26th Annual Conference

International association for Energy Ecomomics

NEW CEHALLENGS FOR ENERGY DECISION MAKERS

Sustainable Development Problems of Latvian Energy Sector

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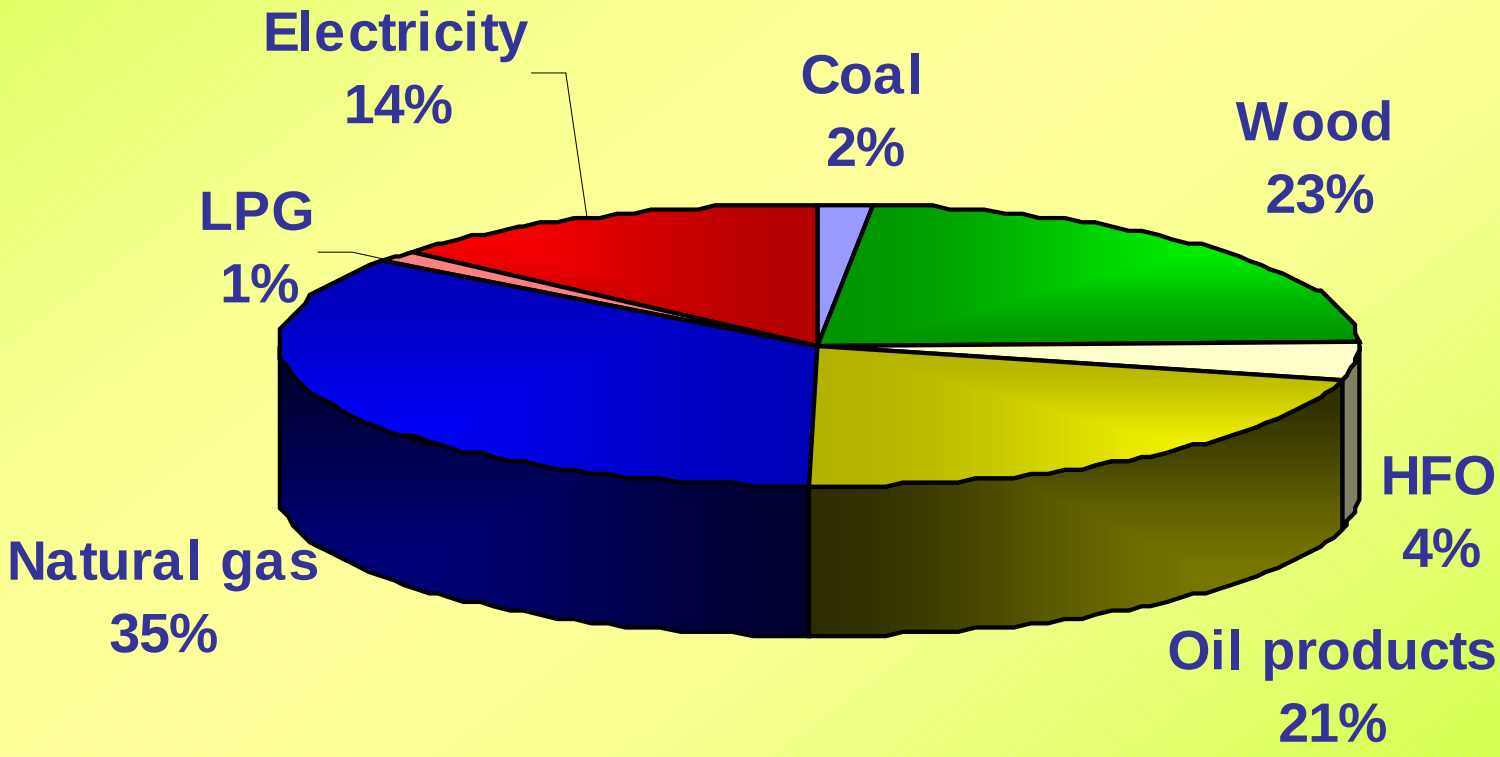
Primary energy consumption by source in 2001 in Latvia



Trends in electricity production and consumption in the Latvia

Year	Production	Consumption	Import	
	TWh	TWh	TWh	%m of Consumption
1995	4,0	6,2	2,2	36
1996	3,1	6,4	3,3	52
1997	4,5	6,3	1,8	29
1998	5,8	6,3	0,5	8
1999	4,1	6,1	2,0	33
2000	4,1	5,9	1,8	31
2001	4,3	6,2	1,9	31

Largest thermal power plants of the Baltic IPS

Plant	**Installed capacity (MW)**	**Available capacity (MW)**	**Number of units and capacity**	**Steam pressure (atm)**	**Fuel**
			Estonia		
Estonian CPP*	1610	1340	8x200	140	Oil shale
Baltic CPP	1390	1322	7x100	100	Oil shale
CHPP Iru	190	190	1x110 1x80	140	Gas, HFO

Largest thermal power plants of the Baltic IPS (Continuation)

Plant	**Installed capacity (MW)**	**Available capacity (MW)**	**Number of units and capacity**	**Steam pressure (atm)**	**Fuel**
		Latvia			
Riga CHPP-2	390	390	3x110 1x60	140	Gas, HFO

Largest thermal power plants of the Baltic IPS (Continuation)

Plant	Installed capacity (MW)	Available capacity (MW)	Number of units and capacity	Steam pressure (atm)	Fuel
		Lithuania			
Ignalina nuclear power plant	3000 (2 reactors, each 1500)	2600	4x750	70	Nuclear
Lithuanian CPP	1800	1800	4x150 4x300	140 255	Gas, HFO
Vilnius CHPP-3	360	348	2x180	140	Gas, HFO
Maziekai CHPP	194	116	2x80 2x34	140	Gas, HFO
Kaunas CHPP	170	170	1x110 1x60		Gas, HFO

Hydro- and pumped storage power plants

Plant	Installed capacity (MW)	Available capacity (MW)	Number of units
Latvia			
Plavinas	855	855	10
Riga	402	402	6
Kegums	260	236	7
Lithuania			
Kruonio	800	760	4
Kaunas	100,8	100	4

Figure 1: Basic power network of the Baltic IPS and its interconnection with other IPS's

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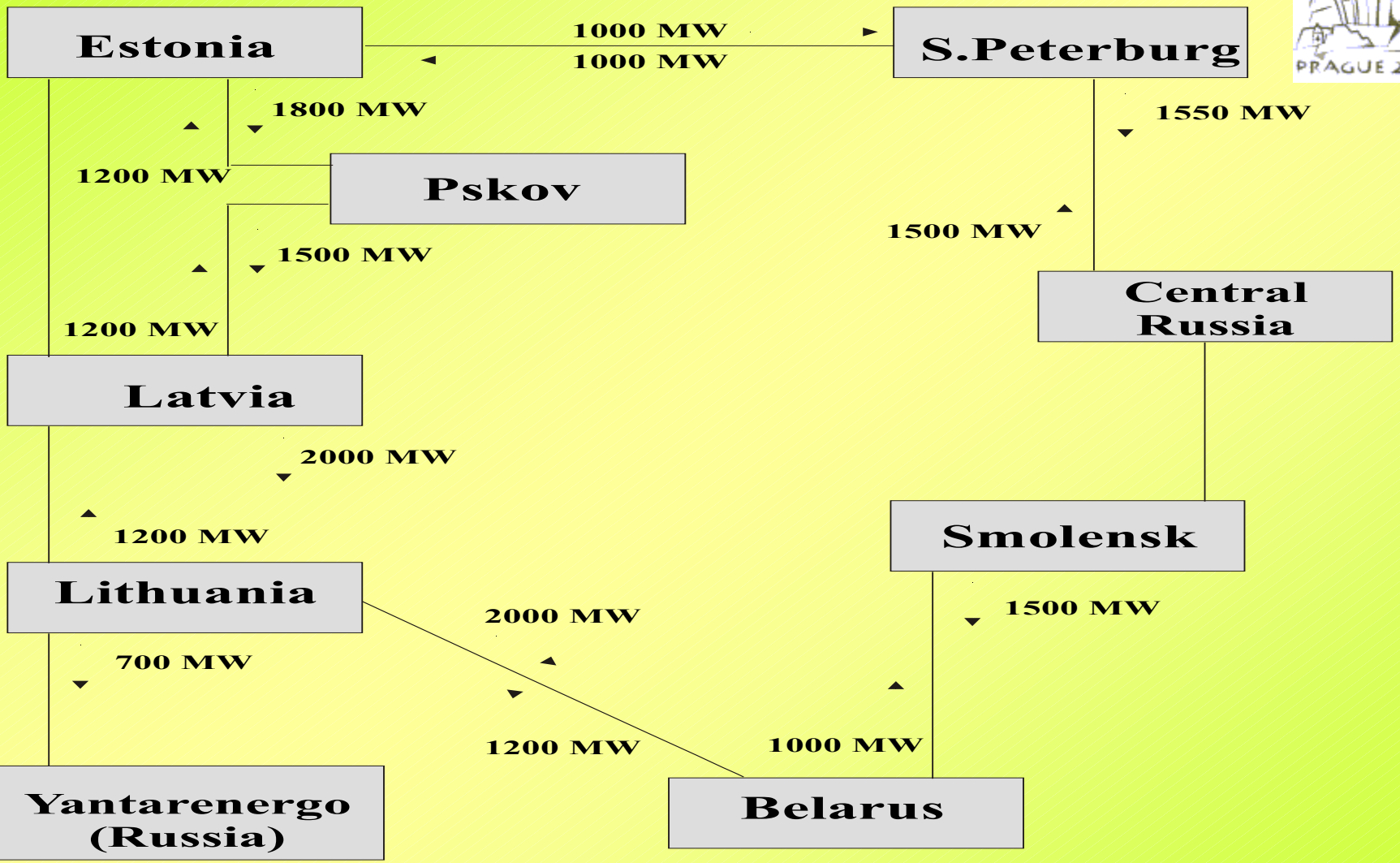
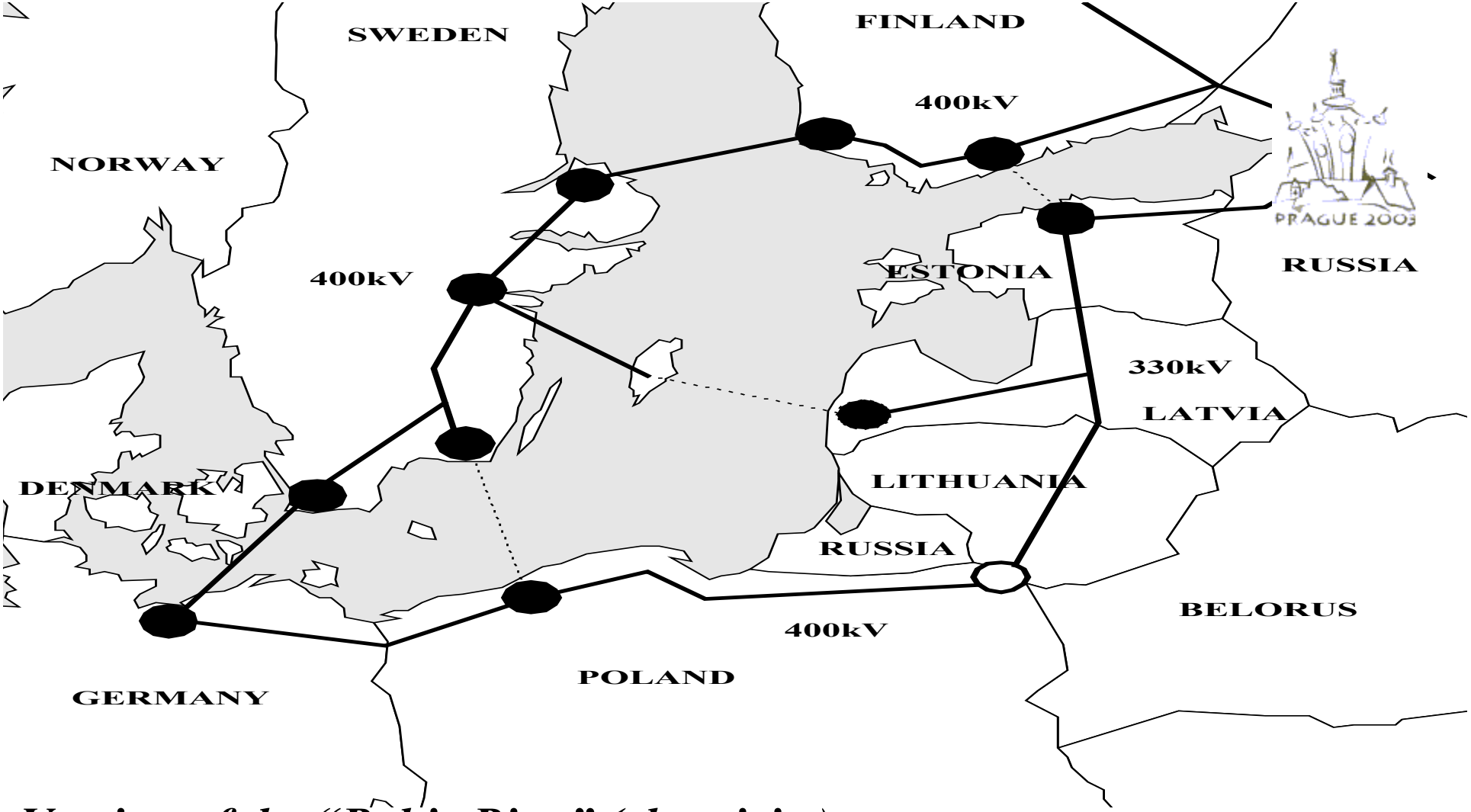


Existing electricity ring: Central Russia (Moscow) – St. Petersburg – Estonia – Latvia – Lithuania – Belarus – Smolensk – Central Russia

Available capacity of the power plants of BIPS (MW)

Country	***Thermal and nuclear power plants***	***Hydro and hydro pumped storage power plants***
Estonia	1,852	-
Latvia	390	1,493
Lithuania	2,034	860



Version of the "Baltic Ring" (electricity)

Existing / Under Construction

Possible

Substation

AC/DC/AC

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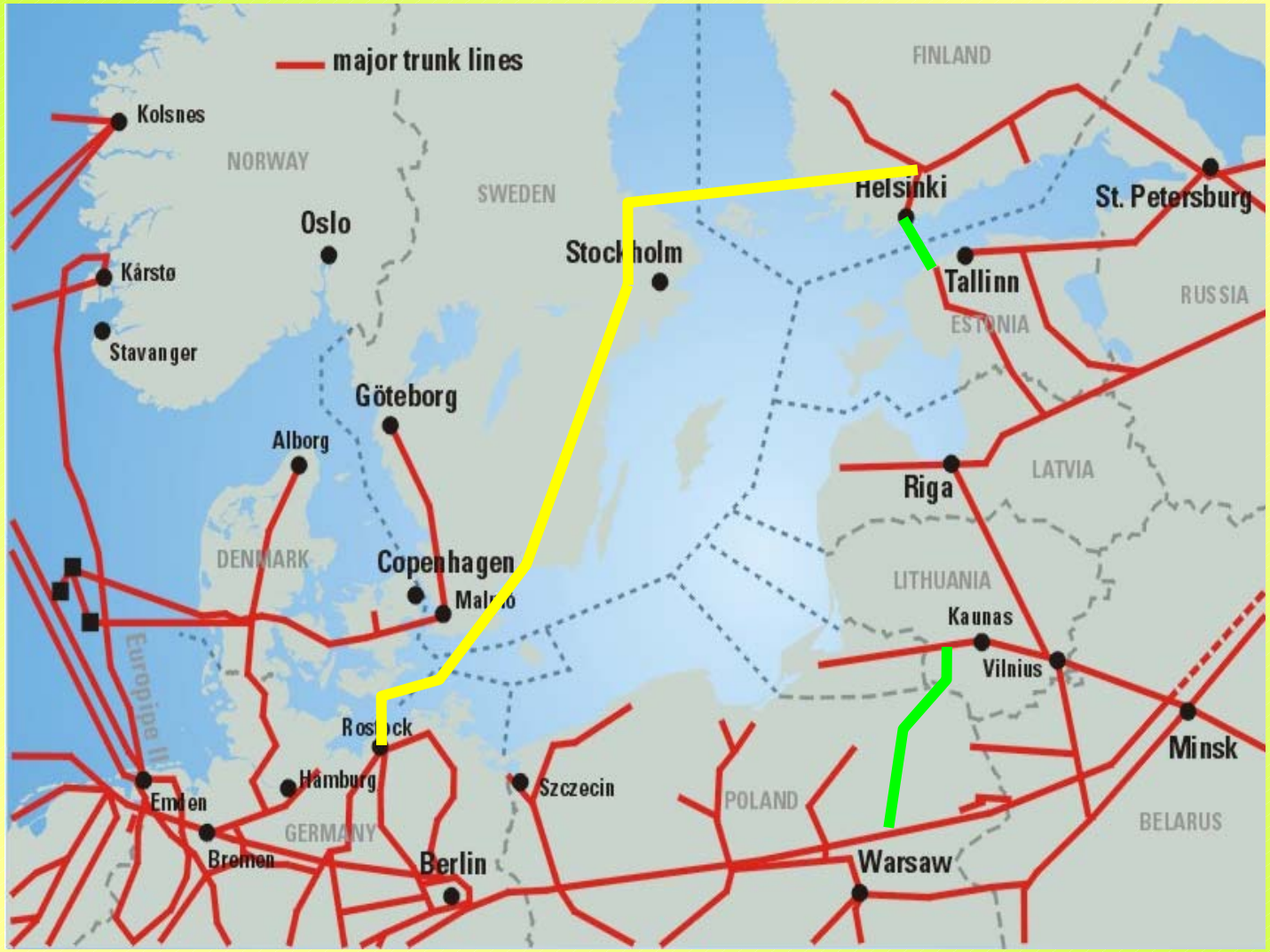
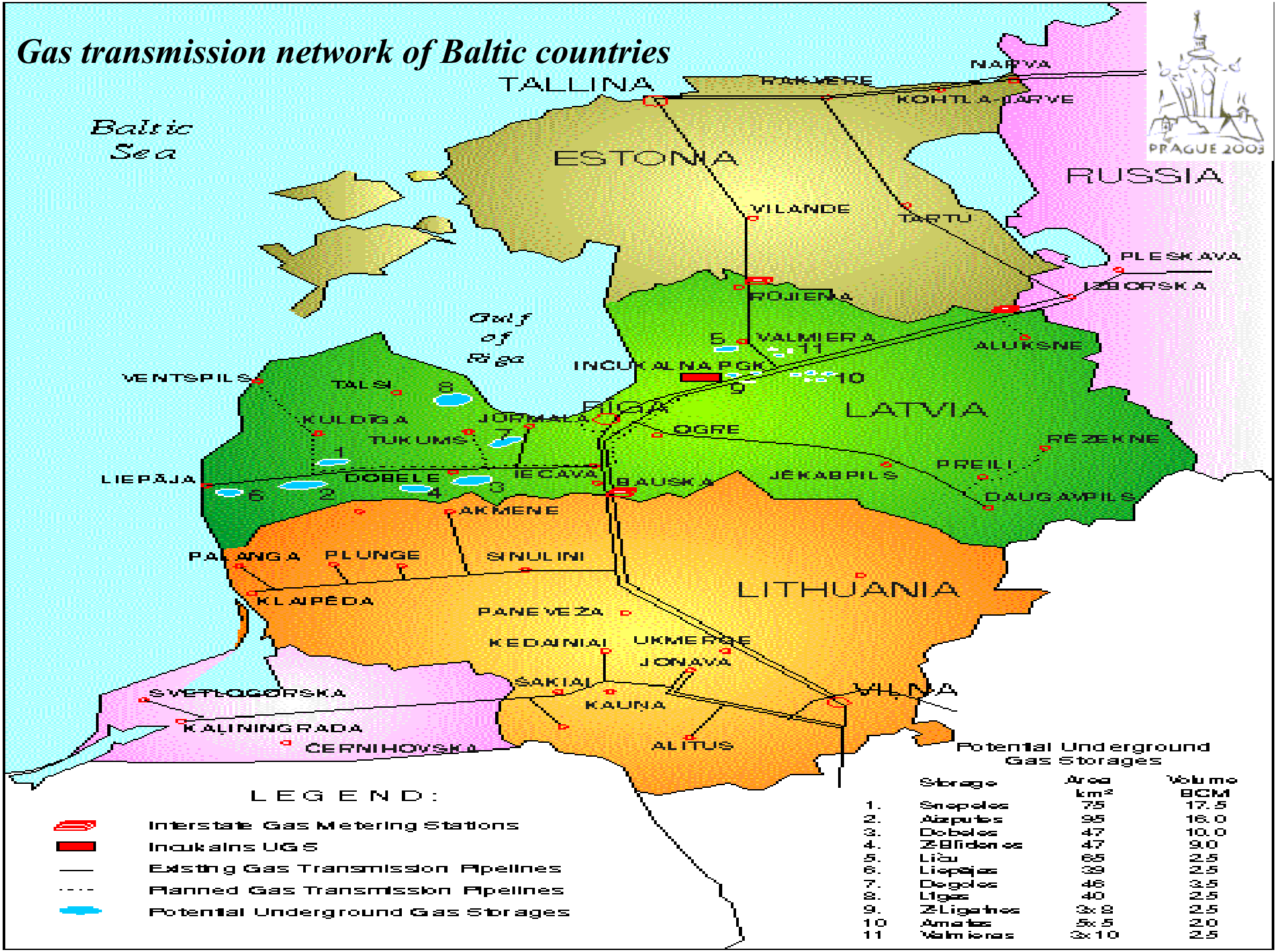


Natural gas grid and UGS in Europe: existing pipes and new pipeline projects.

Gas transmission network of Baltic countries



LEGEND:

- Interstate Gas Metering Stations
- Inculkalns UGS
- Existing Gas Transmission Pipelines
- Planned Gas Transmission Pipelines
- Potential Underground Gas Storages

Potential Underground Gas Storages

	Storage	Area km²	Volume BCM
1.	Snepele	75	17.5
2.	Aizpute	95	16.0
3.	Dobele	47	10.0
4.	Z-Blidene	47	9.0
5.	Liku	65	25
6.	Liepaja	39	25
7.	Dobele	46	35
8.	Liga	40	25
9.	Z-Ligatne	3x8	25
10	Amata	5x5	20
11	Valmiera	3x10	25

The UGS capacities in Eastern Europe (10^9 m^3)

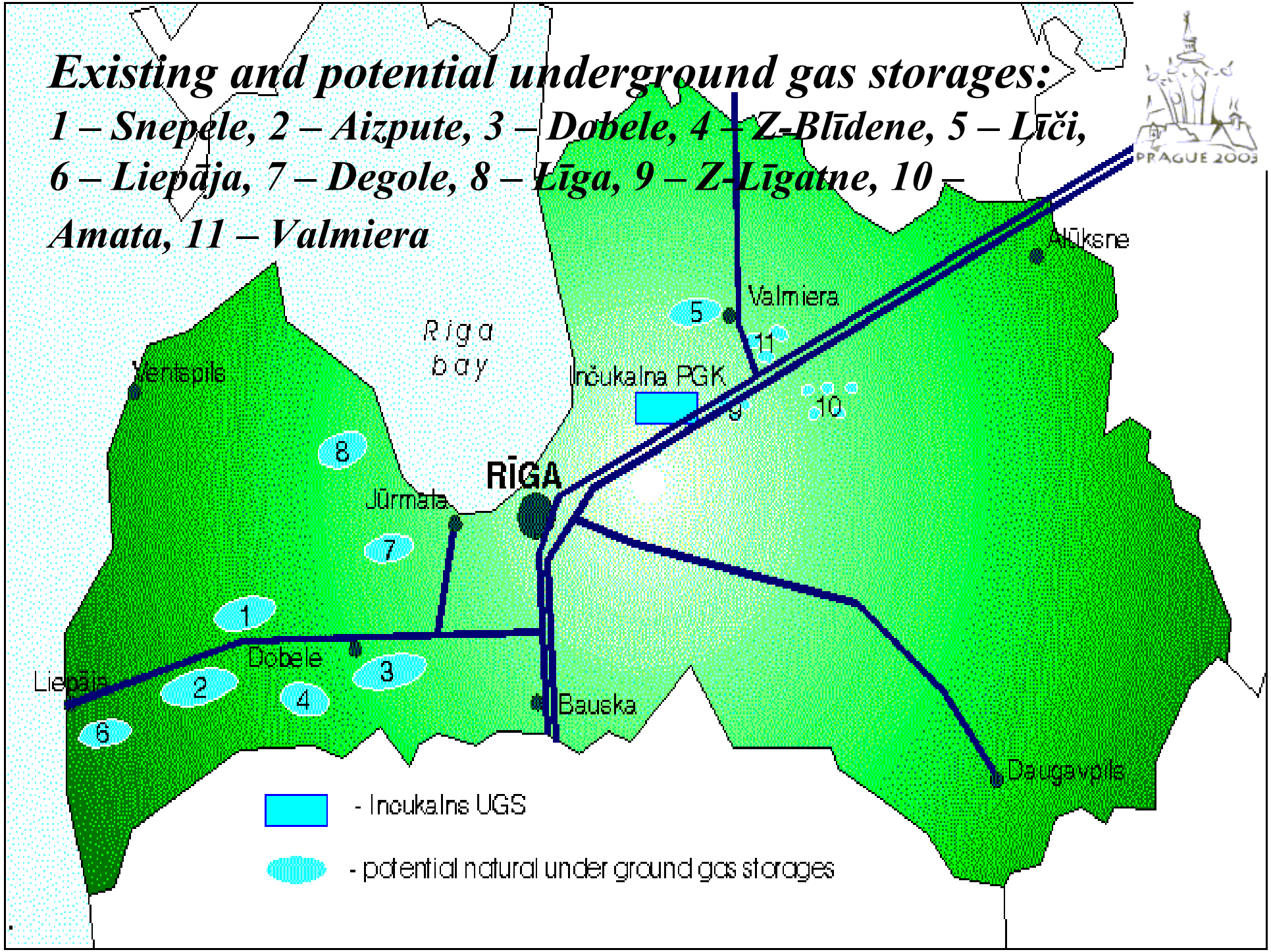
	Existing	Perspective
Latvia	2,12	50 (8UGS)
Poland	0,56	5,23
Slovakia	1,60	4,39
Hungary	1,92	2,52
Czech Republic	2,01	2,20
Romania	0,57	1,45
Slovenia	0,07	0,07
Bulgaria	0,60	0,60

Sites for underground gas storage

Name of UGS	Area (km^2)	Volume (billion m^3)
Snēpele	75	17,5
Aizpute	95	16,0
Dobele	47	10,0
Z-Blīdene	47	9,0
Līči	65	2,5
Liepāja	39	2,5
Degole	46	3,5
Līga	40	2,5
Z-Līgatne	24	2,5
Amata	25	2,0
Valmiera	30	2,5

Existing and potential underground gas storages:

1 – Snepele, 2 – Aizpute, 3 – Dobele, 4 – Z-Blīdene, 5 – Līči, 6 – Liepāja, 7 – Degole, 8 – Līga, 9 – Z-Līgatne, 10 – Amata, 11 – Valmiera



Latvian Oil Transit Corridor

VENTSPILS

Port of Ventspils
(depth - 17,5 m)

Oil terminals

Deadweight
130 000 t

JSC Ventspils nafta
JSC Ventbunkers
JSC Ventamonjaks

1 480 000 m³

Throughput capacity - 50-55 mln t/y, turnover – 27 mln t/y

Capacity - 15 mln t/y
Loading - 10 mln t/y

Capacity - 16 mln t/y
Loading - 13,5 mln t/y

Capacity - 5 mln t/y
Loading - 3,5 mln t/y

Capacity - 18 mln t/y

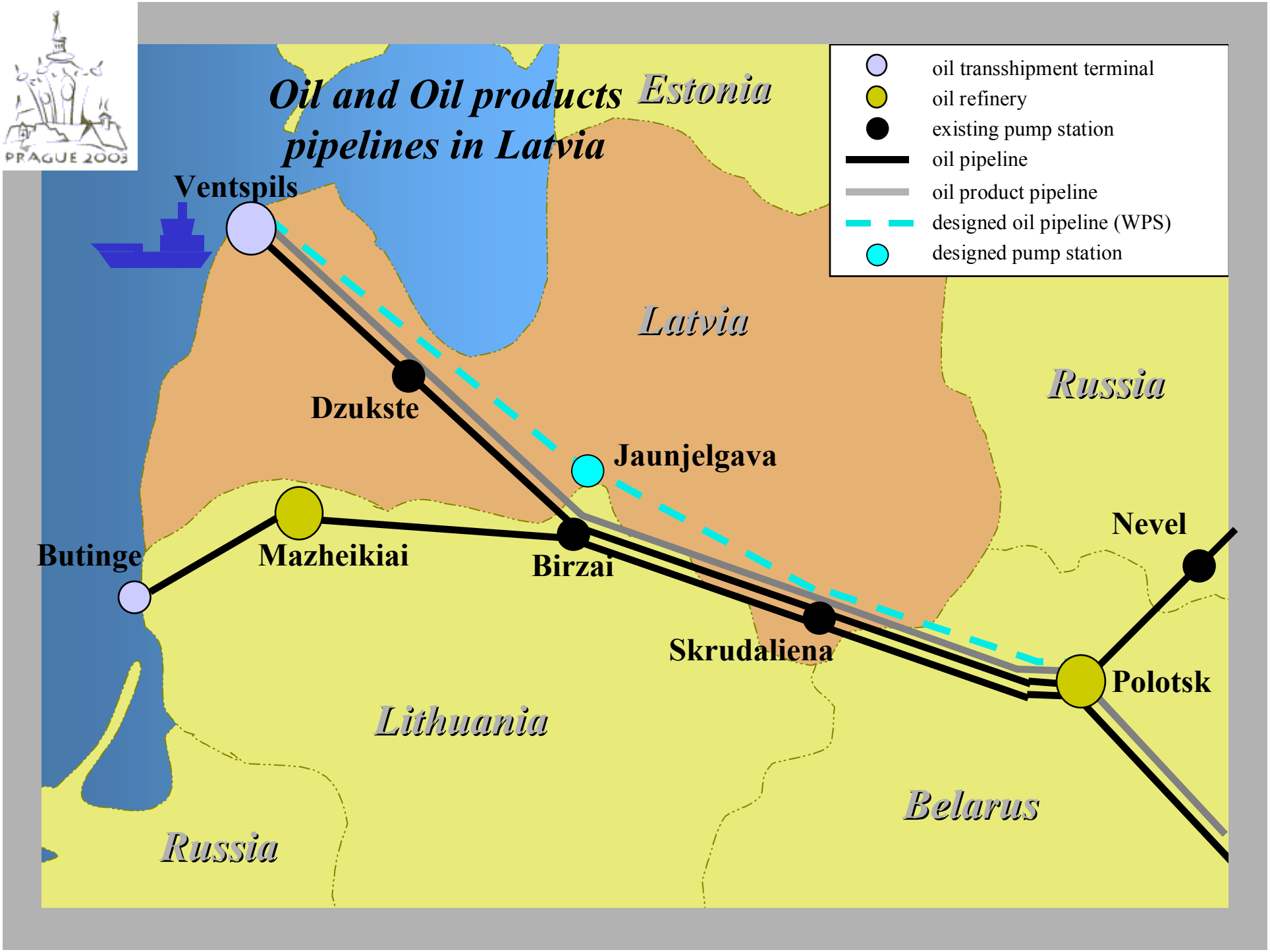
Railway transport
JSC Latvijas dzelzceļš

Pipeline transport
LatRosTrans Ltd.

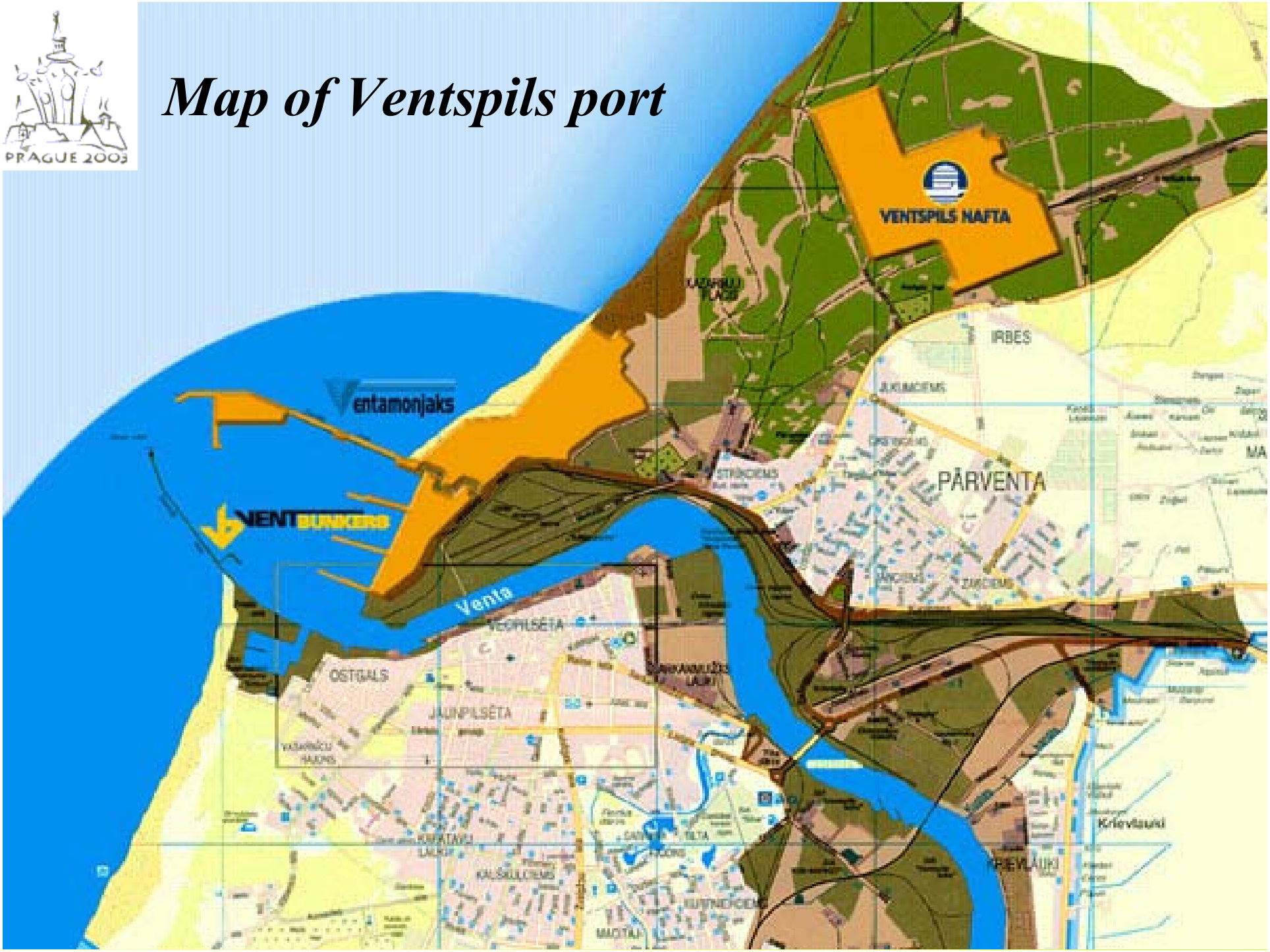
Oil pipeline

Oil product pipeline

Designed oil pipeline


Oil and Oil products pipelines in Latvia
Estonia
Latvia
Russia
Lithuania
Belarus
Russia
Ventspils
Dzukste
Jaunjelgava
Butinge
Mazheikiai
Birzai
Skrudaliena
Nevel
Polotsk
oil transshipment terminal
oil refinery
existing pump station
oil pipeline
oil product pipeline
designed oil pipeline (WPS)
designed pump station
PRAGUE 2003

Map of Ventspils port



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Tankers in Ventspils oil terminal

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Tankers in open Baltic see

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Conclusions

Photo: Pia Sundh