



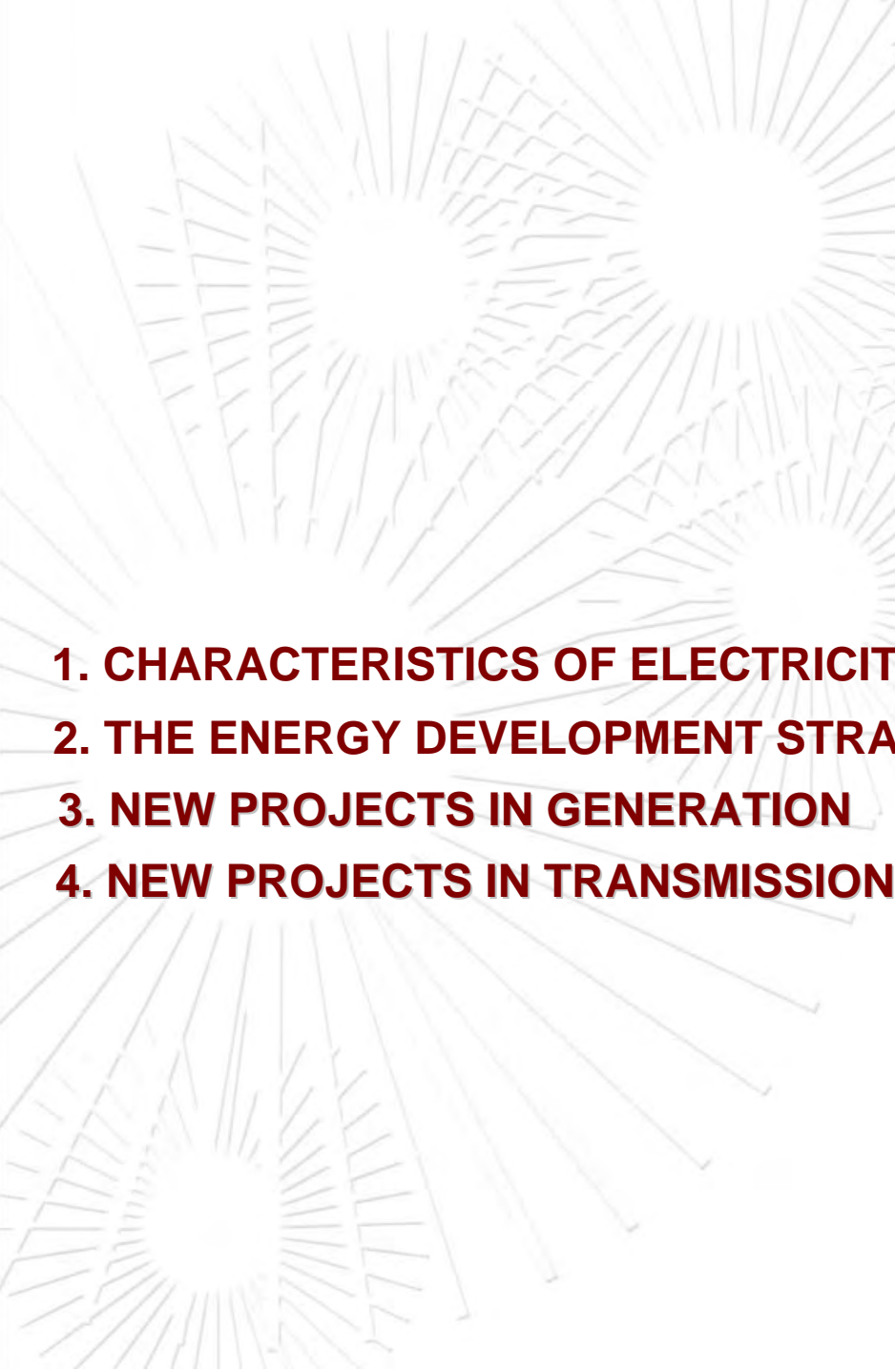
Elektroprivreda Crne Gore

ELECTRICITY SECTOR IN MONTENEGRO

2nd South East Europe Energy Dialogue

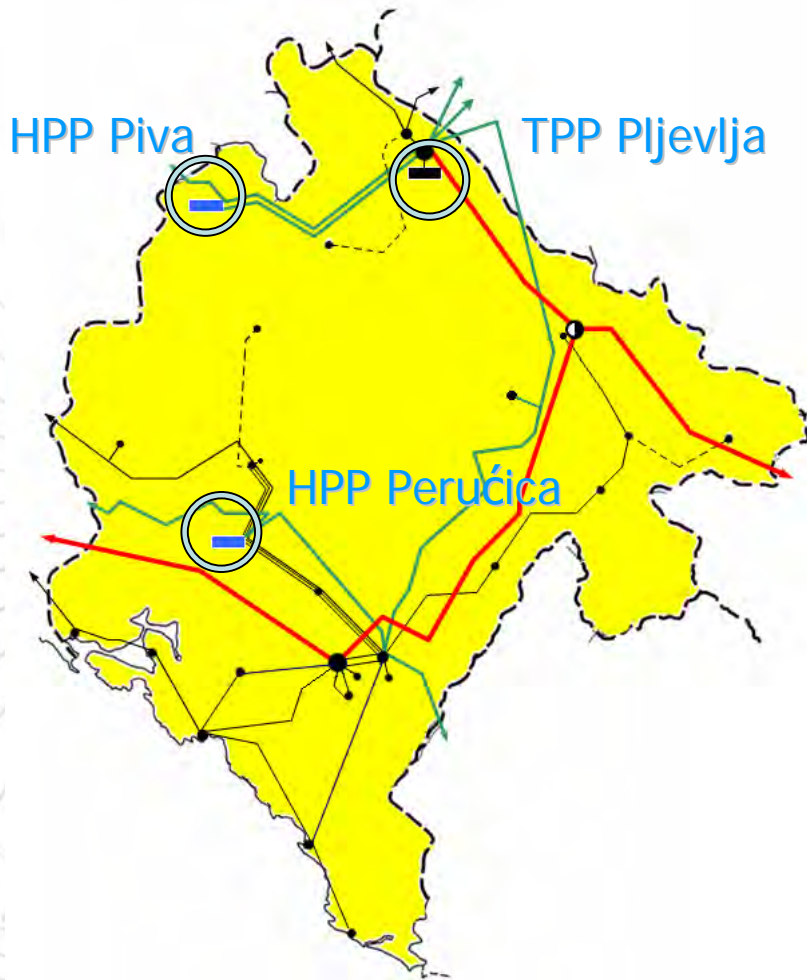
Thessaloniki, 21-22 May 2008

MONTENEGRIN ELECTRIC ENTERPRISE
Joint-stock company Nikšić

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- 1. CHARACTERISTICS OF ELECTRICITY SECTOR**
 - 2. THE ENERGY DEVELOPMENT STRATEGY**
 - 3. NEW PROJECTS IN GENERATION**
 - 4. NEW PROJECTS IN TRANSMISSION**



ELECTRIC POWER SYSTEM OF MONTENEGRO



Generating plants

Power plant	Capacity (MW)	Generation GWh
HPP PERUĆICA	307	932
HPP PIVA	342	860
TPP PLJEVLJA	210	1.150

Transmission and Distribution Network

	Installed capacity (MVA)	Length of the network (km)
400 kV	1.400	254
220 kV	700	400
110 kV	774	657
35 kV	584	1.150
10 kV	1.000	4.230
0.4 kV	-	14.000

ELECTRICITY DEFICIT (IMPORT)



□ year 2007

deficit (import) :

- 2,1 TWh

- 137.8 million €

- 65 €/ MWh

□ year 2008

generation

3,1 TWh

consumption

4,8 TWh

deficit (import) :

- 1,7 TWh (34.6 % consumption)

- 136.4 million €

- 82 €/ MWh

□ year 1999-2008

deficit (import) :

- 14,1 TWh

- 620.3 million €

ELECTRIC POWER SYSTEM OF MONTENEGRO

- Trend of further growth of power consumption and increase in imported power costs
- Electricity import costs-over 130 million EUR/p.a.
- Last power plant built 26 years ago (TPP Pljevlja)
- New power plants need to be built in order to reduce, i.e. eliminate electricity deficit
- Montenegro has great unused hydro potential and high quality coal reserves
- Transmission and distribution network need to be rehabilitated, reconstructed and extended in order to prolong their operating life, to ensure better connection with neighboring countries and safer supply of customers in certain regions and towns of Montenegro

THE ENERGY DEVELOPMENT STRATEGY

Measures are introduced in the energy sector in order to establish good institutional basis:

- Energy Development Strategy by 2025 (adopted in November 2007)
- Spatial Plan of Montenegro by 2020 (adopted in March 2008)

The activities in progress:

- Preparation of the Action plan for implementation of the Energy Development Strategy by 2012
- Development of legal regulations with objective to simplify procedures and to make them applicable (Concession Law, Construction Law,...)

THE ENERGY DEVELOPMENT STRATEGY

- **Construction of the second unit of TPP Pljevlja (225 MW)**
- **Construction of hydropower plants on the rivers Morača and Komarnica**
- **Construction of renewables power plants:**
 - **small hydropower plants**
 - **wind mills**
 - **exploitation of biomass energy**
 - **exploitation of solar energy**
- **EPCG should choose a strategic partner (through selling a part of the state owned shares)**

NEW PROJECTS IN GENERATION

TPP PLJEVLJA II

- Installed capacity: 225 MW
- Average annual generation: 1,1 TWh
- Construction costs: 175 million EUR
- Construction period: 4.5 years

- There is an intention to construct this plant through partnership

- Analyses of this model are in progress as well as possibility to join Coal mine Pljevlja to EPCG

NEW PROJECTS IN GENERATION

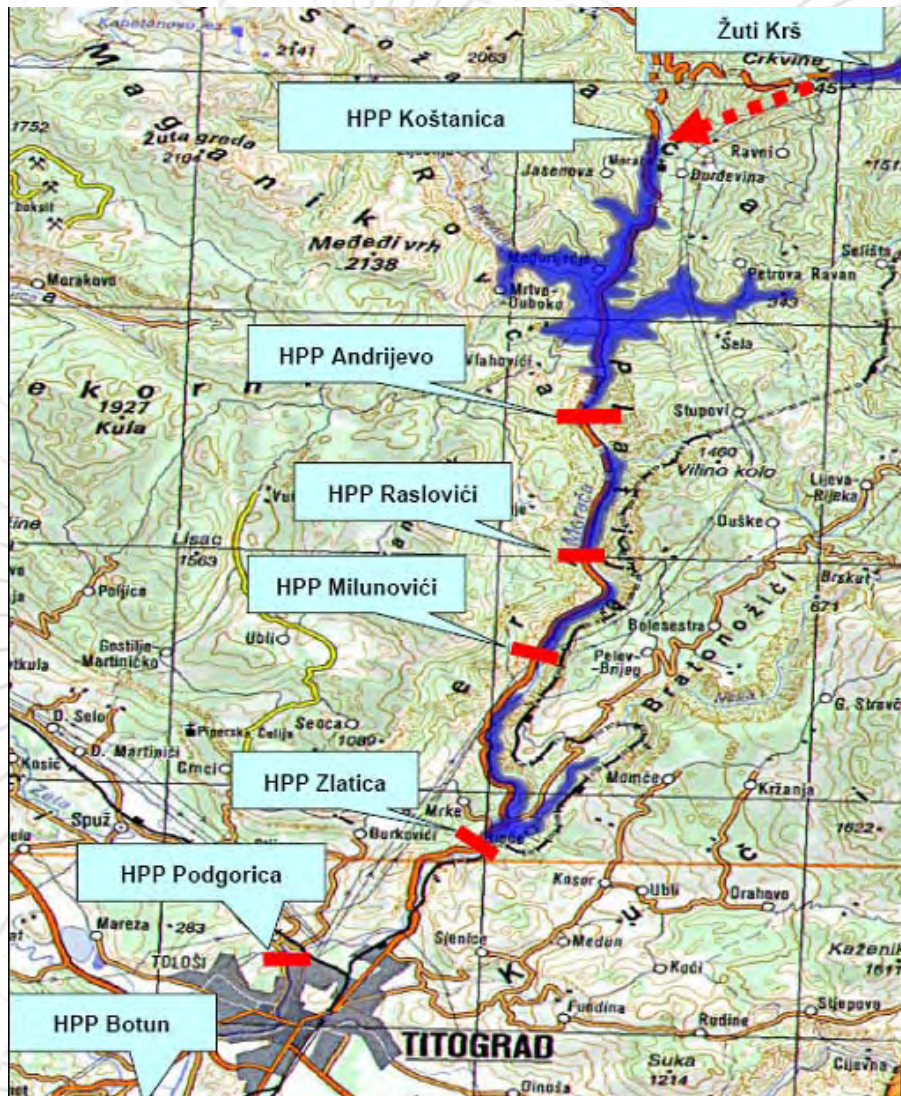


HYDRO POWER POTENTIAL OF MONTENEGRO

□ NATURAL RIVER COURSE

- GROSS HYDRO POWER POTENTIAL:
9,9 TWh
- USED HYDRO POWER POTENTIAL:
1,8 TWh (18%)
- REMAINING TECHNICALLY EXPLOITABLE HYDRO POTENTIAL:
3,7 – 4,6 TWh

NEW PROJECTS IN GENERATION



HYDRO POWER PLANTS ON THE RIVER MORAČA

HPP Andrijevo,
HPP Raslovići,
HPP Milunovići,
HPP Zlatica

- Total installed capacity 238 MW
- Average generation 693 GWh
- Time required for construction of all power plants 6 years
- Total construction costs 430 million EUR

NEW PROJECTS IN GENERATION

HPPs on the river Morača

- There is intention to construct this system of hydropower plants by awarding concessions (BOT or a similar model) through international bidding procedure
- Establishment of the expert team for implementation of activities required for project initiation is in progress (authority of the Ministry of Economic Development)
- Preparation of the Spatial Plan for the reservoir area and Strategic Environmental Assessment Study (SEA)
- Implementation of two-stage tender procedure with a support of a foreign Consultant
- Financing of these activities is to be provided by the Government

NEW PROJECTS IN GENERATION

HPP KOMARNICA Location of dam profile



- Installed capacity: 2 x 84 MW 168 MW
- Average annual generation: 230 GWh
- Construction period: 7 years
- Construction costs: 134 million EUR



- Type of dam: concrete, arch
- Height of dam: 176 m
- Normal operating level of reservoir: 816 m.a.s.l.
- Total reservoir volume: 260 hm³
- Usable volume of reservoir: 160 hm³
- Installed water flow: 2 x 65 m³/sec
- Net head: 153 m
- Type of turbines: Francis

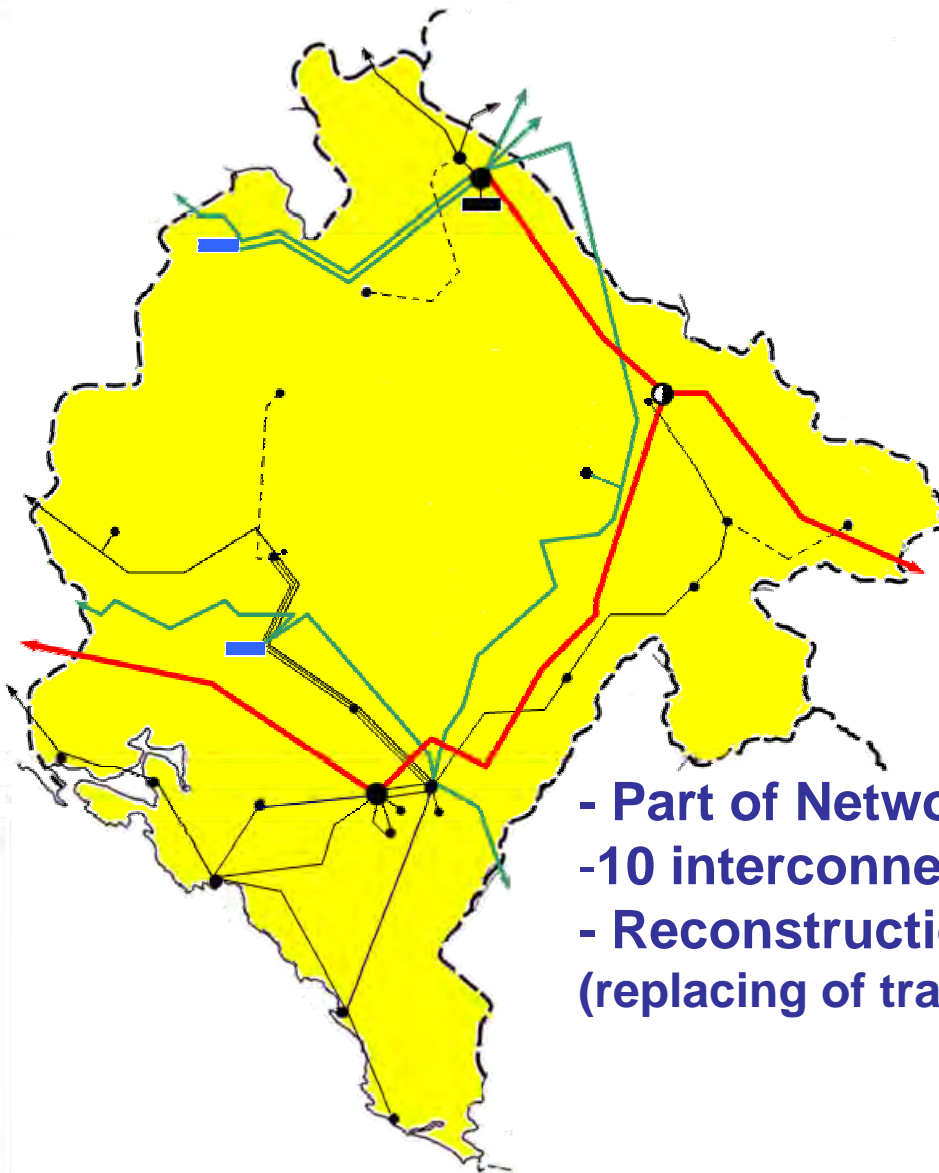
NEW PROJECTS IN GENERATION

HPP KOMARNICA

- Frontal power plant and reservoir in the catchment area of the river Piva
- Dam is located at the end of backwater of existing reservoir Piva
- No eliminating factors (ecology and social)
- Energy and economy effects favourable (with respect to the positive influence on downstream power plants)
- Preparations for finalization of investigation works are in progress
- Preparation of technical documents and Feasibility Study will follow (planned to be finalized by the end of 2009)

CHARACTERISTICS OF TRANSMISSION

Transmission Network



	Installed capacity (MVA)	Length of the network (km)
400 kV	1.400	254
220 kV	700	400
110 kV	774	657

- Part of Network of Former Yugoslavia
- 10 interconnecting lines
- Reconstruction of facilities in progress (replacing of transformers and high voltage equipment)

NEW PROJECTS IN TRANSMISSION

400 KV Pljevlja - Visegrad

220 KV Perućica - Dubrovnik

DC line
Montenegro - Italy

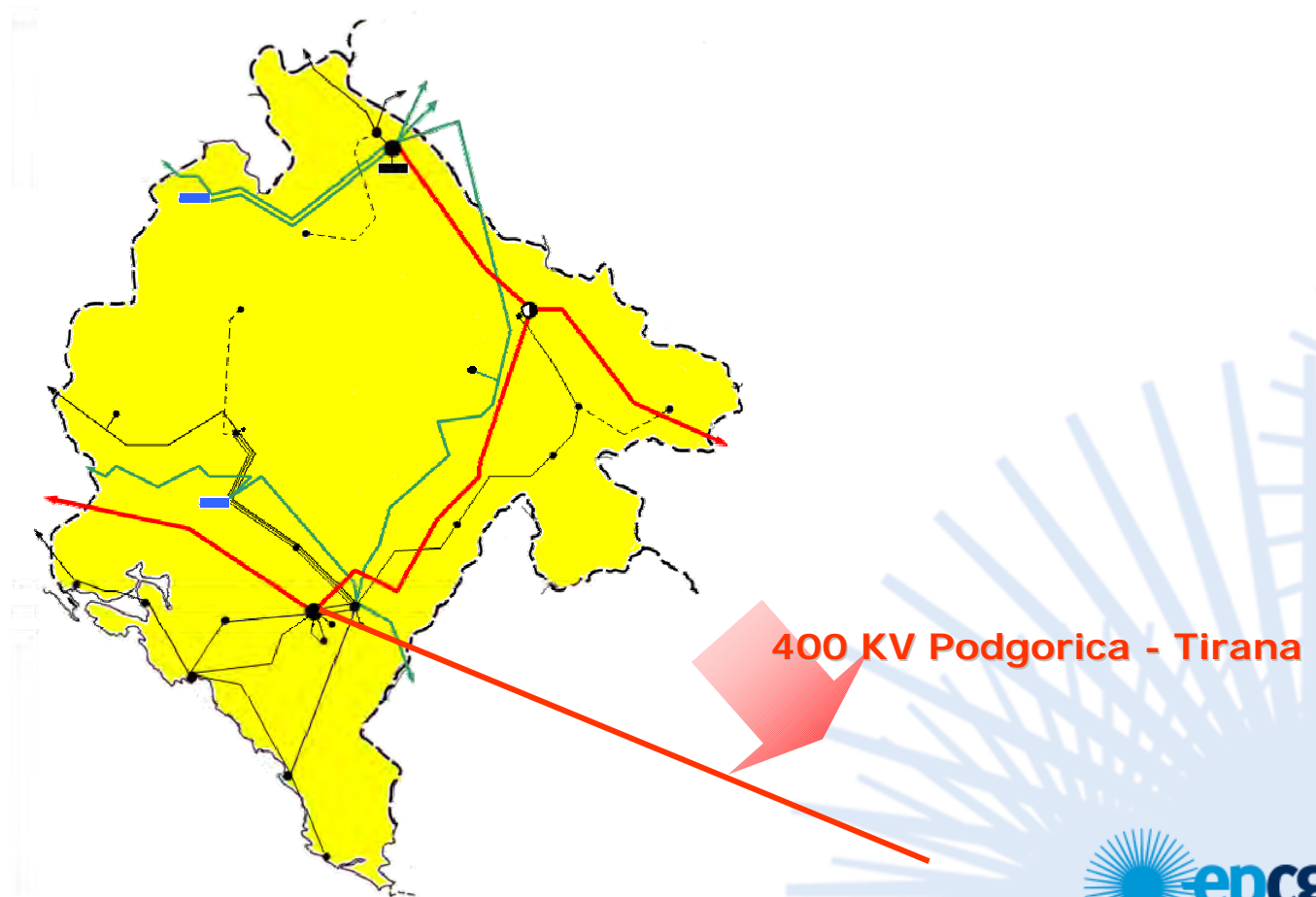
400 KV Podgorica - Tirana

To Italy



NEW PROJECTS IN TRANSMISSION

- Construction of 400kV line Albania
- Expected date of the end of the construction is end of 2009



NEW PROJECTS IN TRANSMISSION



On December 19th, 2007 in Rome, **the Ministers of Economic Development of Italy, Mr. Bersani, and of Montenegro, Mr. Gvozdenović**, signed an **intergovernmental agreement** providing institutional support to the development activities on new undersea interconnection **Montenegro-Italy**.

The intergovernmental agreement has followed the **inter-company agreement** signed between **EPCG and TERNA** with the support of the Ministry of the Economic Development of Montenegro on November 7th 2007 related to the **joint realisation of the feasibility study** of the new interconnection.

The Feasibility Study developed by TERNA and EPCG, with the support of the CG Ministry of Economic Development has been concluded the end of April. Conclusions have been approved by project SC in Podgorica on May 12th 2008.

The new project of undersea interconnection Italy-Montenegro has been considered **feasible** from the **technical, economic and legal/regulatory viewpoint**.

NEW PROJECTS IN TRANSMISSION



The Feasibility study has provided the following main results in terms of technical and economic data:

Technical data:

- 375 km** undersea cable
- 15 km DC connection in Italy
- 60 km AC+DC connections in Montenegro
- 1000 MW** thermal capacity
- Electricity **exchanges in bidirectional way**, both import and export
- HVDC bipolar cable, 2x500 MW

Costs estimation:

- About **700 M€** total project cost, including **CAPEX, studies, engineering and contingency costs**



Thank You!

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