

# *The role of port administrations in greening Danube ports*

## *Strategy & Actions of the Ennshafen*

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Expert Meeting on Development of Ports and Port Operations

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*First a Question – a look into the future ....*

## ***Are inland ports on the way to become “energy hubs” in 2050 ?***

- free surface areas, buildings & land > photovoltaics, Power2x, ...
- green shipping (vessels, shore side electricity, LNG/CNG, Hydrogen, ....
- focus point for modal split – trucks, railway and waterway transport
- industrial areas for transformation (processing)
- wide infrastructure (quais and basins) – future „energy storage puzzles“
- ....

**> a lot of options & challenges: „go to electricity, electricity, electricity“ – new focus of EU commission**

***>>> these new dimensions call for the creation of new ideas which are based on Strategy & Action Plan***



VERBINDEN  
VERSORGEN  
VEREINEN



VERBINDEN  
VERSORGEN  
VEREINEN

### ENNSHAFEN port

- the newest public port in Austria including two business parks
- transport hub for goods and commodities in international logistics and for local businesses
- Public-Private-Partnership: Infrastructure for transshipping und manufacturing companies
- ENNSHAFEN port: three companies – one unit

We **connect** the region to Europe.  
We **supply** to people and businesses.  
We **unite** expertise.


**Ennshafen**

PPP – Public Private Partnership  
3 port companies (OÖ+NÖ) – 1 unit  
our port company: 7 employees

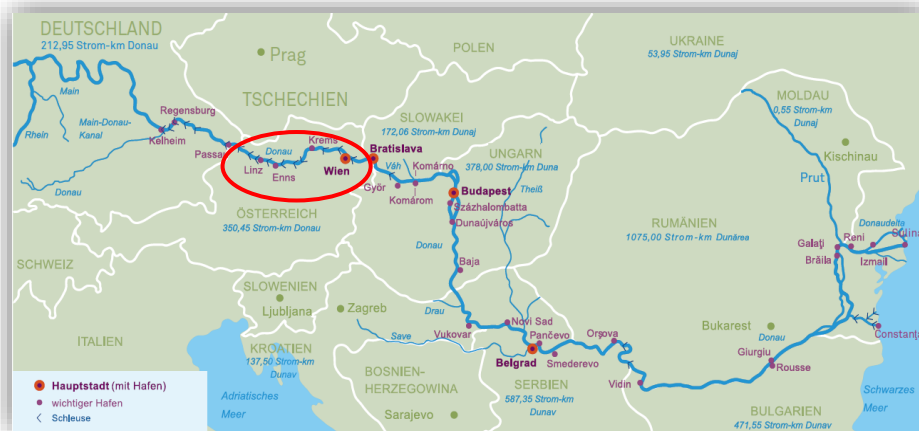


- TEN-T core node on the Rhine-Danube-Corridor
- total area of 3,530,000 sqm
- quaylength of 2.5 km with direct access to the railway system
- feeder lines with 38 km track length
- full service for transshipment by settled companies & partners
- leading tri-modal container terminal
- logistic hub including two business parks
- about 60 companies with approx. 2,500 employees

# Ennshafen in Austria on the Waterway Danube



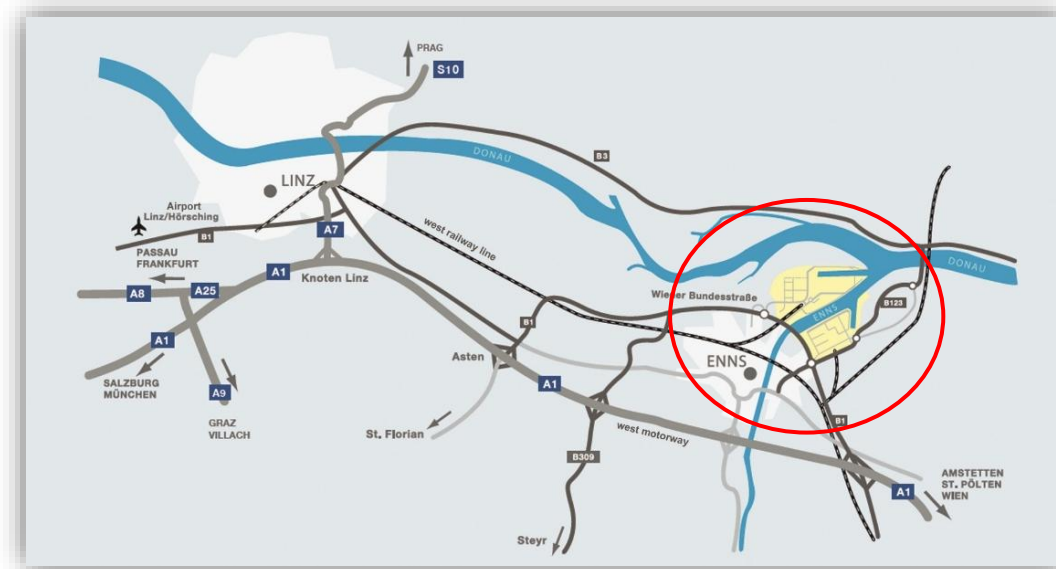
VERBINDEN  
VERSORGEN  
VEREINEN



Source: viadonau

- second longest river of Europe – **2,845 km** length
- 10 riparian countries – 18 locks
- Austrian sector: 351 km
- Transport Volume in Austria: appr. 6 mio tonnes / year

- capture area: appr. **200-300 km** for trucking of the first / last mile (average)
- rail distance to North Sea: appr. **900 km**



## Strategy

- yearly review (since 2017)
- CO<sub>2</sub> is the big headline
  - „Ennshafen\_4.clean“

Längerfristige Betrachtung – Stratiemigration „Ennshafen in Richtung 2050“

Strategieentwicklung der „Vision EHOÖ2030“ in Richtung „Ausrichtung für Dekaden 2030-2050“

Ennshafen 1.0	1970-er bis 1990-er	Entscheidung, Grundsatzgenehmigung, Beginn Bau/Aufmohung, ...
Ennshafen 2.0	1990-er bis 2000-er	Bau LZE (Bürogebäude), große Phase Hafenbecken- und Kai-Errichtung, Ansiedlungen erster großer Firmen
Ennshafen 3.0	2000-er bis ca. 2020	Fertigstellung Kais, Terminalerrichtung und Verpachtung/Ausbau, Ansiedlungsverdichtung (vor allem klassisch), Borealis-Rückzug, freie Flächen werden zusehends rarer

„Ennshafen 4.0“ ab ca. 2020 (>2030/50)  
 > „Ennshafen\_4.clean“  
 (= Synonym für saubere Logistik, digital)

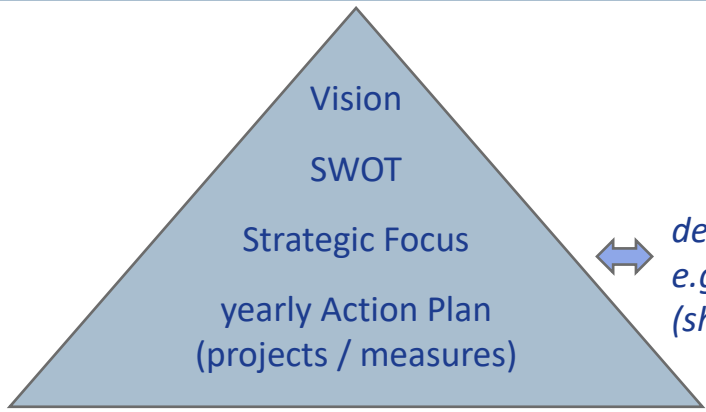
wesentliche Weiterentwicklungen und Rahmenbedingungen:

- Digitalisierungseinzug – überall, in allen Prozessen, auch Logistik
- alternative Antriebe Logistik (LNG, Strom, H2/bio, power2x, ...)
- EU Green Deal > ff. Decarbo-Vorgaben 2030-2050 („netto-null“)
- Bewusstsein für Decarbonizing-Economy ist da, wird nachgefragt
- Schiffe müssen NMMO-Richtlinie erfüllen (Motoren-Änderungen)
- Energiekooperationen bekommen wesentliche Bedeutung (zB PV)
- TEN-T-Rahmenvorgaben bis 2030 (CEF-2-Programme)
- multimodal > synchromodal&advanced (Echtzeit, digital/autonom)
- „TTS“ = truck-train-ship / extrem schnelles Drehen von Gütern, aber wenig neue Flächen verfügbar (bebaut bzw. neue Widmungen ?)
- Engpässe/Beschränkungen bei traditionellen Infrastrukturen (Straße, Schiene, ...) bzw. Einschränkungen (Verbote NO<sub>x</sub>, CO<sub>2</sub>)
- Auswirkungen von Climate Change spürbar (Wasser dramatisch)
- Fachkräftemangel überall, Europa hat überalterte Bevölkerung
- Modernisierungsdruck wird stärker („E“, Anlagen, Gebäude, ...)
- Lieferkettengesetz /Vorboten CSRD, Taxonomie

„Ennshafen\_4.clean“

## Mission Statement

*„Public Private Partnership is our mission for developing port and businesspark – efficiently & successfully.“*



↔ details – details – details  
 e.g. „environment & energy goals“  
 (short-medium-long term)

## Umwelt- und Energiepolitik

Der ENNSHAFEN ist ein bedeutender Binnenhafen & Wirtschaftsstandort von Oberösterreich und Niederösterreich und international vernetzter Logistikhub am Rhein-Danub-Korridor der Transeuropäischen Verkehrsnetze (TEN-T). Somit ist für uns die Verantwortung für nachhaltiges Handeln und die vorausschauende Ausrichtung auf die Erfordernisse der nächsten Dekaden unerlässlich.

Darum stellen wir unser Handeln unter die folgenden Prämissen:

- Wir beachten die Gesetze, wir leben nach ethischen und moralischen Grundsätzen und wenden unseren gesunden Hausverstand an.
- Wir handeln verantwortungsbewusst, nachhaltig, wirtschaftlich und zukunftsorientiert.
- Wir klassifizieren den Schutz der Umwelt und die Schonung der natürlichen Ressourcen gleichwertig zu finanziellem Unternehmenserfolg.

Die Umsetzung dieser Ziele hat oberste Priorität beim Handeln der Mitarbeiter und wird von den Führungskräften in ihrer Vorbildfunktion gelebt. Mit jährlich vereinbarten Zielen und Verfolgung deren Umsetzung entwickeln wir uns laufend weiter, kontinuierliche Verbesserung ist eine Grundlage unseres Handelns.

Wir verpflichten uns insbesondere:

- zum **Aufbau einer effizienten Infrastruktur** für nachhaltige Güterverkehrseinrichtungen nach dem Stand der Technik, **★**
- **verfügbare Schritte zu setzen**, die zu einer wirtschaftlichen Anwendung der besten verfügbaren Technik („BAT“) führen, **★**
- zur **Ausarbeitung und zur Umsetzung von Maßnahmen zur Abschwächung des Klimawandels und zur Ressourcenschonung** bei eigenen Prozessen sowie in Kooperationen mit Partnern im Public-Private-Partnership-Modell des Ennshafens, **★**
- zum **Schutz des Ökosystems „Wasser“** an der Enns und der Donau sowie zu laufenden Verbesserungsmaßnahmen bei Luft- und Lärmmissionen nach internationalen Standards und **★**
- zu **Beiträgen für eine „Gute Nachbarschaft“** mit den Partnern am Standort und den benachbarten Kommunen. **★**

Unser Leitsatz lautet: **VERBINDEN – VERSORGEN – VEREINEN**, das gilt im Besonderen auch für die Umwelt- & Energiepolitik:

- **VERBINDEN** von effizienter Infrastruktur und nachhaltigen Güterverkehrsströmen,
- **VERSORGEN** von Menschen und Wirtschaft unter Anwendung von fortschrittlichen technischen Lösungen,
- **VEREINEN** von Interessen von Wirtschaft, Nachbarschaft und Ökologie zum förderlichen Miteinander.

Ennshafen ÖO GmbH und Ennshafen NÖ GmbH  
 Enns, Juni 2021

➤ **CSRD / EU-Taxonomy > climate transition plan (currently under revision – „Omnibus-process“)**

## CO<sub>2</sub>-balance according to CSRD / Scope 1-3 [as „greenhouse gas equivalent“ / CO<sub>2</sub>e]

**Scope 1: direct emissions from a company's owned or controlled sources;** includes on-site energy, such as natural gas and fuel, refrigerants, and emissions from combustion [specific emission factors > CO<sub>2</sub>e in t/a]

**Scope 2: indirect emissions generated by the production of purchased energy;** includes purchased **electricity**, steam, .... – e.g. calculated from metered electricity consumption > “location-based” and “market-based” [specific emission factors > CO<sub>2</sub>e in t/a]

**Scope 3: indirect emissions that occur in the value chain of a reporting company;** to make a clear distinction between the scope 2 and scope 3 categories, the US Environmental Protection Agency (EPA) describes scope 3 emissions as “the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly impacts in its value chain”; even though these emissions are out of the control of the reporting company, they **can represent the largest portion** of its GHG emissions inventory [specific emission factors > CO<sub>2</sub>e in t/a]

### Scope 3 is structured into 15 categories:

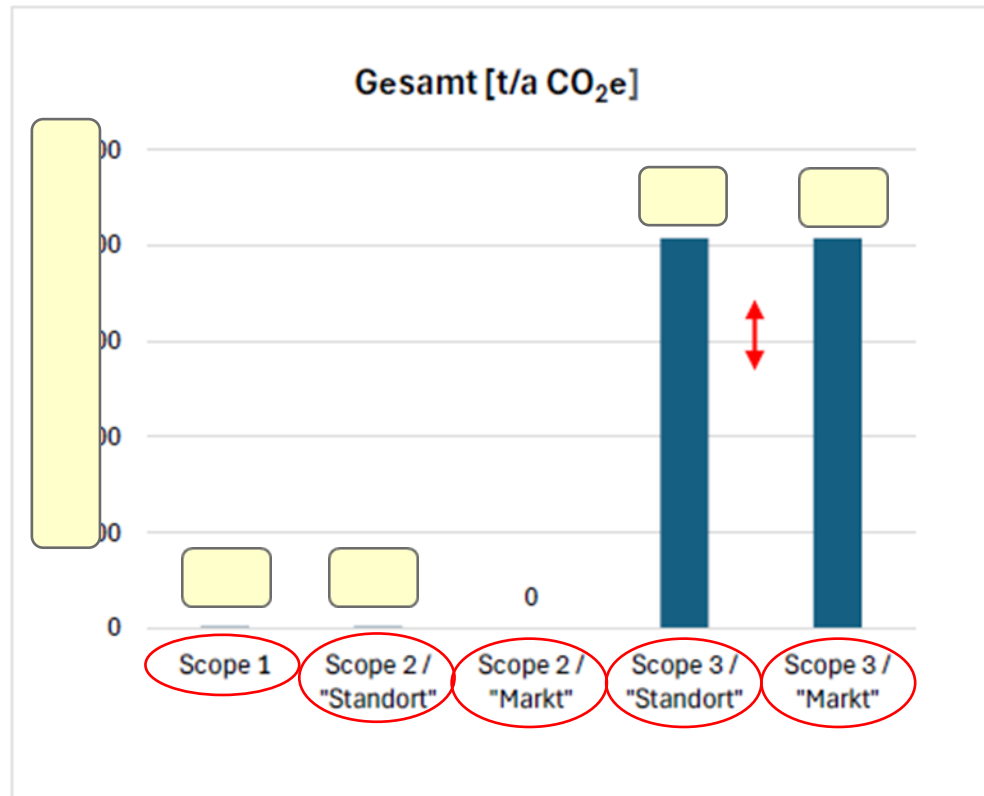
- |   |   |
|---|---|
| 1. Purchased goods and service              | 8. Upstream leased assets                     |
| 2. Capital goods                            | 9. Downstream transportation and distribution |
| 3. Fuel and energy-related activities       | 10. Processing of sold products               |
| 4. Upstream transportation and distribution | 11. The use of sold products                  |
| 5. Waste generated in operations            | 12. End-of-life treatment of sold products    |
| 6. Business travel                          | <b>13. Downstream leased assets</b>           |
| 7. Employee commuting                       | 14. Franchises                                |
|   | 15. Investments [financial]                   |

**Scope 1 + 2:** „no problem“ for a logistic hub (port / terminal)

**Scope 3:** „a real challenge“ – for a PPP-port esp. category 13; cat 1-8 could be managed, even if no data of suppliers are available – eg. maintenance work, small investments, ... >>> international data bases with expenditure-specific method / averaged figures – x kg CO<sub>2</sub>e/€ figures for different works

***There are many of software-tools on the market. BUT: the really challenge is the process definition for Scope 3 categories - especially for category 13 !***

# CO<sub>2</sub>-balance of the port company (EHOÖ)



*enormous differences between the three scopes for a logistic hub > divide into sections in order to get a better view on it*

**Scope 1:** **direct emissions** from a company's owned or controlled sources; includes on-site energy, such as natural gas and fuel, refrigerants, and emissions from combustion

**Scope 2:** **indirect emissions** generated by the production of purchased energy; includes **purchased electricity**, steam, ... – e.g. calculated from metered electricity consumption > "location-based" and "market-based"

**Scope 3:** **indirect emissions** that occur **in the value chain** of a reporting company; to make a clear distinction between the scope 2 and scope 3 categories, the US Environmental Protection Agency (EPA) describes scope 3 emissions as **"the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly impacts in its value chain"**; even though these emissions are out of the control of the reporting company, they can **represent the largest portion** of its GHG emissions inventory [*our first approach: only stretches in Europe*]

## CO<sub>2</sub>-balance of the port company (EHOÖ)

*we elaborated a kind of a matix: SCOPE 1-3 vs. SHELL 1-3*

**Shell 1:** core business of Ennshafen company / directly attributable emissions („scope of responsibility“ - battery limit area, legal entity, ..) **focus: "operative"**

**Shell 2:** emissions from the business of the tenants on our areas / facilities (transhipments on the quays, container terminal, leasing & rental spaces, ...) **focus: „contracts"**

**Shell 3:** external emissions outside the port for transport stretches („cradle-to-gate“): outgoing / ingoing of vessels, railways, trucks **focus: „transport"** [our first approach: only stretches in Europe !]

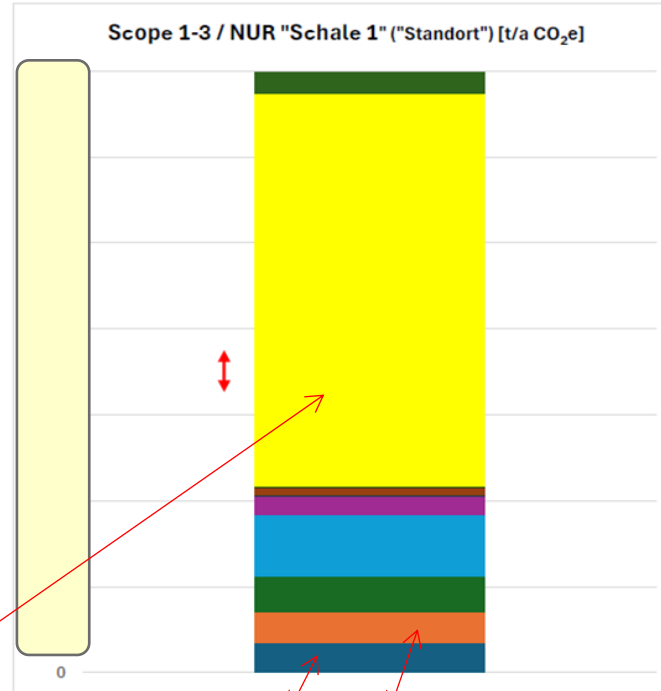
*responsibility & main working field of the port company !!!*

t/a CO <sub>2</sub> e	Shell 1	Shell 2	Shell 3
Scope 1	xx	-	-
Scope 2	xx	x	-
Scope 3	xxx	xxxx	xxxxxxx

# Scope 1-3 / **only shell 1** – „direct responsibility of the port company“

Scope 1-3 / NUR Schale 1 ("Standort") [t/a CO<sub>2</sub>e]

Scope 1 / Heizung	1
Scope 2 / Strom (Standort)	0
Scope 3.1 / Waren+DL	4
Scope 3.2 / Investitionen	3
Scope 3.3 / "BS-Energie-indirekt" (Standort)	2
Scope 3.5 / Abfall	2
Scope 3.6 / Geschäftsreisen	3
Scope 3.7 / Arbeitnehmer	7
Scope 3.8 / vorgelagerte geleaste Vermögen	1
Scope 3.13 / Winterschiffe	4
Scope 3.13 / Sonstige Nutzungen	1
Scope 3.13 / Betriebskantine	0
<b>Summe 1-3 / Schale 1</b>	<b>3</b>



- Scope 3.13 / Betriebskantine
- Scope 3.13 / Sonstige Nutzungen
- Scope 3.13 / Winterschiffe
- Scope 3.8 / vorgelagerte geleaste Vermögen
- Scope 3.7 / Arbeitnehmer
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- Scope 3.5 / Abfall
- Scope 3.3 / "BS-Energie-indirekt" (Standort)
- Scope 3.2 / Investitionen
- Scope 3.1 / Waren+DL
- Scope 2 / Strom (Standort)
- Scope 1 / Heizung

CEF-2-project ONSHORE POWER SUPPLY [€]



building renovation [€]



additionally:  
PV on own areas  
(net-neutrality measure)  
potential: ca. xxx t/a CO<sub>2</sub>e (rough)



Copyright: Danubia Speicherei

# From CO<sub>2</sub>-balance to onshore power supply invest-project

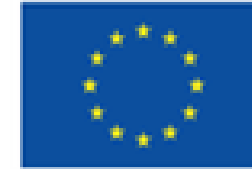
## CEF – Connecting Europe Facility

### CEF-1: Ennshafen prepares smart & sustainable mobility investments

- > 2021 – 2024
- > **study project**: railway debottlenecking, LNG, **onshore power supply**, digitalisation

### CEF-2: Electrified Danube\_Close the Gaps at Ennshafen, Austria

- > 2024 – 2027
- > **works**: **onshore power supply investment** according to currently needs (400 A)



Co-funded by  
the European Union



*responsibility  
for the future*

# CEF – CONNECTING EUROPE FACILITY

## Electrified Danube Close the Gaps at Ennshafen, Austria



- Project number: 101174873
- Project name: Electrified Danube\_Close the Gaps at Ennshafen, Austria
- Project acronym: 23-AT-TG-EDA\_CG\_Ennshafen
- Call: CEF-T-2023-COREGEN
- Starting date: 1 October 2024
- End date: 31 December 2027
- Participants:  
Ennshafen OÖ GmbH, Ennshafen NÖ GmbH
- Budget: 6,318,000 EURO  
(funding rate of 50 percent)



# „approach to a CLIMATE TRANSITION PLAN“

**SIGNIFICANT** topics for

## „CLIMATE TRANSITION PLAN“ (*draft paper*)

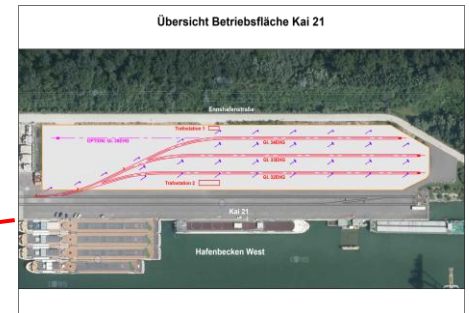
*time horizon: appr. next 10 years (w.i.p)*

### CCM: „Climate Change Mitigation“

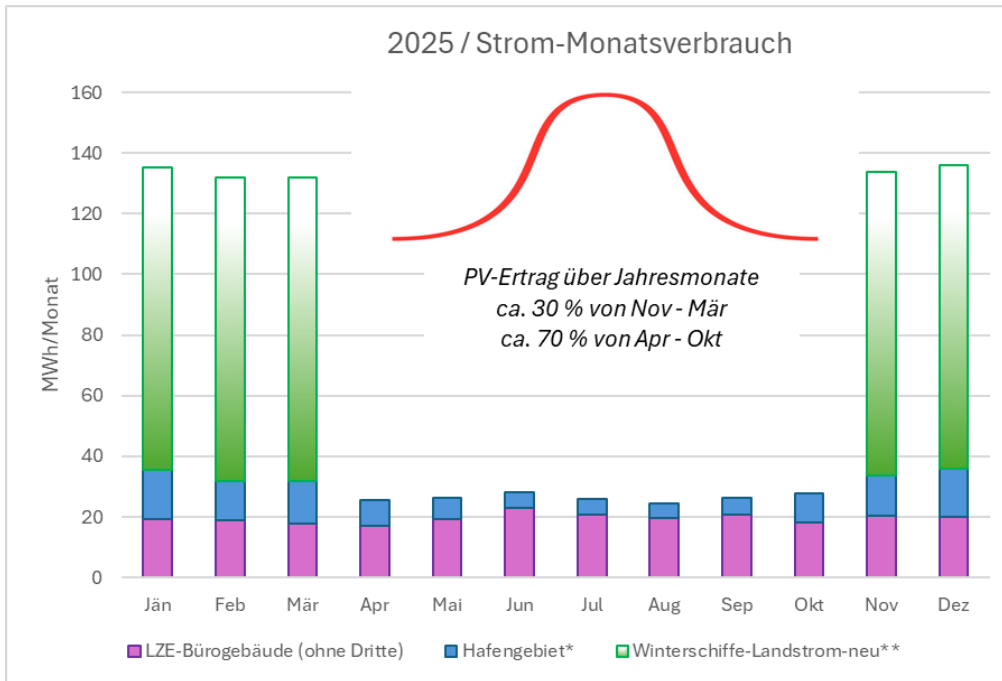
- onshore power supply (new: Powerlock, upgrading cargo transshipment quays)
- building renovation (heating, cooling, isolation, windows, ...) > energy certificate from class „C“ to class „B/A“ (catalog of technical criteria)
- installation of photovoltaics within the port area (fallow land, parking spaces, buildings, ...)
- area expansion / finalisation (quay 21) > for enhanced railway business
- e-charging stations for trucks

### CCA + CCM: „Climate Change Adaption“

- digging of sediments (port areas / basins)



## OUTLOOK: winterstand of cruise ships / demand vs. green electricity availability ?



### **ELECTRICITY GAP: heavy dis-balance between demand and PV-generation potentials**

- PV generation on traffic areas, parking spaces, fallow land, roofs, ... (and strong grid connection)
- battery storage as buffer system (day/night)
- HDV charging (megacharger)  
> peak management system / flexibility

**seasonal surplus/deficit management** (summer PV vs winter OPS demand) probably the solution could be in external underground storage of an energy carrier via seasonal H<sub>2</sub>-generation and -storage

>>> integrated PEMS (port energy management system) – scalable / starting with first core parts, could be enlarged both „vertical and horizontal“

- make more of the infrastructure elements by intelligent combination
- this can really reduce your CO<sub>2</sub>-footprint, will bring „sun-electricity from summer to winter“

*an integrated approach is our next challenge - we have started to plan more in detail and are willing to realise it step-by-step, if economically feasible*

## Back to the question from the beginning ....



VERBINDEN  
VERSORGEN  
VEREINEN

A look into future times ....

### Are inland ports on the way to become “energy hubs” in 2050 ?

- free surface areas (buildings & land) > photovoltaics, Power2x, ...
- green shipping (vessels, shore side electricity, LNG/CNG, Hydrogen, ....
- water, water, water ..... decarbo & sustainable transport
- focus point for combination of railway and waterway transport
- industrial areas for transport and transformation (processing)
- wide infrastructure (quais and basins) – future „energy storage areas“
- ....

> a lot of options & challenges: „go to electricity, electricity, electricity“ – latest focus of EU commission

>>> *upcoming of new dimensions  
and creation of new ideas – need  
for Strategy & Action Plan ... just do it !!!*

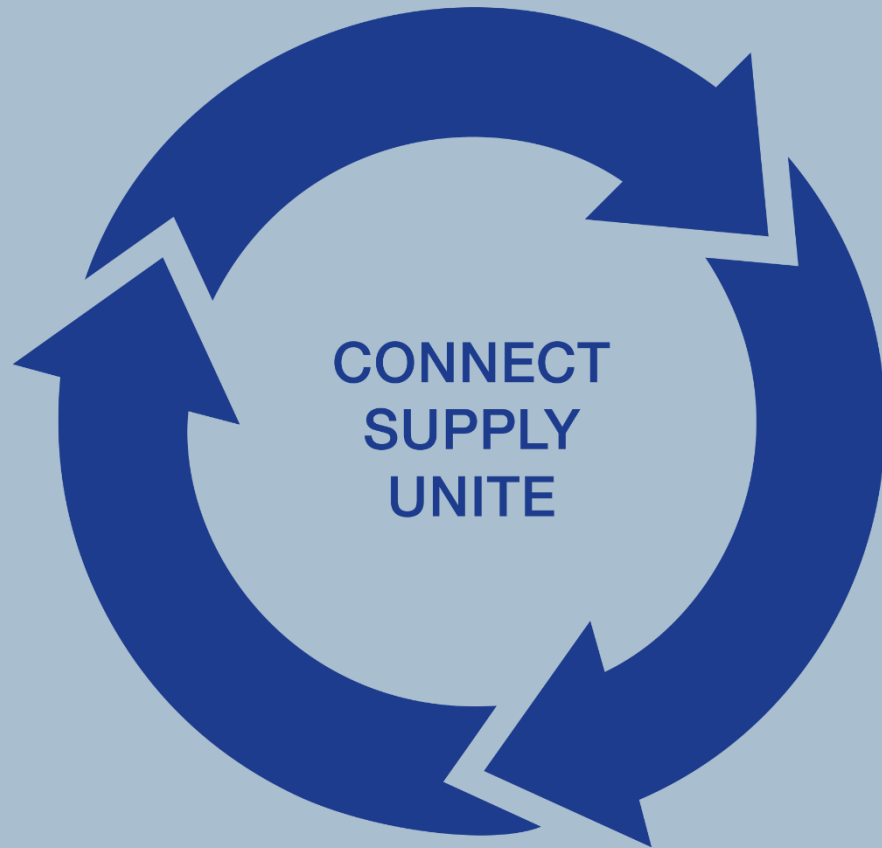


ENNSHAFEN

... yes, ports can come into that direction

- *select your role & responsibility*
- *concentrate on effective projects*
- *don't forget the economic figures*

... just do it !



We connect the region to Europe.

We supply to people and businesses.

We unite expertise.

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