

# Between Decarbonizing the Gas Value Chain and Securing Supply: Towards a Positive Agenda On Russia-EU Cooperation

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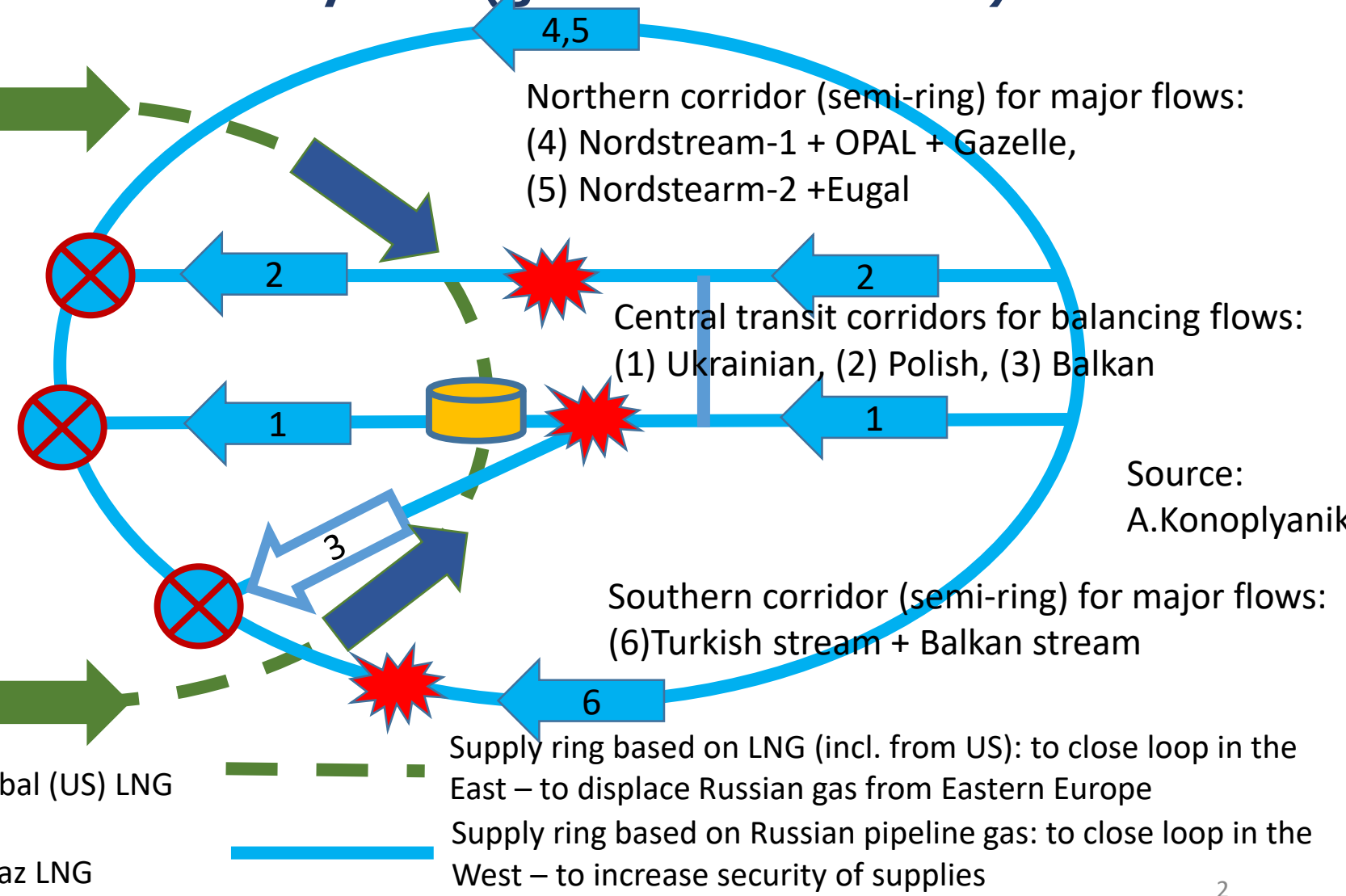
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# Transition from historical system of linear corridors to current linear-circular system of Russian gas supplies to the EU within two current rings of competitive gas supplies in formation: (i) "disruptive" ring of global LNG supplies & (ii) "integral" with internal backup ring of Russian pipeline gas supplies within radial-circle gas infrastructure system (generalized scheme)

-> Europe for Russian pipeline gas supplies = target market  
 -> Europe for LNG supplies (incl. US LNG) = closing (bridge) market within arbitrage deals (but target market for US LNG in Eastern Europe => "to kill the (Russian gas as) competitor")



-  Historical delivery points of Russian gas to the EU
-  Zones of transit risks
-  Pipeline gas
-  Ukrainian UGS
-  Global (US) LNG
-  Regaz LNG

Supply ring based on LNG (incl. from US): to close loop in the East – to displace Russian gas from Eastern Europe  
 Supply ring based on Russian pipeline gas: to close loop in the West – to increase security of supplies

# What is clean energy? Depends on how you calculate/consider it...

Wrong perceptions as if renewable H2 is the only clean H2 and, moreover, that it is clean at all

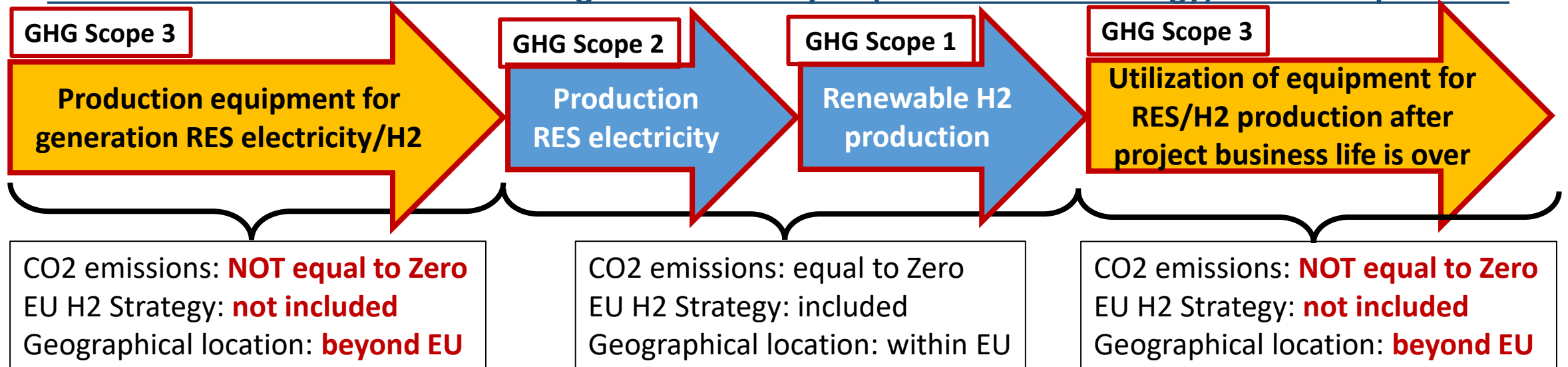
A hydrogen strategy for a climate-neutral Europe (Brussels, 8.7.2020 COM(2020) 301 final):

'Renewable hydrogen' is hydrogen produced through the electrolysis of water (in an electrolyser, powered by electricity), and with the electricity stemming from renewable sources. The **full life-cycle greenhouse gas emissions of the production of renewable hydrogen are close to zero <...>** 'Clean hydrogen' refers to renewable hydrogen.

Siemens/Gascade/Nowega (Hydrogen infrastructure – the pillar of energy transition..., 2020):

"If the electricity required for electrolysis comes exclusively from renewable, CO2-free sources, the **entire production process is completely CO2-free.**"

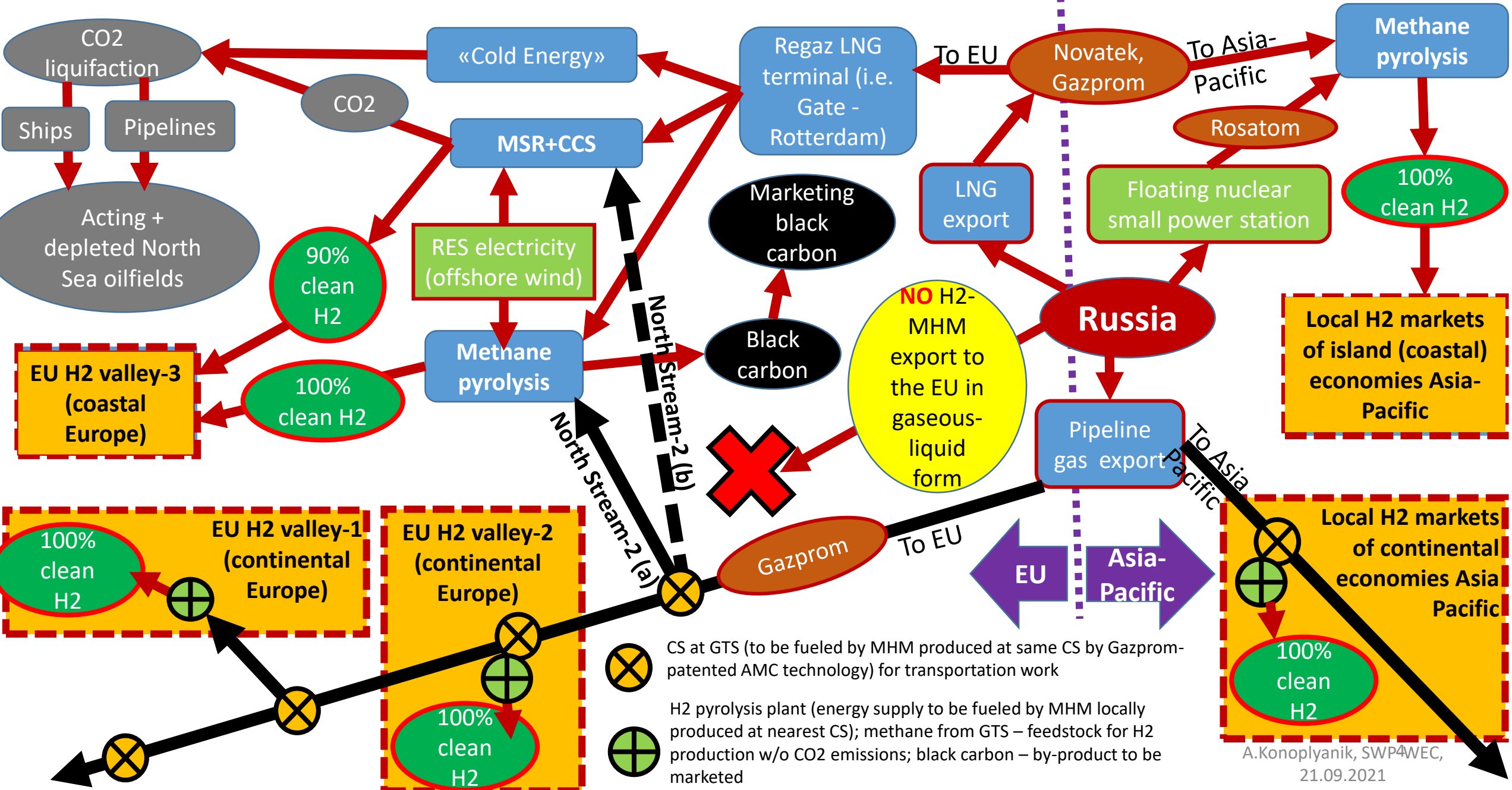
## Carbon track of renewable H2 through the full life-cycle (acc. to EU H2 Strategy) – GHG Scopes 1-2-3



Daniel Yergin, Pulitzer Prize winner for "The Prize" book at presentation of his new book "The New Map":  
**"NEW SUPPLY CHAINS FOR NET-ZERO CARBON REQUIRES CARBON!!! ... They require diesel to operate shuttle in mining..."**

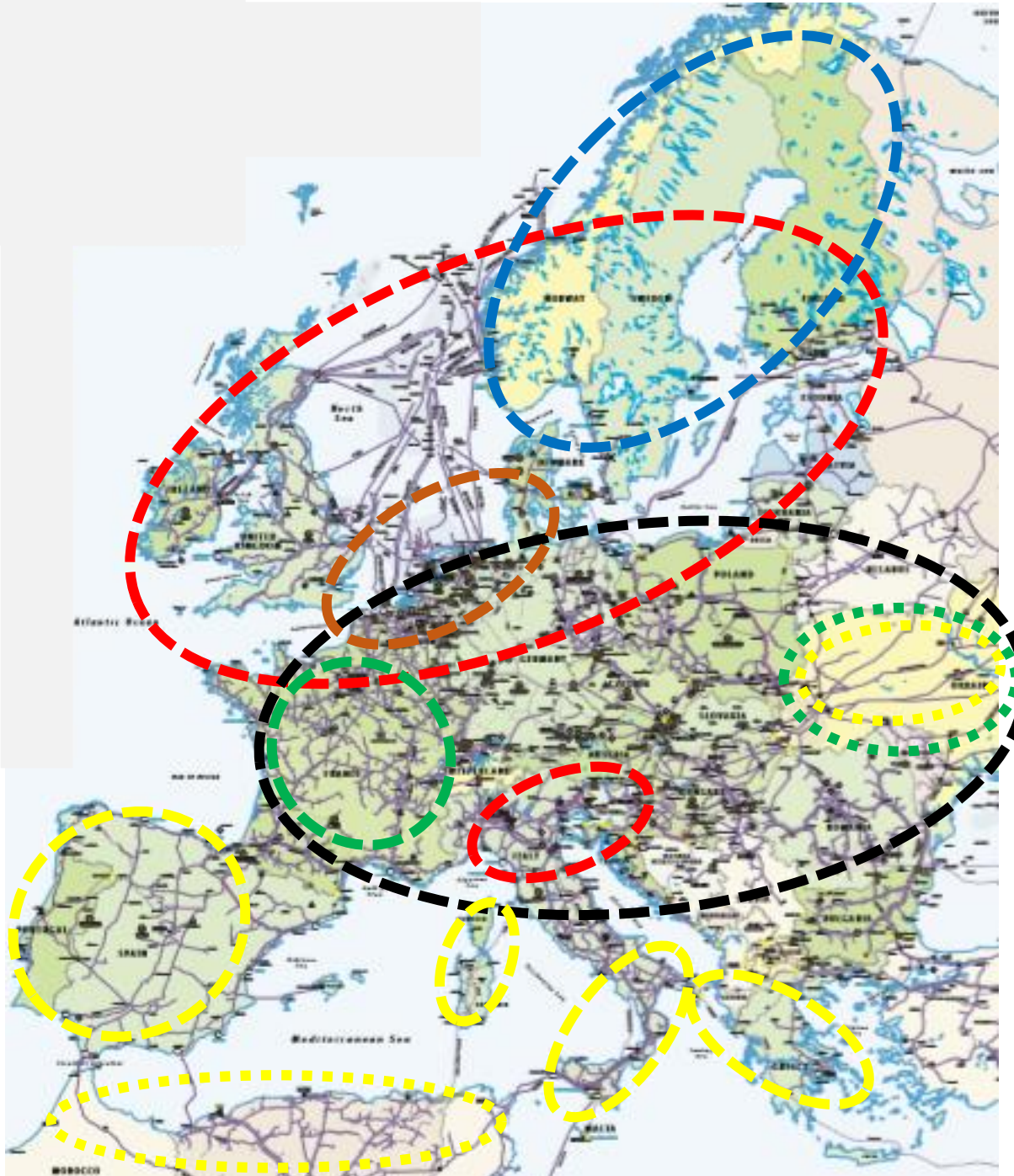
(Source: A conversation with Pulitzer Prize winner and energy expert Daniel Yergin, Atlantic Council, 25.09.2020; <https://www.youtube.com/watch?v=hWMOU8IjRhI>)

# Alternative concept for export-oriented segment of Russian hydrogen energy economy – based on clean H2 (w/o CO2 emission in production) from natural gas (Konoplyanik's vision)





# Approximate potential areas of preferential use of key H2 production technologies in Europe under state regulation based on “technological neutrality” principles



- P2G wind
- P2G hydro
- P2G solar
- P2G nuclear
- MSR/ATR plus CC(U)S
- Methane pyrolysis, plasma-chemical method et al w/o CO2 emissions

**Electrolysis**  
based on different primary electricity sources

**Gas-based** using different gas decarbonisation technological paths

Source: dashed lines - A.Konoplyanik, based on conversations with Ralf Dickel; dotted lines - Ukraine & North Africa are added based on “The 2x40GW Green Hydrogen Initiative Paper” Hydrogen Europe study for illustration purposes with the observation of this author’s skepticism in regard to long-distance transportation of H2 produced in these geographical areas; source of map – ENTSOG

# Thank you for your attention!

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