

Nuclear Russia

The problems and possible solutions

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Green World

Зеленый Мир



- **Russian Nuclear Dreams**
- **How to invest new NPP**
- **Nuclear / Rad Waste**
- **Proliferation**

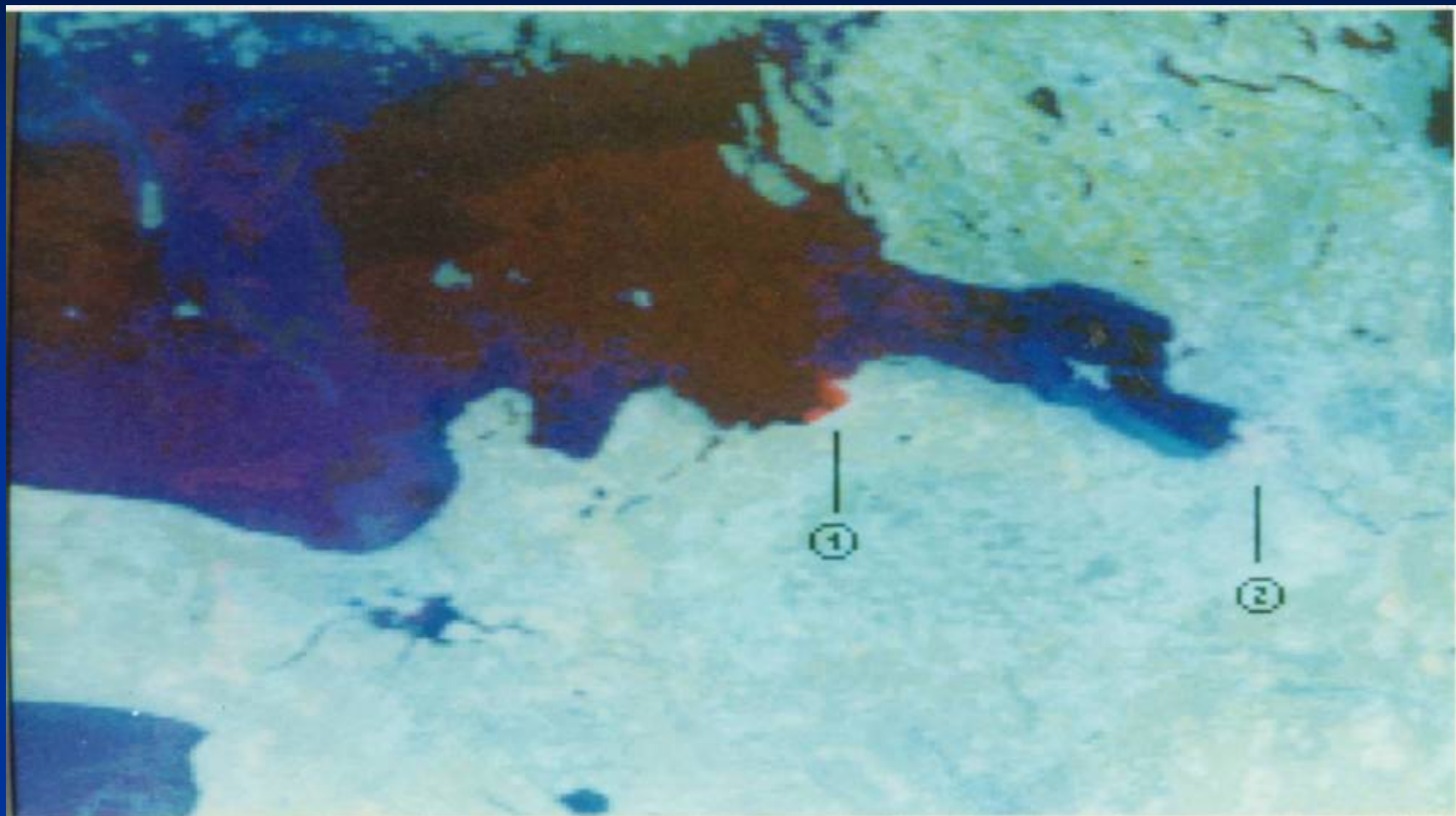


Russian Nuclear Dreams

- 40 nuclear units before 2030 year
- State investments 25 billions Euro
- Nuclear electricity = 25% national electricity



Thermo pollution of LNPP



1 – Leningrad NPP
2 – St. Petersburg



LNPP-2

- 6 units of VVER-1200;
- 12 towers, high 150 m, diameter 75 m;
- 600.000 t Baltic water evaporation /day;
- Efficiency 33%
- Acid rains.



Baltic

Nuclear Risk Trend

28 Nuclear units

Sweden 12 - 2 = 10

Germany 6 - 6 = 0

Finland 4 + 1 = 5

Lithuania 2 - 1 = 1

Russia 4 + 6 = 10

Total 28 - 9 = 19 units



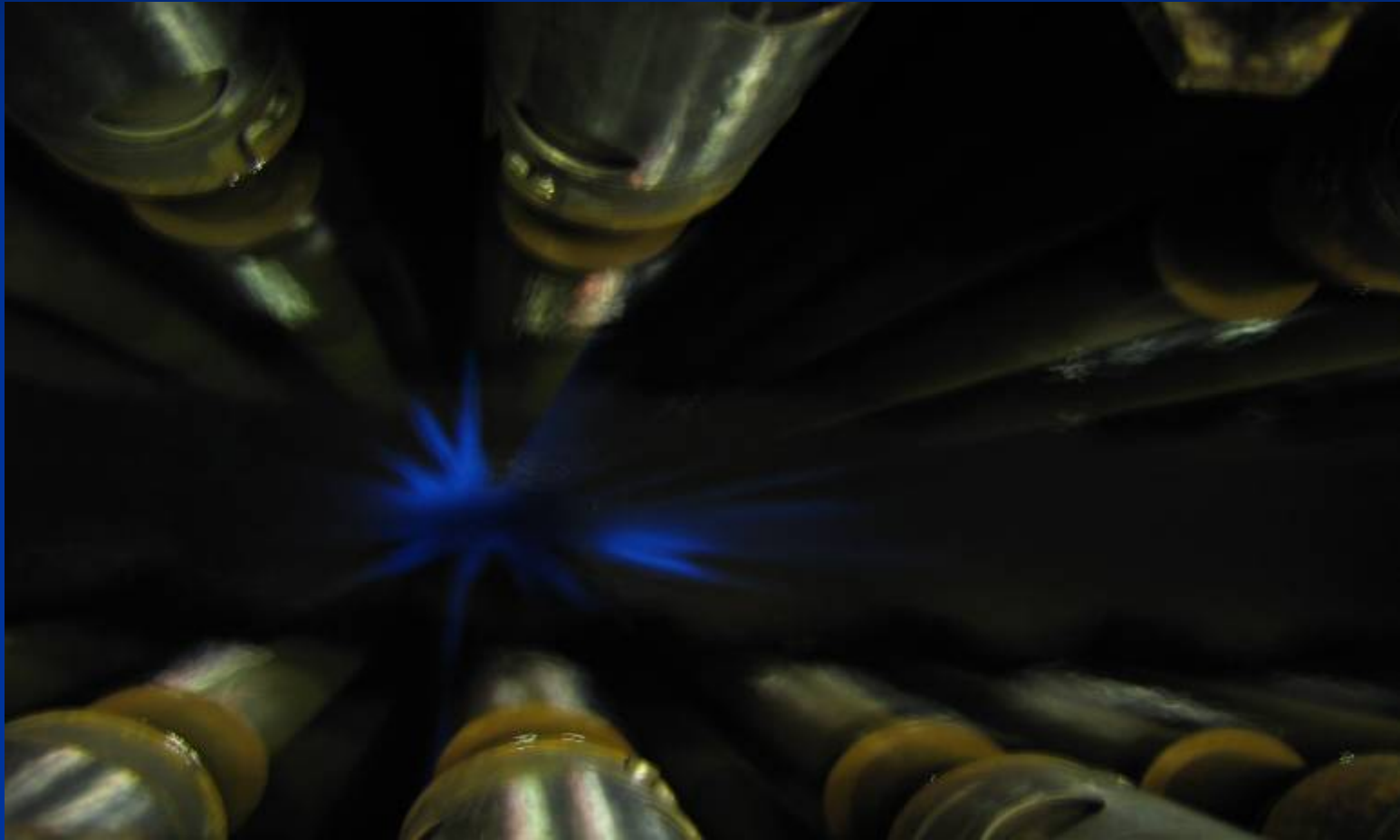
Nuclear Electricity Export LNPP-2

- ❖ Nuclear electricity export will promote further operation dangerous LNPP reactors (Chernobyl & Ignalina closed);
- ❖ Nuclear electricity export = nuclear waste import to the Baltic Russia;
- ❖ Nuclear electricity export = investments of Russian nuclear industry by electricity consumers (violation of Espoo Convention);



Wet storage of SNF

Cherenkov Luminescence



SNF Storage Leningrad NPP

In 5 pools 17.000 SNF (1996 г.) design limit

About 30.000 SNF in 2005



The conditions of the WET storage

- SNF condensation started without EIA in 1996



DRY Storage of LNPP started to construct without EIA



Low level of the technological culture of radioactive waste management

Not sorted rad waste.

Fires on the regional rad waste storage

■ June 1976 ,

■ September 1979,

Underground water contaminated by

H^3 , Sr^{90} , Cs^{137} , Pu^{239}



NEW hot Spots in the Baltic Russia

Ecomet-S

- 10.000 t/year
- 3 victims
- Cytogenetical damages.

Dry storage for the SNF

Plant for reprocessing RW

Plant for the burning rad waste



Baltic Nuclear & Radioactive corridor



Radioactive Waste (RW) in Russia = about 50 % rad waste in the world

- Liquid RW 480 000 000 m³ + 5 000 000 m³/year
105 storages of Liquid RW
- Solid RW 75 000 000 m³ + 1 000 000 m³/year
274 storages of Solid RW
- 600 000 t of radioactive metal
- Total activity of RW = $7.5 * 10^{19}$ Bq = 75 EBq

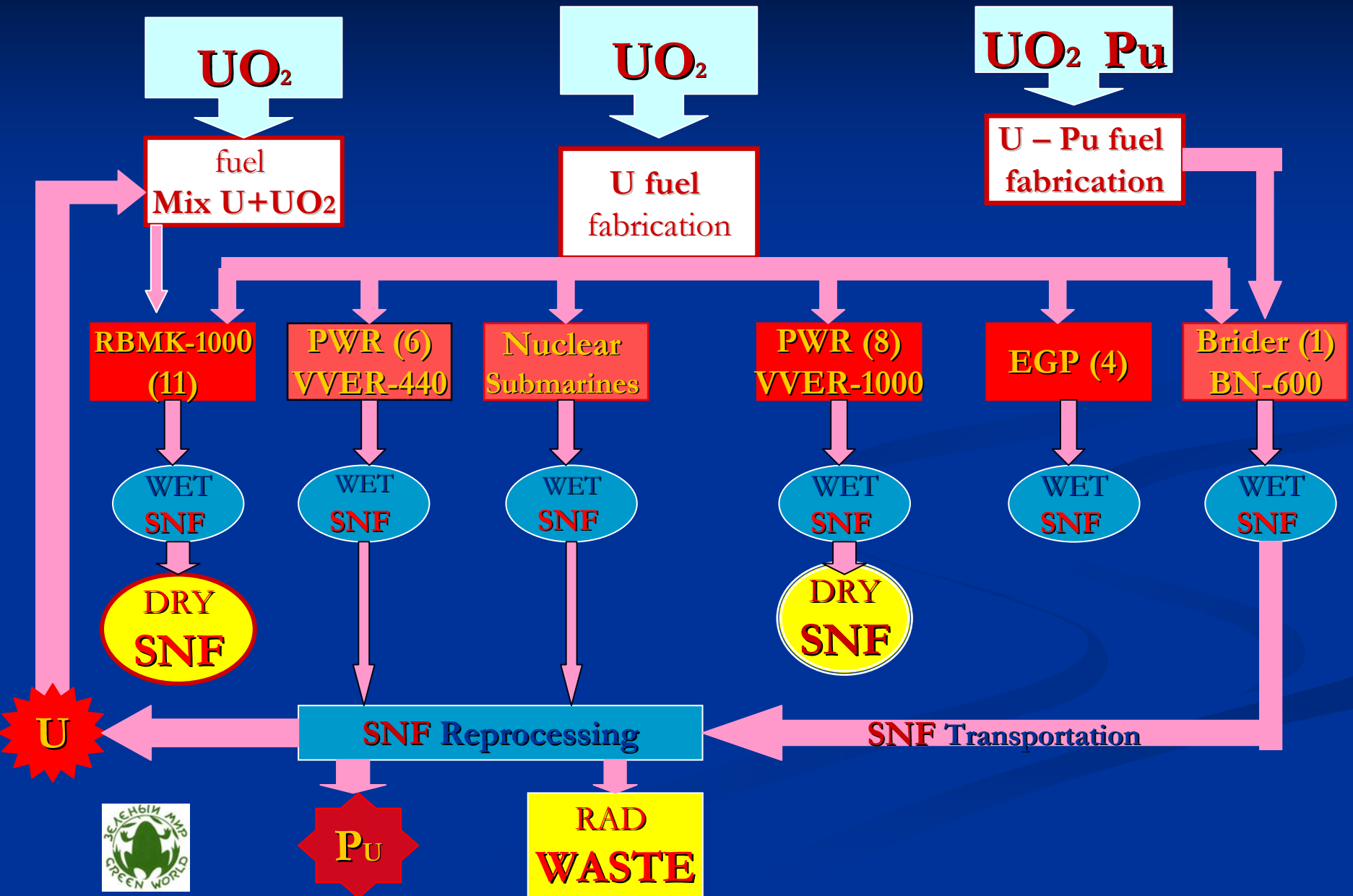


Russian SNF

- 16 000 t (4000 t of LNPP) in 2004
- 160 t/year (400 t) reprocessing in MAYAK
- Produce/reprocess ~4
- 24 temporary SNF Storages
- Total activity = $7.4 * 10^{19}$ Bq = 74 EBq



Nuclear Fuel Fabrication in Russia



Nuclear Taj-Makhal

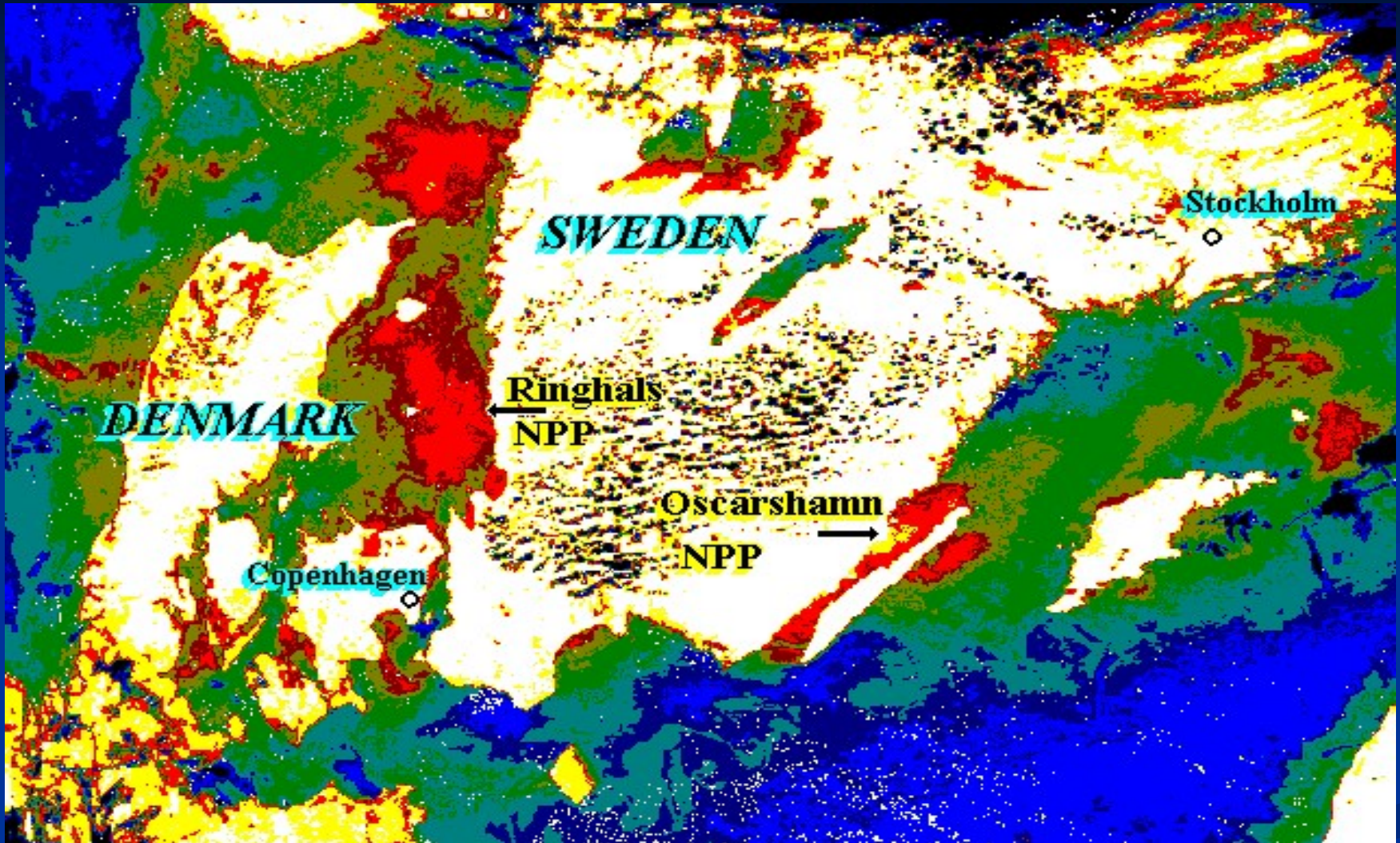


Possible Solutions

- Unification of EU and Russia nuclear safety & public participation standard.
- Promotion of renewable energy and energy saving strategy for EU and Russia;
- Promotion of decommission experience exchange of old NPPs;
- Stop transnational Nuclear and radioactive waste transportation;



Swedish NPP thermo pollution



Barsebaek NPP stopped thermo pollutions
of the Baltic Sea environment



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