

# Report on WP 4.3 e-mobility workshop (learning interaction)

28 June 2017, 13:00 to 14:30, Szombathely

## Lead & Participants

Dieter Schaaf and Regine Guglielmo were leading the session. All partners involved in e-mobility and other participants of the meeting attended in the session.

<b>Participant</b>	<b>Organization</b>
Blanka Odlazek	BSC Kranj RDA
Camelia Vasilache	Giurgiu County Council
Christian Baumgartner	Danube Office
Cristina Munteanu	WWF RO
Daniela Peicea	Giurgiu County Council
Delinke Bejczy	West-Pannon Ltd.
Desislava Slavova	Ivanovo municipality
Diana Cosmoiu	WWF RO
Dieter Schaaf	City of Tuttlingen
Elisabeth Schütze	City of Tuttlingen
Franja Gabrovšek Schmidt	BSC Kranj RDA
Margareta Ofelia Lidia Draghia	Giurgiu County Council
Milen Dulev	Belene Municipality, BG
Plamen Donchev	Ivanovo municipality
Raluca Dan	WWF RO
Rayna Popova	WWF BG
Regine Guglielmo	City of Tuttlingen
Tatjana Djuric	Provincial Secretariat for urban planning and environmental protection
Valentin Grigore	Comana Nature Park (RO)
Valya Valkova	Belene Municipality, BG
Veronika Wierer	Danube Office
Zsombor Aradszki	West-Pannon Ltd.

## Agenda

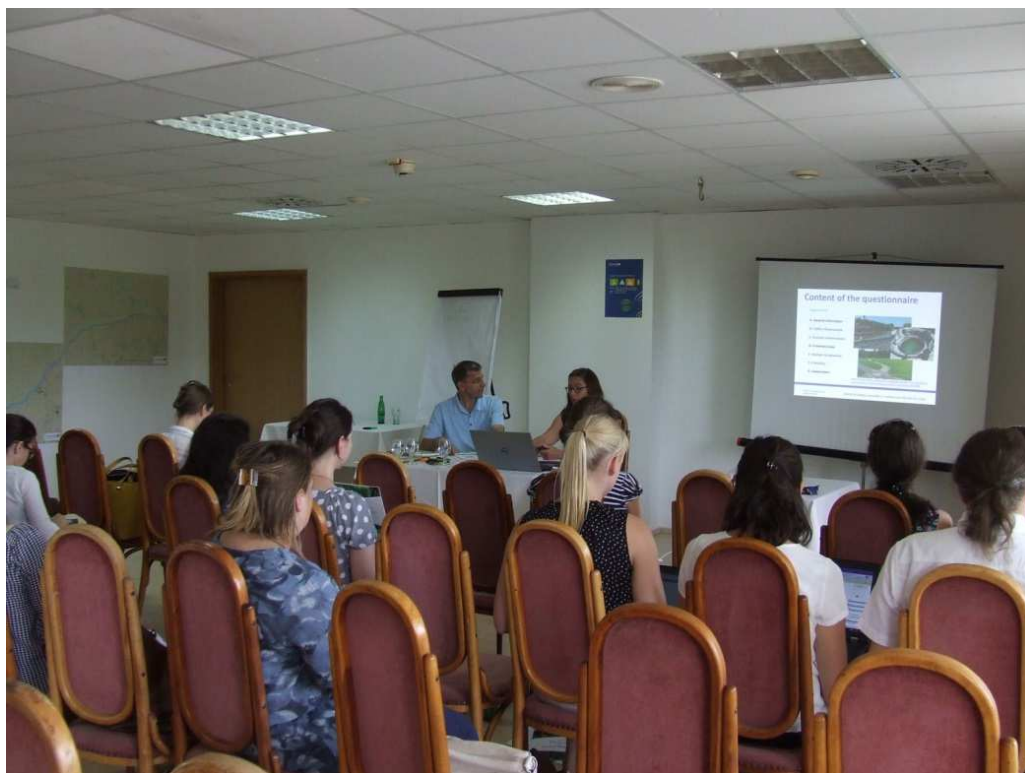
1. Analysis of the questionnaire from involved partners
2. E-manager
3. E-bikes and charging stations
4. Nature routes
5. Future prospects



## 1. Analysis of the questionnaire from involved partners

- Presentation of general overview of involved partners and the relevant areas
- Analysis of questionnaire with similarities and differences between partner areas
- Conclusion: there is an even bigger need for e-mobility in mountainous areas than in the lowlands of Bulgaria and Romania (uphill flow)

- The inventory of bike trails showed that Tuttlingen and Slovenia have an extensive network of safe bike trails whereas in Bulgaria and Romania bike riders very often have to share the road with cars



## 2. E-manager

Who can be an e-manager? (Just examples no strict requirements)

- Has to be an active (e-)bike rider (invitation of Dieter to ride along the whole Danube bike path, from Black to Black in e. g. 3 steps)
- E-bike owner (favorable)
- Craft skills for small (e-)bike repair
- Should have e-mobility overview, e. g. through specialist journals
- Should know e-bike components
- Should know local/regional e-bike-market
- Should stay up to date with „e-bike technology“

What are the tasks of an e-manager?

- Inform about e-bike technology
- Knowledge of repairing e-bikes
- Consult with people who are interested in e-bikes
- Form a network with stakeholders
- Think about expansion of e-bike infrastructure in the region



### 3. E-bikes and charging stations

- Presentation of parts of a secure bike
- Explanation of the difference between S-Pedelecs (maximum 45 km/h, only allowed on roads, not on bike paths) and Pedelecs (maximum 25 km/h, allowed for all types of roads and paths)
- Location of a charging station: should be in a place where you can get food and drinks; there should also be a “point of interest” close
- It is possible to use “bike-energy” station (compatible with basic information in AF)
- No unique plug for e-bikes, you always need your adapter
- E-bike plug of “bike-energy” realizes which e-bike is charging and is saving your battery (accumulator), because it charges exact the way the battery needs it

- It is necessary to have signs at every charging station, they should be used all over the area to have a genuine label, put a QR-Code on it, so that people can check information online
- You have to plan exactly a path with the right distance between the charging stations
- In AF there is mentioned the wrong plug (it is for e-cars, not for e-bikes)
- There is no “anti-theft-system”, having a strong lock is necessary, charging cable of “bike-energy” has a steel ring to lock the bike to the charging station
- In Germany you are not allowed to load the bike with your own loading plug outside, just inside; that’s why the “bike-energy” station would have advantages; there you don’t have to bring your own cable from home, because all adapters are delivered together with the station
- SLO-BSC Kranj has different types of stations, Schuco and type 2, they have AC and DC, for bikes less than 24 kW
- All Partners can do the procurement procedure for the stations soon; each partner will do it separately on their own, because budgets are separated
- WWF BG explains, that through the existing cross border project there are already stations, which should be connected with this project and therefore expand the network, e-bikes are bought already; Stations have to fit to these bikes, WWF BG should have a look at the procurement text for the bikes to know exactly, what is required
- E-managers can be part of the staff or can be external, e. g. in Romania there is no one available in the staff for this position



#### 4. Nature routes

- No official definition
- Go through scenic landscapes through protected areas
- Should connect e-hubs, e-stations
- Develop criteria comparable to premium hiking trails
- For purposes of marketing and maintenance of trail
- List of possible criteria
- Landscape experience and points of interests
- Condition of trails (target group)
- Refreshment opportunities
- Network of e-mobility infrastructure
- Guidance system
- In LENA no budget for signs or building paths, so we use existing trails and put the sticker ("Naturroute") on existing signs
- Partners gave maps of highlights and sights, Regine shows possible Nature routes in partner areas
- Certification of routes cannot be accomplished within LENA
- LENA could be a start and describe the "premium trails" criteria, and initiate a certification process
- SLO-BSC Kranj: Would the certification be for free?  
Regine: No. It costs and the recertification (every 3 years) also costs. But it is very useful for marketing and ensures a quality standard of the trails
- Christian points out to have a look at the criteria of the velo6 path
- Also the ECF – European Cycling Federation with Adam Bodor in person, might be a helpful contact

#### 5. Outlook

- In May 2018 „E-mobility-days“ in Tuttlingen are planned. It will be a 2-day event with lectures, presentation and hands-on activities. There will be a lot of information on e-mobility. As soon as the date is confirmed an invitation will follow. Please keep in mind that the date will be in period 3

#### Following: PowerPoint-Präsentation



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**LENA**

Local Economy and Nature  
Conservation in the Danube Region

# **E-Mobility & Nature Routes**

June, 28 2017  
SOMBATHELEY, Hungary

Project co-funded by the  
European Union

# Abstract

## WP4. Activity 4.3. Ecological Mobility Network Pilot Action

- Develop a transnational **e-manager network** with BG, RO and SL
- The E-Manager's main work is to implement the **network of E-bike infrastructure** in form of Danube E-Stations.
  - **2 e-bike charging stations will be installed at the Ciocanesti fish farm;**
  - **1 CE certified e-bike charging station positioned in the town of Belene;**
  - **1 CE certified e-bike charging station positioned in the village of Ivanovo;**
- Additionally, to implement the network, the E-Manager will investigate in developing **“Nature Routes”**, which connect nature landmarks, places for buying local products to touristic highlights in the region. Nature routes will be developed in DE, RO, BG.



# Content

## Part 1- Analysis of the questionnaire from involved partners (PP01,PP02, PP07, PP10, PP11)

Overview - Similarities and differences.

## Part 2 – E-Manager

Who can be an e-manager? What are the tasks of an e-manager?

## Part 3 – E- Bike Technology and E-Charging Stations

All about the techniques of the e-bikes chargers and stations chosen for the

## Q U E S T I O N S ?

## Part 4 – Criteria Premium Nature Routes for E-Bikes

Concept for creating a network between the nature routes and the existing bike paths.

## Part 5 – E-Bike Strategy and Timeline



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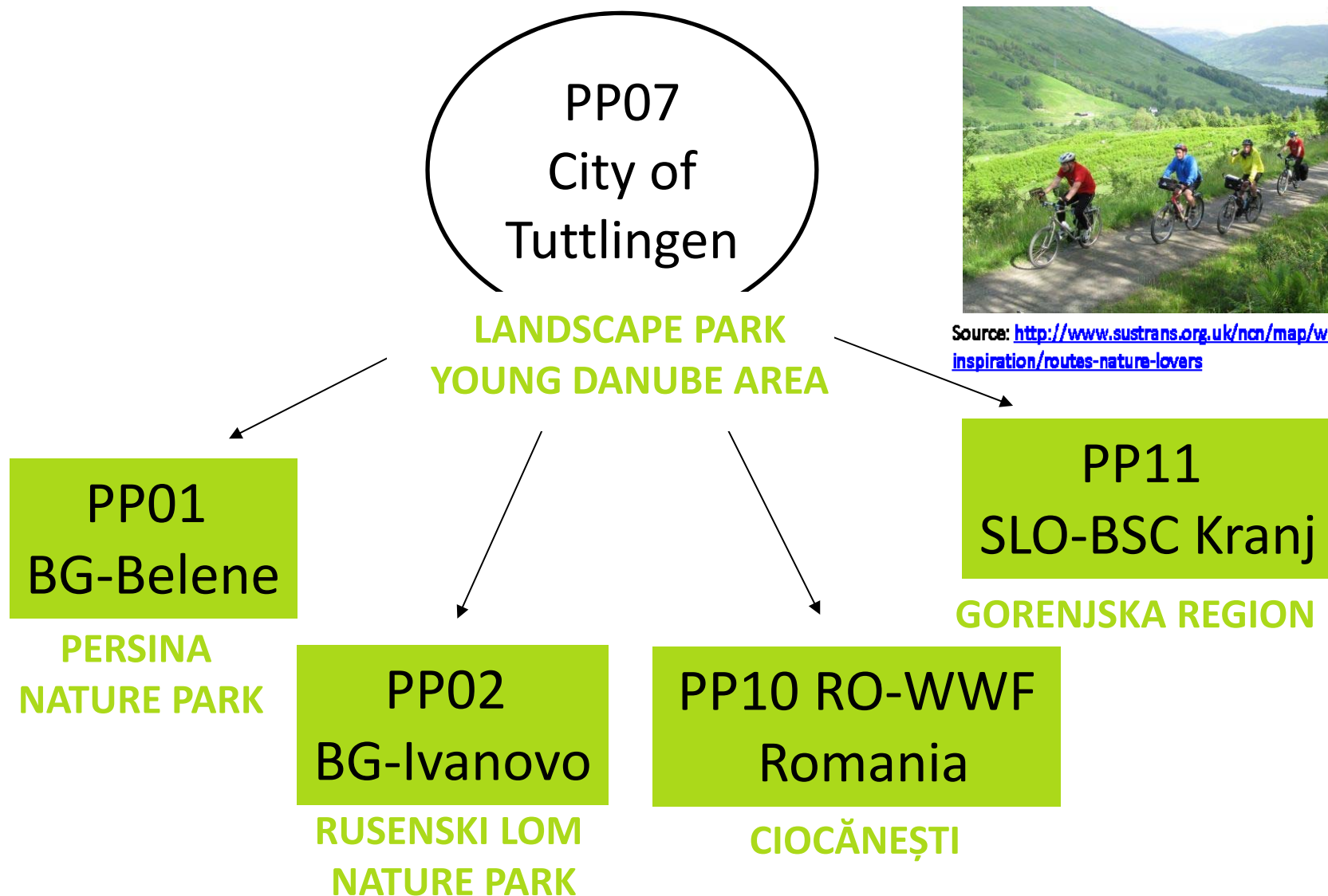
Danube Transnational Programme

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# Part 1: Analysis of the questionnaire

# Involved partners

NATURE ROUTES, NATURE AND LANDSCAPE , E-MOBILITY



Source: <http://www.sustrans.org.uk/ncn/map/walking-and-cycling-inspiration/routes-nature-lovers>

# Content of the questionnaire

## MAIN POINTS

- A. General information
- B. Traffic infrastructure
- C. Touristic infrastructure
- D. Protected areas
- E. Markets & industries
- F. E-Mobility
- G. Stakeholders



Source: <https://www.ottsworld.com/blogs/danube-river-adventure-travel-germany/> <http://www.panoramio.com/photo/2620888>

# A General Overview

## MAIN POINTS

	PP07 Landscape Park	PP01 BG Belene	PP02 BG Ivanovo	PP10 RO- WWF Romania	PP11 SLO-BSC Kranj
Area / Municipalities	623 Km <sup>2</sup> 12	285 km <sup>2</sup> 6 settlements	490 km <sup>2</sup> 13 settlements	135 km <sup>2</sup> 1 settlement	880 km <sup>2</sup>
Population	100.540 inhabitants	9.211 inhabitants	9.429 inhabitants	4.257 inhabitants	37.373 inhabitants
Density	161 p/km <sup>2</sup>	39,3 p/ km <sup>2</sup>	25,3 p / km <sup>2</sup>		
Topography	Mountainous	Lowlands	Lowlands	Lowlands	Mountainous

# B Traffic Infrastructure

## SIMILARITIES AND DIFFERENCES

### Goal mobility hubs



Source: <http://donaupark-tuttlingen.de/>

**Tuttlingen:** - quality of roads are in a good condition  
- trainline along the Danube from Donaueschingen to Sigmaringen  
- safe bike trails wherever possible

### Belene/ Ivanovo

- traffic infrastructure is not well developed - the territory of the city is not crossed by any international road as well as the motorways and the first class roads of the national road network;  
- most of the roads are municipal and local.



Source: <https://www.google.de/maps>

# B Traffic Infrastructre

## SIMILARITIES AND DIFFERENCES



Source: <https://www.google.de/maps>

**PP11 SLO Kranj:** - the highway A2 crosses the region from NW – SE;

State roads crosses most important touristic centers. Roads 201, 202, 637 goes to Kranjska Gora (ski center) - Lesce summer and winter center, Triglav natioanl park)

- state road 210 from NE-SW part of region crosses Kranj (33 km)

- there are arround 340 km local roads with low traffic and very picturesque landscape. All roads are asphalted and in good condition.

**PP10 WWF Romania Ciocănești:** - the county road D31 is passing by the area and an unpaved road (3 km) is facilitating the access to the Ciocanesti fish farm. The bus making connection between Calarasi and Oltenița is stopping in the area. There is no train or boat. At 28 km from Ciocanesti, in Chiciu there is a ferry boat linking Romania (Calarasi) with Bulgaria (Silistra).



Source: <https://www.google.de/maps>

# C Touristic Infrastructure

## SIMILARITIES AND DIFFERENCES



Source: <https://http://www.planstatt-senner.de>

**Tuttlingen:** - Source of the Danube in the Landscape Park  
- places to visit, like Danube Park, Honberg Castle, Art Gallery, places for entertainment;  
- accommodation, (hotels, guest houses)  
- camping places  
- restaurants, taverns, beer gardens...

**Belene:** - Visitor center Nature Park "Persina";  
- bird watching trails and boat bird watching tour of the Belene Islands;  
- archeological sites Roman, Early Medieval;  
- accommodation hotels with restaurants.



Source: <https://www.google.de/maps>  
<http://www.balkanmegaliths.bgjournal.com/Bulgaria/Menhiri/Petokladenci/Petokladenci.html>



# C Touristic Infrastructure

## SIMILARITIES AND DIFFERENCES



Source: <http://www.panacomp.net/ivanovo-rock-monasteries/>

- PP01 BG Ivanovo:** -famous is the rock monastery
- the existing tourist potential consists of a well-developed road network in the adjacent areas, a tourist information center in Ivanovo and traditional routes used for visits of the national archaeological reserves;
    - Dendrological trail, historic routes, great biodiversity routes, natural and historical landmarks are created on the territory of the Park.
    - accommodation is also available in family hotels

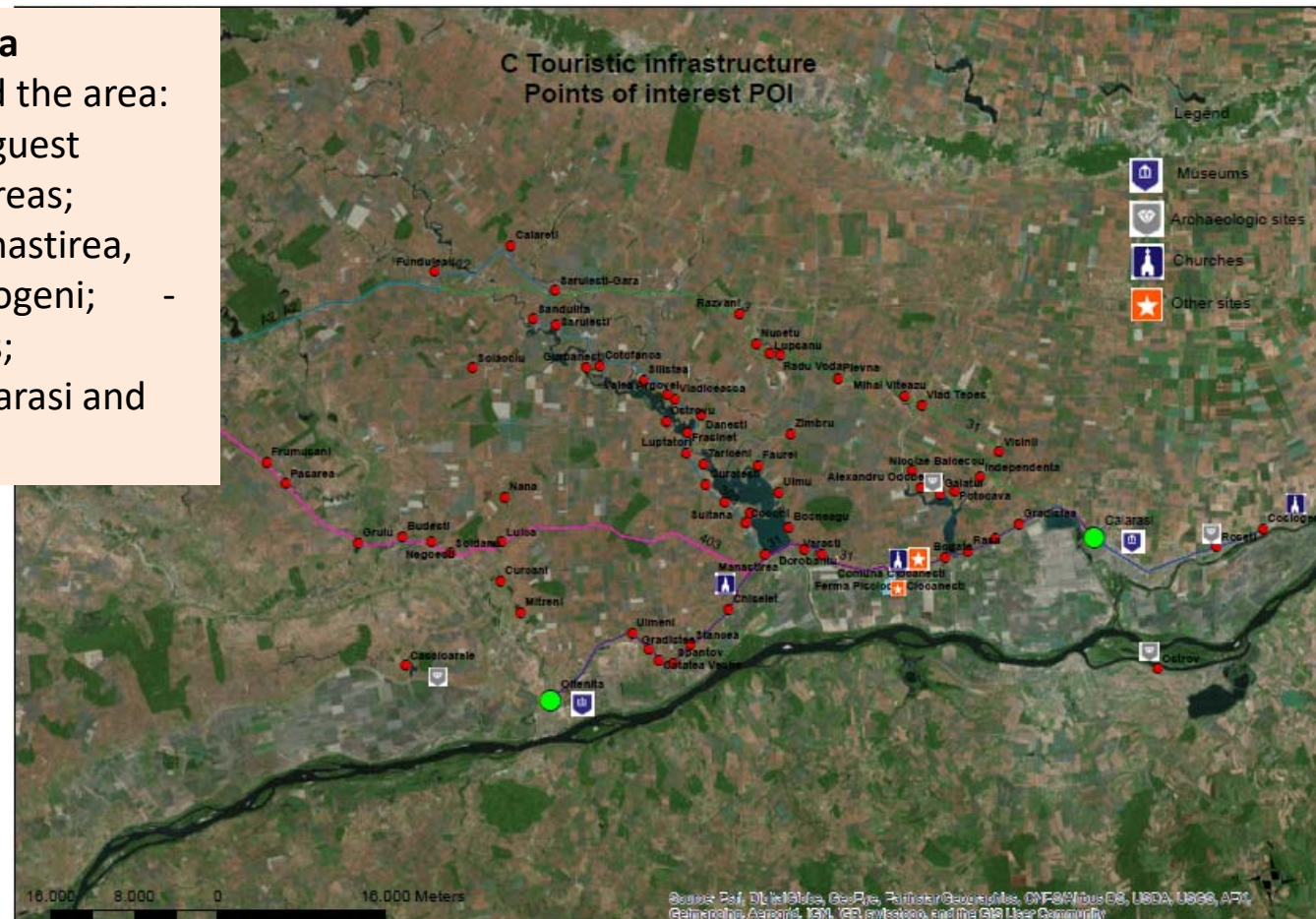
- PP10 WWF Romania Ciocănești:** - around the area:  
approx. 4 hotels, 1 guest house, 2 camping areas;
- 3 churches in Manastirea, Ciocanesti and Coslogeni;
  - 4 archeological spots;
  - 2 museums in Calarasi and Oltenita.

# C Touristic Infrastructure

## SIMILARITIES AND DIFFERENCES

### PP10 WWF Romania

**Ciocănești:** - around the area:  
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# C Touristic Infrastructure

## SIMILARITIES AND DIFFERENCES



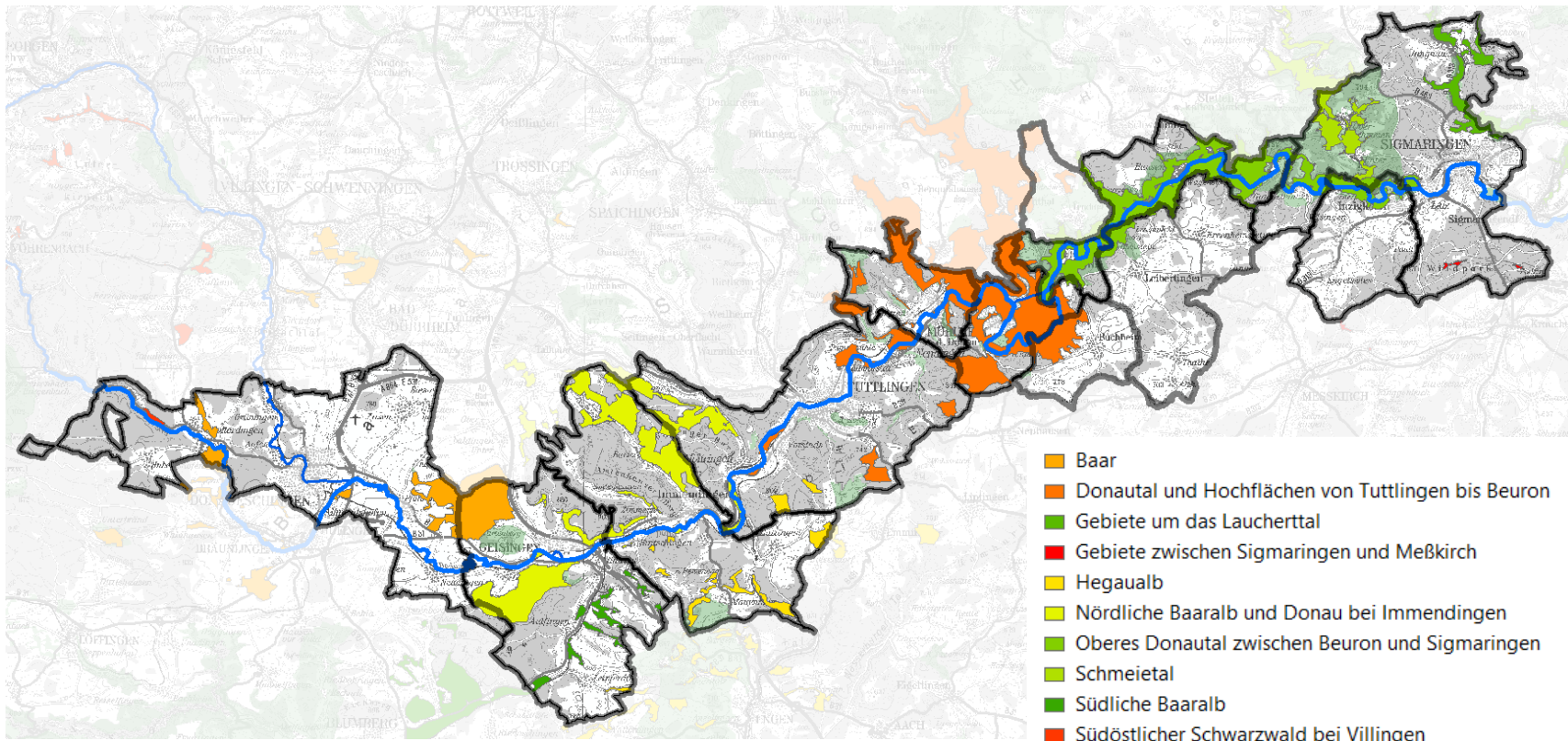
Source: <https://www.slovenia.info/en/places-to-go/cities/kranj>

- PP 1 SLO BSC Kranj:** - in the city and around it: accommodation (62 hotels, 99 tourist farms, 43 youth hostels, 14 camps, 35 mountain huts, 36 pensions);
- places to visit: 15 castles, 3 ruins, ca. 295 churches;
  - tourist info center: themed hiking trails;
    - natural heritage trails / attractions: sources and springs, lakes and ponds, natural baths, parks and gardens, rivers and confluences, waterfalls, canyons;
    - guided tours (single, groups, families).

# D Protected Areas

Tuttlingen: -

## NATURPARK OBERE DONAU



# D Protected Areas

PP01 BG Belene:

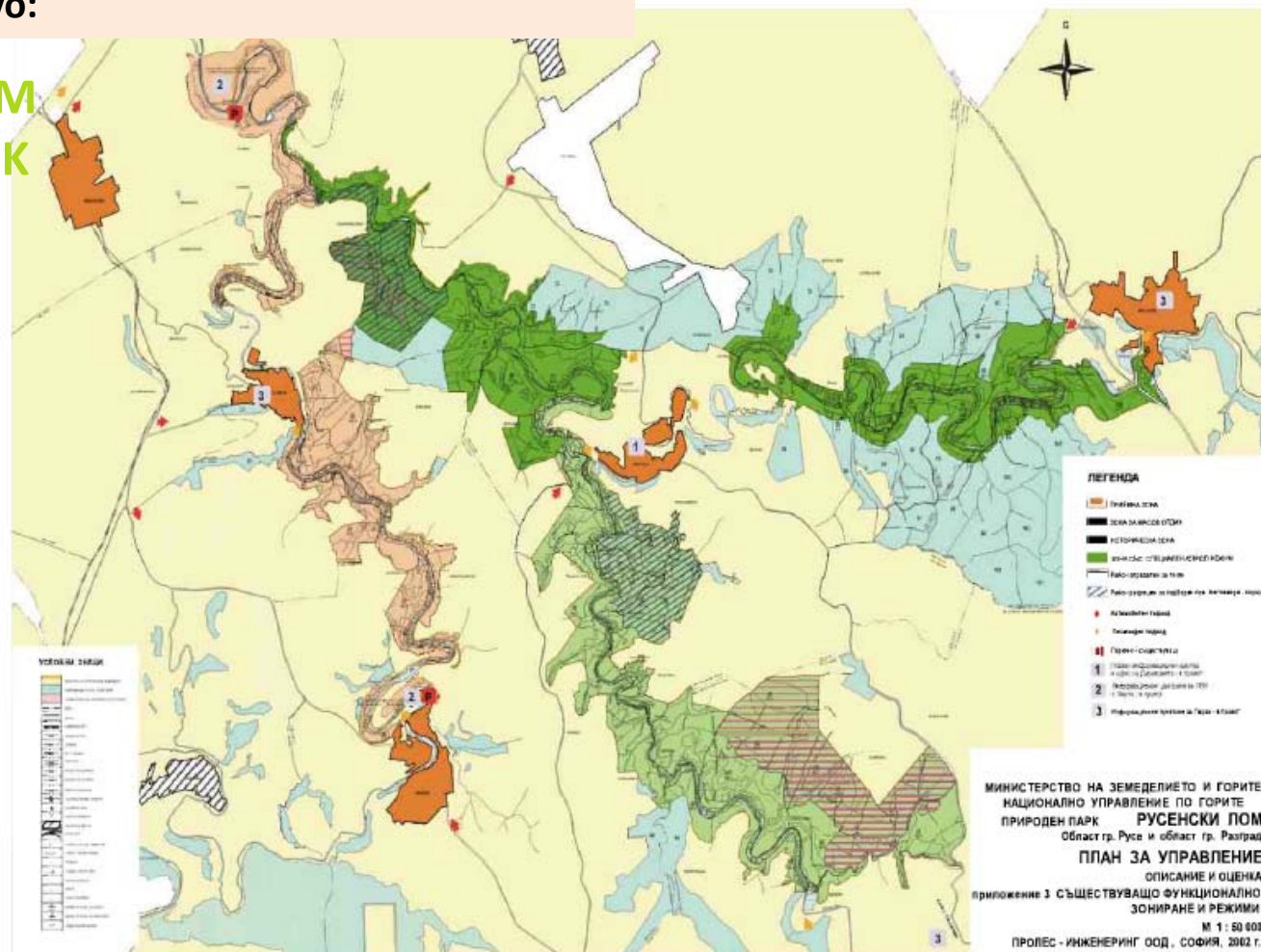
## PERSINA NATURE PARK



# D Protected Areas

PP02 BG Ivanovo:

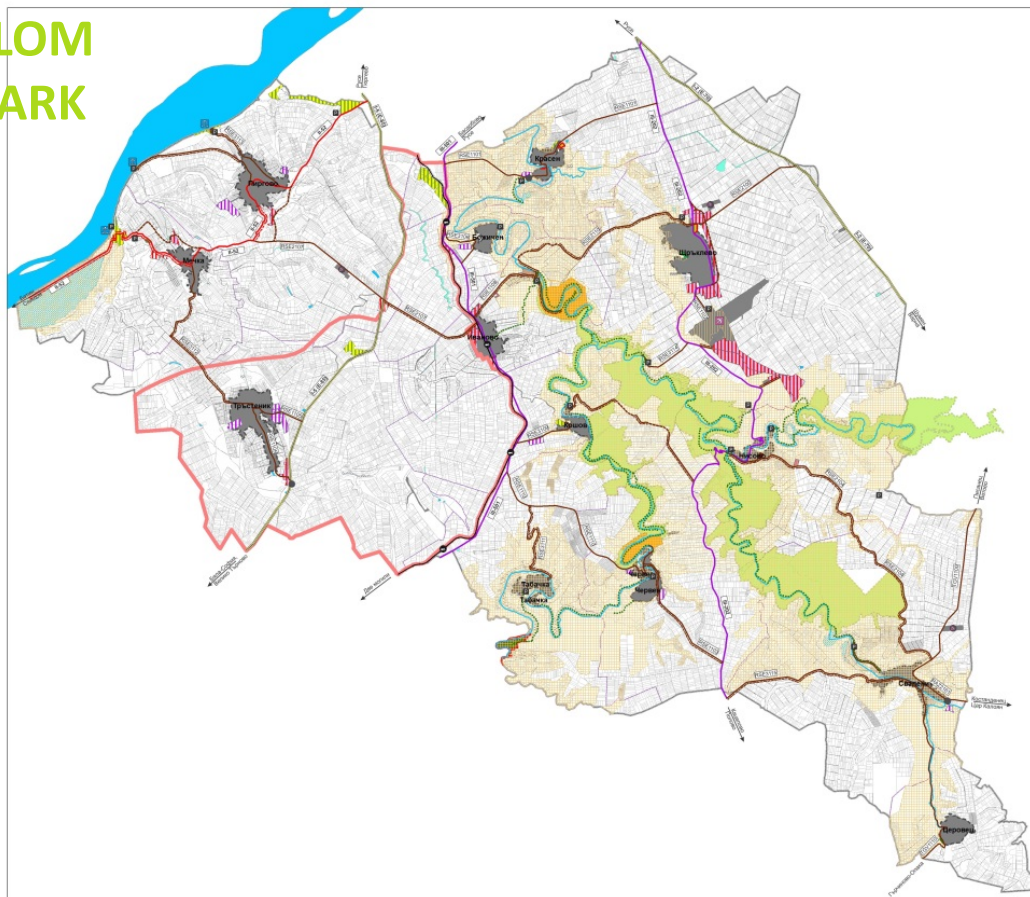
RUSENSKI LOM  
NATURE PARK



# D Protected Areas

PP02 BG Ivanovo:

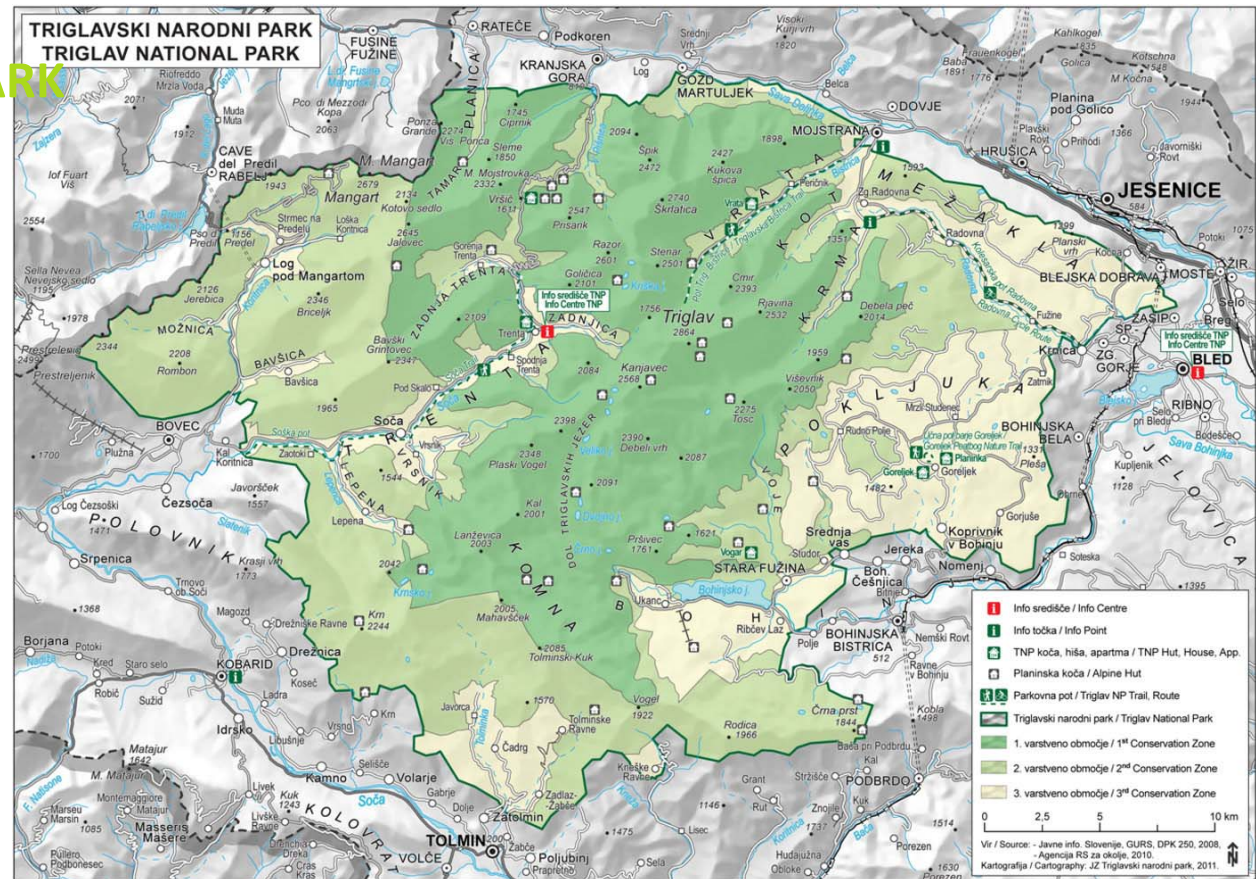
## RUSENSKI LOM NATURE PARK



# D Protected Areas

PP11 SLO BSC Kranj

**GORENJSKA REGION**  
**TRIGLAV NATIONAL PARK**





# E Markets and Industries

## SIMILARITIES AND DIFFERENCES



**Tuttlingen:** hightech industries but also local markets with local and regional products;

Source:

<http://www.visitkranj.com/en/stellap0laris-instablog>  
<https://www.slovenia.info/en/things-to-do/food-and-wine/taste-slovenia>

**PP1 SLO BSC Kranj:** - industrial sectors in the Gorenjska region: agriculture, tourism, beekeeper, electronics and rubber industries;

- small local producers;
- regional products, (dairy and honey products);
- production of meat, boutique wines.



Source: <https://www.tuttlingen.de/de/Leben-in-Tuttlingen>

# E Markets and Industries

## SIMILARITIES AND DIFFERENCES

**PP01 BG Ivanovo:** - industrial sectors: agriculture, furniture production, fishing and hunting, textile industry, food industry, building, trading;

- regional products, (wineries);
- production of meat boutique wines.



Source: <http://citysightseeing.bg/seven-generations-winery/>

Source: [http://www.bulgarianproperties.com/Bulgaria\\_articles/agricultural-land-categories-in-bulgaria\\_3405.html](http://www.bulgarianproperties.com/Bulgaria_articles/agricultural-land-categories-in-bulgaria_3405.html)



**Belene:** - industrial sectors: agriculture (Livestock breeding farmers, Beekeeping Logging, Furniture production, Fishing and hunting, Textile industry, Food industry, Building, Trading);

- **local fish market** will be constructed during the project, (no local markets).

# E Markets and Industries

## SIMILARITIES AND DIFFERENCES

### PP10 WWF Romania Ciocănești:

- industrial sectors: agriculture, animal husbandry, pisciculture, beekeeper;
- **fisheries**; - regional products, (wineries, fish, honey); - **boutique wines** e.g. in Ostrov.



Source: <http://adevarul.ro/locale/calarasi/paradisul-233-hectare-baragan-ferma-piscicola-ciocanesti-destinatie-vis-relaxare>

# E Markets & Industries



## RESULTS OF DATA COLLECTION

- WWF RO (Ciocănești) is the least industrially developed, mostly agriculture destination
- Belene and Ivanovo mainly are agricultural areas, with local craftsmanship and services
- Kranj and Tuttlingen are high-tech industrial regions but also have local markets

# F E-Mobility

## QUESTIONNAIRE

	PP07 Landscape Park	PP01 BG Belene	PP02 BG Ivanovo	PP10 RO- WWF Romania	PP11 SLO-BSC Kranj
E_bike rentals	1 E-bike rental with 25 bikes	120 bikes for the area with INTERREG Va	120 bikes for the area with INTERREG Va	In Calarasi and Olenita with INTERREG Va	About 20 – 30 e-bikes available for rent
Charging Stations	5 locations	--	--	In Calarasi and Olenita with INTERREG Va	19 locations
Suppliers / Network	10				20 e-bike suppliers;

# F E-Mobility

## SIMILARITIES AND DIFFERENCES

**Tuttlingen:** Danube "Donauradweg" with a length of about 120 km. The bike path is mostly unpaved. Along major roads there are separate paved bike paths. In the landscape park there are about 300 km of themed bike trails (paved and unpaved);



Source: [http://www.schwaebische.de/region\\_artikel,-Klimaschutz](http://www.schwaebische.de/region_artikel,-Klimaschutz)

**PP10 WWF Romania Ciocănești :** - the area is passed by a bicycle path signaled C2, Manastirea - Calarasi. The path is following the county road D31 (paved) - 47 km, in Ciocanest fish farm, an unpaved bicycle path was designed from D31 around most significant fish basins (2,5 km);



Source: <http://adevarul.ro/locale/calarasi/cele-mai-frumoase-trasee-bicicleta-calarasi-salbatice-aventura-doua-roti-malul-dunarii.html>

# F E-Mobility

## SIMILARITIES AND DIFFERENCES

**PP1 SLO BSC Kranj:** - themed biking trails  
120

- Gorenjska region (2,137 km<sup>2</sup>): -
- 3,500 km of bike trails (signed on the field or marked on the maps)



Source: BSC Kranj



**Ivanovo:** On the territory of the municipality are built 8 routes with different difficulty

**Belene:** - 1 bicycle alley and 3 bicycle routes  
On the territory of the municipality are built 8 routes with different difficulty  
- Belene is included in the Danube EVRO VELO 6 route.

# G – Stakeholders

## RESULTS OF DATA COLLECTION

- Belene and Ivanovo see their stakeholders in their businesses (Companies and Individuals).
- WWF RO, dto.
- In Kranj and Tuttlingen there are in addition further environmental/climate protection associations (BUND, Greenpeace...)





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# Part 3: E- Manager

# E-Manager

## WHO CAN BE AN E-MANAGER I?

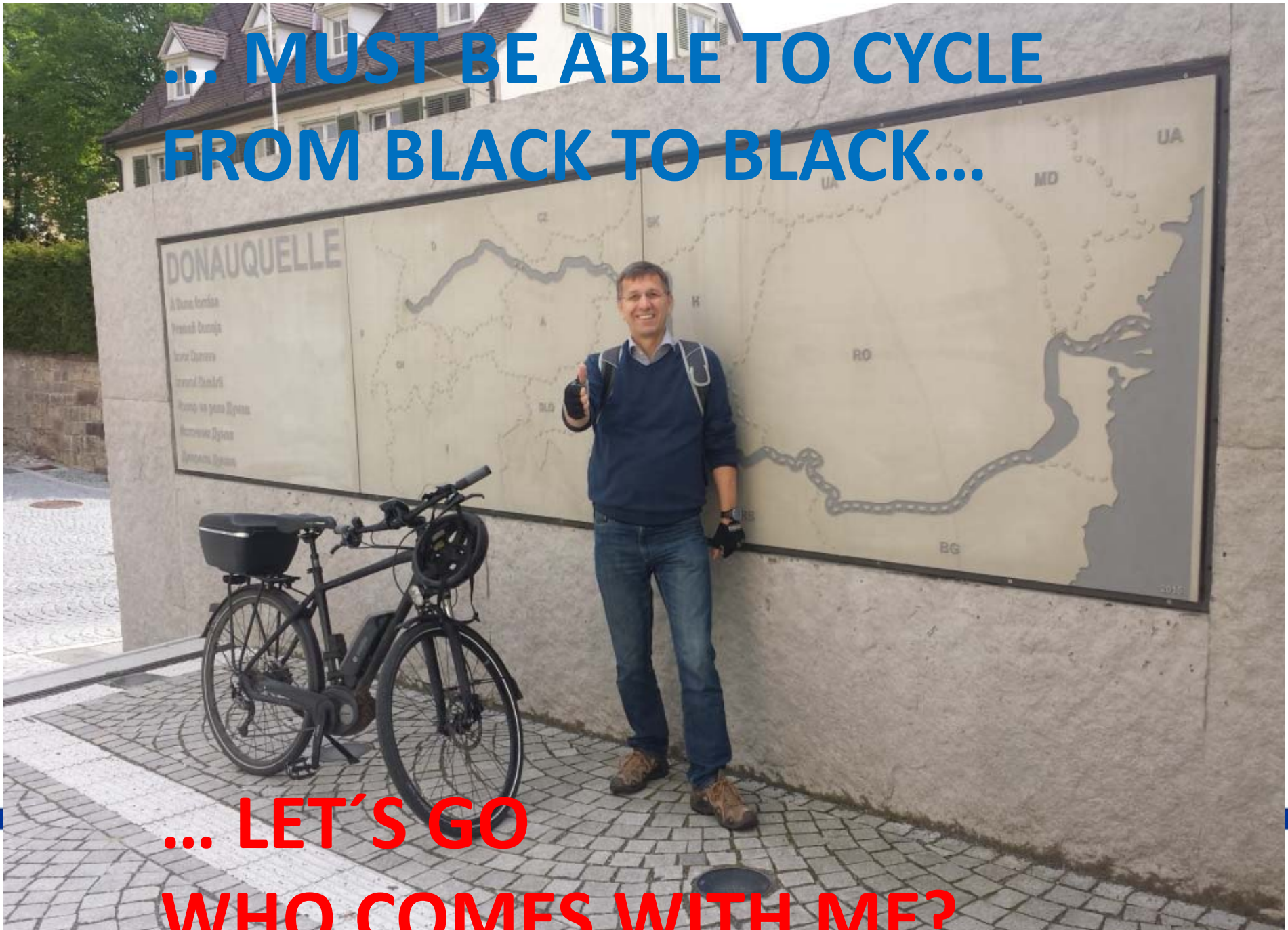


# E-Manager

## WHO CAN BE AN E-MANAGER II?

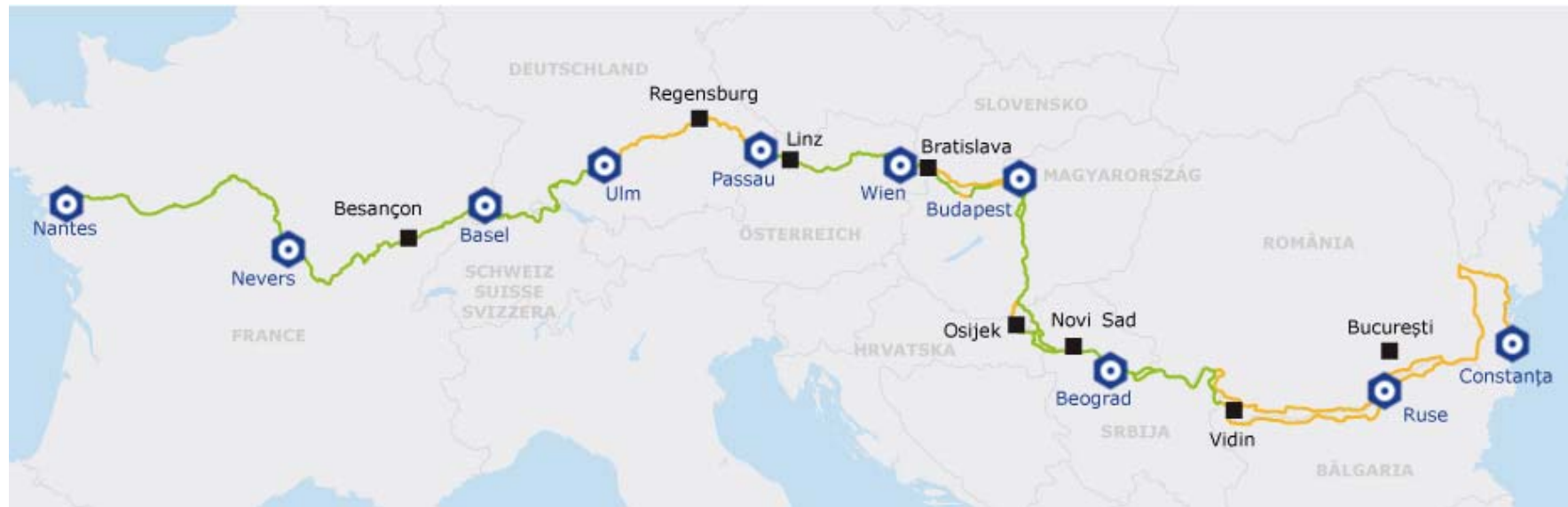


**... MUST BE ABLE TO CYCLE  
FROM BLACK TO BLACK...**



**... LET'S GO  
WHO COMES WITH ME?**

# ... MUST BE ABLE TO CYCLE CYCLE ROUTE EUROVELO 6..



# E-Manager

## WHAT ARE THE REQUIREMENTS?

- Well trained e-cyclist
- It is good if you own an e-bike
- Craft skills for small bike repair
- E-bike-mobility-overview, specialist magazine
- E-bike-components to know (battery, engine, manufacturer, charging technology, service)
- Local/regional knowledge of e-bike market
- Stay up to date with „E-bike-technology“

# E-Manager

## WHAT ARE THE TASKS?

- Inform about e-bike technology
- Repair broken e-bikes if necessary
- Consult people who are interested in e-bikes
- Think about expansion of the e-bike infrastructure
- Network with stakeholders
- ...



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# Part 4 – E-bikes and E-charger stations



# Press-conference, 2.05.2017, First e-bike-station (as an example for LENA), in front of the town-hall Tuttlingen



## Meeting with the mayors from the municipalities of the Landscape Young Danube, 22.06.2017



# E-bikes and e-charger stations

## GENERAL OVERVIEW OF AN E-BIKE

### The traffic-safe bicycle



# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

- E-bike (S-Pedelecs and Pedelecs)
  - S-Pedelecs:
    - Motor capacity max. 500 Watt
    - Speed max. up to 45 km/h  
(Pedelecs: max. up to 25 km/h)
    - Legally: No longer a bicycle, but a small moped
    - Insurance plate & Moped driving license
    - Helmets are required.
    - Bicycle path can not be used!
    - No bike child seat or trailers may be installed!
    - Pedelecs and S-Pedelecs look the same
    - Superior quality material  
(Frame more stable and brakes more powerful)



# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

- E-bike (Trekking bike)
  - Equipped with a sturdy frame
  - Seat position is more stretched and therefore sportier
  - These e-bikes are suitable for travel, tours and longer trips
  - The technical equipment is of high quality:  
This includes a powerful motor, a very good lighting system and an accurate display of the battery capacity



# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

- E-bike (City, Comfort E-bike)
  - Are ideal for the way: to work, to school, to university, to do errands or for trips in the city
  - The saddle of a City e-bike is comfortable
  - The equipment of a City e-bike includes a removable battery, fenders, traffic-proof lighting, a stand, luggage rack and, possibly, a good suspension
  - Cycling pleasure is guaranteed!



# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

- **E-bike (E-Mountain bike)**
  - **E-mountain bikes are strong in coming!**
  - If you really want to have fun or love the mountains and the hills, take an e-mountain bike and profit from the sporty engine support
  - This makes every mountain seem smaller.
  - With an e-mountain bike, the driver is in good hands thanks to the wide tires and the suspension on forest roads and paths.
  - The electric drive also allows untrained drivers to ride uphill more easily.
  - To arrive at the summit with a red face belongs to the past with an e-mountain bike



# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

- **E-bike (Supplier companies I)**
  - BH e-bikes
  - BMW e-bikes
  - Cannondale
  - Corratec
  - Electra
  - Focus
  - Gazelle
  - Giant
  - Gocycle
  - Haibike
  - Hercules
- **E-bike (Supplier companies II)**
  - Mando Footloose
  - M1
  - Raleigh
  - Riese & Müller
  - Sinus
  - Stromer
  - Winora
  - Pfau Tec Dreiräder
  - Van Raam Dreiräder
  - Dreirad-Zentrum
  - Elektromobile  
(for disable or older people)

More information: [https://de.wikipedia.org/wiki/Liste\\_von\\_Fahrradherstellern](https://de.wikipedia.org/wiki/Liste_von_Fahrradherstellern)



# E-bikes and e-charger stations

CONDITIONS & LOCATION FOR E-BIKE-STATIONS

ALONG THE DANUBE E-BIKE WAY

→ THREE THINGS BELONG ALWAYS  
TOGETHER

- BIKE-STATION
- BEVERAGE
- FOOD

# E-bikes and e-charger stations

## CONDITIONS & LOCATION FOR E-BIKE-STATIONS



Charging cable with smart chip.

The chip recognizes the battery manufacturer and the best charging time curve

# E-bikes and e-charger stations

CONDITIONS & LOCATION FOR E-BIKE-STATIONS



# E-bikes and e-charger stations

CONDITIONS & LOCATION FOR E-BIKE-STATIONS



# E-bikes and e-charger stations

CONDITIONS & LOCATION FOR E-BIKE-STATIONS



Project co-funded by the  
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[WWW.INTERREG-DANUBE.EU/APPROVED-PROJECTS/LENA](http://WWW.INTERREG-DANUBE.EU/APPROVED-PROJECTS/LENA)

# E-bikes and e-charger stations

CONDITIONS & LOCATION FOR E-BIKE-STATIONS



# E-bikes and e-charger stations

CONDITIONS & LOCATION FOR E-BIKE-STATIONS



# E-bikes and e-charger stations

CONDITIONS & LOCATION FOR E-BIKE-STATIONS



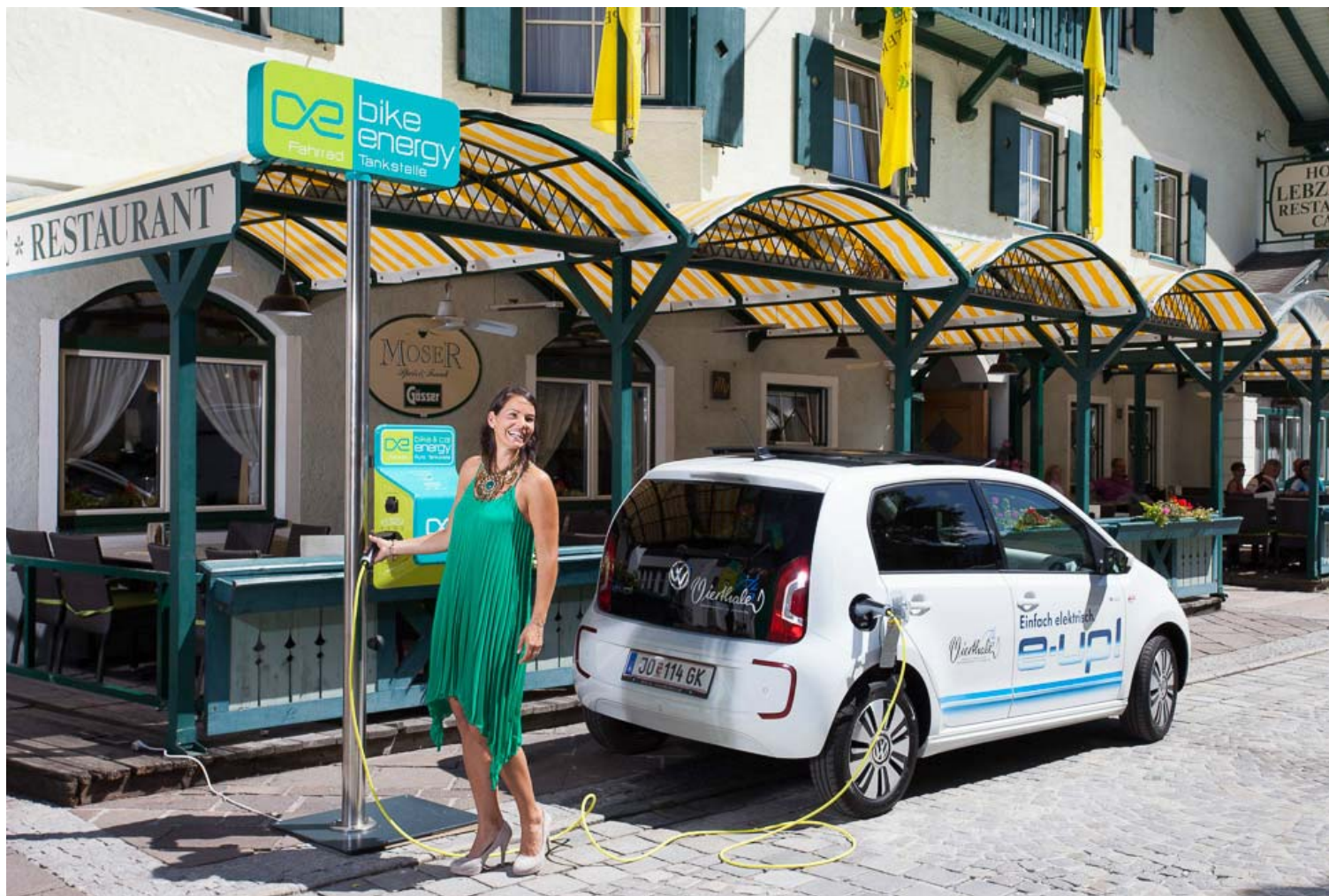
Project co-funded by the  
European Union

[WWW.INTERREG-DANUBE.EU/APPROVED-PROJECTS/LENA](http://WWW.INTERREG-DANUBE.EU/APPROVED-PROJECTS/LENA)



# E-bikes and e-charger stations

CONDITIONS & LOCATION FOR E-BIKE-STATIONS



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# E-bikes and e-charger stations

CONDITIONS & LOCATION FOR E-BIKE-STATIONS

<https://www.youtube.com/user/bikeenergyaustria/videos>

Die neue, einfache Art  
E-Bikes aufzuladen



## bike-energy LINE

### L1B | L3B | L2B1C (22kW)

Universal-Ladestation für Elektro-Autos und E-Bikes

#### Datenblatt

Stromversorgung:

230V 10-16A für Typ: L1B und L3B

400V 16-32A für Typ: L2B1C

Gehäuse:

Schlagfester Kunststoff, zusätzlich foliiert, Rückwand Metallplatte

Maße: 274x1665x110mm H/B/T für Typ L3B, L2B1C

Maße: 230/300/110mm H/B/T für Typ L1B

Gewicht: ca. 14kg für Typ L3B, L2B1C

Gewicht: ca. 4kg für Typ L1B

Schutzart: IP 55, UV- Witterungsbeständig

Schutzklasse:

III Schutzkleinpannung für RoPD Stecksysteme für E-Bikes

I Fi-Schutzschalter Typ B 40/4/0,03 für Typ L2B1C

Elektronik:

Für E-Bike:

Ladeelektronik – Programmierbare U-I Quelle mit EnergyBus Vorbereitung (CAN open)

E-Bike Anschlüsse: je Kanal 15-48VDC, 0-6A, max 288W; Display mit 2x16 Zeichen je Kanal

Für E-Car:

Typ 2 Ladesteckdose nach IEC 621962 zur Mode 3 Ladung; Kommunikationsbox sowie Fi-LS

Schalter integriert; Ladeleistung 11kW Standard (16A Absicherung) 22kW auf Wunsch (32A

Absicherung)

Kennzeichnung:

CE, TÜV

## Die neue, einfache Art E-Bikes aufzuladen



### Docking-System:

#### Für E-Bike:

RoPD Systeme-C passend für alle bike-energy Ladekabel. Das Docking System ist Teil der modernen Sicherheits-Magnetkupplung; Anstelle von Stecker wird nur angedockt für höchste Sicherheit. Bei ruckartiger Belastung entkuppelt der Adapter augenblicklich. Für Aufladen im Freien, bei jeder Witterung. Ausstattung unterschiedlich je nach Typ L1B für 1 E-Bike oder L3B für 3 E-Bikes.

#### Für E-Car:

Typ2 Ladesteckdose nach IEC 621962 zur Mode 3 Ladung. Ausstattung unterschiedlich je nach Typ L2B1C für 2 E-Bikes und 1 E-Car und 1 Stk. Sicherheits-Schuko Steckdose für alle Typen.

### Montage:

Einfach an die Wand, an Fahrradständer oder freistehend (optional) auf Stahlprofilen.  
Ausführliche Betriebsinformation und Montageanleitung liegen jedem Gerät bei.

### Anschluss:

Die Station wird anschlussfertig geliefert und muß von einem autorisierten Elektrotechniker an das 230/400V Netz angeschlossen werden.

### Funktion:

L1B und L3B lädt alle gängigen E-Bikes ohne Heimpladegerät. Einfach mit dem intelligenten bike-energy Ladekabel anschließen. E-Bikes können auch mittels Heimpladegerät an der Steckdose geladen werden.

L2B1C lädt E-Cars mit Vorrichtung für Typ 2Stecker und/oder 230V Steckdose.

### Lieferung:

Kartonverpackt, per Spedition oder Paketdienst

# PREISLISTE 2017



## bike-energy POINT - Ladestation für Wandmontage

POINT für 2 E-Bikes	P2B	3.122,- €	<p>POINT: Abmessungen H226, B360, T190 mm, Magnetschlüsselschloß und Display, P1C, P2C und P2B1C: Schnell-Ladeeinheit für E-Cars, Typ2 Stecker, Kommunikationsmodul, 400 V, 32A, 22 kW.</p> <p>PA10: Stahlblech B290 x H1550 x T40mm, Bodenplatte B290 x H390 x T30 mm, Material: Nitro pulverb. RA1, T016 „Anastgraf“</p>
POINT für 4 E-Bikes	P4B	4.817,- €	
POINT für 1 E-Car	P1C	2.238,- €	
POINT für 2 E-Cars	P2C	3.348,- €	
POINT für 2 E-Bikes + 1 E-Car	P2B1C	4.472,- €	
<b>ZUBEHÖR</b>			
AUFSTELLER für alle POINT Modelle	PA10	843,- €	

## bike-energy TOWER - Ladestation freistehend

TOWER für 2 E-Bikes	T2B	4.409,- €	<p>TOWER: Abmessungen B360, T300, H660 mm, Magnetschlüsselschloß und Display, Edelstahl mit Edelstahlschloß, Head-up-Display, mit wählbaren Indikatoren am Ausleger. Anschluss 16A Erdkabel (32A für T1C, T2C, T2B1C, T4B1C), Einbauelement, kein Fundament nötig.</p> <p>T1C, T2C, T2B1C, T4B1C: Induktive Schnell-Ladeeinheit für E-Cars, Mit Typ2 Stecker und Kommunikationsmodul, 400 V, 32A, 22 kW.</p> <p>BP10: Schraubfundament L1090 mm, D110 mm, Stahl feuerverzinkt für alle TOWER Modelle</p> <p>BP10: Bodenplatte B290 x T890 x H10 mm, 30kg, Stahl feuerverzinkt für alle TOWER Modelle</p>
TOWER für 4 E-Bikes	T4B	5.781,- €	
TOWER für 1 E-Car	T1C	3.534,- €	
TOWER für 2 E-Cars	T2C	4.657,- €	
TOWER für 2 E-Bikes + 1 E-Car	T2B1C	5.770,- €	
TOWER für 4 E-Bikes + 2 E-Cars	T4B2C	8.528,- €	
<b>ZUBEHÖR</b>			
SCHRAUBFUNDAMENT für Verankerung im Erdreich	BF10	208,- €	
BOODENPLATTE zum Aufstellen wie Gastro-Schirm	BP10	314,- €	

## bike-energy LINE - Ladestationen für Wandmontage oder freistehend

LINE für 1 E-Bike	L1B	1.437,- €	<p>LINE: Abmessungen L1B, L1C: 600 mm, L3B, L3B1C: 818/80 mm, Kunststoffgehäuse Klett, Magnetschlüsselschloß und Display, Durch Användarschloß beliebig viele Abschleppplätze im Freien, in Hotels, Betriebe, etc. L2C2: Schnell-Ladeeinheit für E-Cars, Typ2 Stecker, Kommunikationsmodul, 400 V, 32A, 22 kW.</p> <p>LA10: anthrazitgrau pulverbeschichtet</p> <p>FS10: verzinkt, inklusive Montageschrauben</p>
LINE für 3 E-Bikes	L3B	4.472,- €	
LINE für 1 E-Car	L1C	1.448,- €	
LINE für 2 E-Bikes + 1 E-Car	L2B1C	4.808,- €	
<b>ZUBEHÖR</b>			
AUFSTELLER für L3B und L3B1C freistehend	LA10	314,- €	
FAHRRADSTÄNDER für 3 E-Bikes	FS10	330,- €	

## bike-energy LADEKABEL - einfach aufladen - ohne Ladegerät

LADEKABEL für Akku mit Steckerbuchse	LK3T 1 Stk	59,90 €	<p>LK3T: mit Stecker für BOSCH, Stromer, Skoda, Traxx, E-Lion, Green-Mover, Impulse, Parkera, etc.</p>
LK-SORTIMENT sortiert für die gängigsten Akkus	LK3S 5 Stk	322,50 €	

## Böler System, Zubehör, Abrechnungssystem, Schilder & Tafeln

### bike-energy SOLAR-SYSTEM - für Einbau in bestehende Säulen oder Stationen

SOLAR-SYSTEM mit 2,6 kWh Batterie	SS26	1.890,- €	SS26: 1x Solarockel 200W, Laderegler, Wechselrichter, Batterie 2,6kWh
SOLAR-SYSTEM mit 3,12 kWh Batterie	SS30	2.117,- €	SS30: 1x Solarockel 200W, Laderegler, Wechselrichter, Batterie 3,12kWh

# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

- **E-bike-loading-station I**
- **Bike-energy POINT → P1B | P2B | P4B | P1C | P2C | P2B1C\*)**
- Universal, free standing charging station. Charge up to 4 e-bikes and/or 2 e-cars at the same time. Fully automatic recognition of the connected e-bike battery. Charge your e-bike safely and comfortably outdoors, no home-charging adapter needed.
- **Product details**
- **Power supply:**
- 230 V 10-16A for models: P1B, P2B, P4B
- 3Ph 230/400V 16A (by request 32A) for models: P1C, P2C, P2B1C

# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

- **E-bike-loading-station II**

- **Casing:**

- Shock-resistant plastic, additional branded lamination, metal mounting plate at the back,
    - Dimensions: 635/380/182mm H/W/D, weight: 7-14 kg depending on model. Protection class: IP 55, UV- and weatherproof.
  - **Protection class:**
  - Class III SELV for RoPD socket systems for E-Bikes, models: P1B, P2B, P4B.
  - I Fi-safety switch type B 40/4/0,03 for models: P1C, P2C, P2B1C
  - Electronics:

# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

- **E-bike-loading-station III**

bike-energy POINT → P1B | P2B | P4B | P1C | P2C | P2B1C\*)

- Class III SELV for RoPD socket systems for E-Bikes, models: P1B, P2B, P4B.
- I Fi-safety switch type B 40/4/0,03 for models: P1C, P2C, P2B1C
- **Electronics:**
- For e-bike: Charging electronics- programmable U-I source with EnergyBus preparation (CAN open)
- **E-bike connections:** per channel 15 - 48VDC, 0 - 6A, max.288W. Display: 2x16 characters per channel.



# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

- **E-bike-loading-station IV**

bike-energy POINT → P1B | P2B | P4B | P1C | P2C | P2B1C\*)

- **For e-car:**

- Type2 socket by IEC 621962 for mode 3 charging,
- Features depending on model: for 1 or for 2 e-cars.
- 1 safety socket for all models

- **Installation:**

- Simply on a wall or (optionally) free-standing on a stainless-steel pole.  
Extensive company
- information and installation manual come with every device.

# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

### E-bike loading-station

- bike-energy POINT → P1B | P2B | P4B | P1C | P2C | P2B1C\*)
- **Connection to power supply:**
- The device is supplied ready-for-connection and needs to be connected to the 230/400V circuit by an authorized electrician.
- **Functionality:**
- Charges all common e-bikes without the home-charging system. Simply connect your bike with the intelligent bike-energy charging cable.
- E-bikes can also be charged with the standard adapter on the common socket.
- Charges e-cars with a contraption for type 2 plug and/or with the 230V socket.
- **Shipment:** In cardboard packaging, by freight forwarding or by parcel service.
- **Status:** 2015.09 reserved for changes

# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

- **Public and half-public charging stations**
  - Charging stations (AC from 3,7; 7; 11 up to 22 kW)
  - Super charger (DC up to 50, 100 and 150 kW)
  - Wallbox (AC from 3,7; 7; 11 up to 22 kW)
- **Private charging stations (e.g. at home or office)**
- **Batteries and motors (further details will come)**
  - 250, 300, 400, 500 W/h
  - Front, middle or rear engine
  - approx. 70%/75% have mid-engine (Bosch)

# E-bikes and e-charger stations

## TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

- Plug

From the EU, the Type 2 connector (“Mennekes-plug”) has been fixed as a standard charge plug connection for **alternating current (=AC )** and AC power.

As a standard for fast-charging with **direct current (=DC)**, the Combined Charging System (CCS).

# E-bikes and e-charger stations

TECHNIQUES OF THE E-BIKES CHARGERS AND STATIONS

## QUESTIONS?



**Interreg**



EUROPEAN UNION

Danube Transnational Programme

**LENA**

# Part 4 – Criteria Premium Nature Routes for E-Bikes

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# Nature Routes

## WHAT ARE “NATURE ROUTES”?

There is no official definition. Within LENA bike routes will be identified that pass through scenic landscape within protected areas.

The routes connect the e-hub stations in the towns with the surrounding landscape. The nature routes are easily accessed with e-bikes.

A criteria catalogue similar to the catalogue of “premium hiking trails” is developed for the nature routes.



Source: [http://s2.germany.travel/media/content/erholung/radfahren\\_1/81\\_donauradweg/\\_81c\\_Radfahrer\\_auf\\_dem\\_Donauroadweg\\_RET.jpg](http://s2.germany.travel/media/content/erholung/radfahren_1/81_donauradweg/_81c_Radfahrer_auf_dem_Donauroadweg_RET.jpg)

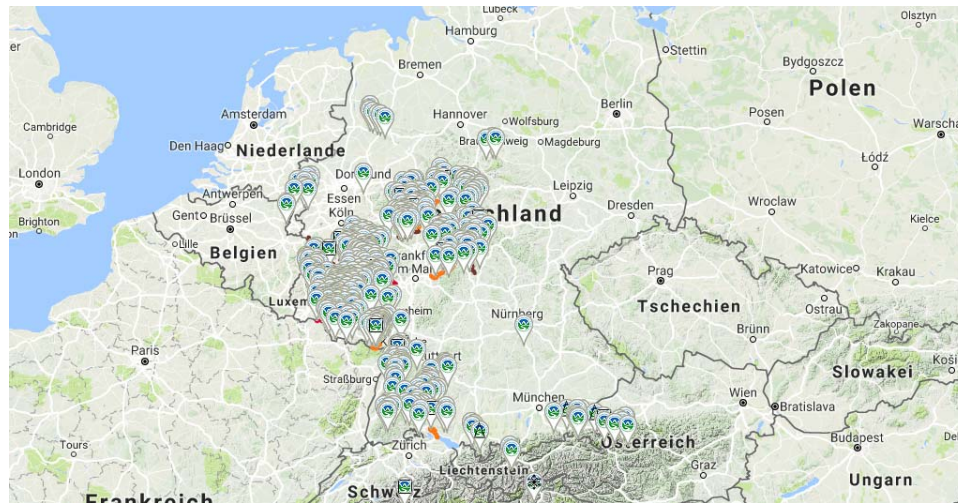


Source: [http://s2.germany.travel/media/content/erholung/radfahren\\_1/81\\_donauradweg/\\_81c\\_Radfahrer\\_auf\\_dem\\_Donauroadweg\\_RET.jpg](http://s2.germany.travel/media/content/erholung/radfahren_1/81_donauradweg/_81c_Radfahrer_auf_dem_Donauroadweg_RET.jpg)

# Premium Hiking Trails

## WHAT ARE “PREMIUM HIKING TRAILS”?

“Premium Hiking trails” are selected and certified by Deutsches Wanderinstitut. Every three years the trails have to be recertified to keep the high quality.



Source: <http://www.wanderinstitut.de>, <http://www.donaubergland.de>



# Premium Biking Trails = Nature Routes

Question: Who could certify premium biking trails?



Source:  
<https://www.tourismus-bw.de/Media/Touren/Bike-Crossing-Schwaebische-Alb-Bike-X-ing-Gesamtroute>



Source: <http://www.wanderinstitut.de>, <http://www.donaubergland.de>

Project co-funded by the  
European Union

[WWW.INTERREG-DANUBE.EU/APPROVED-PROJECTS/LENA](http://WWW.INTERREG-DANUBE.EU/APPROVED-PROJECTS/LENA)

# Criteria for Premium Nature Routes for E-Bikes

→ Target group: e-bike tourists

## MAIN CRITERIA FOR PREMIUM NATURE ROUTES FOR E-BIKES

1. Landscape experience and points of interests
- 2: Condition of trails (target group)
- 3: Refreshment opportunities
- 4: Network of e-mobility infrastructure
- 5: Guidance system
- 6: ...



Source: <https://www.ottsworld.com/blogs/danube-river-adventure-travel-germany/>

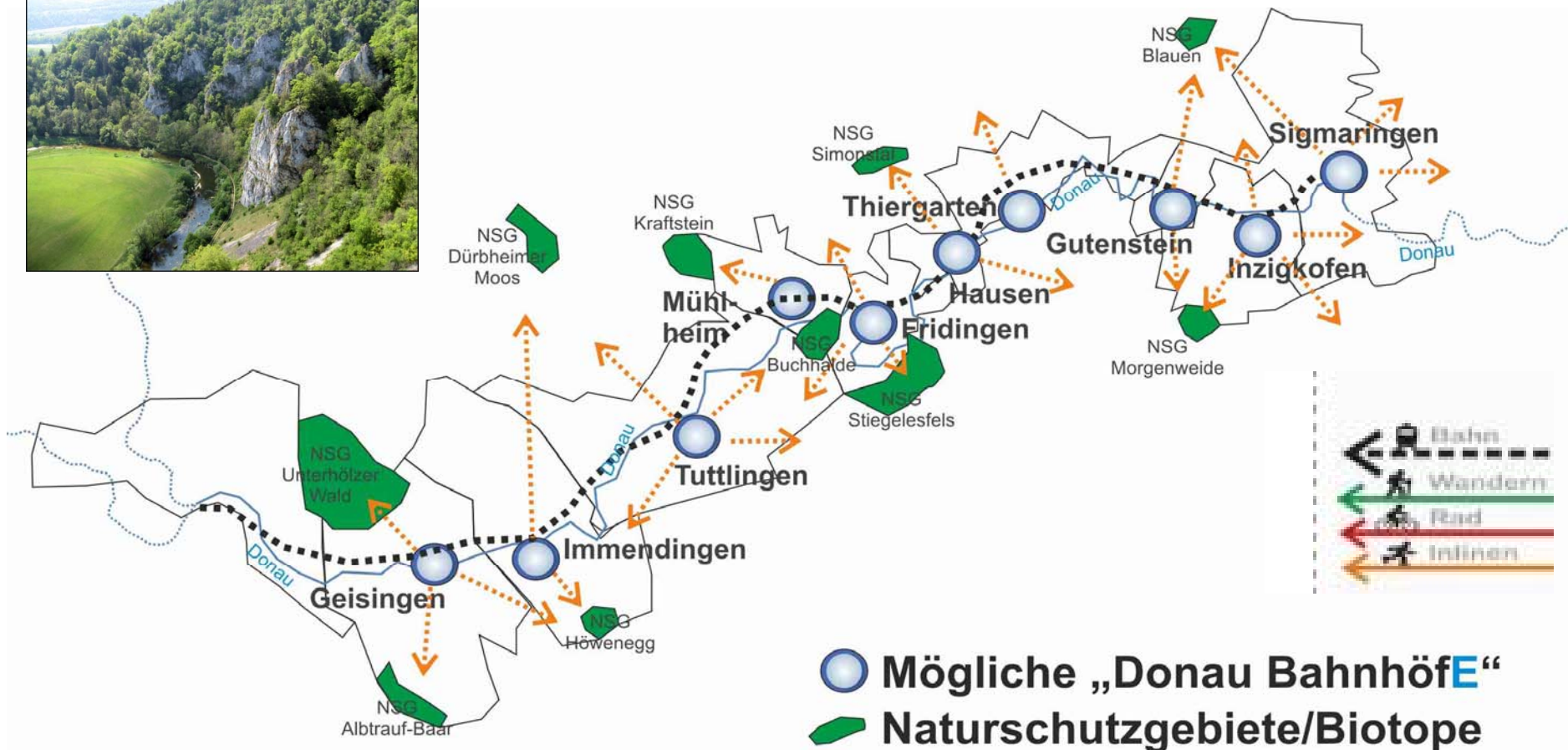
# Naturrouten

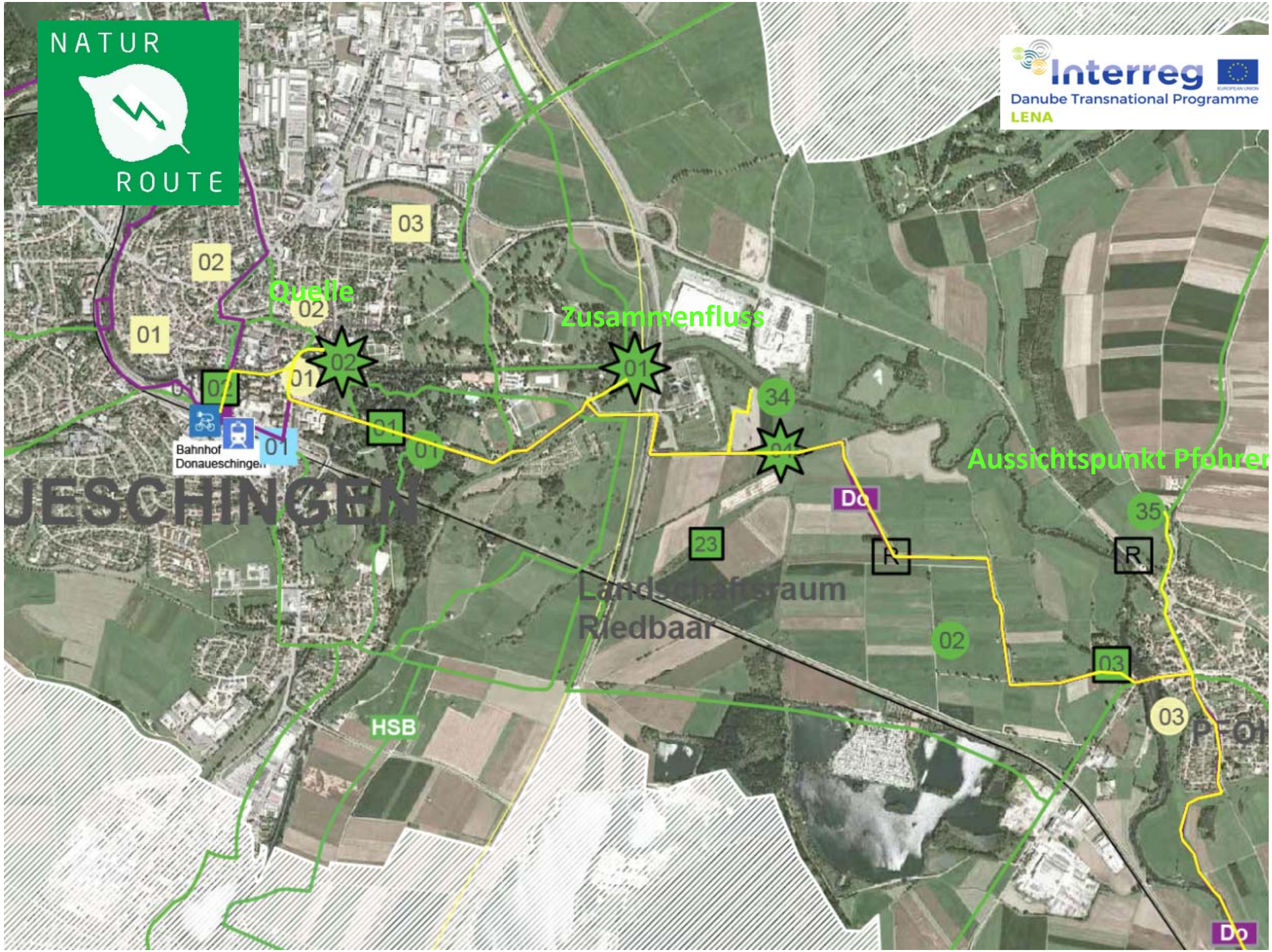
## BESCHILDERUNG



# Connectivity

## MOBILITY AND LANDSCAPE





JESCHINGEN

Bahnhof  
Donaueschingen

Quelle

Zusammenfluss

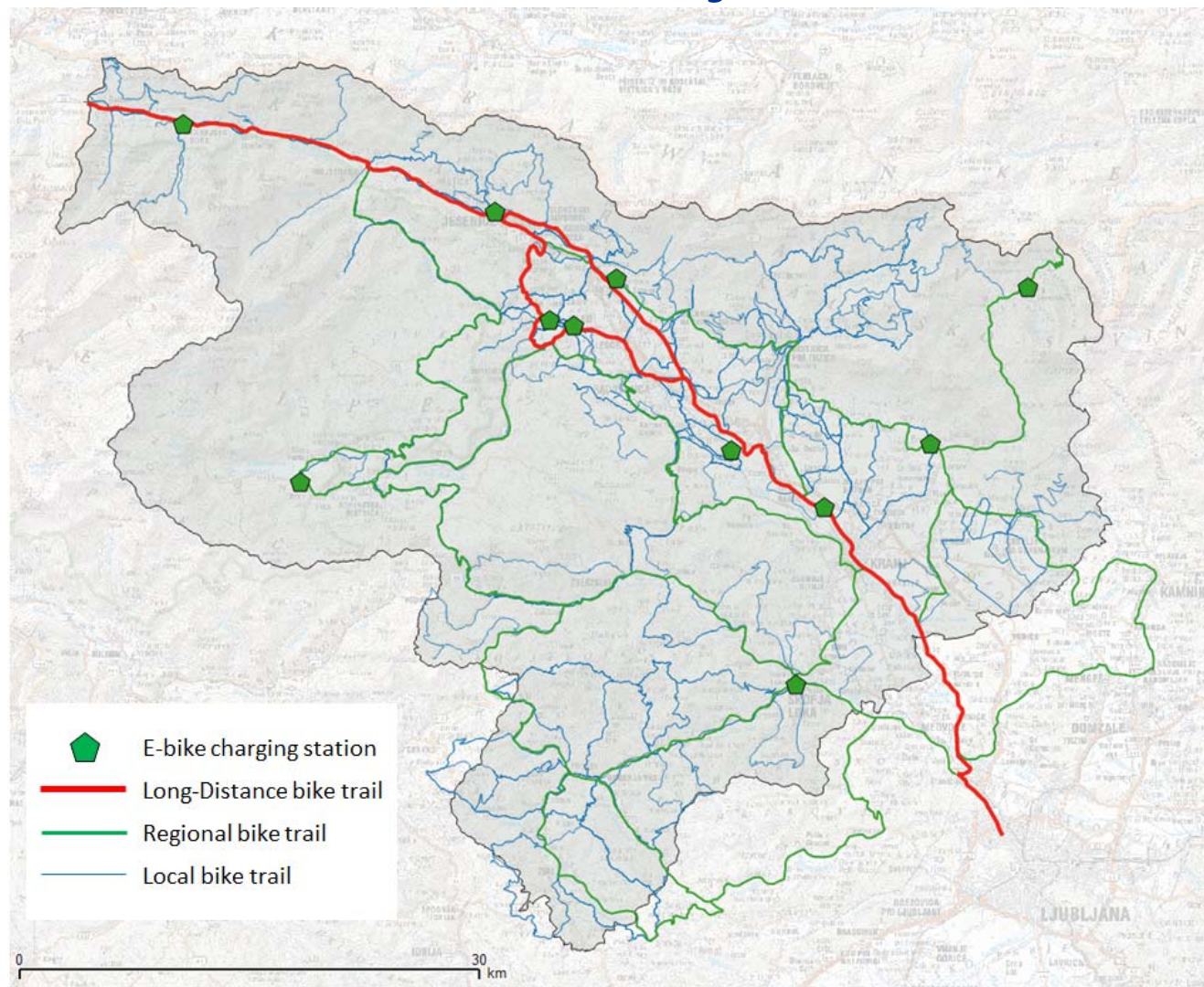
Aussichtspunkt Pföhren

Landschaftsraum  
Riedbaal

HSB

Do

# BSC Kranj RDA of Gorenjska Today



**Gorenjska region (2,137 km<sup>2</sup>)**

**11 e-bike charging stations**  
(15 charging plugs)

**20-30 e-bikes available for rent (inventory needed)**

**3,500 km of bike trails**  
(signed on the field or marked on the maps)

## **Challenges to be addressed:**

- trail is not standardized
- inadequate, patchy, unsuitable routing and informational signs and signaling
- dangerous sections
- lack of supporting facilities and services

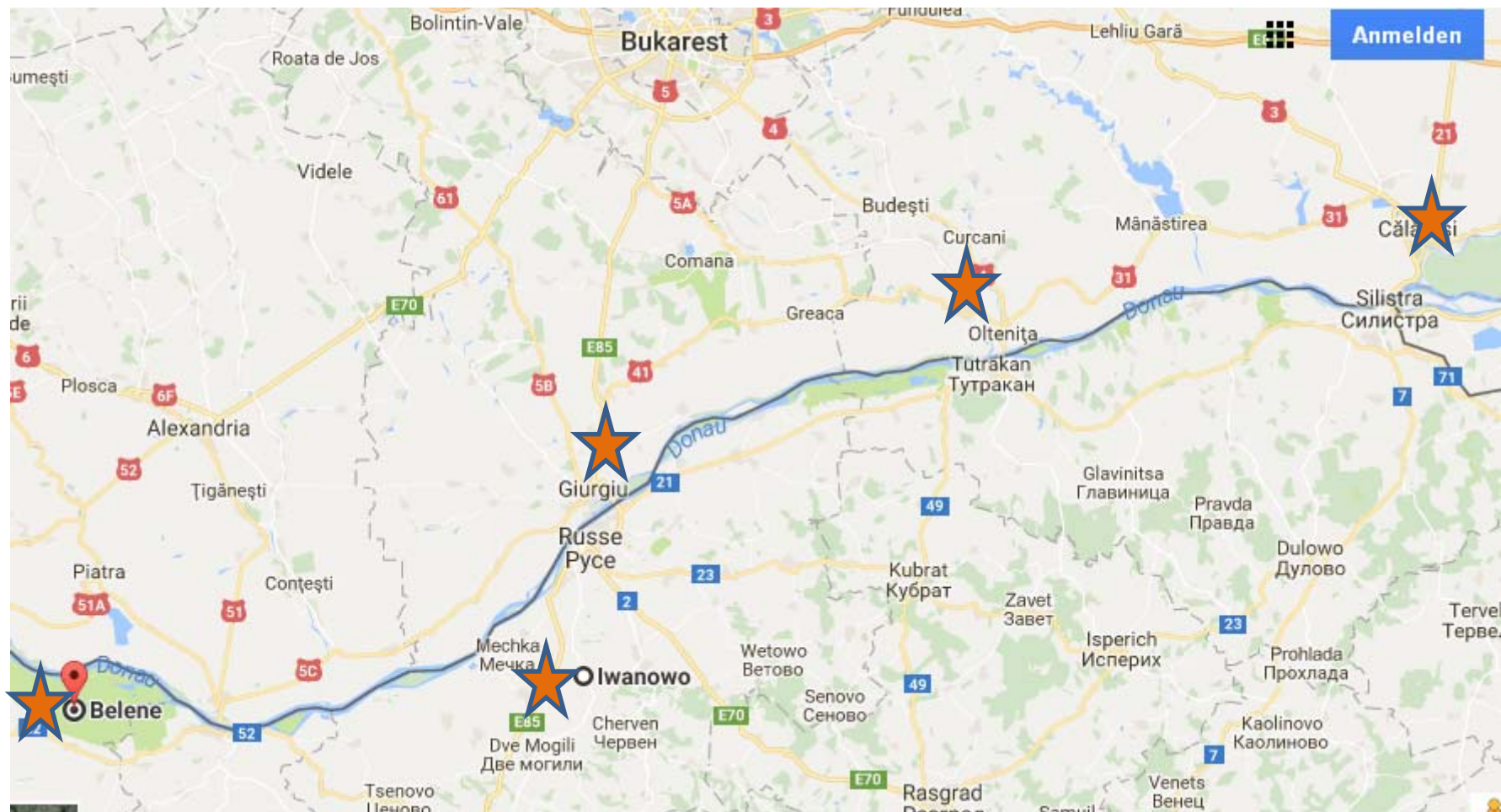
# PP10 WWF Romania Ciocănești



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# Belene / Ivanovo / Giurgiu / Oltrenita / Calarasi



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**Interreg**



EUROPEAN UNION

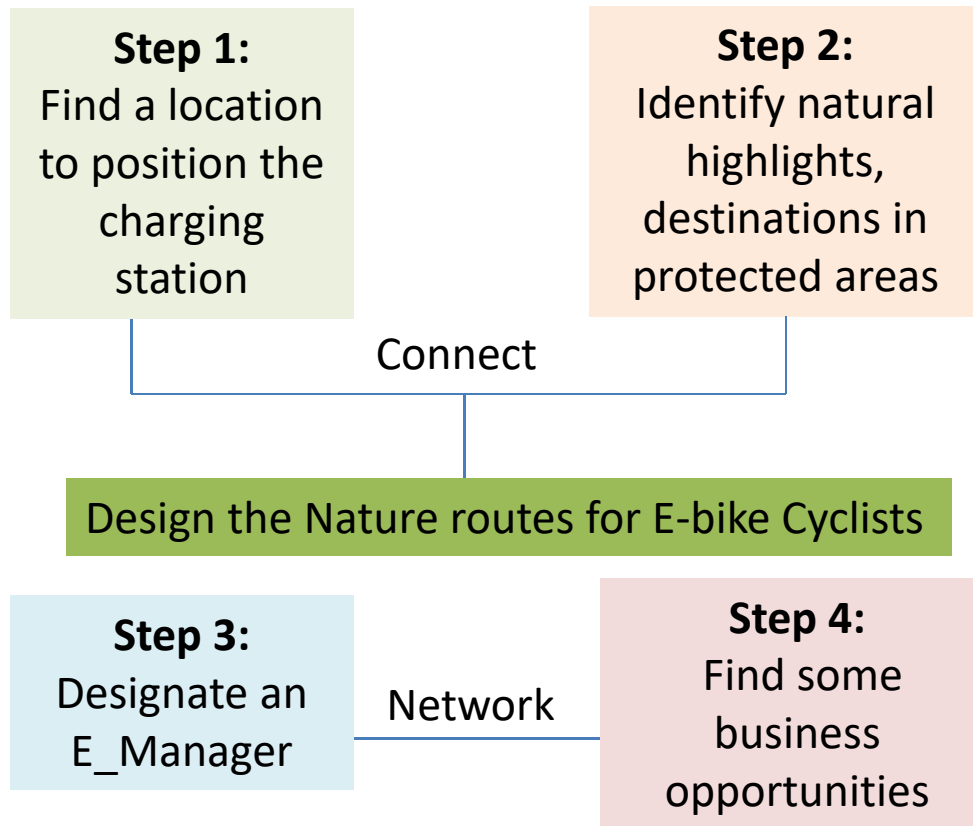
Danube Transnational Programme

**LENA**

# Part 5: E-Bike Strategy and Timeline

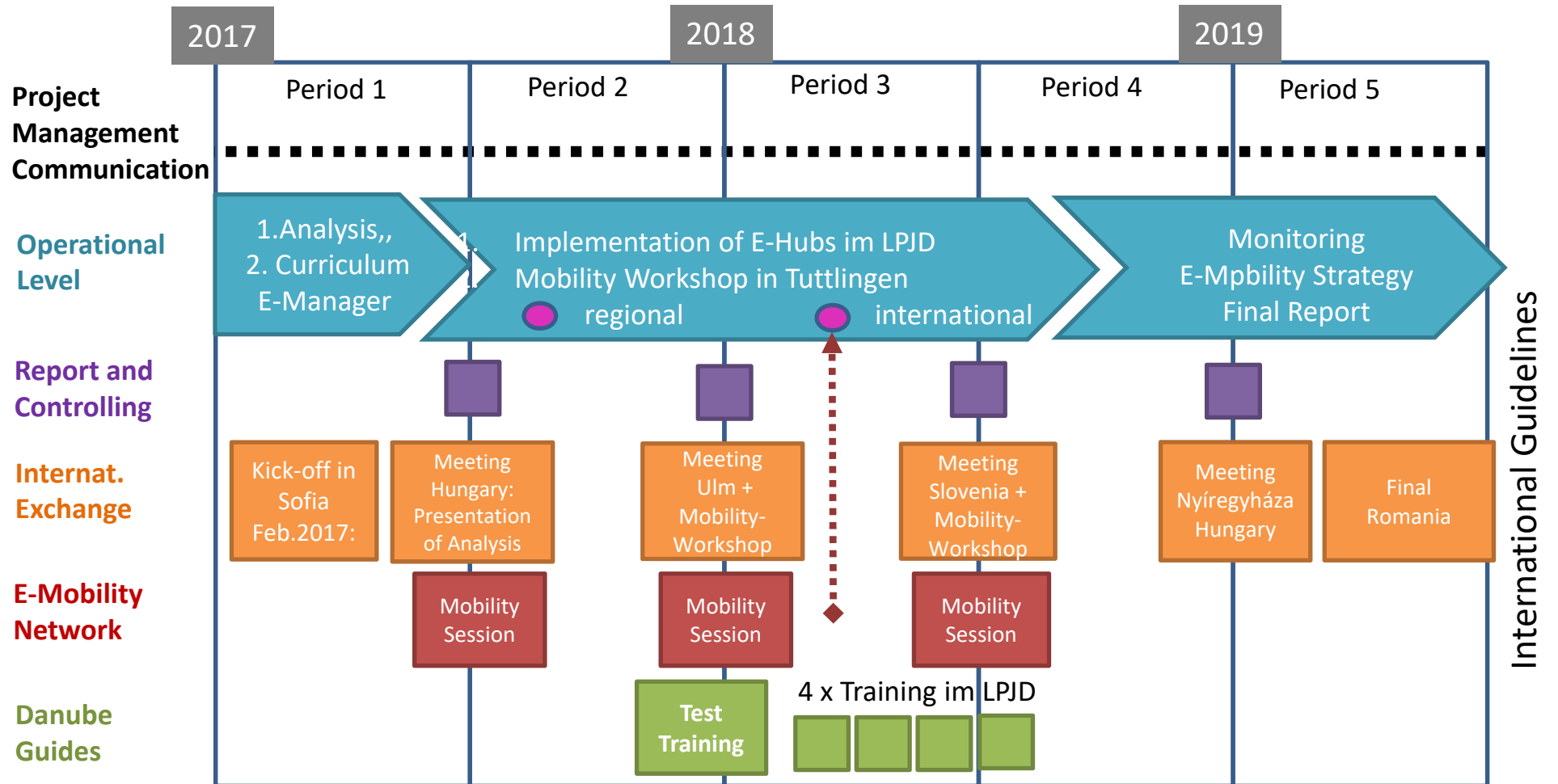
# E-Bike Strategy

## DEVELOP AN E-MOBILITY STRATEGY



Source:  
<https://www.ottsworld.com/blogs/danube-river-adventure-travel-germany/>

# Timeline





**WE ARE LOOKING FORWARD TO CYCLING FROM BLACK TO BLACK**



# Discussion



- **Thanks your very much for your attention!**

- **Questions?**

- **Contacts:**

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