MONTEL GROUP Iberian Energy Day 2022

LA INDUSTRIA ANTE EL DESAFÍO DE LA CRISIS ENERGÉTICA

Blanca Losada

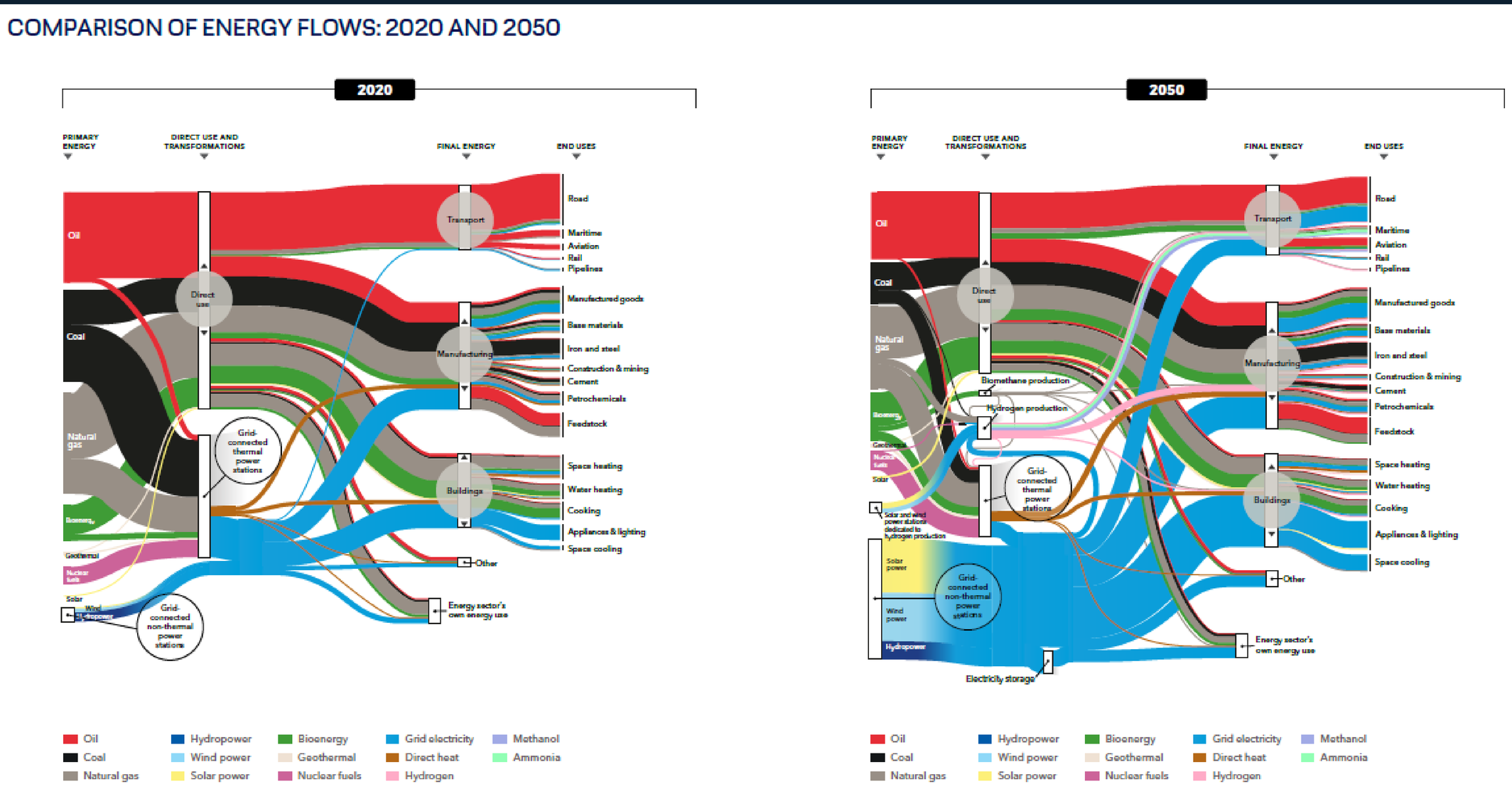
Madrid, 24 de noviembre, 2022

FORTIA
ENERGÍA

LA TRANSICIÓN ENERGÉTICA

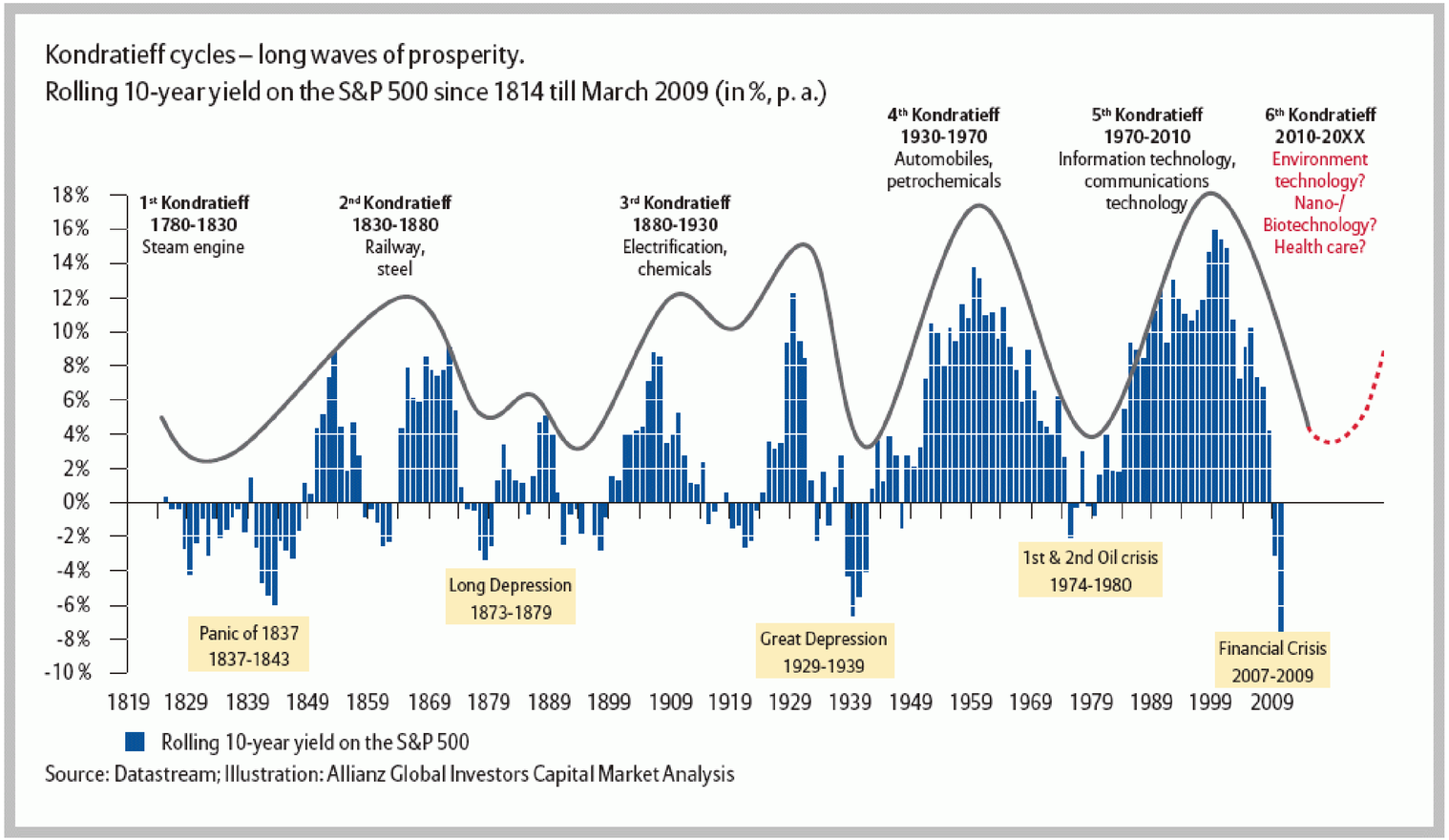
> “El grado de **evolución** de una cultura viene determinado por la **cantidad de energía** que es capaz de utilizar y la **eficiencia en su uso** que es capaz de lograr”
>
> *– Ley de White*

La eficiencia y la termodinámica…



Fuente: Energy Transition Outlook 2022. DNV GL

…son parte intrínseca de la nueva revolución industrial



Nikolái Kondrátiev

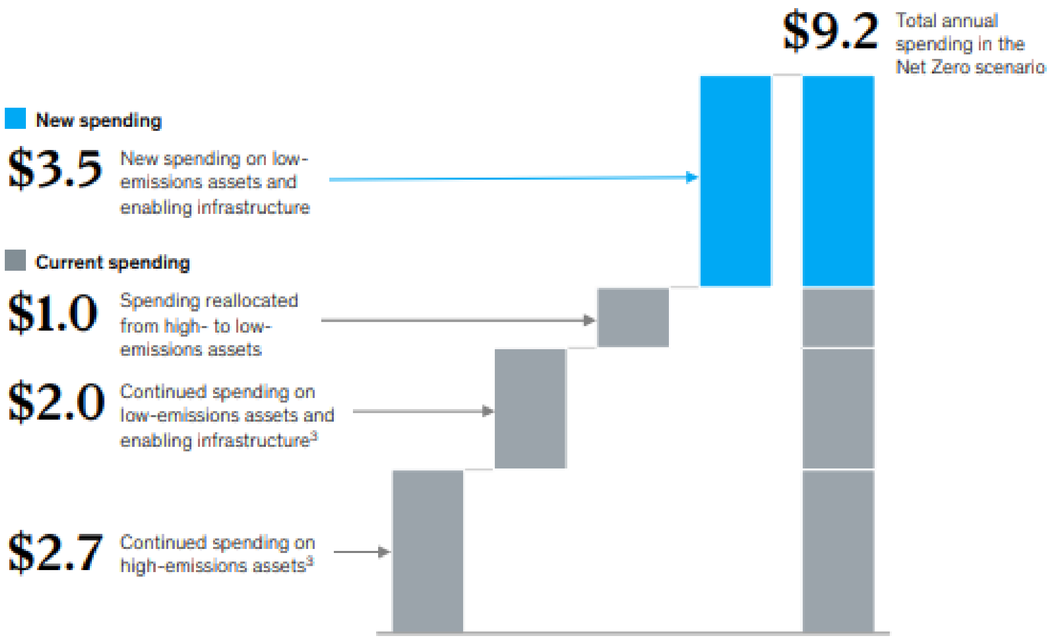
ALGUNAS CLAVES

“Es muy difícil hacer predicciones, especialmente acerca del futuro”

– Niels Bohr

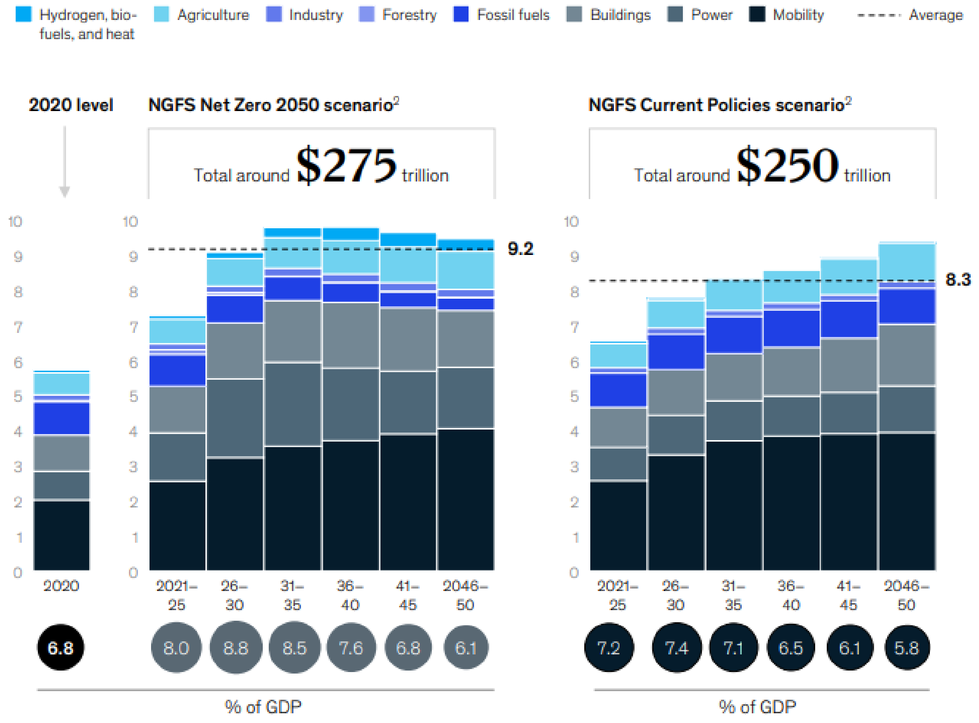
La transición energética es intensiva en financiación..

Annual spending on physical assets for energy and land-use systems[1] in the Net Zero 2050 scenario,[2] average 2021–50, $ trillion



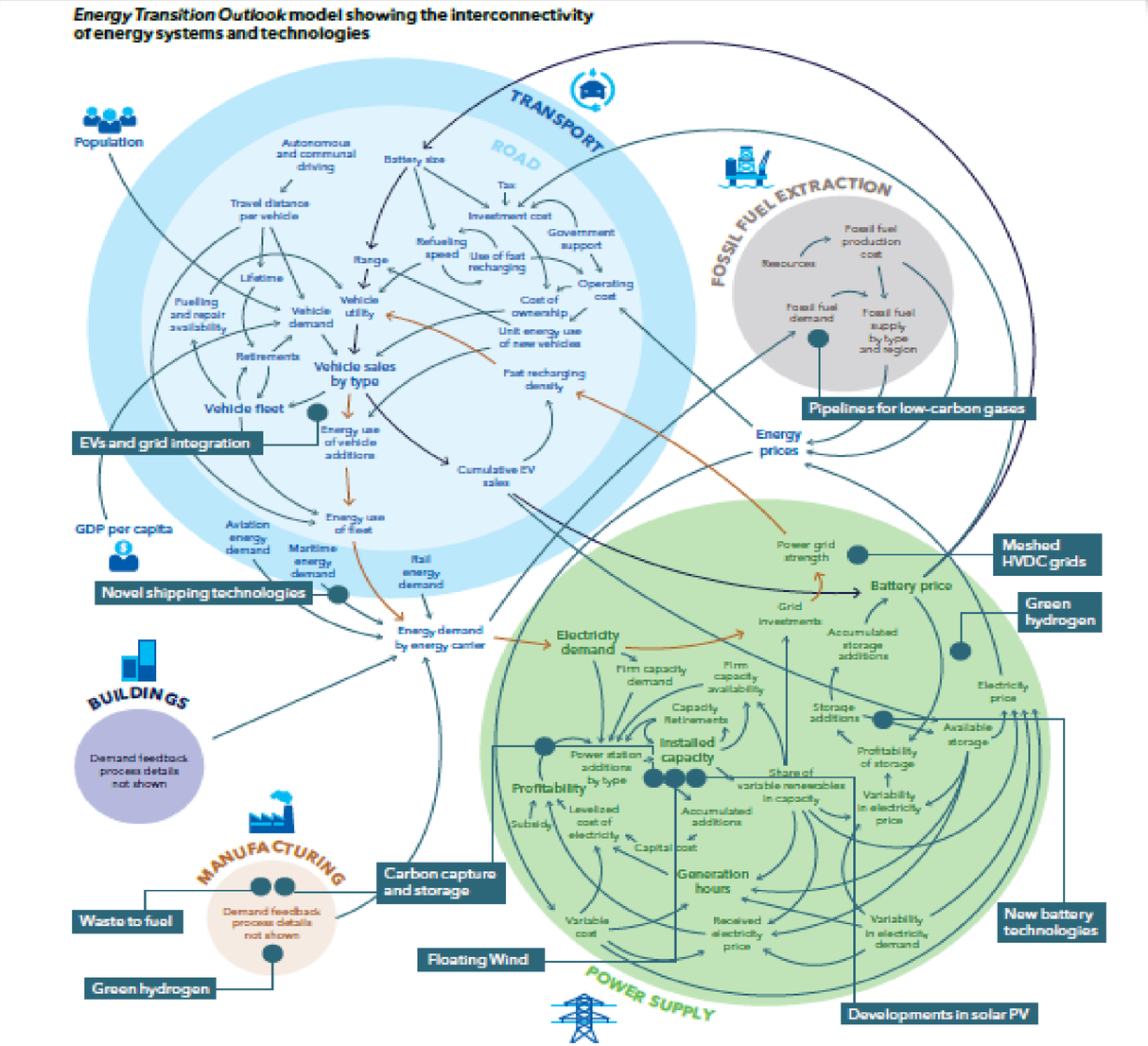
Source: McKinsey Center for Future Mobility Electrification Model (2020); McKinsey Hydrogen Insights; McKinsey Power Solutions; McKinsey–Mission Possible Partnership collaboration; McKinsey Sustainability Insights; McKinsey Agriculture Practice; McKinsey Nature Analytics; McKinsey Global Institute analysis

Annual spend on physical assets for energy and land-use systems,[1] $ trillion per year



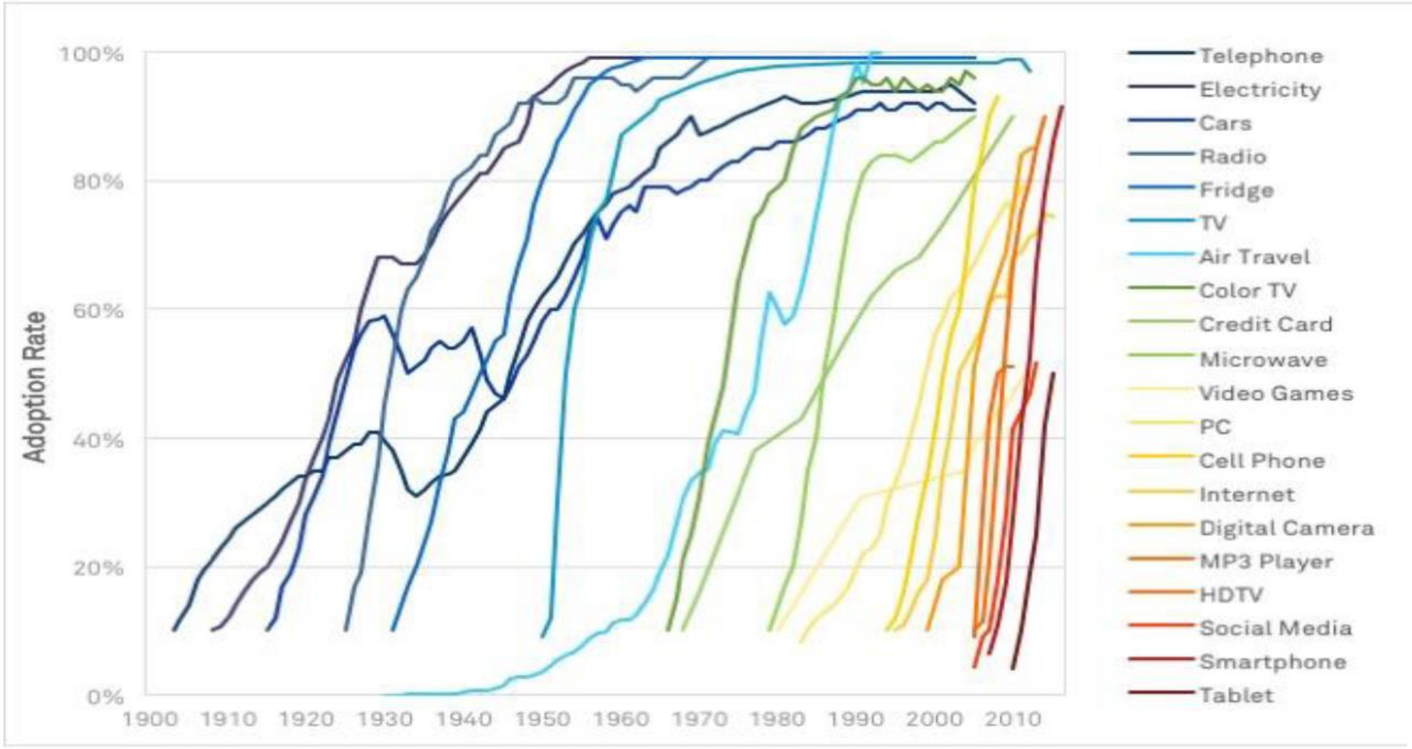
Source: Network for Greening the Financial System 2021 (Net Zero 2050 scenarios) REMIND-MAgPIE model; Vivid Economics; McKinsey Center for Future Mobility Electrification Model (2020); McKinsey Hydrogen Insights; McKinsey Power Solutions; McKinsey–Mission Possible Partnership collaboration; McKinsey Sustainability Insights; McKinsey Agriculture Practice; McKinsey Nature Analytics; McKinsey Global Institute analysis

…en tecnología…



Fuente:DNV Technology Progress Report Energy Transition Outlook 2021

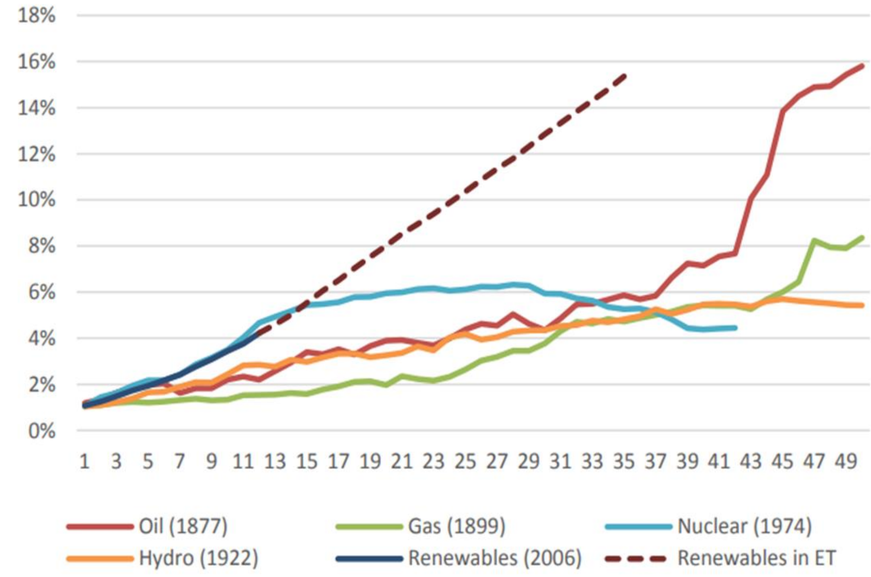
…en adopción social y de mercado…



Source: Asymco

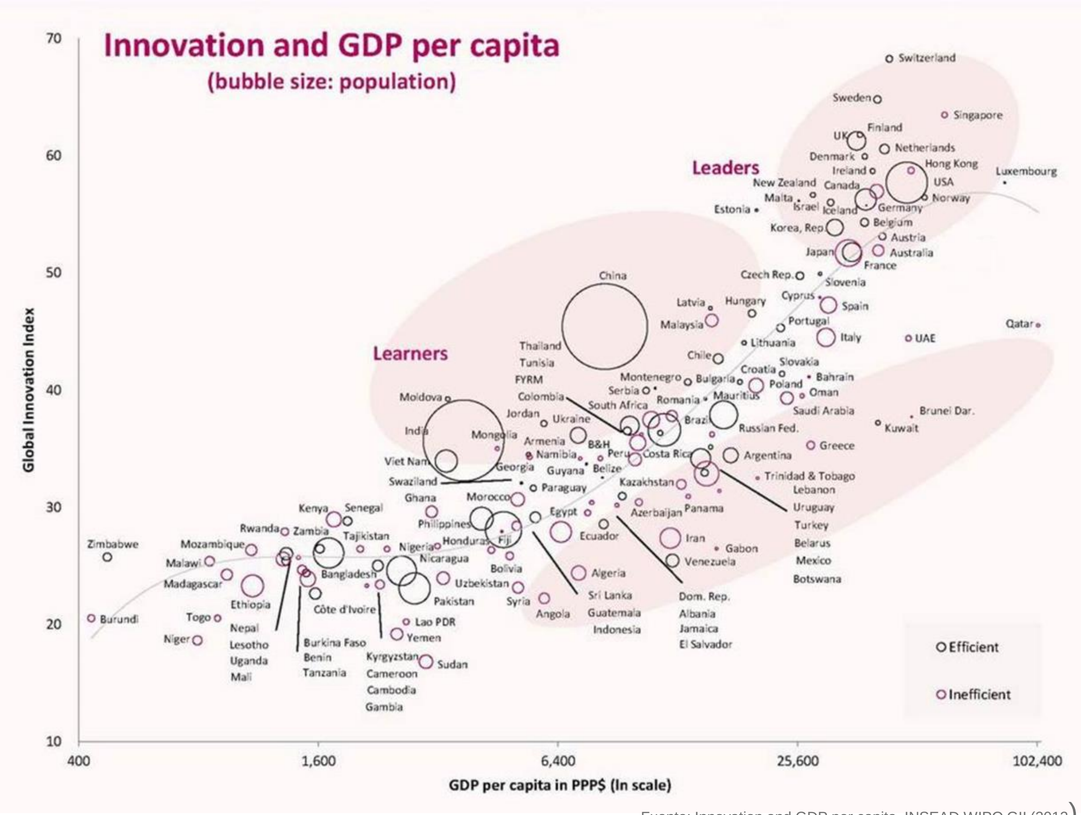
BLACKROCK

Figure 1: Speed of penetration of new fuels in the global energy system

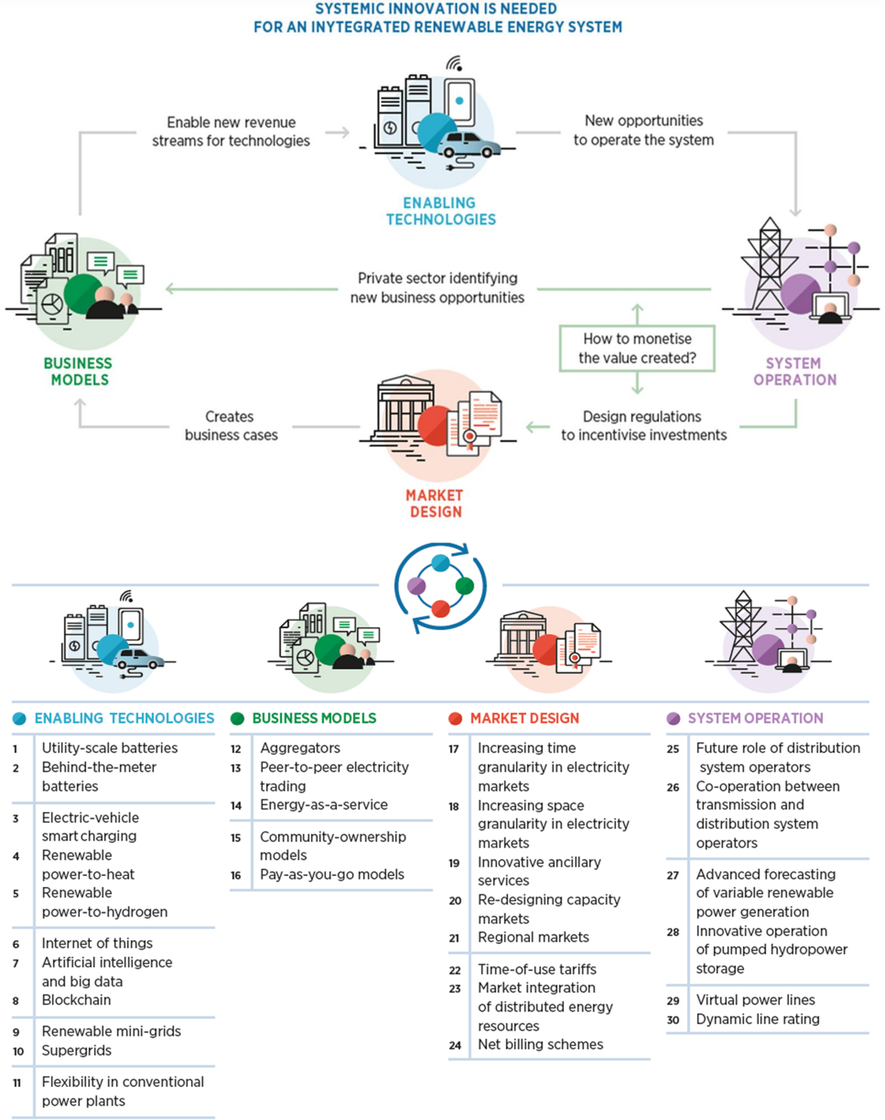


Source: Source: BP (2019)

…en innovación y talento…



Fuente: Innovation and GDP per capita. INSEAD WIPO GII (2012)



Fuente: IRENA Innovation landscape 2019

… en calidad institucional…

TRANSFORMER TECHNOLOGY.com

NEWS MAGAZINE COMMUNITY HUB SERVICES COMPANIES SUBSCR

Continental Europe TSOs support Ukraine and Moldova power systems

MAR 25, 2022

Photo: Igor Karimov on Unsplash

European Commission - Statement

Statement by Commissioner for Energy Kadri Simson on Synchronisation of the Continental European Electricity Grid with Ukraine and Moldova

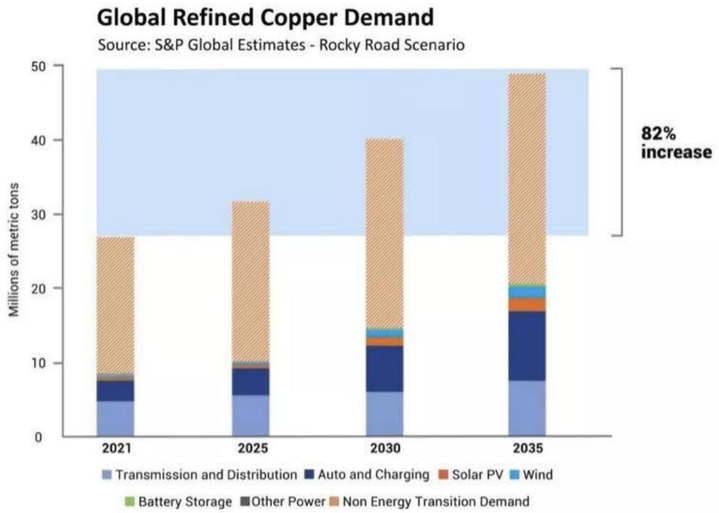
Brussels, 16 March 2022

Today, the electricity grids of Ukraine and Moldova have been successfully synchronised with the Continental European Grid. This will help Ukraine to keep their electricity system stable, homes warm and lights on during these dark times. It is also a historic milestone for the EU-Ukraine relationship – in this area, Ukraine is now part of Europe.

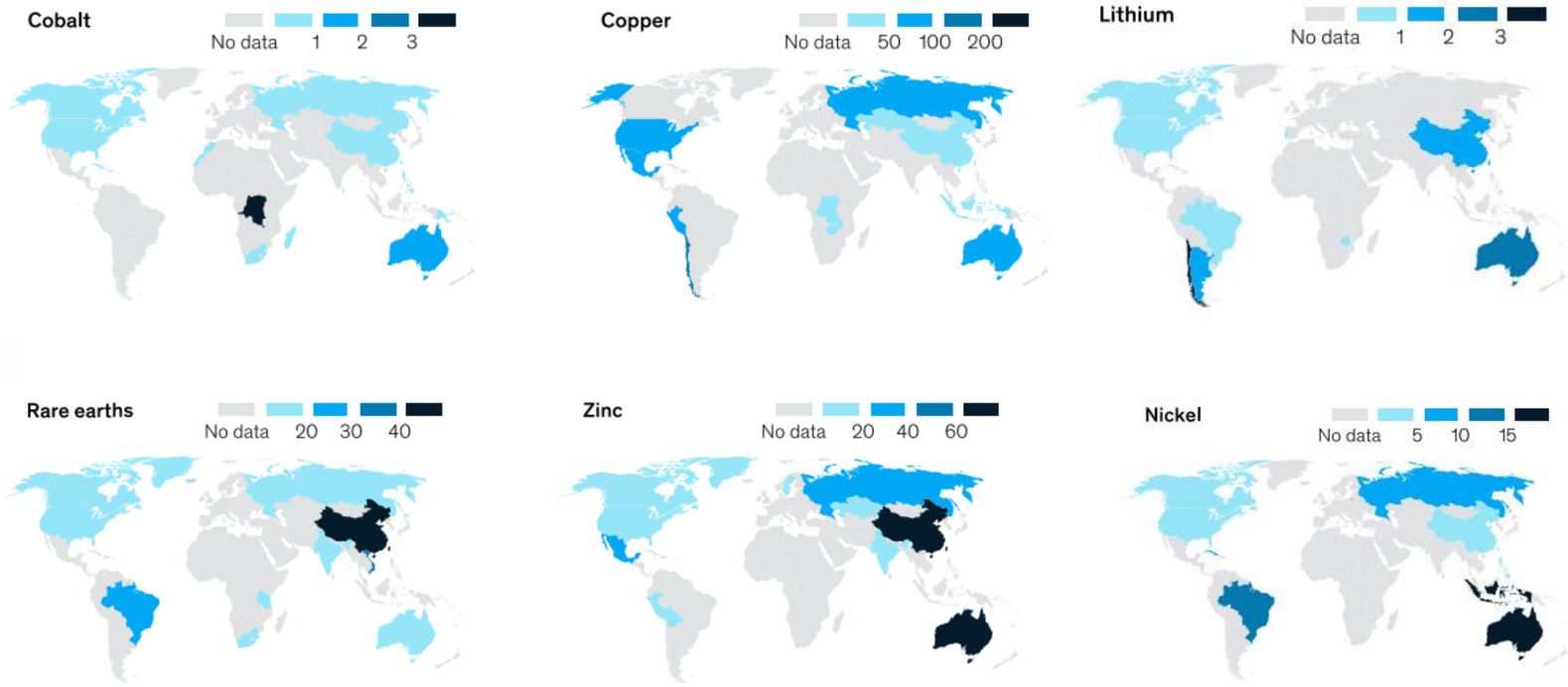
This project has shown extraordinary cooperation and determination from everyone involved. I want to thank the European Network of Transmission System Operators for Electricity (ENTSO E) for doing a year's work in two weeks to make this happen. I want to thank the French Presidency of the Council and Member States for their support to this project that is not without risks. And I want to thank our Ukrainian partners – Minister Galushchenko and Ukrenergo in particular – for their heroic efforts in keeping the Ukrainian energy systems working in the middle of a terrible war.

The EU will continue to support Ukraine in the energy sector, by ensuring the reverse flows of gas to the country and the delivery of energy supplies that are badly needed. We are also looking forward to the time when we can continue our excellent cooperation on the green transition and market reforms.

…en materias primas…



Reserves of minerals that are used in low-emissions technologies,
average ratio of mineral reserves to global production[1]



Source: US Geological Survey; McKinsey Global Institute analysis

… en industrialización productiva….

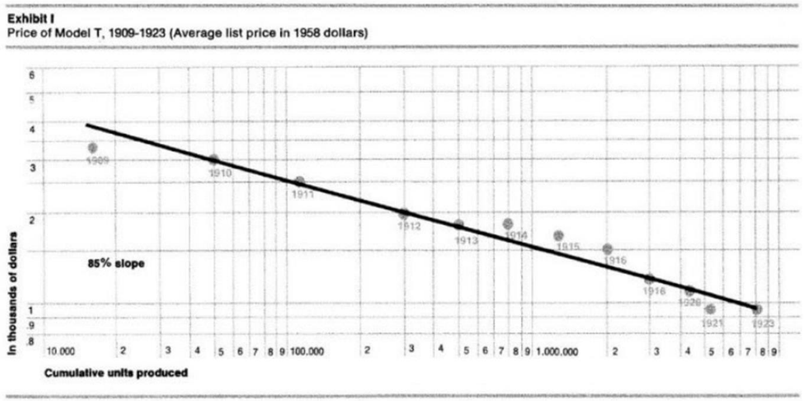
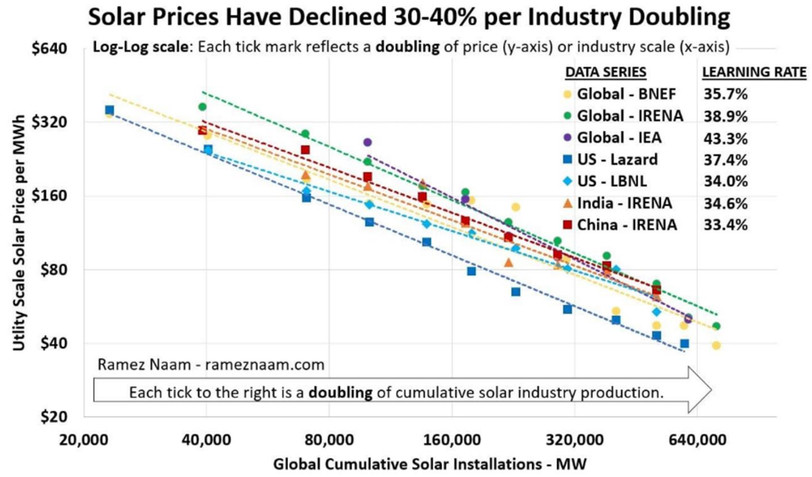
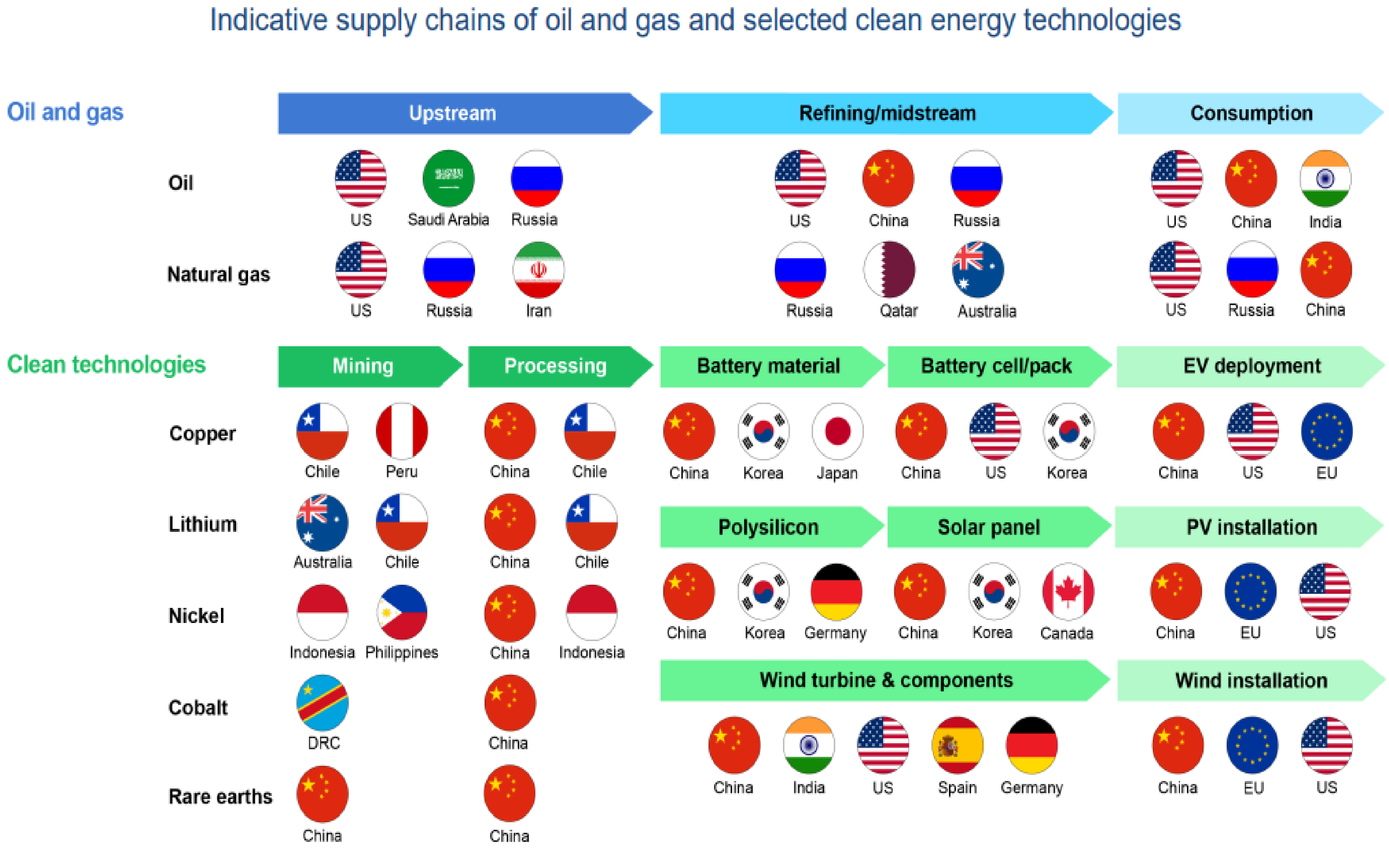
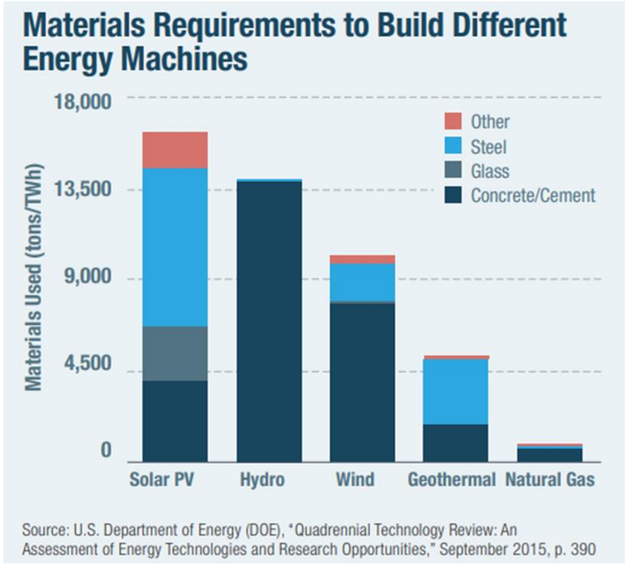


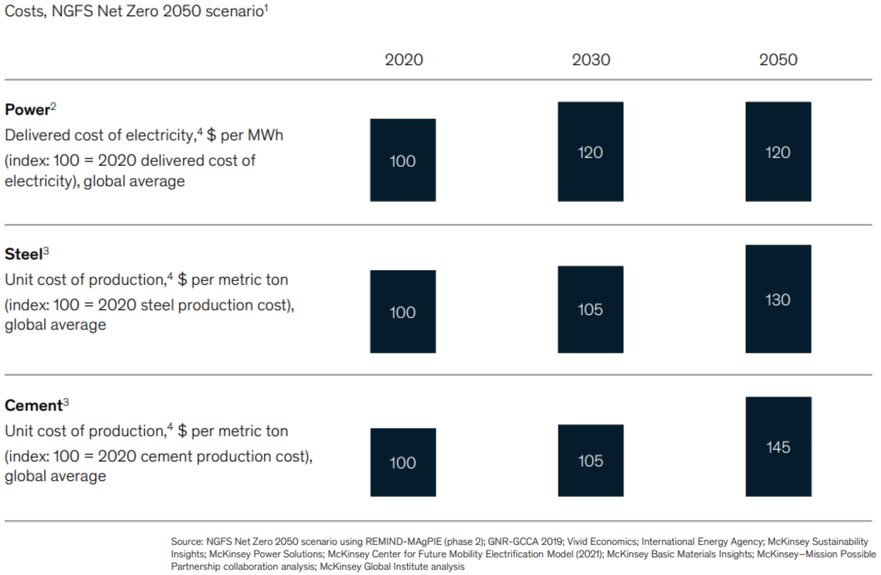
Figure 1. The price of the Ford Model T from 1909-1923[2].

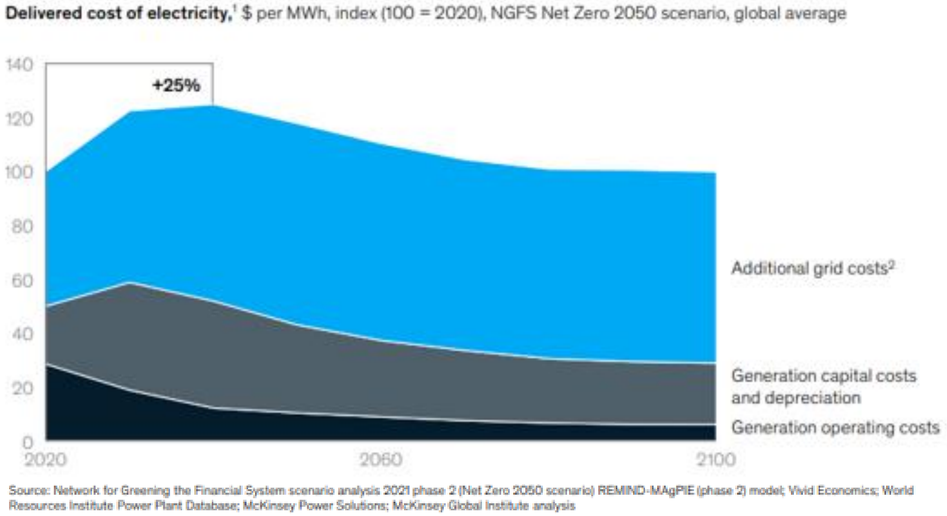


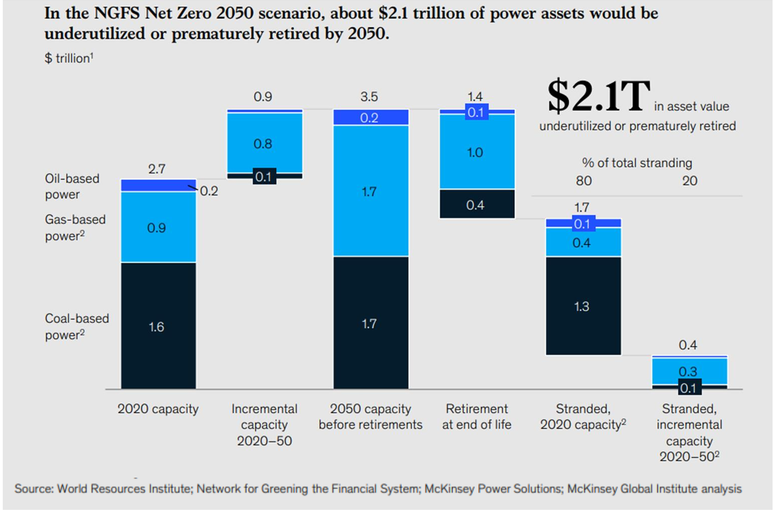


...y en...¡energía!...


Materials Requirements to Build Different Energy Machines
18,000
13,500
9,000
4,500
0
Materials Used (tons/TWh)
Other
Steel
Glass
Concrete/Cement
Solar PV
Hydro
Wind
Geothermal
Natural Gas
Source: U.S. Department of Energy (DOE), "Quadrennial Technology Review: An Assessment of Energy Technologies and Research Opportunities," September 2015, p. 390


Costs, NGFS Net Zero 2050 scenario[1]
2020
2030
2050
Power[2]
Delivered cost of electricity,[4] $ per MWh
(index: 100 = 2020 delivered cost of electricity), global average
100
120
120
Steel[3]
Unit cost of production,[4] $ per metric ton
(index: 100 = 2020 steel production cost), global average
100
105
130
Cement[3]
Unit cost of production,[4] $ per metric ton
(index: 100 = 2020 cement production cost), global average
100
105
145
Source: NGFS Net Zero 2050 scenario using REMIND-MAgPIE (phase 2); GNR-GCCA 2019; Vivid Economics; International Energy Agency; McKinsey Sustainability Insights; McKinsey Power Solutions; McKinsey Center for Future Mobility Electrification Model (2021); McKinsey Basic Materials Insights; McKinsey–Mission Possible Partnership collaboration analysis; McKinsey Global Institute analysis

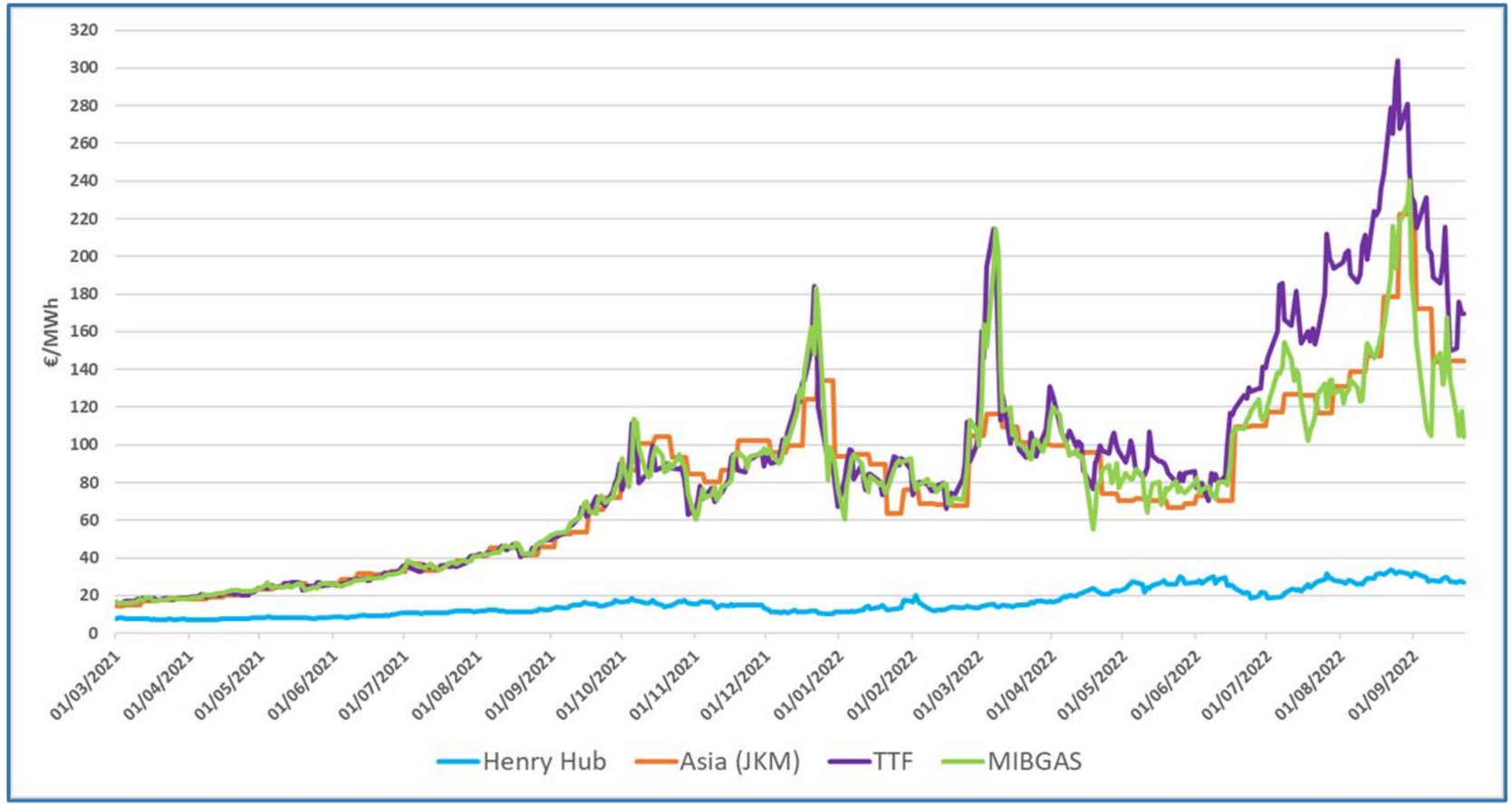

Delivered cost of electricity,[1] $ per MWh, index (100 = 2020), NGFS Net Zero 2050 scenario, global average
140
120
100
80
60
40
20
0
+25%
2020
2060
2100
Additional grid costs[2]
Generation capital costs and depreciation
Generation operating costs
Source: Network for Greening the Financial System scenario analysis 2021 phase 2 (Net Zero 2050 scenario) REMIND-MAgPIE (phase 2) model; Vivid Economics; World Resources Institute Power Plant Database; McKinsey Power Solutions; McKinsey Global Institute analysis


In the NGFS Net Zero 2050 scenario, about $2.1 trillion of power assets would be underutilized or prematurely retired by 2050.
$ trillion[1]
$2.1T in asset value underutilized or prematurely retired
% of total stranding
80
20
Oil-based power
Gas-based power[2]
Coal-based power[2]
2.7
0.2
0.9
1.6
0.9
0.8
0.1
3.5
0.2
1.7
1.7
1.4
0.1
1.0
0.4
1.7
0.1
0.4
1.3
0.4
0.3
0.1
2020 capacity
Incremental capacity 2020–50
2050 capacity before retirements
Retirement at end of life
Stranded, 2020 capacity[2]
Stranded, incremental capacity 2020–50[2]
Source: World Resources Institute; Network for Greening the Financial System; McKinsey Power Solutions; McKinsey Global Institute analysis

LA CRISIS DE PRECIOS

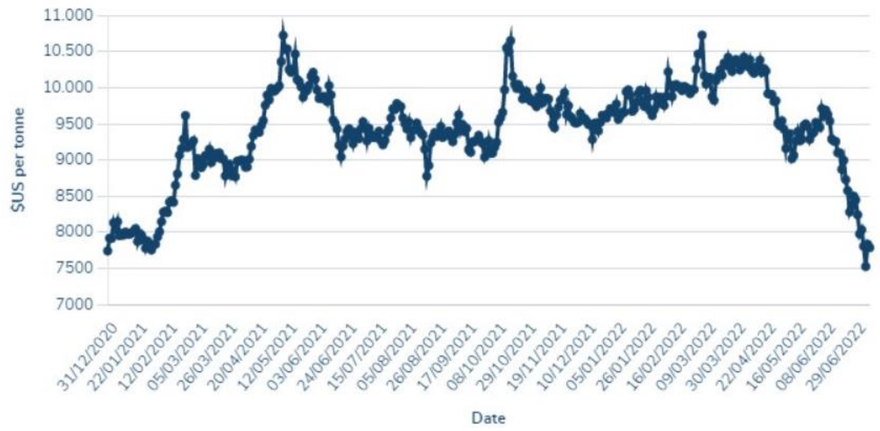
> **“Todas las situaciones críticas tienen un relámpago que nos ciega o nos ilumina”**
>
> *– Victor Hugo*

Los precios de la energía….

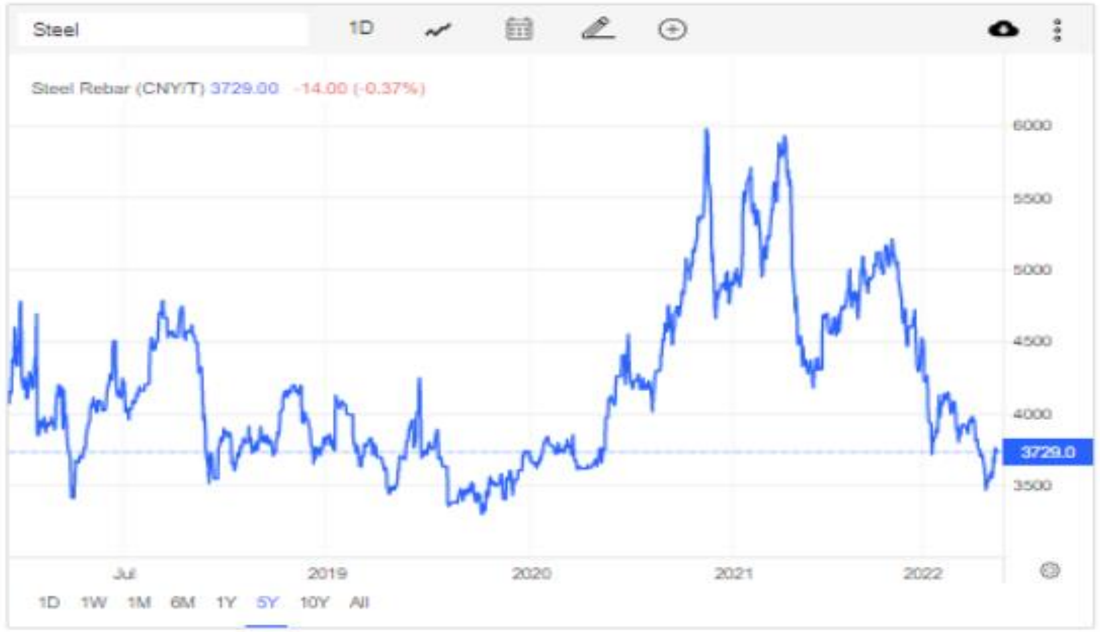


…y su impacto en la cadena de suministro...

Evolución del precio del aluminio en la Bolsa de los Metales de Londres desde el 1 de enero de 2021 al 8 de julio de 2022. Fuente: LME.



Evolución del precio del cobre desde el 1 de enero de 2021 al 8 de julio de 2022. Fuente: LME.



…en la economía…

Gráfico – inflación histórica del IPC Alemania (anual) – plazo de medición íntegro

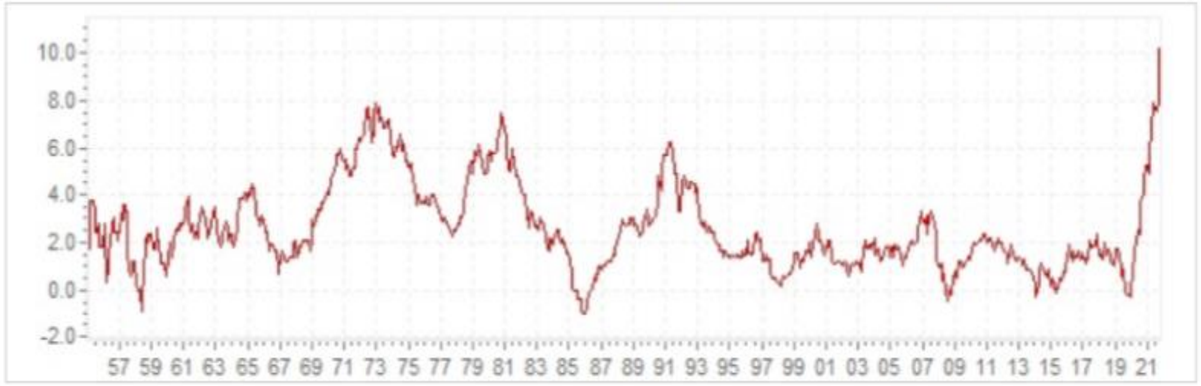


Gráfico – inflación histórica del IPC Francia (anual) – plazo de medición íntegro

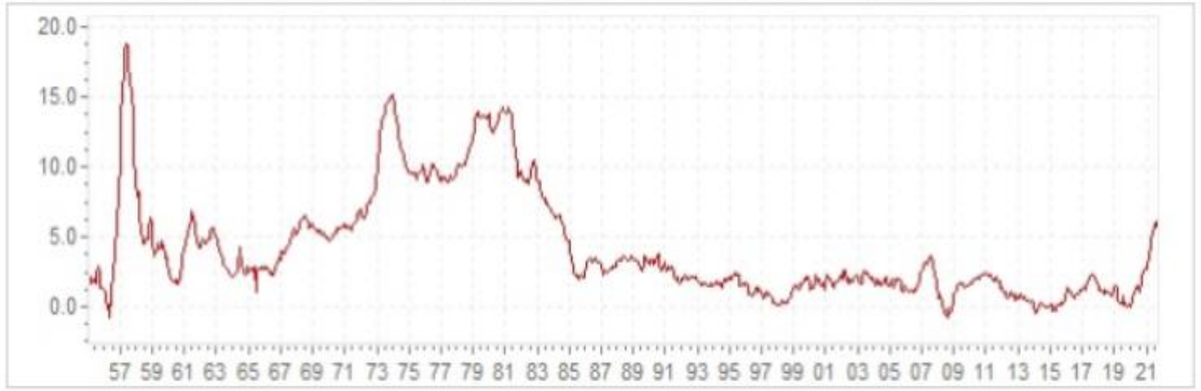
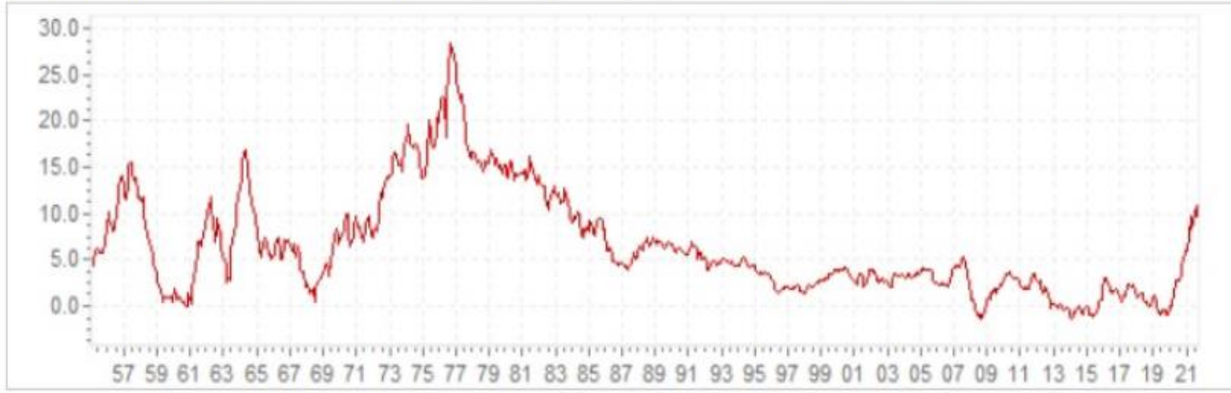
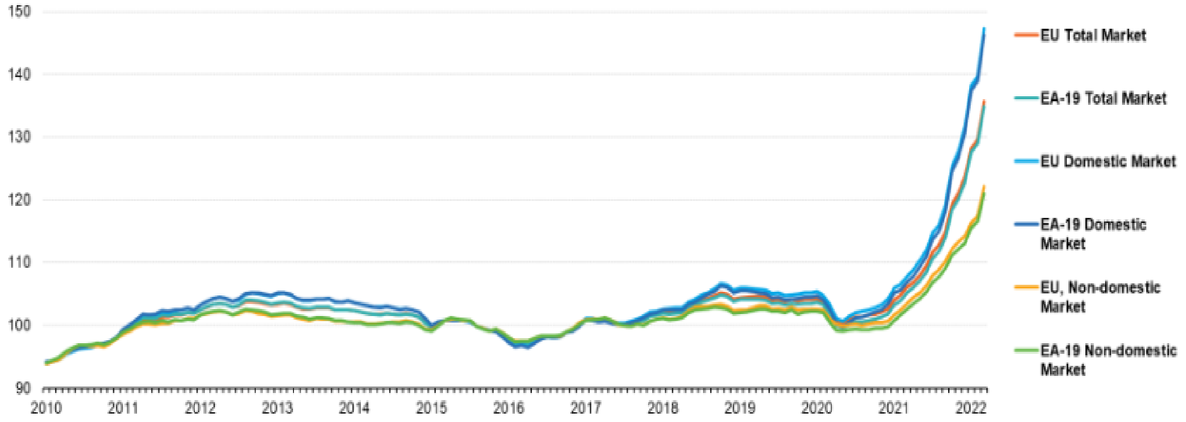


Gráfico – inflación histórica del IPC España (anual) – plazo de medición íntegro



…y en la competitividad industrial

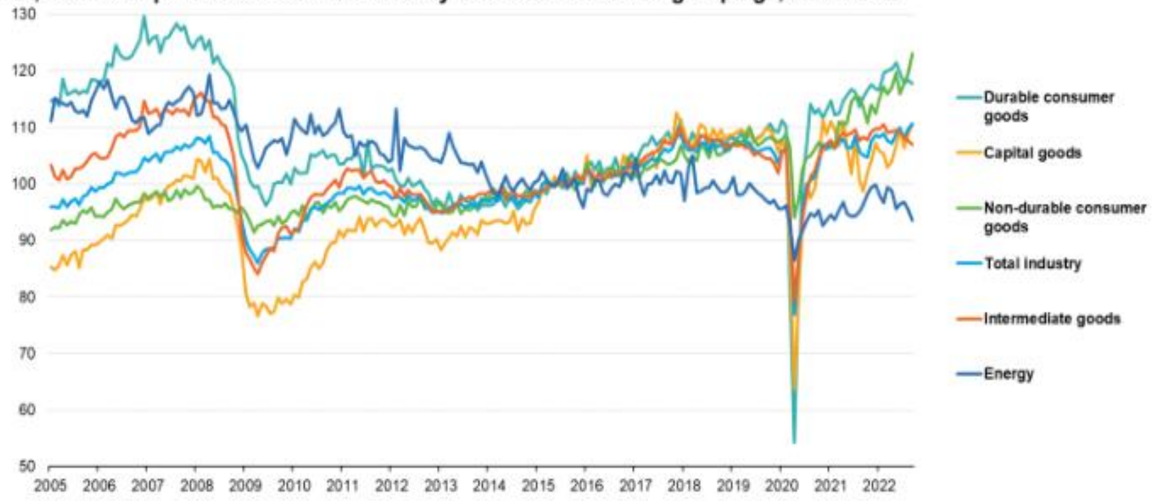
EU, EA-19 Industrial producer prices, total, domestic and non-domestic market, 2010 - 2022, undadjusted data (2015 = 100)



Source: Eurostat (online data code: sts_inpp_m; sts_inppd_m; sts_inppnd_m)

eurostat

EU, Industrial production for total industry and main industrial groupings, 2005-2022



Source: Eurostat (online data code: sts inpr_m)

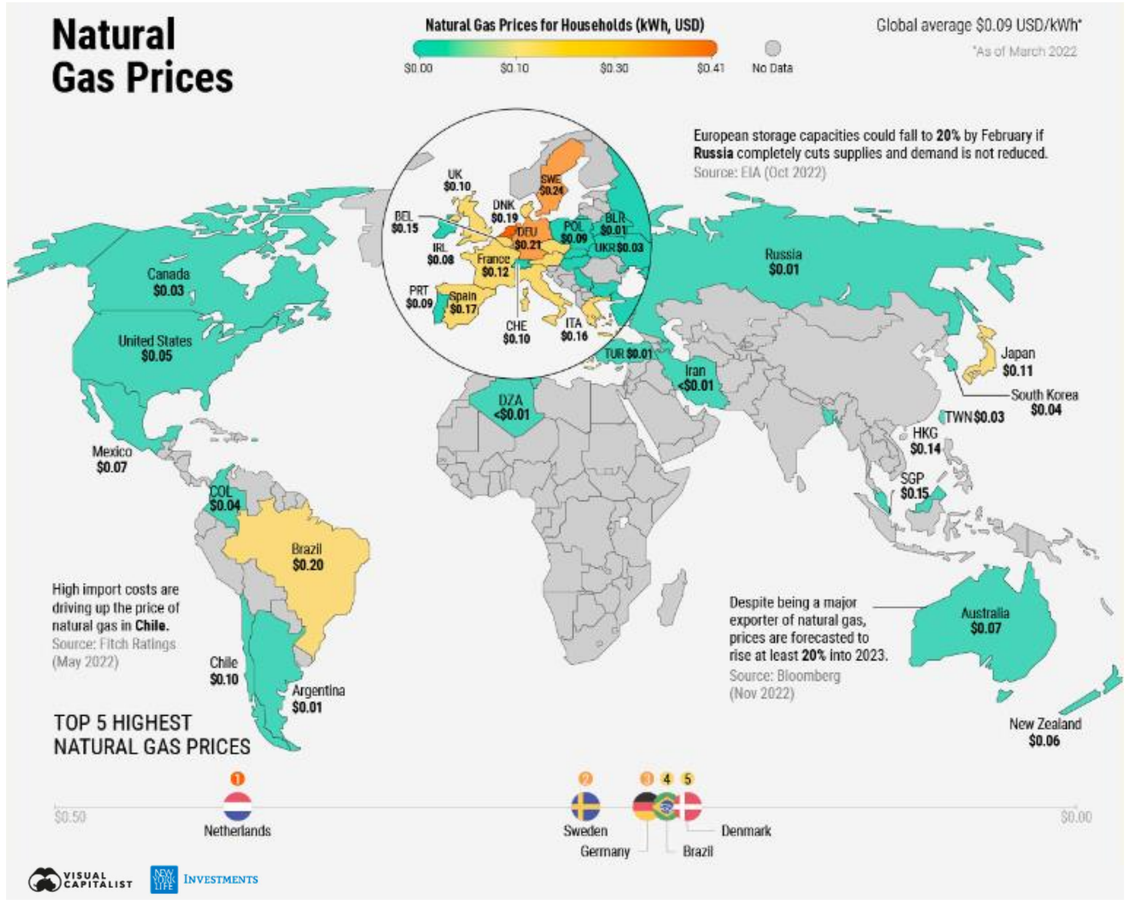
eurostat

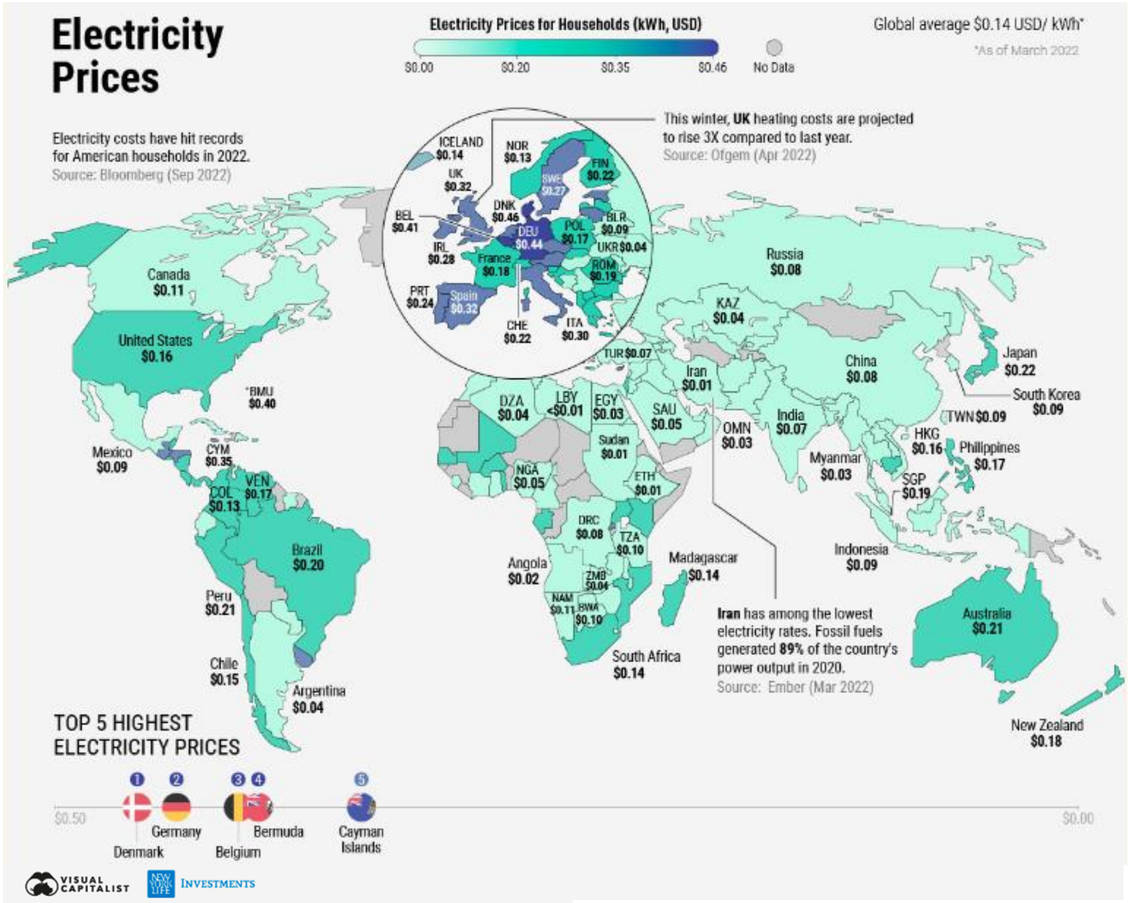
EL DESAFÍO

“Siempre que hay un reto, también hay una oportunidad para afrontarlo”

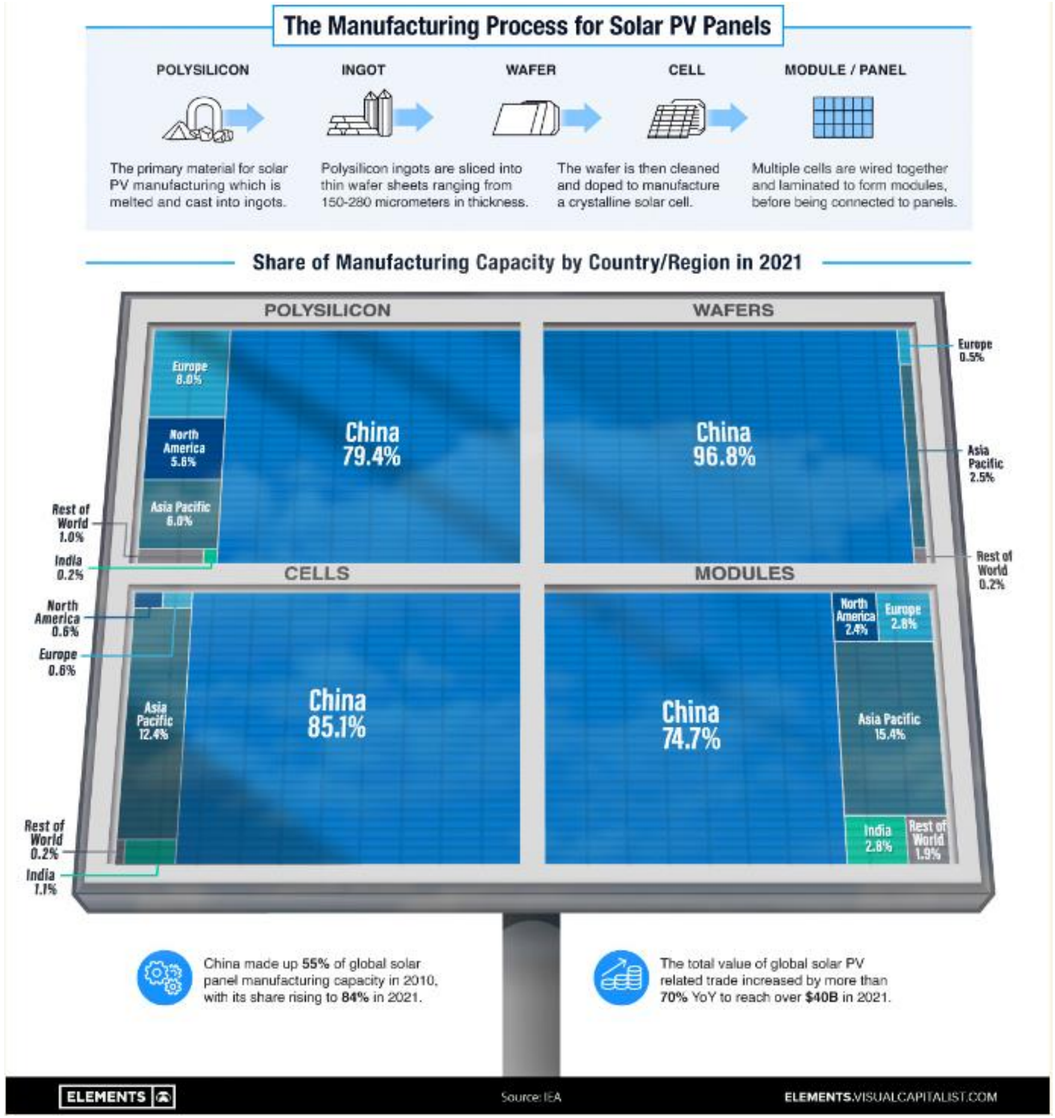
– Dalai Lama

Los precios y los mercados





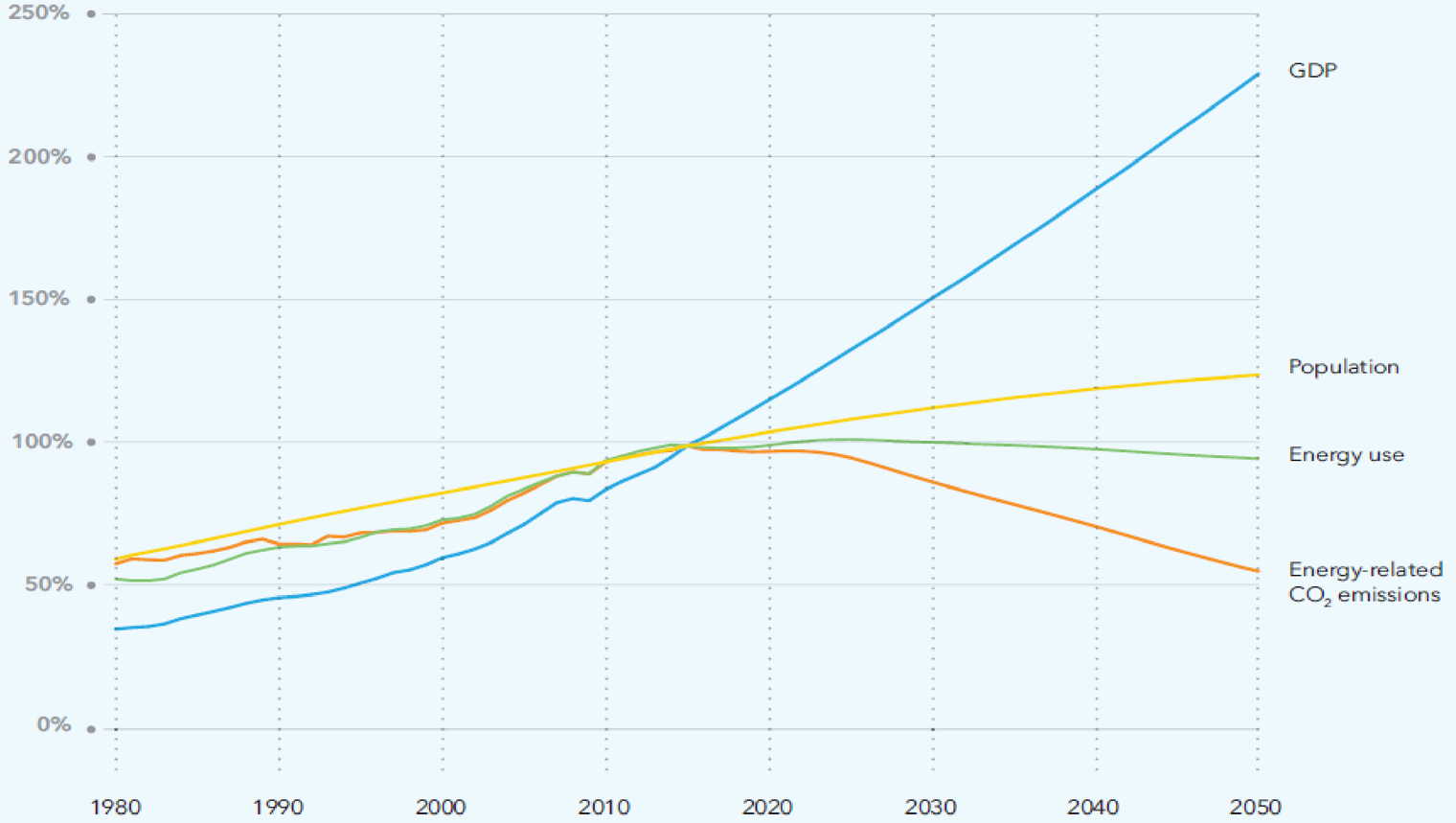
La apuesta tecnológica e industrial



La eficiencia energética…

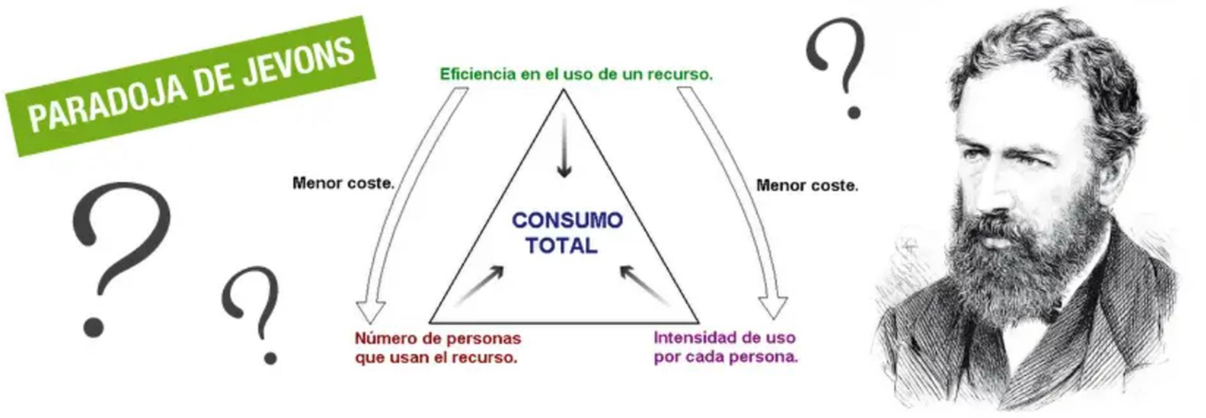
FIGURE 1. THE DECOUPLING OF ENERGY FROM KEY PARAMETERS

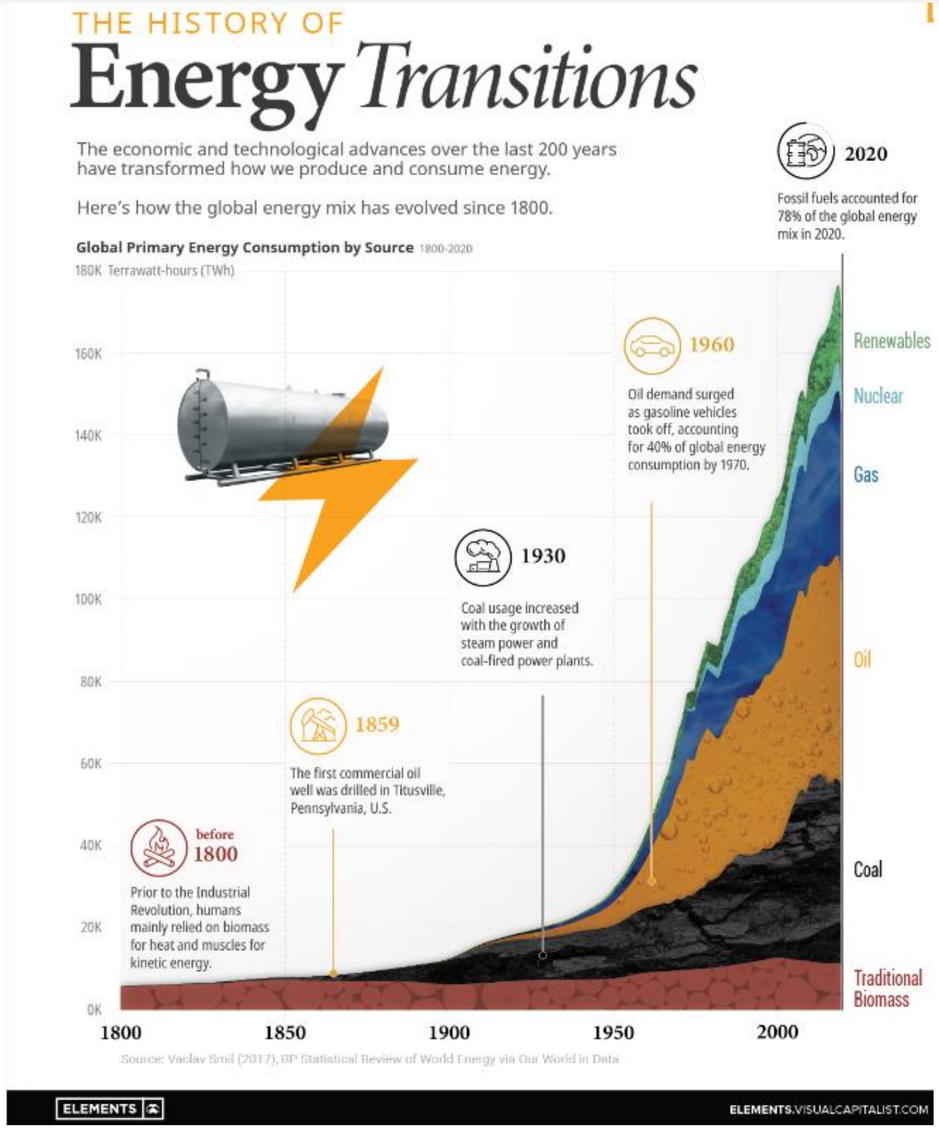
Units: **Percentage of 2015 level**



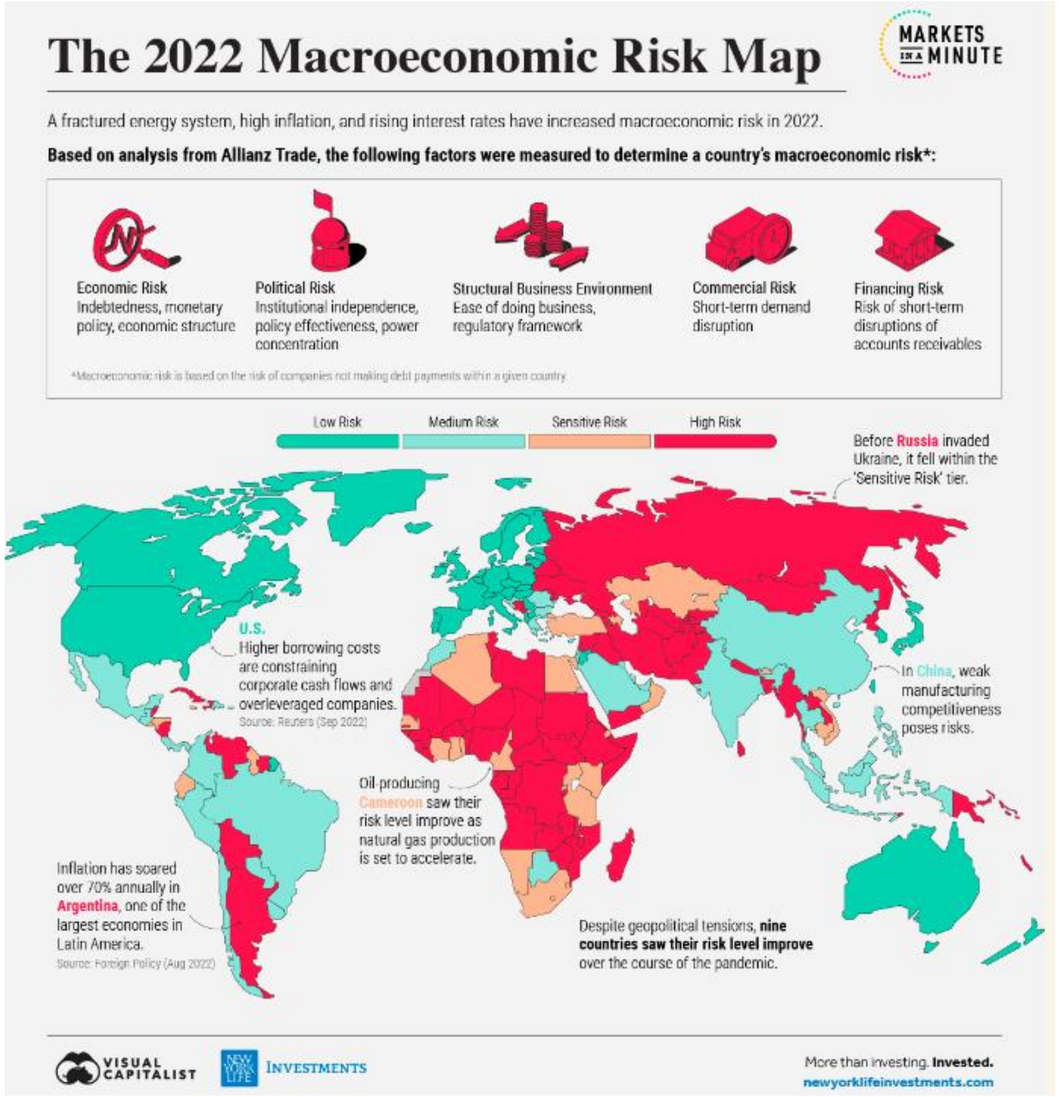
Source: Energy Transition Outlook 2017. DNV GL

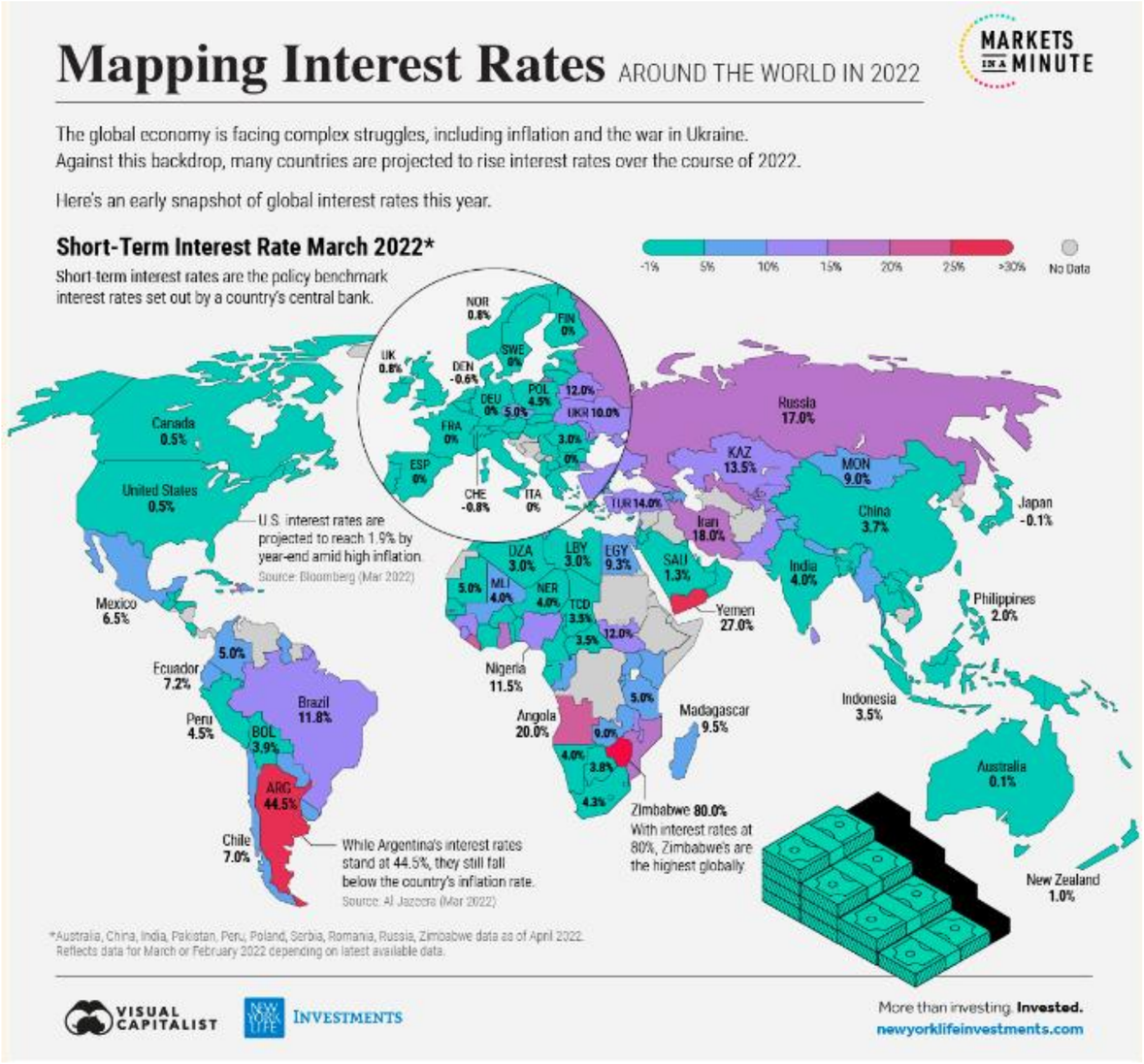
…y sus implicaciones





La solidez financiera e institucional





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