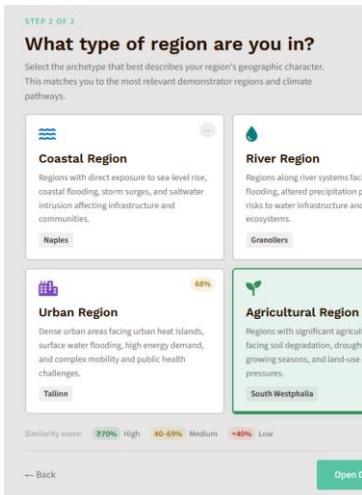
The screenshot shows the 'South Westphalia' region profile in the KNOWING DSS. The interface includes a navigation bar with options like 'DEMONSTRATOR OVERVIEW', 'PATHWAY & INTERVENTIONS', and 'IMPACT CHAINS'. The main content area is titled 'South Westphalia' and includes a 'Regional profile' section with text about the region's characteristics (e.g., 'Forest-rich, hilly, rural-industrial region with 1.5 M inhabitants'). Below this is a 'PATHWAY' section with a photo of wind turbines and a '2. Integrated 2050 pathway' section. To the right, there is a '3. Outcomes & reality checks' section and a '4. Transferability' section. At the bottom right, there is a '6. Local Hub & uptake' section and a 'MODELS' section listing various tools like CLUMondo and MAED-City.



This screenshot shows the first step of the DSS: 'Where is your region?'. It prompts the user to search for their NUTS or municipality region. A search bar contains the text 'Type a region name (e.g. Napoli, Tallinn, Westfalen)...'. Below the search bar is a map of Europe with various regions highlighted. At the bottom, there are buttons for 'Back to start', 'Skip this step', and 'Continue'.



This screenshot shows the same 'Where is your region?' step, but with 'Ardennes' entered in the search bar. The map now highlights the Ardennes region in France. At the bottom, the text 'Ardennes (FR - NUTS 3)' is visible, and the 'Continue' button is highlighted in green.



This screenshot shows the second step of the DSS: 'What type of region are you in?'. It prompts the user to select the archetype that best describes their region's geographic character. There are four options: 'Coastal Region', 'River Region', 'Urban Region', and 'Agricultural Region'. The 'Agricultural Region' option is selected, and the 'South Westphalia' region is highlighted in green. At the bottom, there is a 'Similarity score' bar and buttons for 'Back' and 'Open Dashboard'.

Übertragbarkeit „quantitativ“ - 2

Decision Support Service - DSS <https://knowing-climate.eu/tools-and-services/decision-support-service/>

KNOWING DEMONSTRATOR OVERVIEW PATHWAY & INTERVENTIONS IMPACT CHAINS REGION COMPARISON SIMILARITY MAP DOMAIN MODELLING SD-RESULTS SEARCH


CONTEXT: Agricultural Region | Soil Fertility & Agriculture [Edit selection](#)


South Westphalia Renewables > Forests > Industry

From regional profile to pathway, transfer and regional uptake

Regional profile

- Forest-rich, hilly, rural-industrial region with 1.5 M inhabitants
- Strong SMEs and manufacturing, dispersed settlements
- Climate challenge shaped by the **energy-land-ecosystem nexus**
- Expansion of wind energy** on drought-damaged areas
- Focus on **restoration of forest soil health**
- Wind revenues to support forest restoration





PATHWAY

IMPLICATIONS

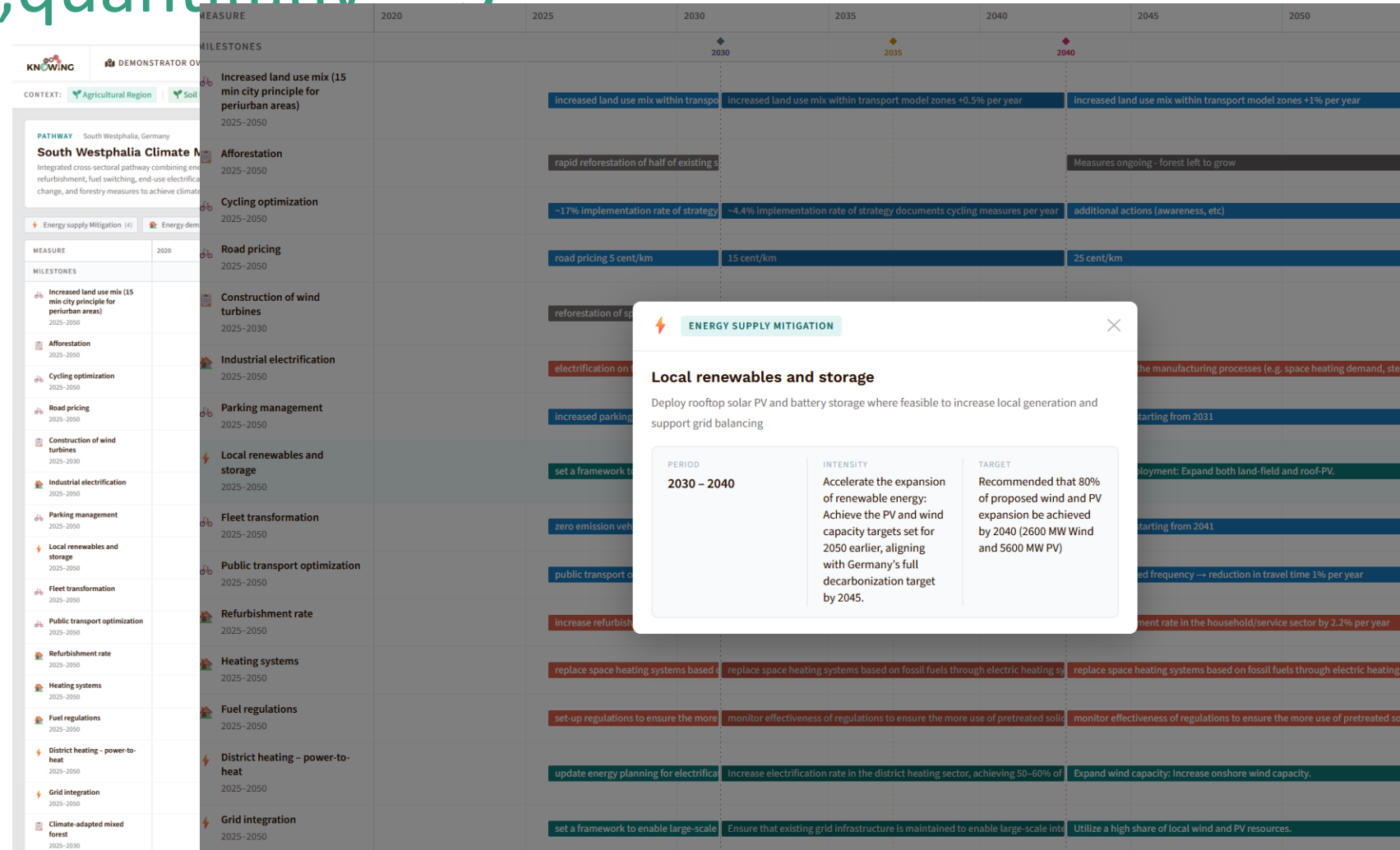
<p>2. Integrated 2050 pathway</p> <p>Climate neutrality and resilience by 2050</p> <p>Land-use and forestry transition</p> <p>Electrification-driven demand transition</p> <p>Least-cost system with renewables, storage and flexibility</p> <p>Mobility decarbonisation and societal acceptance as feasibility conditions</p>	<p>3. Outcomes & reality checks</p> <p>Affordable, reliable regional energy for industrial transformation</p> <p>Wind and PV scale-up with biodiversity and water safeguards</p> <p>Bottleneck chain: grid, permitting, land availability and acceptance</p> <p>Model results support regional prioritisation and sequencing</p>	<p>4. Transferability</p> <p>Decision-support for similar forest-rich middle-mountain range areas in Central Europe</p> <p>Reusable system understanding and planning heuristics</p> <p>Governance and transparency patterns reduce time-to-insight</p>
<p>5. Exploitations</p> <p>Impact Shopfloor train-the-trainer format</p> <p>SequoIA-CAM satellite forest monitoring concept for CO₂ and biodiversity</p> <p>LIFE Connect - Wind-Forest-Water project</p> <p>Fact Sheet procedure transparency guide</p> <p>Energy Summit South Westphalia</p>	<p>6. Local Hub & uptake</p> <p>Sustains the regional implementation agenda beyond the project</p> <p>Aligns actors around bottlenecks, safeguards and uptake tools</p> <p>Continued by Energy4Climate.NRW</p> <p>Energy Summit South Westphalia 2026 as transformation impulse</p>	<p style="text-align: center; font-size: small;">MODELS</p> <p style="text-align: center; font-size: x-small;">CLIMondo MAED-City WRF ESopt ABM + PTV Visum Coping Typology</p>

Übersicht des Demonstrators

Übertragbarkeit „quantitativ“ - 3

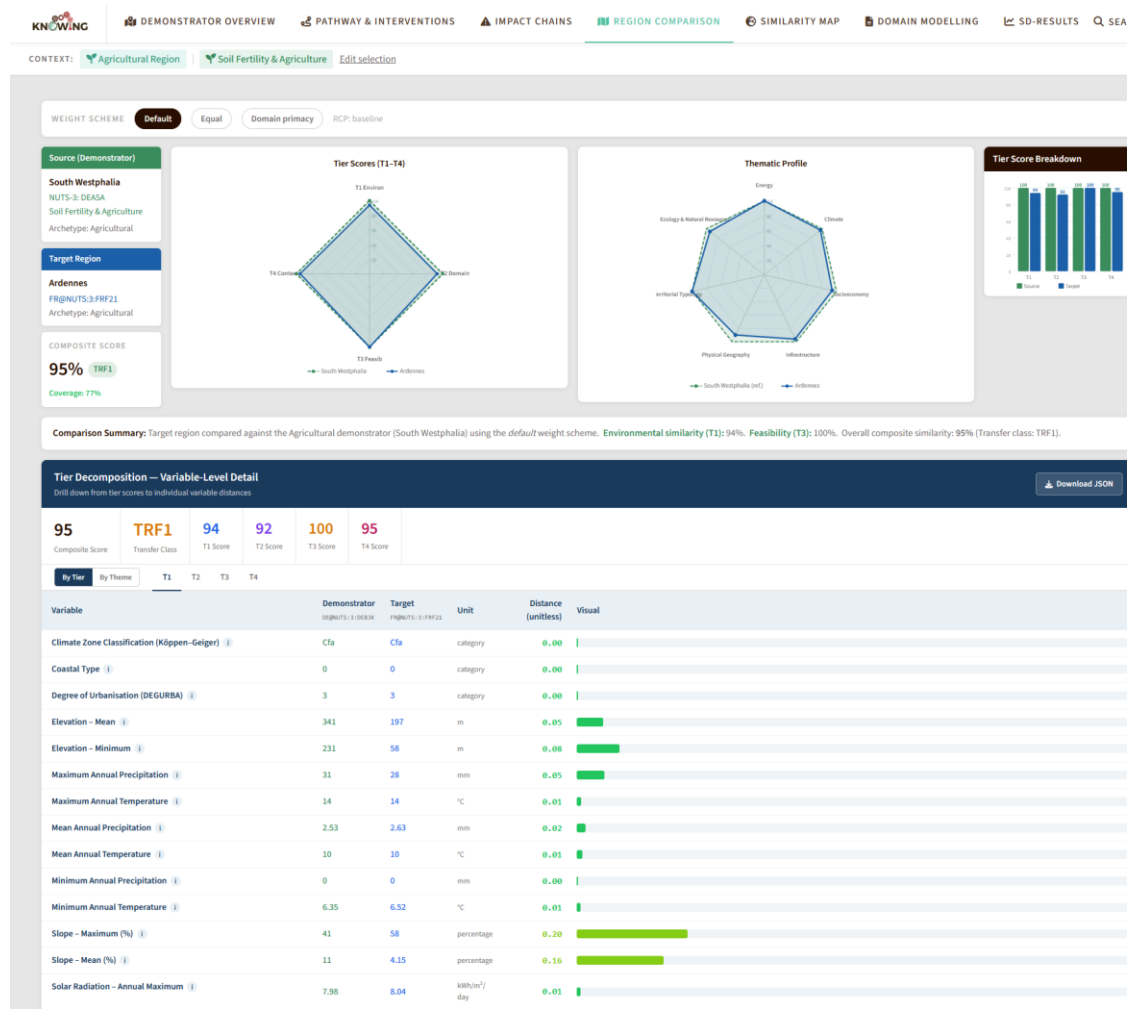
Decision Support Service - DSS

Klimapfad und Maßnahmen



Übertragbarkeit „quantitativ“ - 4

Decision Support Service - DSS



Grad der regionalen Vergleichbarkeit
Auswertung von 124 Kriterien

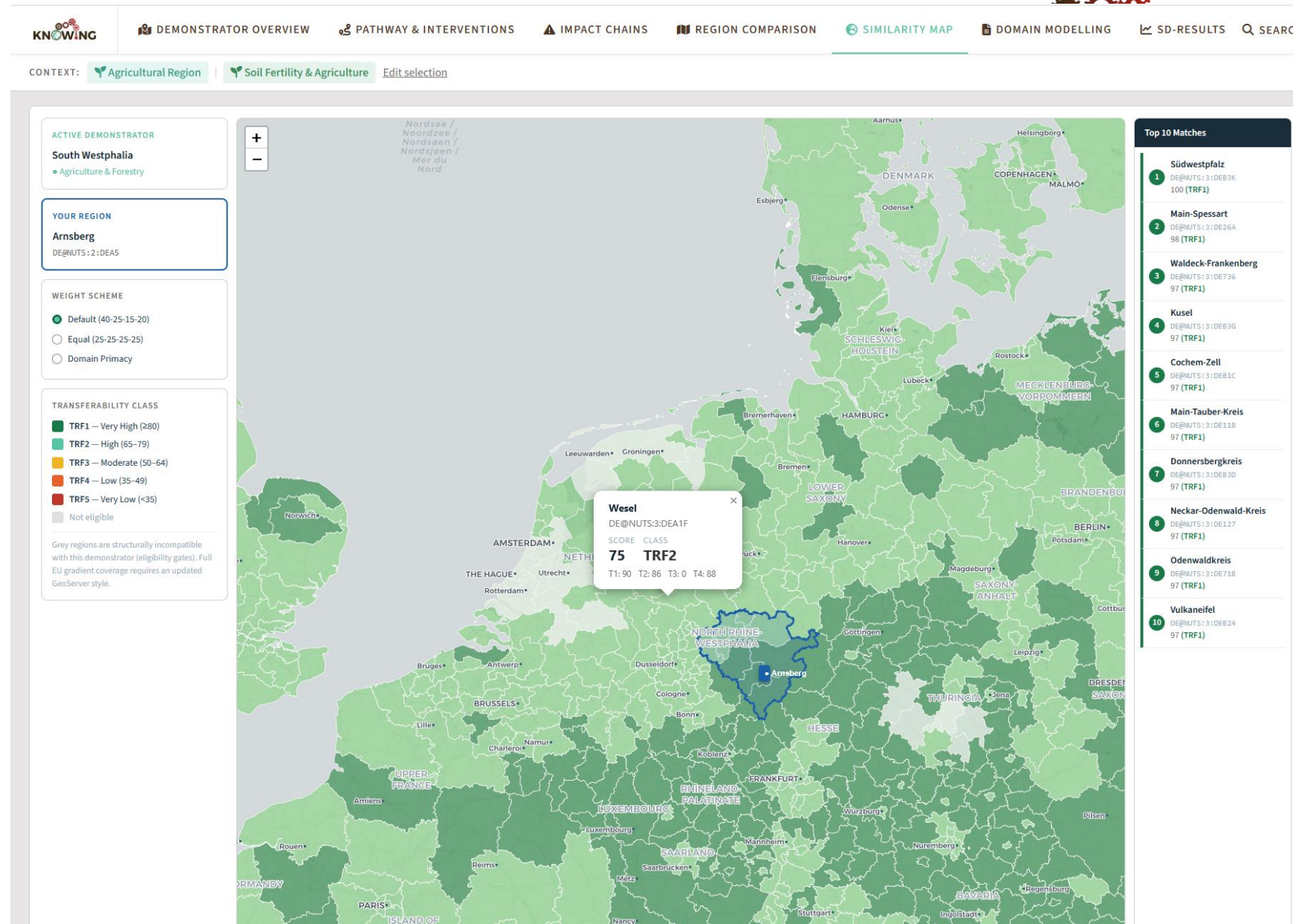
- Topografie, Demografie, Wirtschaft, Regionalklima, Bewaldung....

Übertragbarkeit

Decision Support Service - DSS

Hohe Vergleichbarkeit mit der
Sucherregion

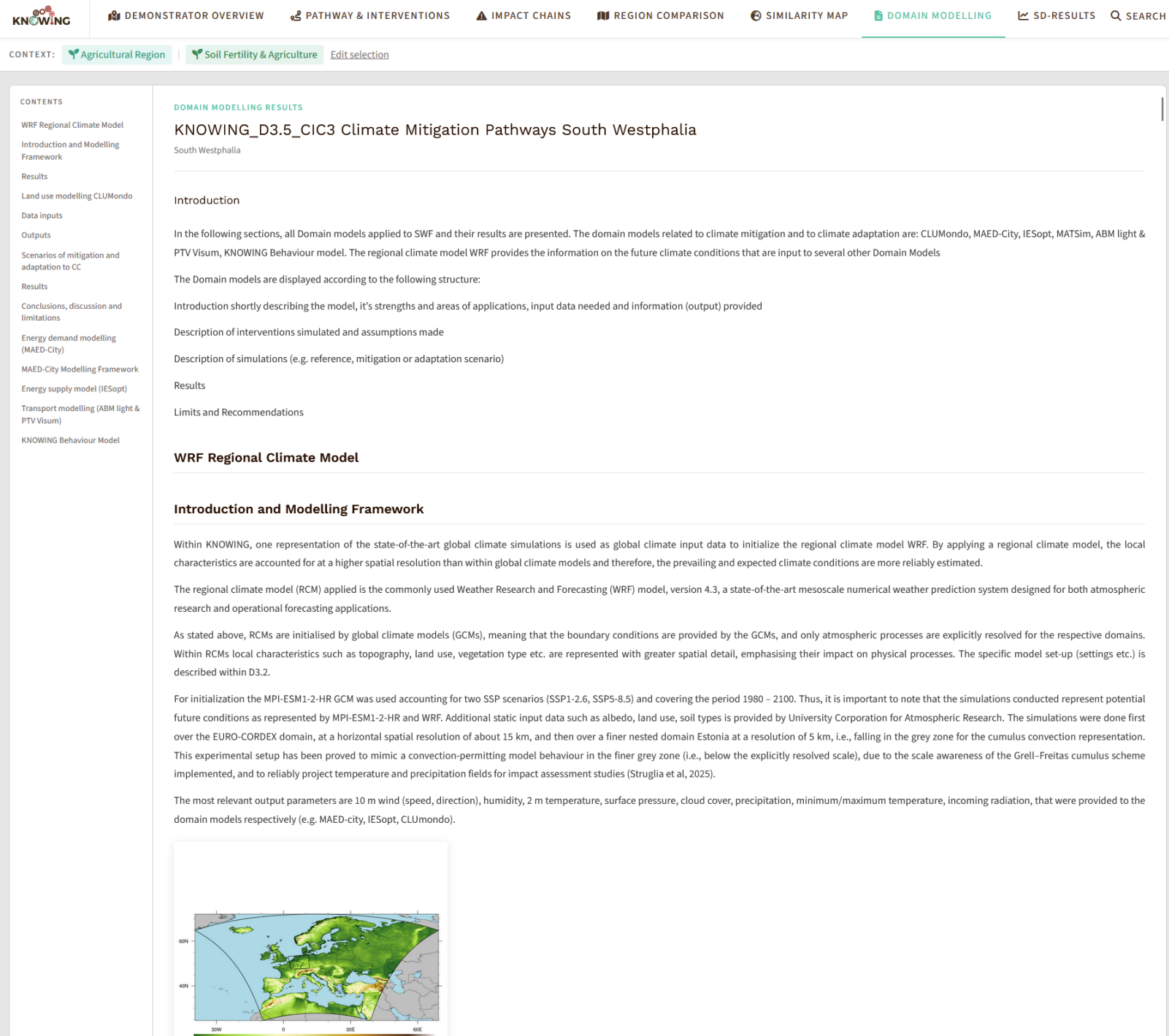
(Südwestfalen = „Arnsberg“)



Übertragbarkeit „q

Decision Support Service - DSS

Beschreibung der verwendeten Modell und deren Ergebnisse in einem „Deliverable“ (>100 Seiten)



The screenshot displays the KNOWING website interface. At the top, navigation links include DEMONSTRATOR OVERVIEW, PATHWAY & INTERVENTIONS, IMPACT CHAINS, REGION COMPARISON, SIMILARITY MAP, and DOMAIN MODELLING. The current page is titled 'CONTEXT: Agricultural Region | Soil Fertility & Agriculture'. The main content area is titled 'DOMAIN MODELLING RESULTS' and 'KNOWING_D3.5_CIC3 Climate Mitigation Pathways South Westphalia'. A left sidebar lists the 'CONTENTS' of the report, including sections like 'WRF Regional Climate Model', 'Introduction and Modelling Framework', 'Results', 'Land use modelling CLUMondo', 'Data inputs', 'Outputs', 'Scenarios of mitigation and adaptation to CC', 'Energy demand modelling (MAED-City)', 'MAED-City Modelling Framework', 'Energy supply model (IESopt)', 'Transport modelling (ABM light & PTV Visum)', and 'KNOWING Behaviour Model'. The main text under 'Introduction' states: 'In the following sections, all Domain models applied to SWF and their results are presented. The domain models related to climate mitigation and to climate adaptation are: CLUMondo, MAED-City, IESopt, MATSim, ABM light & PTV Visum, KNOWING Behaviour model. The regional climate model WRF provides the information on the future climate conditions that are input to several other Domain Models'. It further details the structure of the domain models, the introduction of the model, and the description of interventions and simulations. A section titled 'WRF Regional Climate Model' follows, with an 'Introduction and Modelling Framework' section. This section explains that the WRF model is initialized with global climate data from MPI-ESM1-2-HR and covers the period 1980-2100. It notes that the simulations represent potential future conditions and were conducted over the EURO-CORDEX domain at a 15 km resolution, with a finer nested domain at 5 km. The experimental setup is designed to mimic a convection-permitting model. The most relevant output parameters listed are 10 m wind (speed, direction), humidity, 2 m temperature, surface pressure, cloud cover, precipitation, and minimum/maximum temperature and incoming radiation.



Übertragbarkeit „qualitativ“ – 1

STORYTELLING

Canvasses

South Westphalia

From regional profile to pathway, transfer and regional uptake

Renewables × Forests × Industry

Regional profile

- Forest-rich, hilly, rural-industrial region with 1,5 million inhabitants
- Strong SMEs and manufacturing; dispersed settlements
- Climate challenge shaped by the energy-land-ecosystem nexus
- Expansion of wind energy on drought-damaged areas
- Focus on restoration of forest soil health
- Wind revenues to support forest restoration

2. Integrated 2050 pathway

- Climate neutrality and resilience by 2050
- Land-use and forestry transition
- Electrification-driven demand transition
- Least-cost system with renewables, storage and flexibility
- Mobility decarbonisation and societal acceptance as feasibility conditions

3. Outcomes & reality checks

- Affordable, reliable regional energy for industrial transformation
- Wind and PV scale-up with biodiversity and water safeguards
- Bottleneck chain: grid, permitting, land availability and acceptance
- Model results support regional prioritisation and sequencing

4. Decision support

- mid-to-mountain range areas in Europe
- Reusable system understanding and planning heuristics
- Governance and transparency patterns reduce time-to-impact

5. Exploitations

- Impact Snapshot train-the-trainer format
- SciESIA-CAM satellite forest monitoring concept for CO₂ and biodiversity
- LIFE Connect – Wind-Forest-Water project
- Fact sheet procedure transparency guide
- Energy Summit South Westphalia

6. Local Hub & Uptake

- network of hubs for the design and implementation of individual exploitations
- Connecting actors around concrete follow-up actions, governance needs and implementation opportunities

Models: CLUMondo | MAED-City | WRF | IESOpt | ABM + PTV Visum | Coping Typology

Tallinn

From regional profile to pathway, transfer and regional uptake

Urban Heat × Green Infrastructure

Regional profile

- Mid-sized Northern European capital with district heating, high car dependency and growing urban heat stress
- Climate action reframed around health, affordability and service reliability
- Integrated pathway bundling mobility decarbonisation, energy transition and urban heat adaptation
- Nature-based solutions targeted at heat hotspots: schools, transit nodes, elderly care facilities
- Reference for Baltic and Central-Eastern European cities with district heating, car-dependent mobility and rising heat risks

2. Integrated 2050 pathway

- Integrated approach connecting mobility decarbonisation, energy transition and urban heat adaptation
- Mobility packages modified with behavioral wellness
- Energy demand projected to 2050 (incl. business-as-usual road/growth), hourly profiles optimized for cost and resilience
- Urban heat hotspots mapped at high resolution to target greening and de-welving where it matters most

3. Outcomes & reality checks

- Modeling mobility transitions that account for behavioral response and end-user needs
- Heat adaptation prioritizes public-service facilities
- For financing breaks the bundle politically defensible reliability
- Social response analysis helps anticipate resistance and avoid backfire effects in implementation

4. Transferability

- Transferable as a 'bundle' of legible evidence + reference templates for cities where climate action needs political repackaging
- Mobility, energy and heat evidence integrated into one coherent intervention narrative adaptable without full model rebuild
- Strong reference for Northern, Baltic and Central-Eastern European cities with district heating, car dependence and rising heat stress

5. Exploitations

- Heat hotspot targeting package: prioritization guidance for culture-based interventions at public-service locations
- Climate proofing map (COP) integrates climate layers into planning and permitting workflows
- Policy brief templates for co-financing the bundle via health, affordability and resilience arguments
- Engagement tools: Shape your Future App and Playful Trainings for stakeholder communication and feedback

6. Local Hub & uptake

- Hub connects existing expertise to budget authorities and service owners across departments
- Continuity ensured by embedding the intervention bundle in annual budget and investment programming
- Heat maps and hotspot data integrated into planning standards and digital works guidance
- Resilient engagement cycle (challenge + expert keeps stakeholders aligned under shifting political priorities)

Models: ABM light + PTV Visum | WRF | PALM-4U | IESOpt | MAED-City | SD Model | Coping Typology



Übertragbarkeit „qualitativ“ – 2

STAKEHOLDER BLUEPRINT <https://knowing-climate.eu/tools-and-services/>

Regional Vision WS

PRE-WS
Pre-activity



STEP 1 stakeholder tailored info-package

STEP 2 preparatory survey

Regional Vision WS Objective

1. Exploring stakeholder interests
**via online survey*
2. Co-creating a climate vision
integrating mitigation, adaptation and resilience.
3. Introducing back into the process
initial mapping of the situation and long-term (2040-2050) vision.

Regional Vision WS Objective

A. A poster illustrating the vision

B. A timeline of the vision

Pre-activity Invitation
(one month before)

SAVE-THE-DATE: MESSAGE FOR INVITATION

[PROJECT NAME]

In our Challenge Workshop on [date] we intend to create a shared vision for the city of Napoli, that will be the basis for the development of the city's climate adaptation strategy. This workshop will be a key step in the process of co-creating a shared vision for the city of Napoli, that will be the basis for the development of the city's climate adaptation strategy.

How can this VISION create synergies with the city's strategy?

How can it frame and influence the city's climate adaptation strategy?

Pre-activity Invitation
(one month before)

STAKEHOLDER-TAILORED INFO-PACKAGE

OVERVIEW VISION WS

Il Vision Workshop

Il Vision Workshop all'interno del progetto KNOWING è un'attività che ha come obiettivo principale quello di coinvolgere i cittadini nella definizione di una visione condivisa e ambiziosa per il futuro climaticamente resiliente della città di Napoli, che possa rappresentare un esempio nel contesto delle città costiere nell'Europa Mediterranea. Questo processo di co-creazione mira a integrare azioni specifiche e complementari in diversi settori, considerando le sfide legate al cambiamento climatico e alla transizione energetica, per costruire un consenso sulla direzione futura, promuovendo una visione integrata e sostenibile per affrontare gli impatti climatici e le sfide legate alla decarbonizzazione, favorendo al contempo trasformazioni urbane volte al miglioramento della qualità della vita per le comunità locali.

Obiettivi del Vision Workshop

- Comprendere le attuali strategie e visioni degli stakeholder in relazione al clima e alla resilienza.
- Sviluppare una visione condivisa per la resilienza climatica per la città di Napoli, intesa come capacità di raggiungere obiettivi di mitigazione e adattamento climatico rispondendo al contempo alle principali sfide socio-economiche e ambientali locali.
- Esaminare come la visione proposta si integri con le strategie, gli obiettivi e le azioni degli stakeholder presenti, identificando potenziali sinergie, ma anche eventuali ostacoli o limitazioni.
- Articolare gli obiettivi e le azioni individuali in una possibile timeline temporale (2030-2050).

Example: NAPOLI INFO-PACKAGE

RECAP KICK OFF – CHALLENGE WORKSHOPS

Pre-activity STEP 0

AGENDA

Warm up lunch 30'

Step 1 Vision 70'

Step 2 Timeline 70'

AGENDA

13:00 Light Lunch

SINTESI INFORMATIVA

13:30 Benvenuto e introduzione al Vision Workshop
Sintesi dei risultati del Napoli Regional Hub Challenge Workshop e della survey online

SESSIONI COLLABORATIVE

14:00 Co-creazione della Vision per Napoli 2050

14:40 Break

14:50 Timeline per la Vision: interventi, sinergie e ostacoli

CONCLUSIONI

15:30 Discussione finale

16:00 Chiusura lavori

EXAMPLE OF AGENDA AND EXCERPT OF INVITATION DOCUMENT



Was wurde in den anderen Regionen erreicht?



Granollers

Granollers

From regional profile to pathway, transfer and regional uptake

Flooding × Renaturalisation × Adaptation

Regional profile

- Mid-sized urban-industrial city (~60,000 inhabitants) in Barcelona metropolitan corridor
- Dense urban fabric with sealed surfaces + fragmented river ecosystem
- Climate challenge shaped by water-urban-infrastructure nexus (heatwaves + flooding)
- High flood risk from heavy rainfall + insufficient drainage capacity
- Focus on urban drainage transformation and nature-based solutions (NbS)
- Integration of river restoration, retention areas and green infrastructure



Granollers

From regional profile to pathway, transfer and regional uptake

Flooding × Renaturalisation × Adaptation

Pathway

Implications

2. Integrated 2050 pathway

- Climate adaptation-mitigation integration via SECAP-linked implementation
- Risk-driven pathway: flood (pluvial/river) + urban heat as entry points
- SUDS/NbS first-line approach: de-sealing, retention, urban & river greening
- Model-based prioritisation (WRF, ICM InfoWorks, PALM-4U, SD)
- Societal response integrated via coping typology & engagement tools

3. Outcomes & reality checks

- Risk hotspots translated into targeted intervention packages
- NbS reduce flood peaks + heat stress with co-benefits (health, biodiversity)
- Bottlenecks: data gaps, drainage limits, urban space constraints, acceptance
- Strong link of modelling results to municipal instruments (SECAP, DUPROCIM, SUDS)
- Engagement reduces implementation friction and response risks

4. Transferability

- Decision-ready analytics template for flood & heat risk + options testing
- Replicable SECAP-linked implementation workflows
- Transferable engagement & communication patterns (digital + facilitation)
- Applicable to Mediterranean mid-sized cities & shared river basins

5. Exploitations

- SECAP-SYF App for citizen engagement & feedback loops
- Integrated modelling evidence base for planning & decision-making
- Decision Support Service (DSS) for transfer & policy support
- Climate Coping Typology for acceptance-aware implementation
- Playful trainings for capacity building & climate literacy

6. Local Hub & uptake

- Regional hub for co-design, validation and implementation
- Aligns stakeholders across planning, risk, engagement and uptake
- Embeds tools into policy workflows and municipal practice
- Continued by Granollers City Council & Besòs-Tordera Consortium

Models

ICM InfoWorks | PALM-4U | WRF | IESopt | MAED-City | Coping Typology | System Dynamics SD Model

regional profile → pathway → outcomes → transfer → uptake

Granollers

Neapel

Naples

From regional profile to pathway, transfer and regional uptake

Regional profile

- Large coastal metropolitan city (~1 million inhabitants) with dense urban fabric and critical infrastructure
- Climate challenge shaped by **coastal flooding–infrastructure nexus** (sea-level rise, storm surges, heavy rainfall)
- High exposure to **compound flood risks** (coastal + pluvial) with major economic damage potential
- Focus on **integrated risk modelling** (e.g. SFINCS) and infrastructure adaptation pathways
- Use of nature-based coastal protection (e.g. seagrass, wetlands) + multi-level governance & stakeholder co-creation



Flooding × Sea level rise × Infrastructure

Naples

From regional profile to pathway, transfer and regional uptake

Flooding × Sea level rise × Infrastructure

Pathway

2. Integrated 2050 pathway

- Naples faces overlapping climate risks: coastal and urban flooding plus extreme heat. The pathway treats these as one interconnected challenge, not separate problems
- A suite of simulation models translates these risks into concrete decision support for city planners
- Two implementation clusters guide action through 2050: Climate Shelters (heat protection + social inclusion) and Renewable Energy Communities (local clean energy + participation)
- All measures are tied into Naples' existing municipal climate plan (SECAP) to ensure they are fundable and actionable

Implications

3. Outcomes & reality checks

- Climate risks are framed around cascading impacts on buildings, transport and public services, making them directly relevant to city decision-makers
- Flood response follows a "hybrid by default" rule: combining hard infrastructure with nature-based solutions
- Heat protection is treated as a social issue: Climate Shelters serve both as cooling refuges and inclusion infrastructure
- All results feed back into the official municipal climate planning process

4. Transferability

- Template for multi-hazard framing, cascading impacts and robust planning heuristics
- Two ready-to-adapt use-case packages (Climate Shelters; CER) – reusable without local model reruns
- Robust heuristics: hybrid flood adaptation; heat strategies targeting local amplification factors
- Institutional scaling via integration into a Territorial Information System across municipalities

5. Exploitations

- Climate Shelters package: governance model, inclusion criteria, building requirements, community outreach
- Renewable Energy Communities (CER) package: governance-first template with staged technical options
- Hybrid Flood Adaptation Playbook: grey infrastructure, NBS, depaving and planning instruments combined
- Heat Amplification Reduction Guidance: targeting logic for shading/greening with public health co-benefits
- SECAP/PAESC integration materials: decision briefs and roadmap structure for implementable measures

6. Local Hub & uptake

- Hub as coherence mechanism connecting modelling evidence to municipal planning
- Alignment across planning, risk, energy and stakeholder domains around implementable packages
- Continuation through embedding in municipal SECAP governance with defined next milestones
- Metropolitan upscaling via Territorial Information System for replication across municipalities

Models
SFINCS | WaveWatch III | WRF | SD
Flooding | PALM-4U | HWLEM | IESopt |
MAED-City | Coping Typology

typology → pathway → outcomes → transfer → uptake

Naples

Tallinn

From regional profile to pathway, transfer and regional uptake

Regional profile

- Mid-sized Northern European capital with district heating, high car dependency and growing urban heat stress
- Climate action reframed around health, affordability and service reliability
- Integrated pathway bundling mobility decarbonisation, energy transition and urban heat adaptation
- Nature-based solutions targeted at heat hotspots: schools, transit nodes, elderly care facilities
- Reference for Baltic and Central-Eastern European cities with district heating, car-dependent mobility and rising heat risks



Urban Heat x Green Infrastructure

Tallinn

From regional profile to pathway, transfer and regional uptake

Urban Heat x Green Infrastructure

Pathway

Implications

2. Integrated 2050 pathway

- Integrated approach connecting mobility decarbonisation, energy transition and urban heat adaptation
- Mobility packages modelled with behavioural realism: parking management, road pricing and public transport investment tested including acceptance risks
- Energy demand projected to 2050 (incl. heatwave-driven cooling growth); supply portfolios optimised for cost and resilience
- Urban heat hotspots mapped at high resolution to target greening and de-sealing where it matters most

3. Outcomes & reality checks

- Modelling mobility transitions that account for behavioural response and enforcement needs
- Heat adaptation prioritises public-service locations: schools, transit nodes, elderly care facilities
- Re-framing keeps the bundle politically defensible linking measures to health, cost-of-living and service reliability
- Societal response analysis helps anticipate resistance and avoid backfire effects in implementation

4. Transferability

- Transferable as a "bundle + legible evidence + re-framing" template for cities where climate action needs political repackaging
- Mobility, energy and heat evidence integrated into one coherent intervention narrative adaptable without full model reruns
- Strong reference for Northern, Baltic and Central-Eastern European cities with district heating, car dependence and rising heat stress

5. Exploitations

- Heat hotspot targeting package: prioritisation guidance for nature-based interventions at public-service locations
- Climate-proofing map (GIS): integrates climate layers into planning and permitting workflows
- Policy brief templates for re-framing the bundle via health, affordability and resilience arguments
- Engagement tools: Shape-your-Future App and Playful Trainings for stakeholder communication and feedback

6. Local Hub & uptake

- Hub connects modelling outputs to budget authorities and service owners across departments
- Continuity secured by embedding the intervention bundle in annual budget and investment programming
- Heat layers and hotspot data integrated into planning standards and capital works guidance
- Recurring engagement cycle (trainings + app) keeps stakeholders aligned under shifting political priorities

Models
 ABM light + [PTV Visum](#) | WRF | PALM-4U | IESopt | MAED-City | [SD Model](#) | Coping Typology

typology → pathway → outcomes → transfer → uptake

Tallinn



South Westphalia

From regional profile to pathway, transfer and regional uptake

Renewables × Forests × Industry

Regional profile

- Forest-rich, hilly, rural-industrial region with 1,5 mill inhabitant
- Strong SMEs and manufacturing; dispersed settlements
- Climate challenge shaped by the **energy-land-ecosystem** nexus
- **Expansion of wind** energy on drought-damaged areas
- Focus on **restauration of forest soil health**
- Wind revenues to support forest restoration



South Westphalia

From regional profile to pathway, transfer and regional uptake

Renewables × Forests × Industry

Pathway

Implications

2. Integrated 2050 pathway

- Climate neutrality and resilience by 2050
- **Land-use and forestry transition**
- **Electrification-driven demand transition**
- Least-cost system with renewables, storage and flexibility
- **Mobility decarbonisation** and societal acceptance as feasibility conditions

3. Outcomes & reality checks

- Affordable, reliable regional energy for industrial transformation
- **Wind and PV scale-up with biodiversity and water safeguards**
- Bottleneck chain: grid, permitting, land availability and acceptance
- **Model results support regional prioritisation and sequencing**

4. Transferability

- **Decision-support** for similar forest-rich middle-mountain range areas in Central Europe
- Reusable system **understanding and planning heuristics**
- **Governance and transparency patterns** reduce time-to-insight

5. Exploitations

- **Impact Shopfloor** train-the-trainer format
- SequOIA-CAM **satellite forest monitoring** concept for CO₂ and biodiversity
- **LIFE Connect** – Wind-Forest-Water project
- **Fact Sheet** procedure transparency guide
- **Energy Summit** South Westphalia

6. Local Hub & uptake

- network of hubs for the design and implementation of individual exploitations
- Connecting actors around concrete follow-up actions, governance needs and implementation opportunities

Models

CLUMondo | MAED-City | WRF | IESopt | ABM + [PTV Visum](#) | Coping Typology

typology → pathway → outcomes → transfer → uptake



Europas Klimazukunft

- ⚙️ Regionen schaffen die Bausteine
- ⚙️ Übertragbarkeit erfordert Anpassung
- ⚙️ Zusammenarbeit schafft Abstimmung
- ⚙️ Kreativität treibt Bottom-up-Maßnahmen an
- ⚙️ Europa wird stärker durch Vernetzung

Übertragbarkeit: Gemeinsam das Puzzle zusammensetzen

**Was kein Entwurf vollständig planen kann,
lässt sich durch Zusammenarbeit dennoch verwirklichen!**