



European
Commission

11-13 JUNE 2024

EUROPEAN SUSTAINABLE ENERGY WEEK

Net-zero energy solutions
for a competitive Europe



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THE ROLE OF NUCLEAR FOR SUSTAINABILITY AND LOCAL DEVELOPMENT

THE VIEW OF WECARE
PROCLIMATE AND PRO NUCLEAR NGO

(MARC DEFFRENNES)



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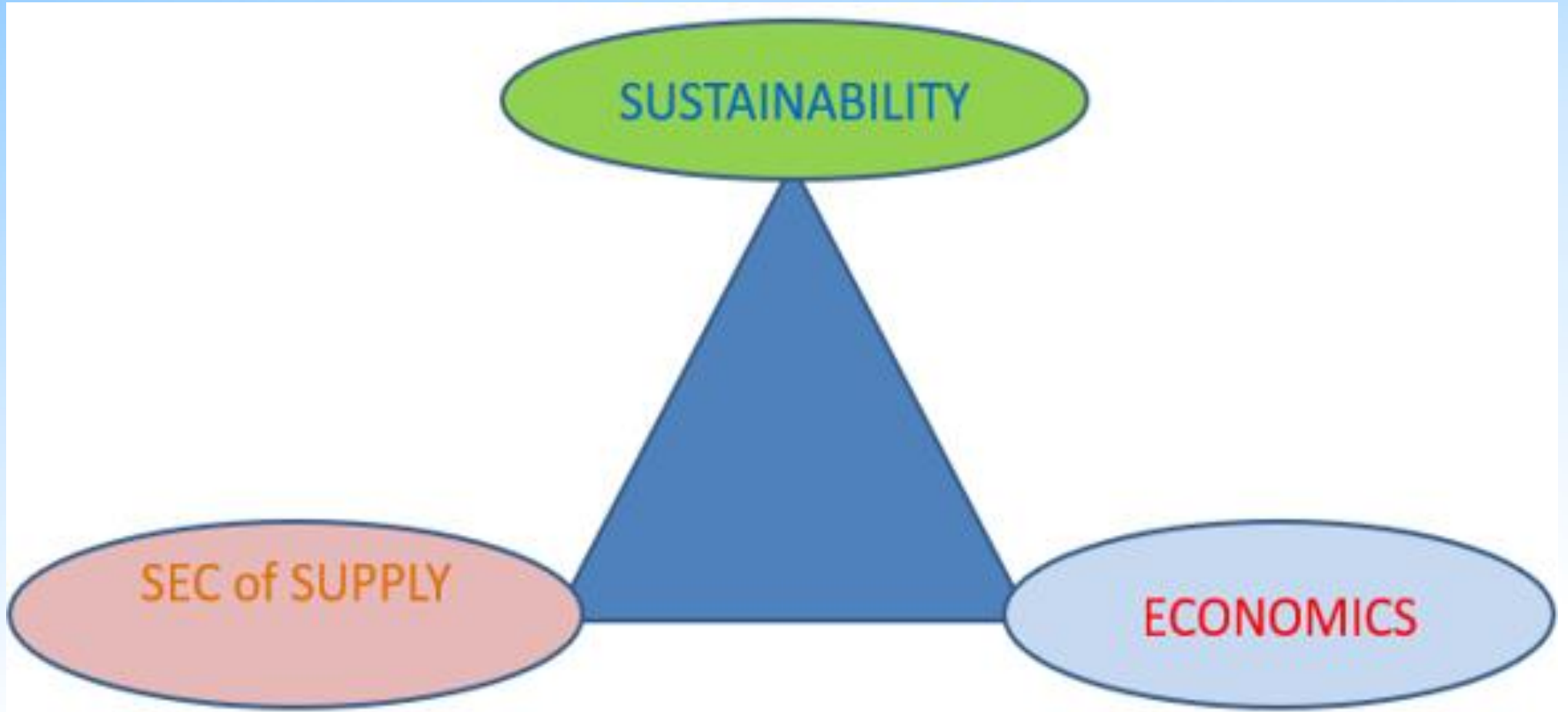
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SUSTAINABILITY... THE USUAL WAY



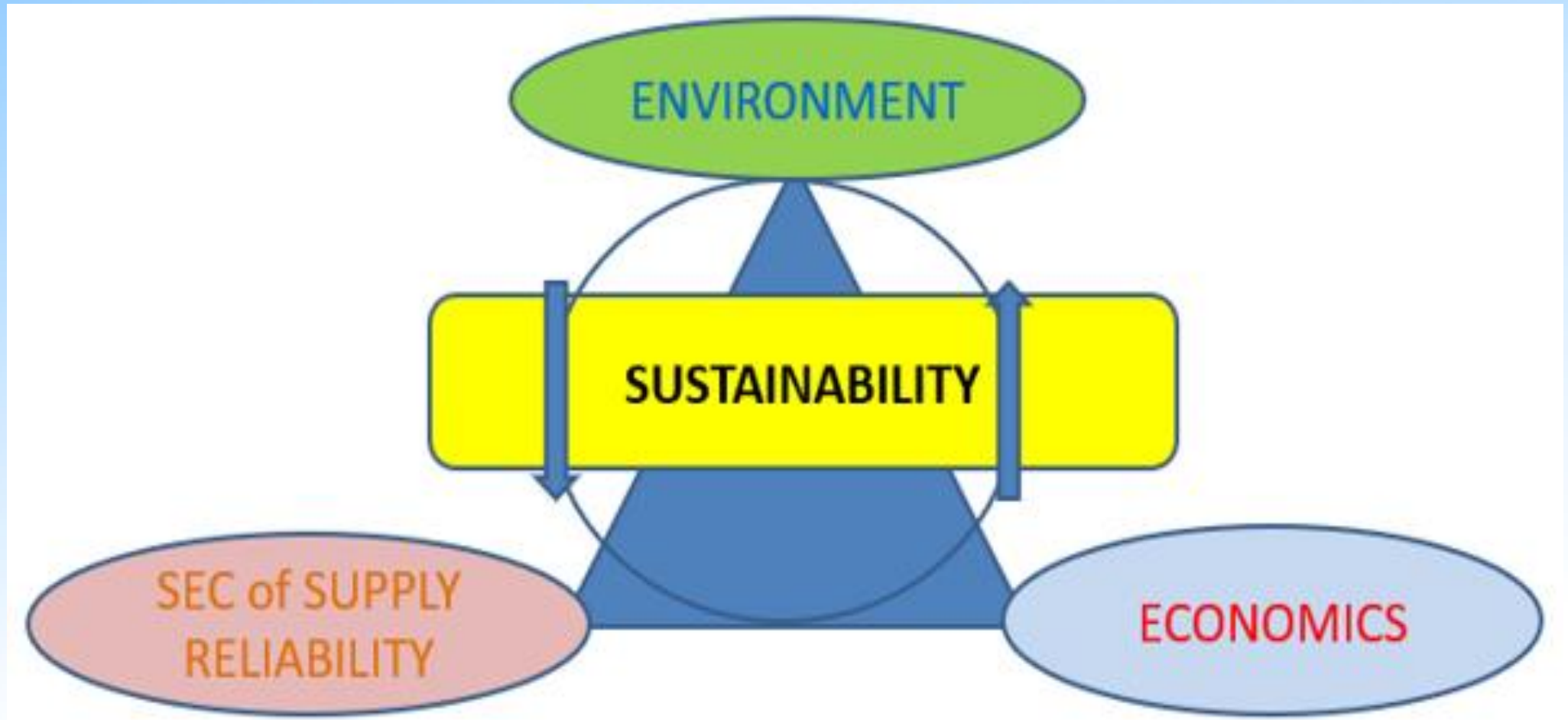
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TOWARDS A BETTER WAY...



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... NUCLEAR IS CLEAN-AFFORDABLE-RELIABLE

weCARE <https://www.wecareeu.org>



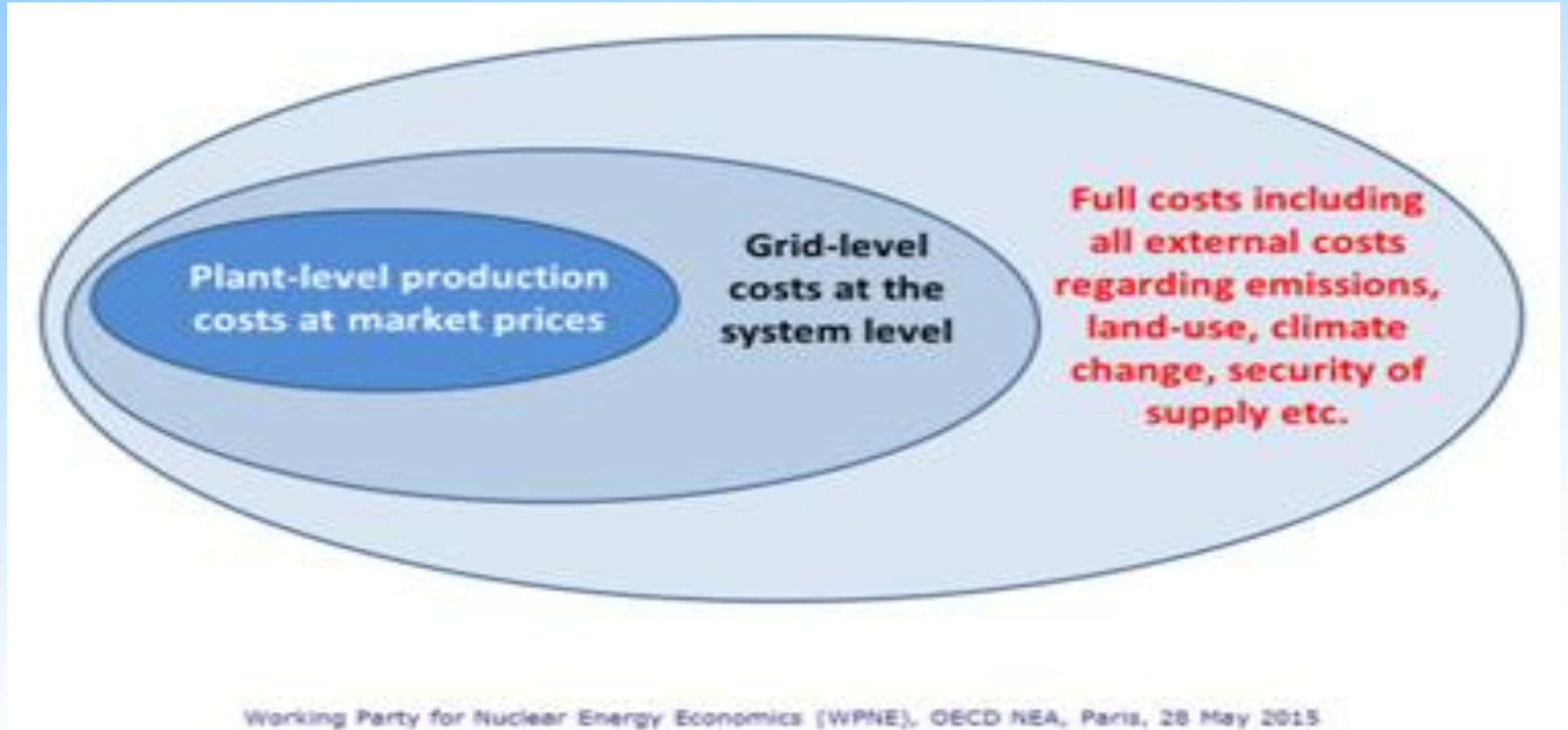
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ECONOMICS IS CENTRAL: LCOE VERSUS OTHER COSTS



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SYSTEM COSTS (OECD)

- **Report OECD NEA 7299/2019: The Cost of Decarbonisation: System Costs with High Shares of Nuclear and Renewables... (Electricity)**

MAIN CONCLUSION:

Assuming 50gr CO₂/kWh in 2050... (meaning limiting gas!!!) – going from 0 to 75% VRE...

- Going from zero to 75% VRE multiplies the necessary installed capacity by 3
- With 75% VRE System costs are increased by 50 USD/MWh
- More VRE means more volatility in electricity prices (at 75% 4000 hrs negative prices) and discourage investment
- Market value of VRE reduces with increasing shares (more for solar than wind), also discouraging investment

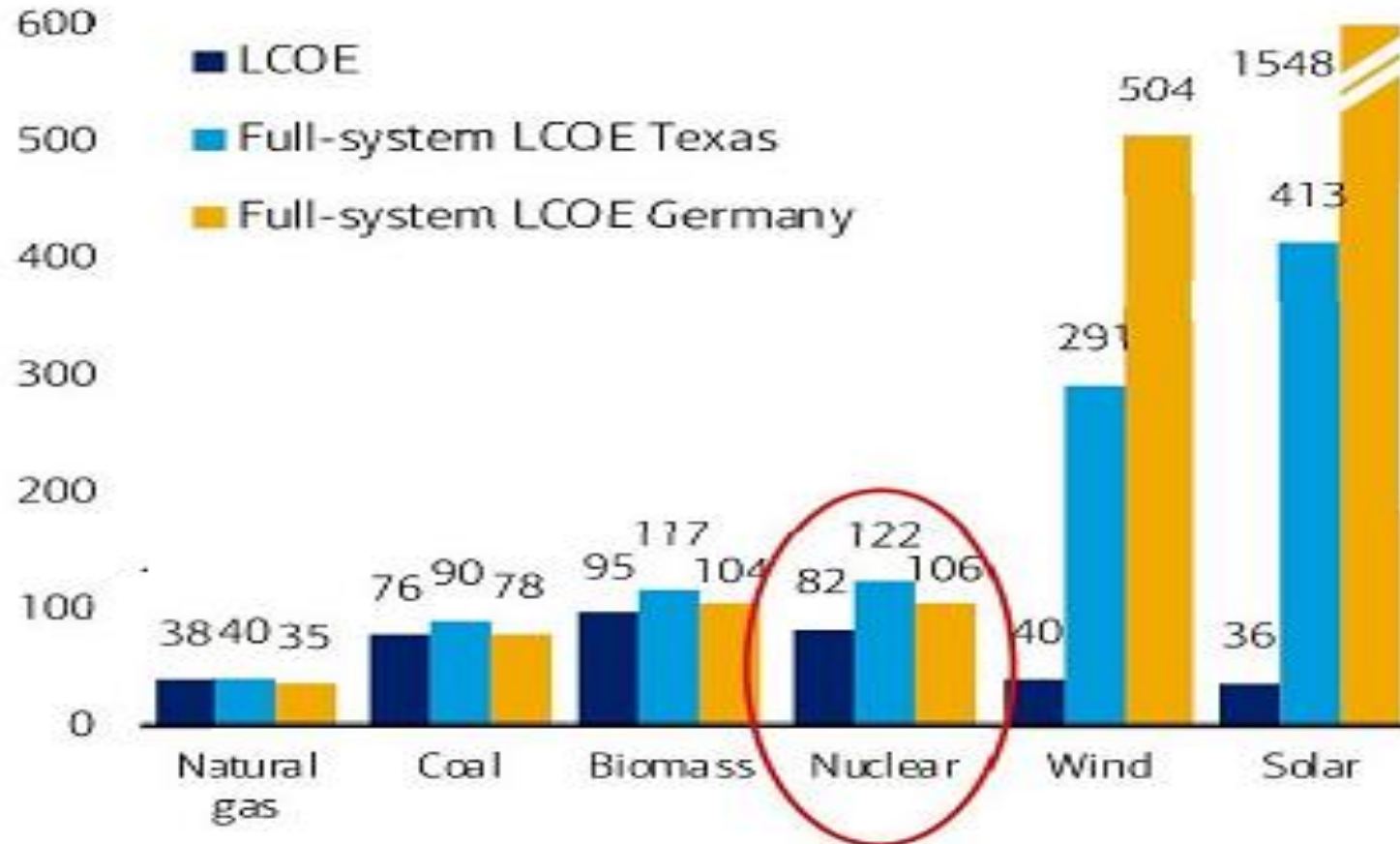
... **there seems to be an « economic » upper limit for VRE of the order of 30 to 40%...**



LFSCOPE (BANK OF AM)



LCOE & LFSCOPE calculations by energy source



Source: BofA Research Investment Committee, Idel 2022

BofA GLOBAL RESEARCH



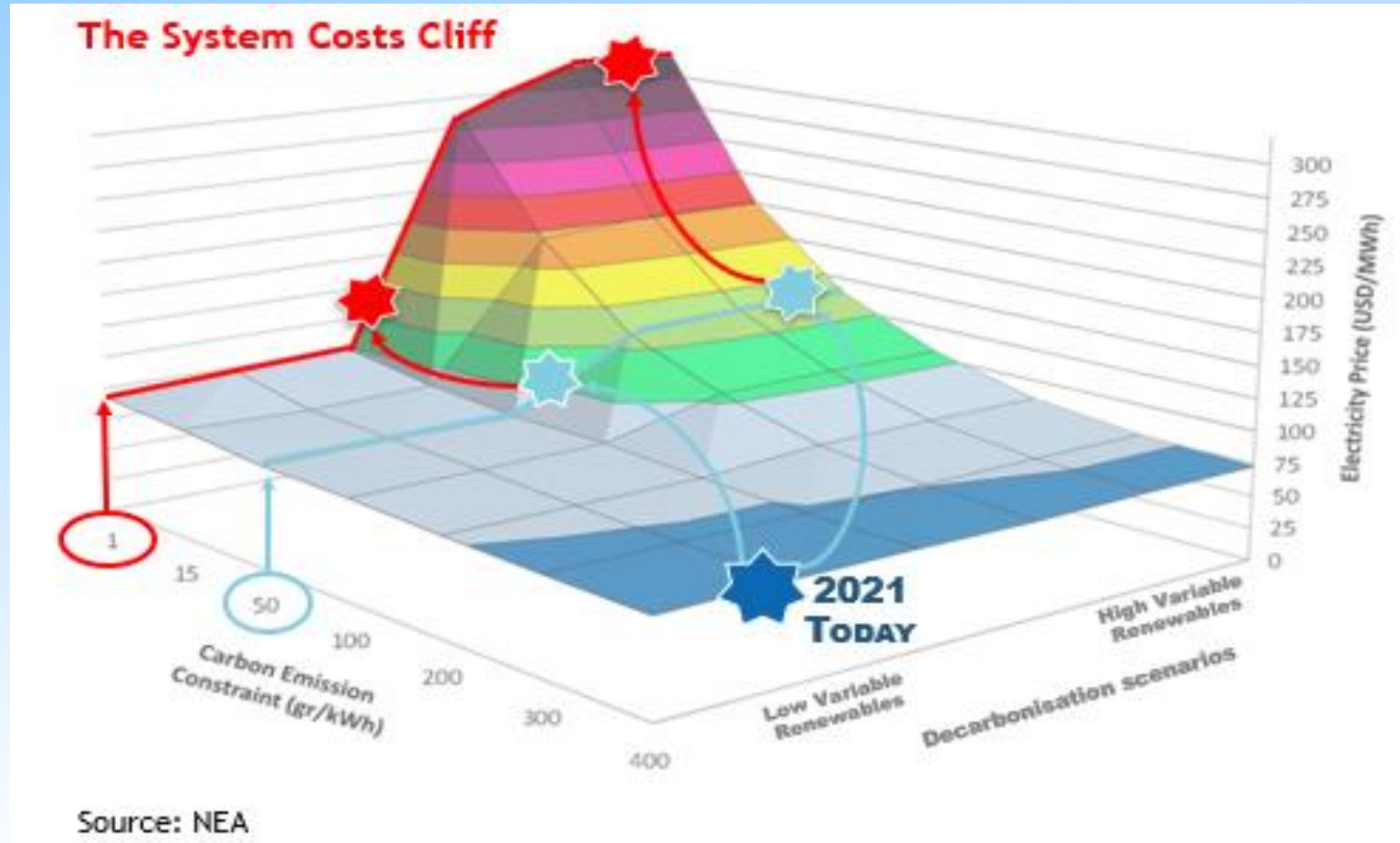
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NUCLEAR AND RENEWABLES... YES... BUT...



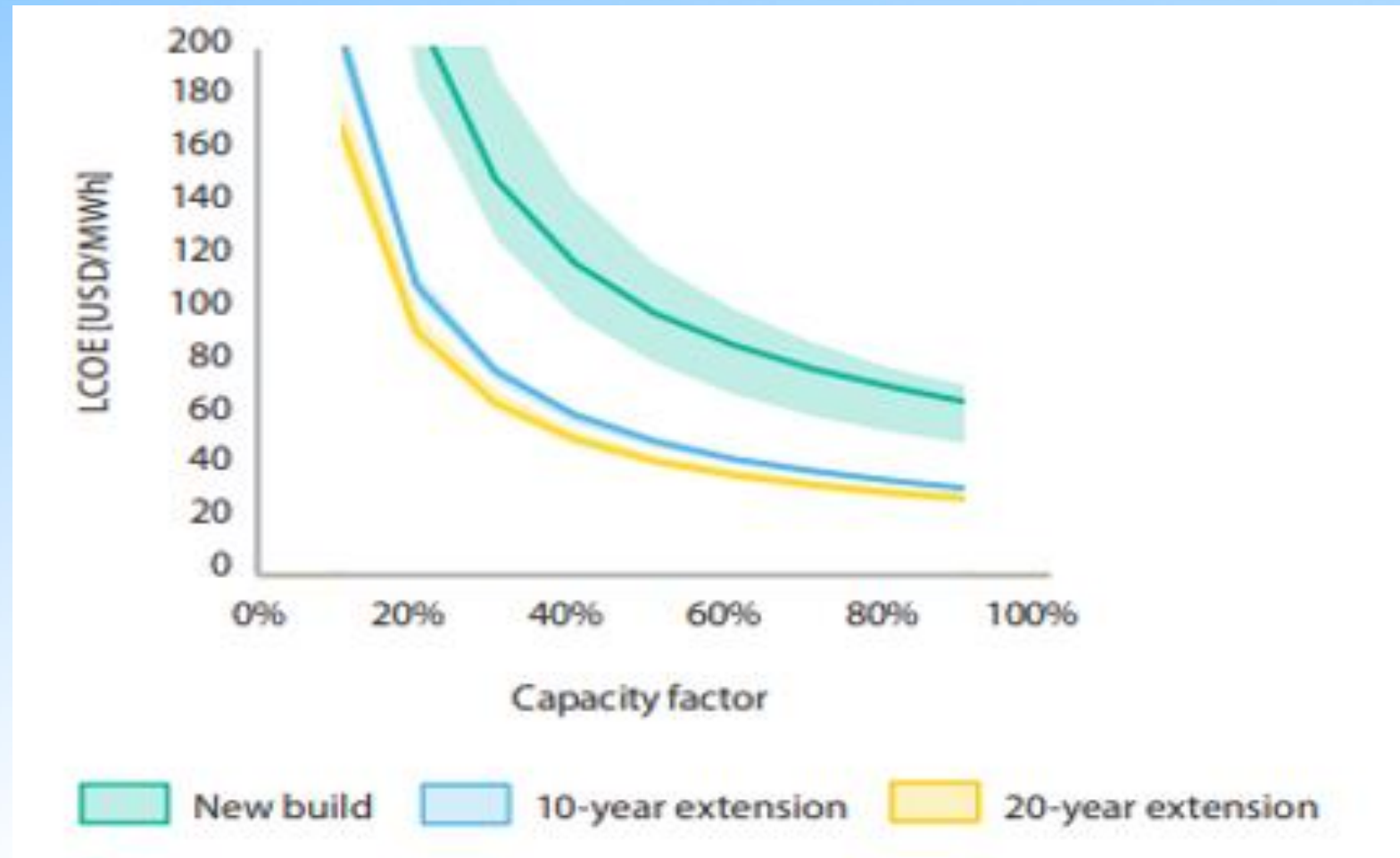
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ISSUE : CAPACITY FACTOR



Note: Values at 7% discount rate. Lines indicate median values, areas the 50% central region.



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ROLE FOR NUCLEAR (POLICY)

- Keep all existing plants in LTO (if OK Saf Authorities)
- Build new large NPPs to replace the existing fleet and beyond in 10+ years from now for baseload
- Develop and demonstrate GenIII SMRs for power AND heat, for local applications and hybrid systems (flexibility at system level by the users of P&H)
- Research on and demonstration of AMRs based on Fast Reactors with closing the fuel cycle for very long-term sustainability (recycling, resource and optimised waste management)
- Fusion



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NUCLEAR TOO EXPENSIVE ?

- Case of Germany 2022:
150 GWe VRE - 250 TWh – 385gr CO2/kWh
2005 2025 : 500 Billion Subsidies VRE (20 years lifetime) + 150 Billions for HV Grid
German Court of Auditor + 450 Billion for HV Grid
Total 1100 Billion
- Case of France 2022
60 GWe Nuclear - 300 TWh – 50gr CO2/kWh
LTO programme (+20 years lifetime) : 50 Billion
- ... ??? New Build – say 10 Billion for 1500 Mwe
150 GWe 1000 Billion (1000 TWh/y - 80 years lifetime)

