# The Just Transition and sustainable development in Africa

Presentation prepared for the Executive Master
"Global Public Diplomacy and Sustainable Development"

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COSMOPOLITAN KAROO
SUSTAINABLE DEVELOPMENT

ALMA MATER STUDIORUM
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# The Climate Crisis in Africa

**Key Facts:**

- Africa contributes less than **4% of global GHG emissions** yet faces severe climate impacts.
- Climate change jeopardizes **human, animal, plant life, and ecosystems**.
- Threatens **social and economic systems**, impacting development gains and diverting resources from critical priorities.

**Africa's Socio-Economic Vulnerabilities:**

- High dependence on **rain-fed agriculture**.
- Limited alternative livelihood options.
- Challenges include **widespread poverty, inequality**, low education levels, and limited access to financial resources.

**Impact on Future Needs:**

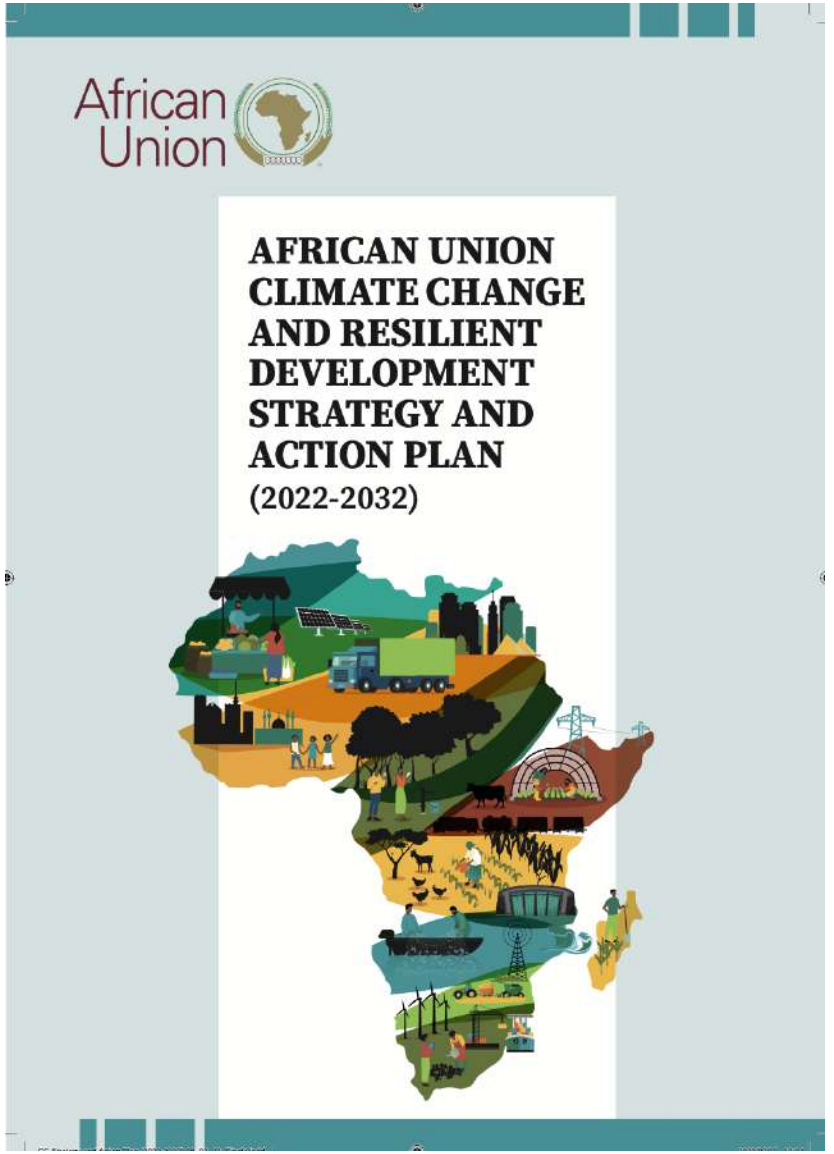
- **50% increase in agricultural production needed by 2050**.
- Urbanization and infrastructure development require **massive investments**.

# AU Strategy and Action Plan 2022-2032

- **Objectives:**
  - Create a **low-emission, climate-resilient** economy.
  - Align with **Agenda 2063** and the **2030 Agenda for Sustainable Development**.

- **Key Components:**
  - **Investment Need**: Over **$3 trillion required by 2030** for adaptation and mitigation (AfDB).
  - **Strategic Projects**: Africa Adaptation Initiative, Great Green Wall, Africa Renewable Energy Initiative.
  - **Unified Voice**: **CAHOSCC** coordinates Africa's stance in global climate negotiations.

- **Long-Term Vision:**
  - **Resilient growth** in agriculture, energy, industry, and blue economy sectors.
  - **Inclusive partnerships** with civil society, private sector, and global actors for implementation and monitoring.




Transform Africa into a global power by 2063.

Signed in 2013 by African Heads of State during the African Union's 50th anniversary.

**Core Values:** Unity, self-determination, progress, and prosperity for the African people.

**Pan-Africanism:** The ideal of a shared destiny for all people of African origin, both on the continent and in the diaspora.

**Inclusive Economic Development:** Regional integration, democratic governance, peace, and security.

**Main Goals:** Support an "African Renaissance" through sustainable growth and social development.

# Specific Objectives of AU Climate Action

**1. Strengthen Adaptive Capacity**

- Support affected communities in adapting to and managing climate-related risks.

**2. Promote Equitable, Low-Emission Development**

- Pursue transformative pathways for climate-resilient, sustainable growth.

**3. Increase Resource Mobilization and Technology Access**

- Boost Africa's ability to secure resources and access advanced technology for ambitious climate initiatives.

**4. Enhance Inclusion and Alignment**

- Ensure cohesive climate strategies and ownership across government levels and stakeholder groups.

# Strategic Intervention Axes for Climate-Resilient Development

**1. Strengthening Policy and Governance**

Climate diplomacy: Enhanced climate policy, inclusive governance, regional coordination, anticipatory planning, improved climate literacy, and climate-conflict solutions.

**2. Transformative Climate-Resilient Development Pathways**

Key Transitions: Food systems, land and water ecosystems, energy, mobility, industrialization, blue economy, urban resilience, and digital transformation.

**3. Means of Implementation & Climate Finance**

Priorities: Climate finance, safety mechanisms for loss/damage, technology transfer, inclusive participation, and capacity building.

**4. Leveraging Regional Flagship Initiatives**

Role: Mobilize partnerships, political support, resource pooling, and information sharing.

# AXIS 3: Means of Implementation & Climate Finance

**Current Financial Challenges:**

- **Insufficient Adaptation Funds**: annual adaptation costs exceed available finance (current estimates $70 billion, rising up to $500 billion by 2050).
- **Finance Imbalance**: Adaptation needs more grants; 57% provided as loans, impacting vulnerable countries.
- **Debt Constraints**: Heavy loan reliance and external debt hinder fiscal space for further climate resilience investments.
- **Access Barriers**: Complex accreditation processes for multilateral funds limit Africa's access to international climate finance.

**Strategic Actions Needed:**

1. **Public & Private Sector Collaboration**: Blended finance, green bonds, and public-private partnerships to enhance private investment.
2. **Direct Access Empowerment**: Streamline pathways for African entities to gain direct access to climate funds, fostering local agency.
3. **Enhanced Tracking & Transparency**: Improve MRV (Measurement, Reporting, and Verification) for better accountability in fund usage.

# AXIS 4: Leveraging Regional Flagship Initiatives

**Africa-Wide Climate Initiatives for Resilience and Action**

African initiatives aim to accelerate climate action continent-wide, supporting resilience through political buy-in, partnerships, resource mobilization, and information exchange.

**Key Focus Areas**:

- **Infrastructure Development** (PIDA): Cross-border projects in energy, transport, and water, reducing infrastructure deficits and enhancing Africa's economic growth.
- **Trade Facilitation** (AfCFTA): Creating a unified market for goods/services, reducing trade barriers, and promoting eco-friendly policies.
- **Climate Information Services** (ClimDev-Africa, WISER): Developing observational infrastructure and climate data utilization for policy-making.

# Just Energy Transition Partnerships (JETPs)

**Overview:**

- JETPs are multilateral platforms between developed and emerging economies (COP26, 2021, Glasgow).
- Aimed at mobilizing climate finance to support equitable and socially inclusive low-carbon transitions in developing countries.

**Key Objectives:**

- Accelerate decarbonization and support developing countries to achieve Nationally Determined Contributions (NDCs) under the Paris Agreement.
- Ensure climate justice by addressing historical climate responsibilities and supporting those most affected by climate change.

**Climate Justice & Equity:**

- Developed countries fund developing countries, recognizing historical emissions and climate injustice.
- Funding supports local transitions, targeting renewable energy and just outcomes without increasing national debt.

**Structure & Funding:**

- Includes a mix of grants, loans, and private investments.
- Commitments: $100 billion per year (2009 goal, extended to 2025), with new post-2025 target to be set at COP29.

**Examples of JETPs:** South Africa (2021), Indonesia (2022), Vietnam (2022), Senegal (2023).

# Just Energy Transition Partnership (JETP) in South Africa

- **JETP** established in 2021 at COP26 by South Africa, France, Germany, the United Kingdom, the United States, and the European Union
- Political model aimed at implementing an energy transition that is "fair and perceived as fair"
- The International Partners Group (IPG) has mobilized an initial funding of $8.5 billion (2023-2027) for decarbonizing electricity, electric vehicles, and green hydrogen.

***Re-invigorating, rejuvenating and redefining Eskom's destiny as we lead the energy transition into the future.***


# The Paris Agreement (2015)

- Signed by 196 countries at COP21 to limit global warming to 1.5°C above pre-industrial levels.
- Target: Reduce greenhouse gas (GHG) emissions by 43% by 2030, with no new fossil fuel investments.
- *South Africa's Commitment:* Signed the agreement, committing it to cut GHG emissions.

**South Africa's Nationally Determined Contributions (NDC)**

- Pledged to reduce GHG emissions by 17% by 2025 and 12-32% by 2030.
- Focus on rapid transition to renewable energy, minimizing fossil fuel dependency.

# The Just Transition in South Africa

Presidential Climate Commission established in 2021

**Just Energy Transition Investment Plan (2022)**

It identifies $98 billion in financial requirements over five years to begin South Africa's 20 year energy transition.

Focuses on:

- Creating quality jobs
- Enhancing energy security
- Addressing climate change risks
- Boosting economic growth

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TOWARDS A JUST TRANSITION

# Core Principles of a Just Transition

Framework for a Just Transition in South Africa 2022

Climate Change Act of July 2024

### Distributive Justice

- An equitable distribution of risks and responsibilities across all society levels, including government, corporations, and citizens.

### Restorative Justice

- Redress of historical damages against individuals, communities, and the environment. Aim: rectify past harms to disenfranchised communities.

### Procedural Justice

- Empower workers, communities, and small businesses to define their own development and livelihoods, reflected in actions from government, corporations, and citizens.

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Framework for a
JUST TRANSITION
in South Africa

# Historicizing the Just Energy Transition

The debate on South Africa's just transition highlights the ongoing tension between social justice and neoliberal economic development.

Both are essential yet contradictory elements of the democratization process that began after apartheid, where energy policy has played a key role.

# The Mineral Energy Complex

- South African way to capitalism since the mining revolution
- Energy supply system based on **low-cost coal production** to support an industry focused on the export of raw and semi-processed mineral products such as platinum, iron ore, steel, and aluminum
- The migrant labor system and the exploitation of black labor consolidated during apartheid.

# Energy policy in democratic South Africa

Among the objectives of the **"Reconstruction and Development Programme" (RDP)** was the commitment to improving access to energy through a national electrification plan.

In 1994, 36% of the population had access to the national electricity grid, with over 19,000 schools and 4,000 clinics still without access.

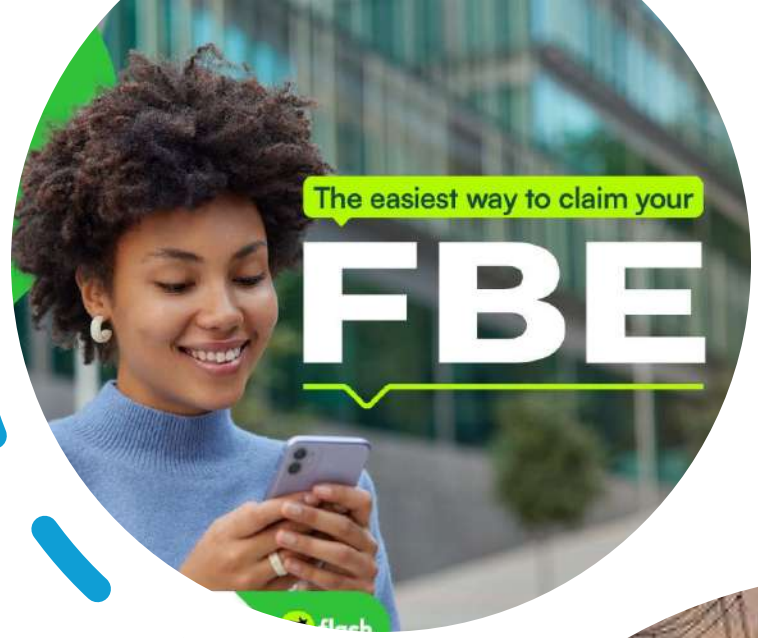
By 1996, only 58% of households in South Africa had access to electricity (Statistics South Africa, 1996).
Two priorities of the ANC's energy policy:

- Expanding access to energy (**energy justice**)
- Strengthening energy security (**energy security**)

# Energy Justice initiatives

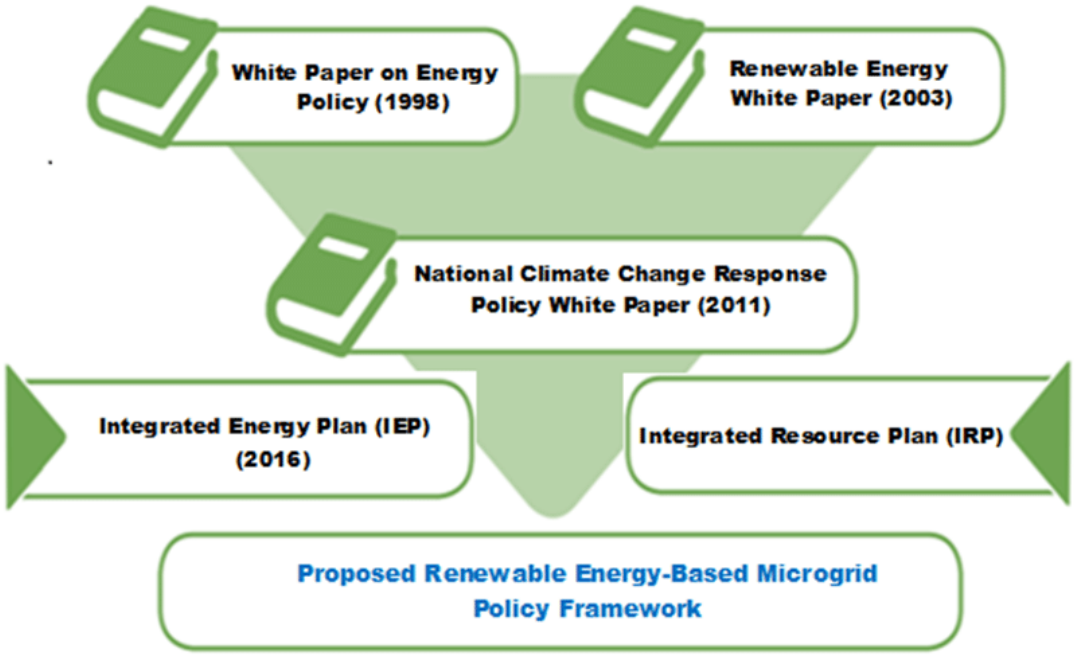
- National Electrification Programme of 1994
  - Increase in utility access from 31% in 1991 to 88% in March 2016.

- Free Basic Electricity (FBE) of 2003
  - Subsidy for 50 kilowatt-hours (kWh) per month.




# Energy security policy and renewable energy

- Turning point with the presidency of Thabo Mbeki from 1998: the White Paper on Energy Policy and the National Environmental Management Act (NEMA).
- These initiatives can be seen as an initial attempt to formulate an energy policy in dialogue with environmental policy.
- Implementation would take another decade.



# The 2000s: The growth of energy demand and the role of renewables

The political principles developed in 1998 were further defined in the 2000s under the influence of three factors:

1. The recognition of the role of renewable energy as a tool to diversify the energy supply and, at the same time, contribute to reducing poverty and inequality.
2. In 2007, energy demand exceeded supply for the first time, requiring an acceleration of initiatives to secure energy production.
3. The international commitments signed by South Africa starting in 2002 under the implementation agreements of the Kyoto Protocol.

# International commitments on emission reduction

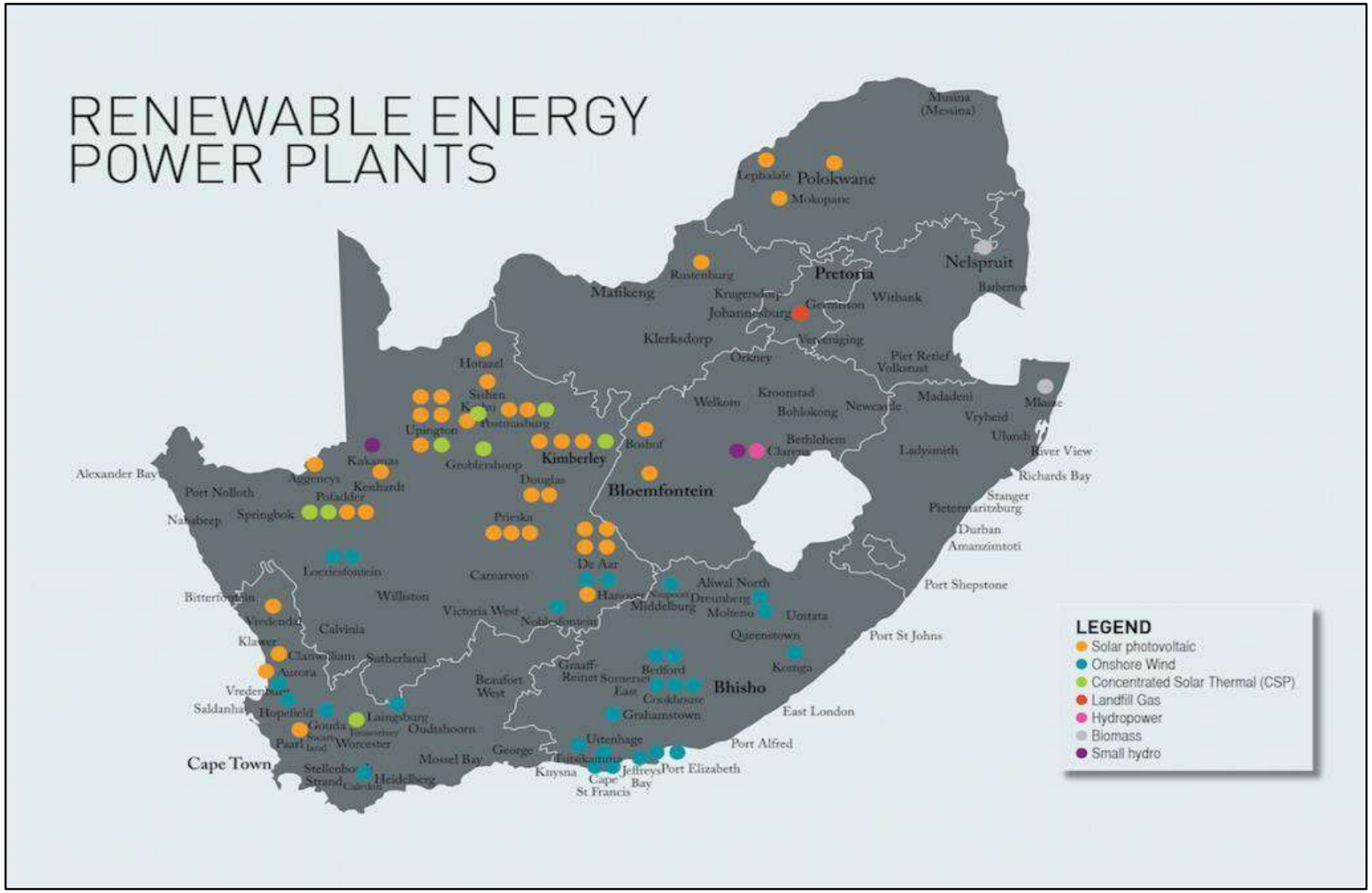
- South Africa ratified the Kyoto Protocol in 2002.
- At COP15, Zuma announced a 34% reduction in emissions compared to a "business as usual" scenario by 2020.
- At COP17, hosted by South Africa in Durban in 2011, further commitments were made, including the creation of 300,000 new jobs in the green sector by 2020.
- In 2021, the South African government updated its commitments for COP26 in Glasgow, setting emission targets between 350 and 420 million tons of CO2 equivalent by 2030.


# REIPPPP
# Seven bid windows between 2011 and 2022

| Bid window 1 | Bid window 2 | Bid window 3 | Bid window 3.5 | Bid window 4 | Bid window 5 | Bid window 6 |
|---|---|---|---|---|---|---|
| • Sub-mission date: November 2011 | • Sub-mission date: March 2012 | • Sub-mission date: August 2013 | • Sub-mission date: March 2014 | • Sub-mission date: August 2014 | • Sub-mission date: April 2021 | • Sub-mission date: October 2022 |
| • 1425 MW contracted | • 1040 MW contracted | • 1475 MW contracted | • 200 MW contracted | • 2205 MW contracted | • 2,583 MW contracted | • 2 600 MW contracted |
| • Signature of the PPAs: November 2012 | • Signature of the PPAs: May 2013 | • Signature of the PPAs: December 2014 | • Signature of the PPAs: April 2018 | • Signature of the PPAs: April 2018 | • Signature of the PPAs: October 2021 | • Signature of PPA's: *tbc* |

Source: IPP Office (Online: https://www.ipp-renewables.co.za/)

# Renewable energy infrastructures




Source: Energy Intelligence, 2022

# Contestation on the Just Transition

National union of Metalworkers of South Africa (NUMSA)


# Recent developments


Mail&Guardian

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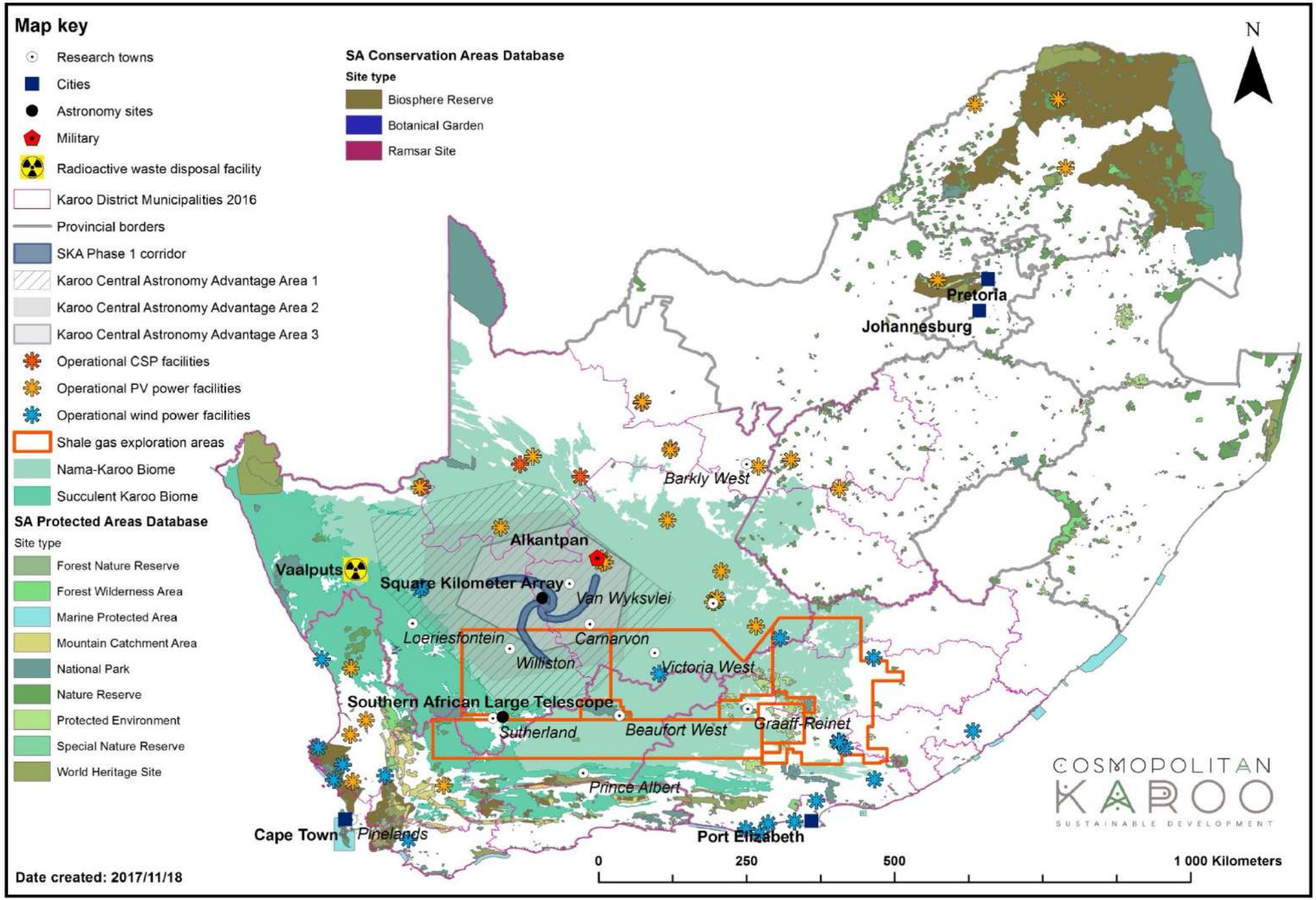
THE GREEN GUARDIAN / 10 SEPTEMBER 2024

**EU's R628m deal to boost South Africa's green hydrogen programme**

By Ozayr Patel





Map key
Research towns
Cities
Astronomy sites
Military
Radioactive waste disposal facility
Karoo District Municipalities 2016
Provincial borders
SKA Phase 1 corridor
Karoo Central Astronomy Advantage Area 1
Karoo Central Astronomy Advantage Area 2
Karoo Central Astronomy Advantage Area 3
Operational CSP facilities
Operational PV power facilities
Operational wind power facilities
Shale gas exploration areas
Nama-Karoo Biome
Succulent Karoo Biome
SA Protected Areas Database
Site type
Forest Nature Reserve
Forest Wilderness Area
Marine Protected Area
Mountain Catchment Area
National Park
Nature Reserve
Protected Environment
Special Nature Reserve
World Heritage Site
SA Conservation Areas Database
Site type
Biosphere Reserve
Botanical Garden
Ramsar Site
N
Pretoria
Johannesburg
Barkly West
Alkantpan
Vaalputs
Square Kilometer Array
Van Wyksvlei
Loeriesfontein
Carnarvon
Williston
Victoria West
Southern African Large Telescope
Sutherland
Beaufort West
Graaff-Reinet
Prince Albert
Cape Town
Pinelands
Port Elizabeth
COSMOPOLITAN
KAROO
SUSTAINABLE DEVELOPMENT
0
250
500
1 000 Kilometers
Date created: 2017/11/18

# Conclusions

- JET characterized by a number of tensions
- Financial issues: who is going to fund the transition?
- JETPs as a new form of ‘green conditionality’?
- Role of changing geopolitical context
- Energy security/energy justice
- The problem of scale
- Overlapping land uses

# International Climate Dynamics

## An overview

19/11/2024 Manfredi Valeriani mvaleriani@luiss.it

Luiss
Center for International
and Strategic Studies

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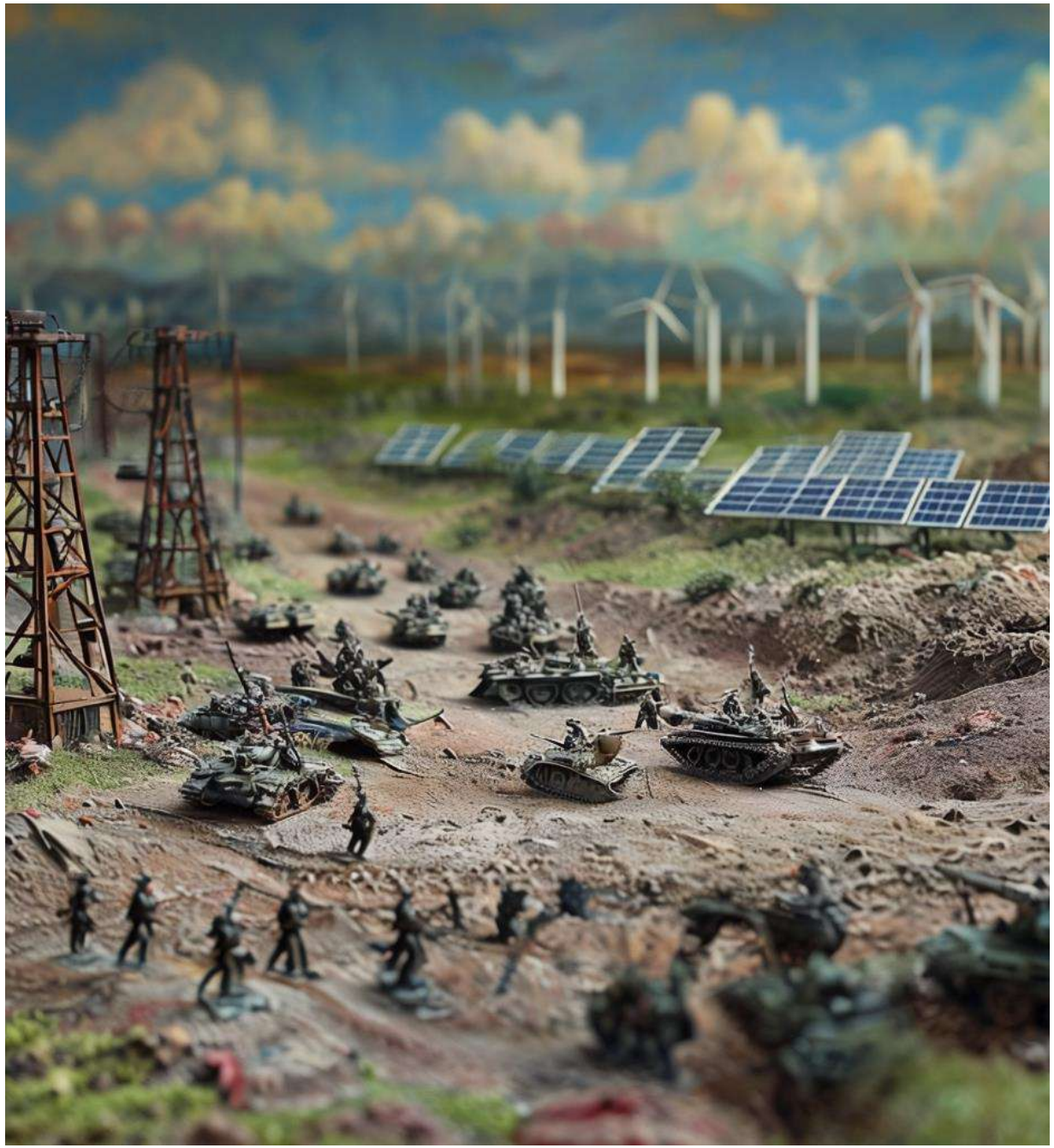
# Understand the profile of the issue from a Global Politics perspecrive

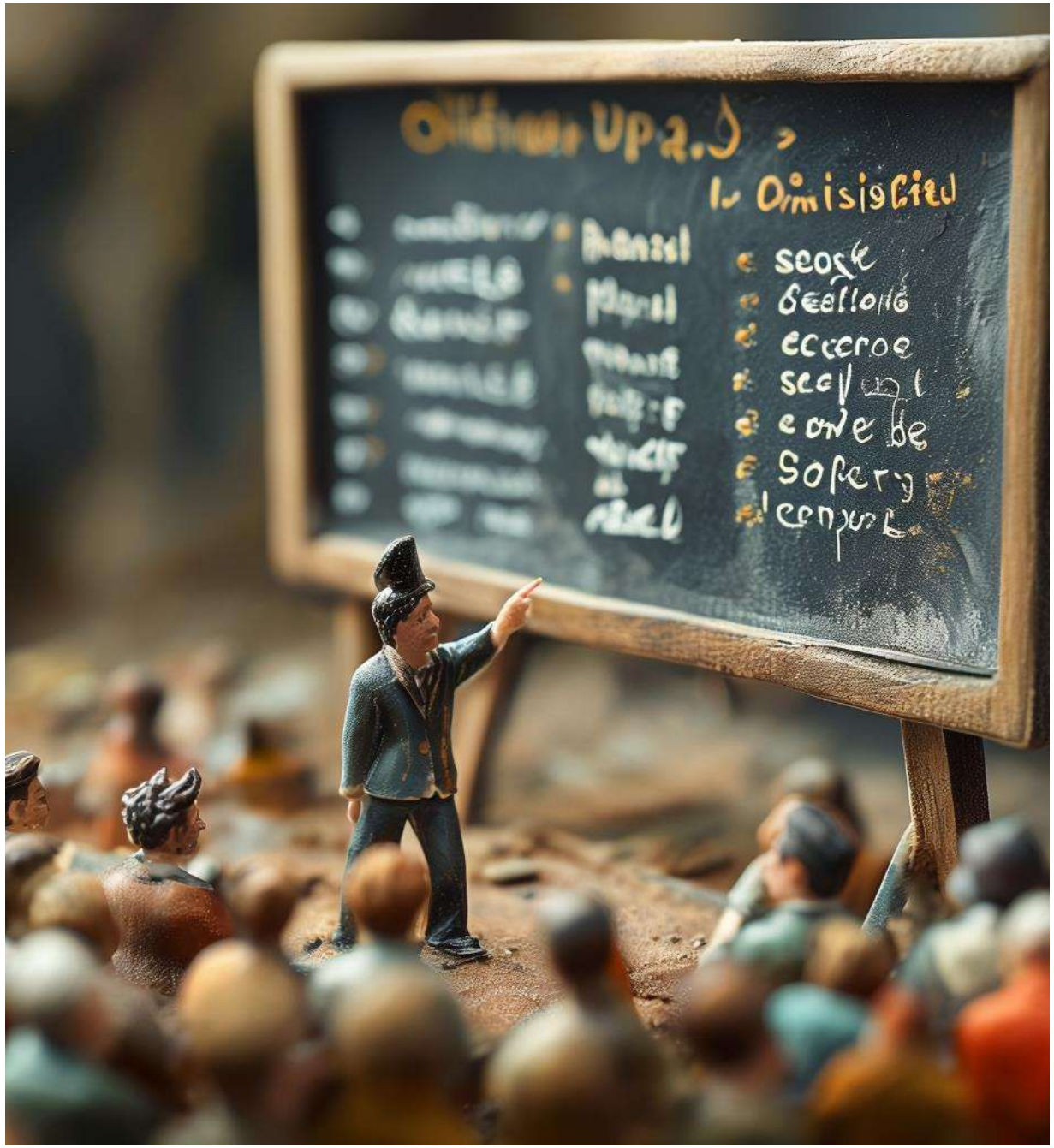
# Objectives

- Understand the main dynamics and approaches related to global politics
- Highlight the different dimplomatic routes related to the issue
- Define the possible changes coming with the energy transition



# Outline

- Global Politics
- The role of science and ideas
- Accountability
- Multilateralism
- Power Politics



# Global Politics

# Anarchy

- The international system is anarchic. (Domestic disanalogy)

- Does the structure affect the agent or vice versa? Different theories offer different perspectives

# Power

Dahl, power as “the ability to make another actor doing what he/she would not have otherwise done” or not doing what she/he would have otherwise done

Waltz, an actor has power as long as can influence the behavior of the other more than the other can influence himself

Actually, power is not influence in itself, but **the ability of A (be it individual or group) to influence B using a number of instruments**, primarily military and economic.

# Power

**Hard, Soft, smart, sharp**

Hard: material power (military, territory, population, resources)

Soft: immaterial power (cultural, aterritorial, cooptative)

Smart: combination of hard and soft resources

# Actors


The European House
Ambrosetti
SANT'EGIDIO
BILL & MELINDA GATES foundation
HUAWEI
amazon
THE WORLD BANK
لا إله إلا الله
الله رسول محمد
BRICS

# Multi track Diplomacy

## Various Tracks

- Track I: formal G2G
- Track II: unofficial interactions and non-state actors
- Track III: business relationships
- Track IV: people to people
- Track V: research and training
- Track VI: activism and advocacy

# The Global Politics of Climate Change

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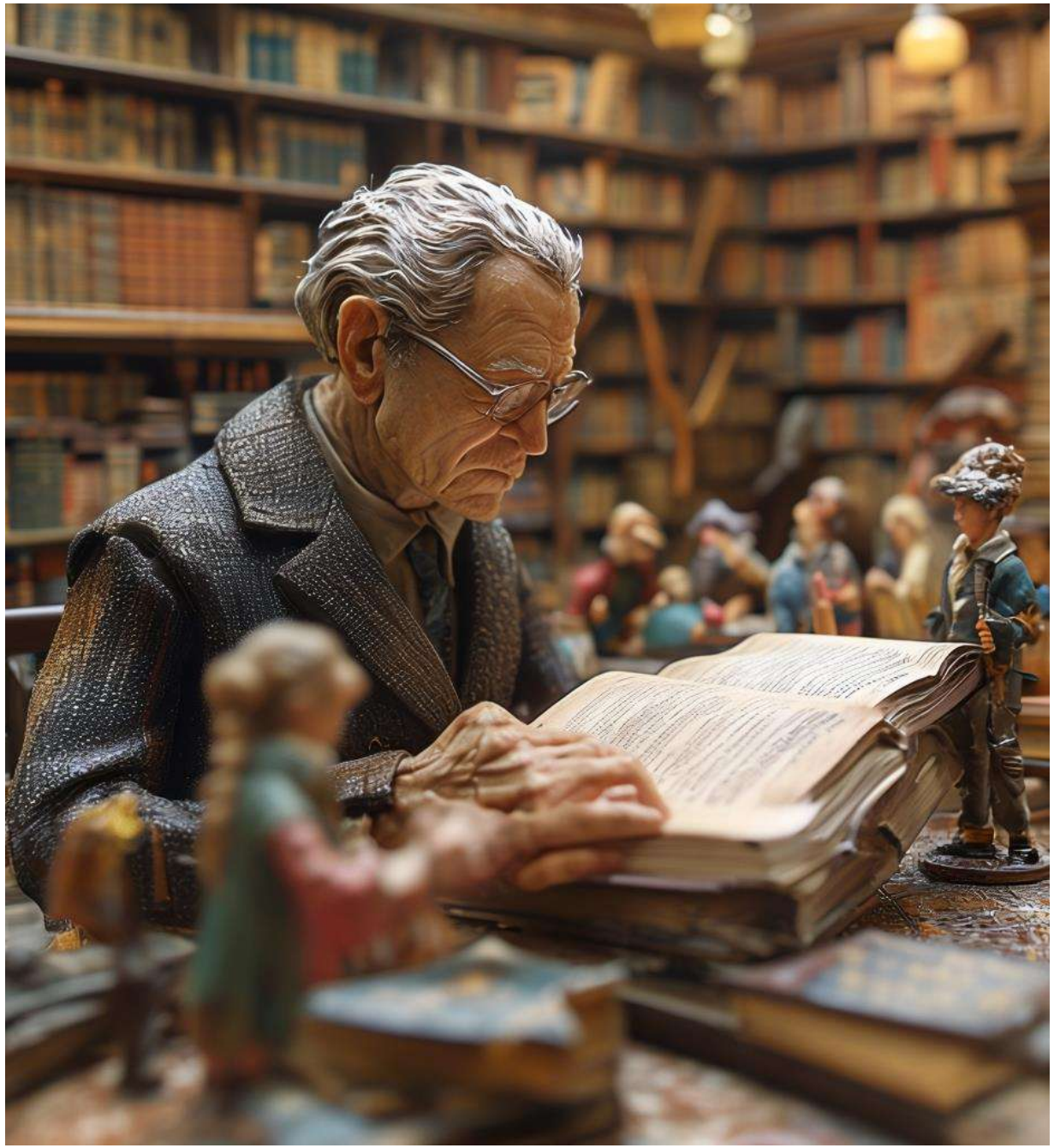
# Science and Ideas

# Constructivism

- Departure from previous approaches
- **Focus on ideas and how they shape social identities** → theoretical concepts are created and employed in strategic politics.
- Nothing is given and strategy and **geopolitics are dependent on how they are conceptualized**
- No policy prescriptions



# Epistemic Communities

## Scientists as protagonists

**1896** – Svante Arrhenius – Greenhouse gases can lead to climate change

**1930s** – Detection of rising temperatures, but why?

→ Guy Stewart Callendar says this is due to climate change (calculations basically ignored) –

**1950s** – More attention on the subject.

**1988** - James Hansen testifying in the US Senate. First call for action on climate change

# Epistemic Communities

## Scientists as protagonists

Networks of experts with a specific focus

More or less defined relations with governments

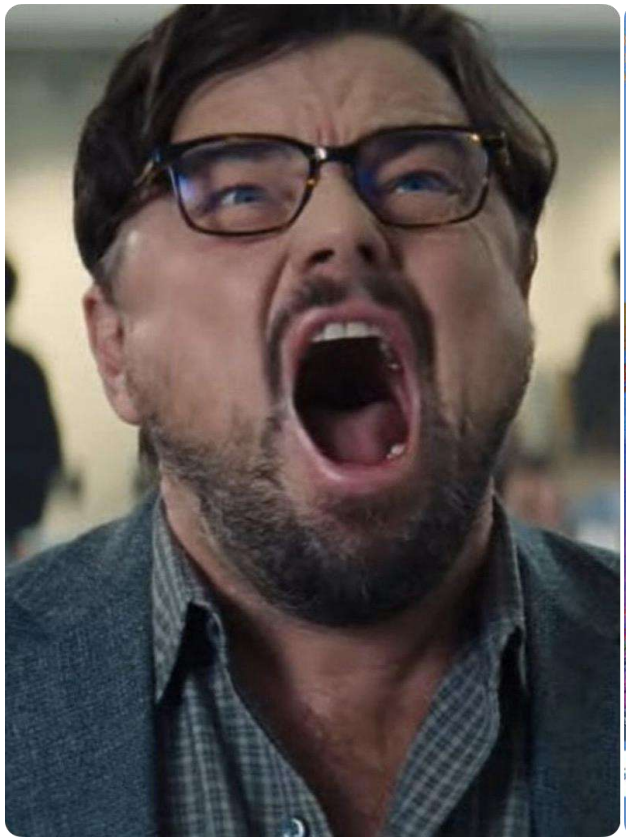
They build a technical but also a value base

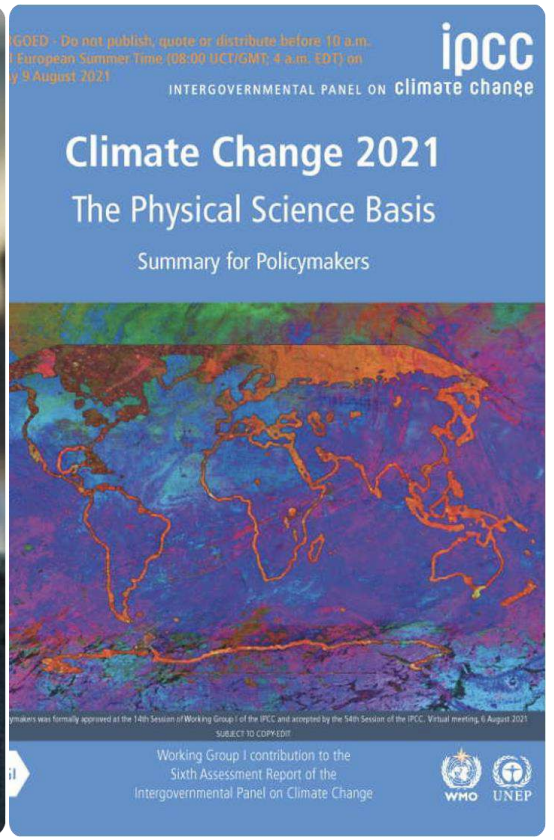
**1988 - Intergovernmental Panel on Climate Change**

Founded by UNEP and WMO (World Meteorological Organization)

Try to collect as much data on climate change as possible

Then? > Multiple agreements





# Social Movements

- Since the 1960s there has been a new ferment at the level of civil society.
- These are the years of the great battles for civil rights, peace (Vietnam War), but also a deeper underlying philosophy.
- Fundamentally anti-system movements, against the government and against the capitalist system and its effects

# Social Movements

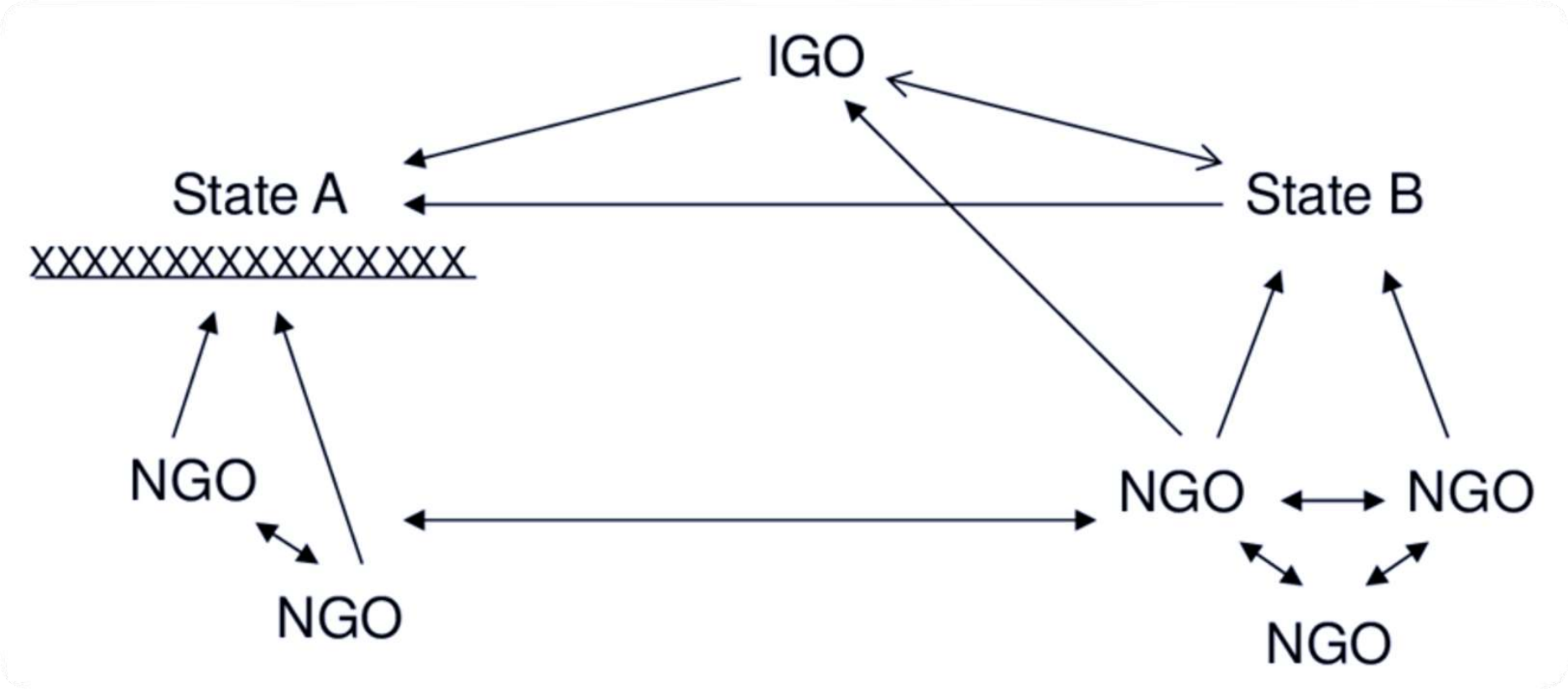
- Over the years social movements evolve, **combining protests and actions.**

- The 90s, for example, saw the birth of no-global movements (against WTO – Seattle 1999)

# Today?

- Today, the most relevant initiative is that of the FFF
- Not only for the environmental issue, but also because it represents an interesting case of youth activism (youth activism )
- **Transnational advocacy networks**
- "Networks of activists, distinguishable largely by the centrality of principled ideas or values motivating their formation. We call these transnational advocacy networks".

# What networks are activated?



# Who is accountable?

# Marxism

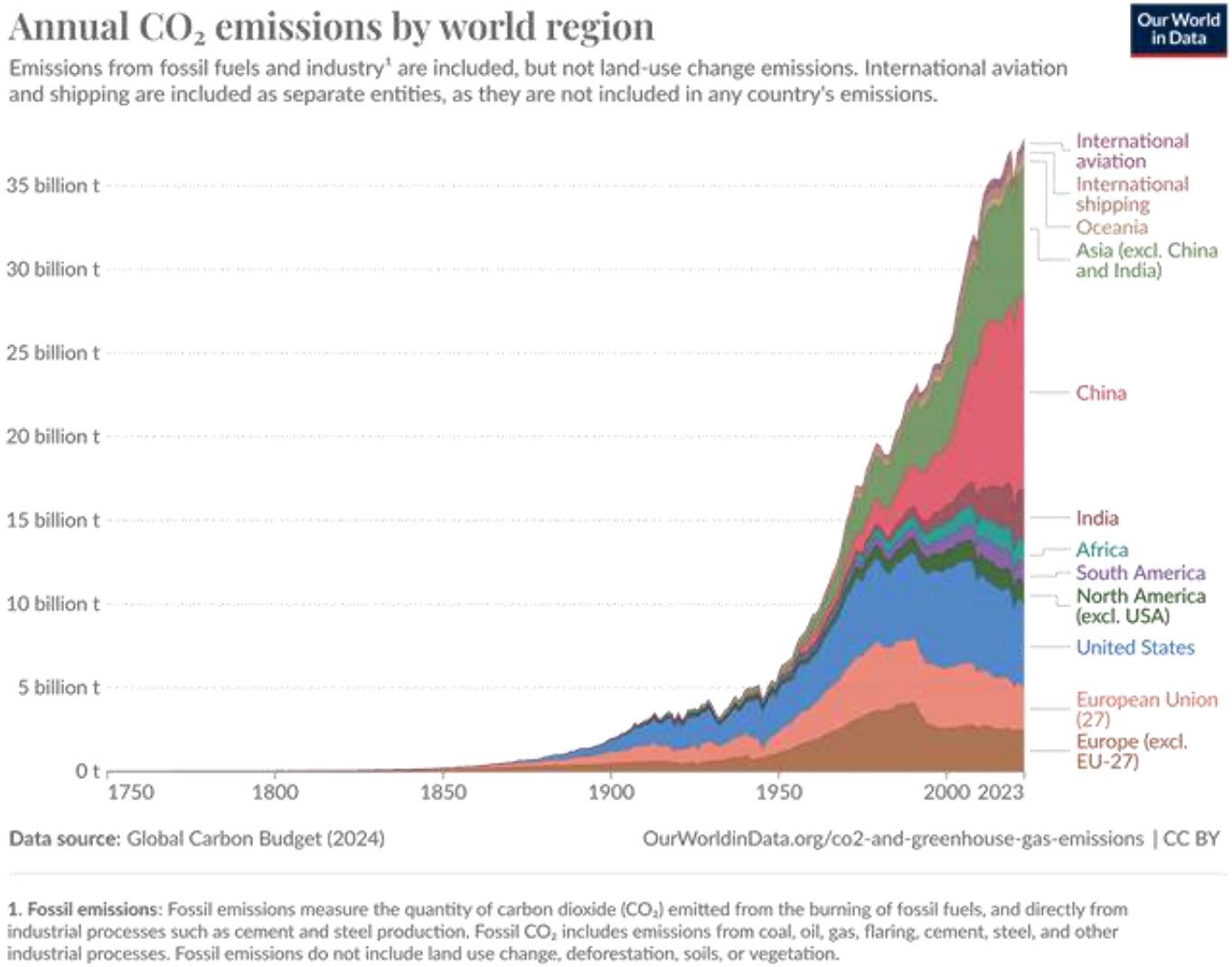
## Classes, but globally

- A division of the world based on classes.
- Linked to decolonization processes and imperialistic dynamics
- Center-Semiperiphery-Periphery

# Geopolitics

## The geographical dimension

- An historical shift
- Development at the cost of the environment?
- Newcomers share responsibility?
- Are newcomers all the same?

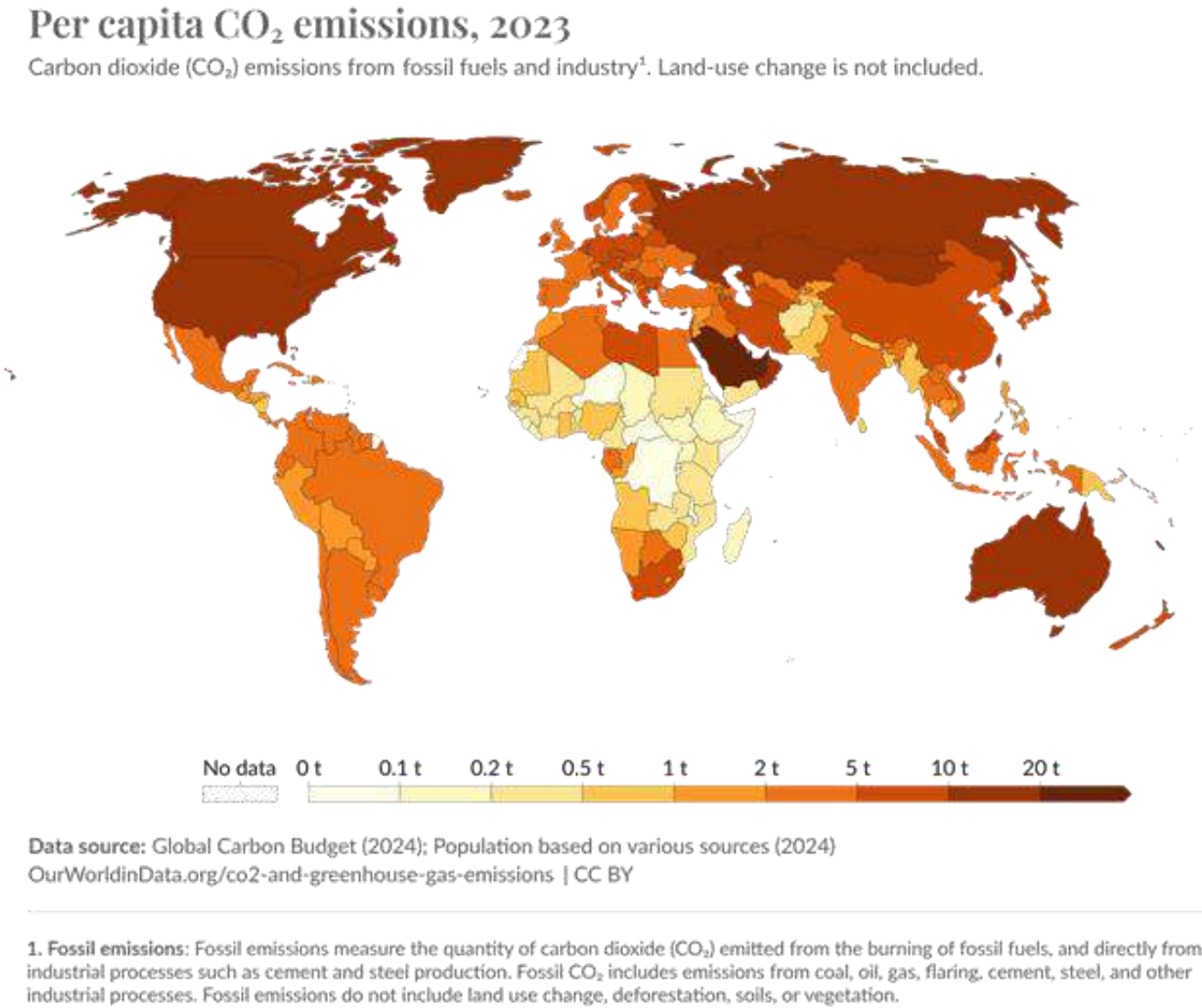



1. **Fossil emissions**: Fossil emissions measure the quantity of carbon dioxide ($CO_2$) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil $CO_2$ includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.

# Two main issues

- Historical reposibility Vs. current capabilities. [Still true?]

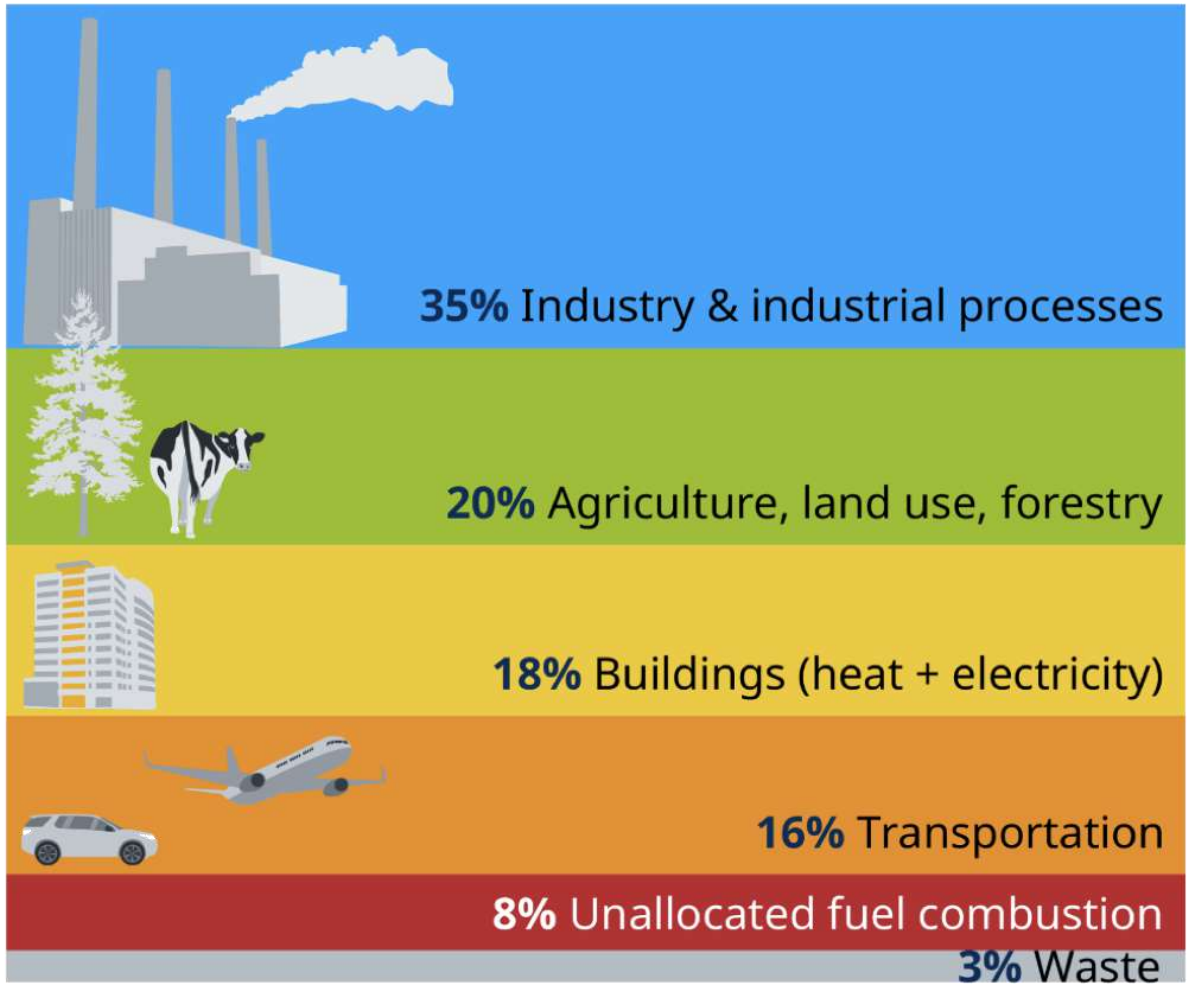
- Investment gap. $5.8 trillion annually from 2023 to 2030 for 48 developing economies, 19% of GDP (UNCTAD) .



# Geopolitics

## Competitiveness

- Climate action comes at a cost
- Limiting cheap energy production causes inequalities
- Inequalities can be vertical (North-South) or horizontal (Norht-North, South-South)
- The cost is highly dependent on energy policies




Source: WRI 2020 (data referring to 2016 as latest available), figures rounded

# Can we cooperate?

# Liberalism

## Assumptions

1. Multicentric approach (not only states)
2. State is not unitary actor
3. State is not rational
4. The agenda is wide and diversified

# Liberalism

## Public goods

| | Excludable | Non excludable |
|---|---|---|
| Rivalrous | Private goods (food) | Common goods (water?) |
| Non rivalrous | Club goods (pay TV) | **Public goods (national defense, street lighting, public TV, air)** |

# Liberalism (institutional)

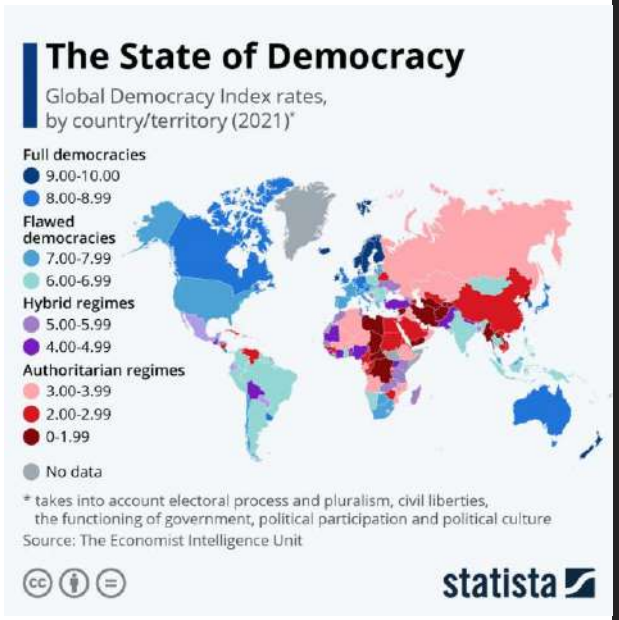
- Critique of realism
- The system is anarchic but IOs can mitigate the security dilemma.
- Internal workings of the state matter
- The agenda is not focused only on security

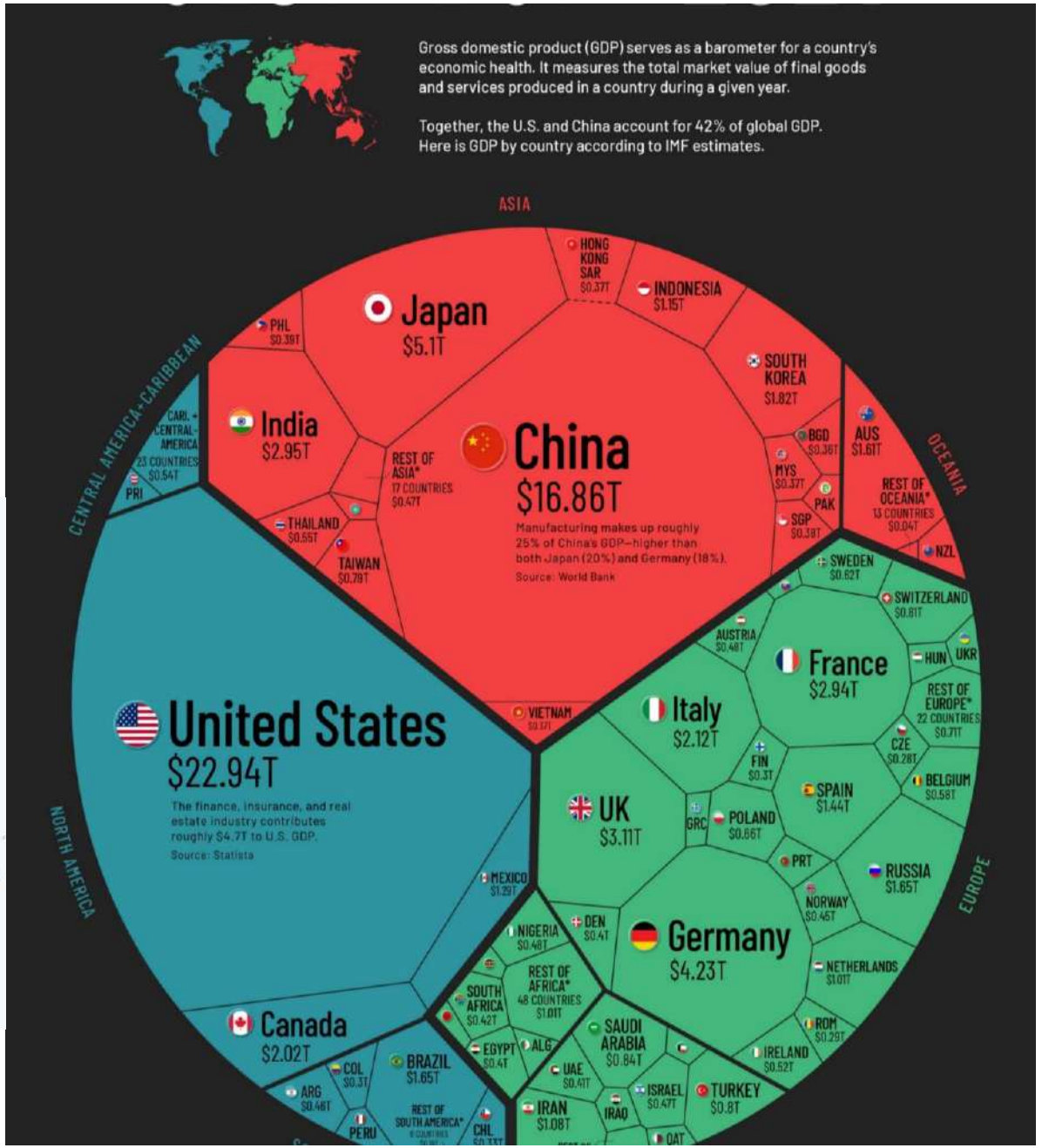
→ Positive sum game

- Multilateralism

# Economy and Democracy

- Complex interdependence
- Democratic peace



# Multilateralism

## A timeline of summits

**1972**: UN Conference on the Human Environment (Stockholm)

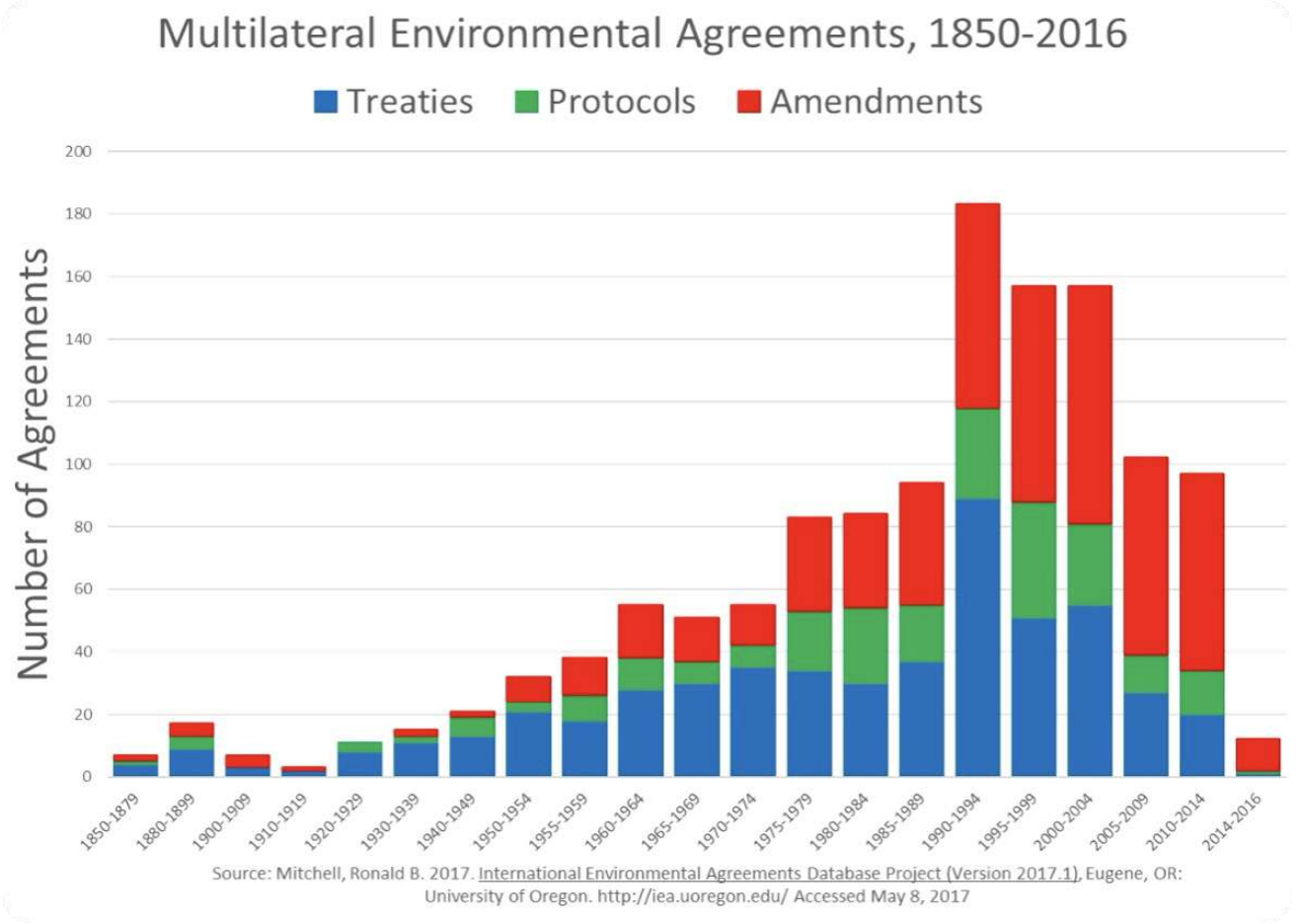
**1992**: Earth Summit (Rio de Janeiro) (UNFCCC)

**1997**: Kyoto Protocol

**2000**: UN Millennium Declaration

**2012**: Rio+20 Summit (Rio de Janeiro)

**2015**: Cop 21 – Paris Agreement



# Multilateralism

**Needed, but with difficulties**

- 1992 Earth Summit in Rio de Janeiro, marked the beginning of coordinated international action on climate change.
- 1997 Kyoto Protocol. First agreement to set targets for developed countries
  - **Target**: reduction of emission (2008-2012), "legally bidnding" and checks.
  - **Ratified** by 191 countries: open in 1998 and into force in 2005 (after Russia), USA not ratified, Canada out in 2012, India and China ratified but without oblicgations.

# Multilateralism

## Needed, but with difficulties

- 2015 Paris Agreement (Cop 21):
  - Universal participation and **obligations on both developed and developing countries.**
  - **Bottom-up approach**. Nationally Determined Contributions (**NDC**) (countries set their targets) to be updated every 5 years.
  - Long-term goal: global warming below 2°C, preaferably 1.5°C.

# Or is it a matter of national interests?

# Realism

Origins in Thucydides and the Peloponnesian Wars (later Machiavelli)

- States exist in an anarchic world

→ Perpetual fear (security dilemma)

→ States as rational actors (maximize benefits)

→ International politics as a zero-sum game

# Realism

## Assumptions

1. The most important actors of international relations are the states
2. The state is a unitary actor
3. The sate is a rational actor
4. The agenda is centered on security

# Geopolitics

- *The study of how geography, politics, strategy and history combine to generate the rise and fall of great powers and wars among states*

- *The theory(ies) that merge geographical factors and power*
- IR as a discipline is different from geopolitics
- Today often used as synonymies

# Energy and Geopolitics

- How do energy dynamics affect international relations?
- A matter of security?
- What international blocks?

# Energy and Geopolitics

## The effects of the energy transition

From a **centralized** to a **decentralized** distributed energy generation

Control of **key technology** over resources (but CRM).

**Complex** and **interconnected** energy systems.

**New vulnerabilities**, cybersecyrity (especially for digitalized grids)

# Energy and Geopolitics

## The effects of the energy transition

**Decline of Fossil Fuel Exporters:** oil peak in 2030 or 2050. Challenges for countries like Russia, Saudi Arabia, Venezuela.

**New Strategic Depedencies:** CRM, manifacturing capabilities and technology (China dominates 70% of clean tech manifacturing)

**Competitive landscape:** trade measures on clean energy tech (200 since 2020) and production costs disparities (up to 45% higher in US/EU vs China)

**Security concerns:** cyber and infrastrucutre security

# Country Profiles

# USA

## Ally or Enemy of the Transition?

- Largest oil producer
- Yet, significant increase in clean nergy investments. $369 billion investment in clean energy
- Reduce external dependence
- High production costs for renewables.
- Changes with every presidency?

# USA

## Enemy

- From importer to exporter
- New exporter with impact on LNG market.
- Reserves of tight shale gas and tight oil (the issue of managing reserves)
- The role in the middle east [Stabilizer Vs De-Stabilizer? Protector of Israel (and Saudi Arabia?)]

# USA

## Ally

- In the last years 60% surge in clean energy investments (+310.000 jobs)
- Share of renewable energy in the power mix projected to increase (from 22% in 2023 to 34%by 2028)(IEA)
- Net greenhouse emissions in USA fell by 18% between 2005 and 2022 (possibly 50% by 2030 and net zero by 2050)

# Russia

## The big loser?

- Important challenges with the energy transition
- Russian economy highly centered on energy
- Higher production costs than other OPEC countries

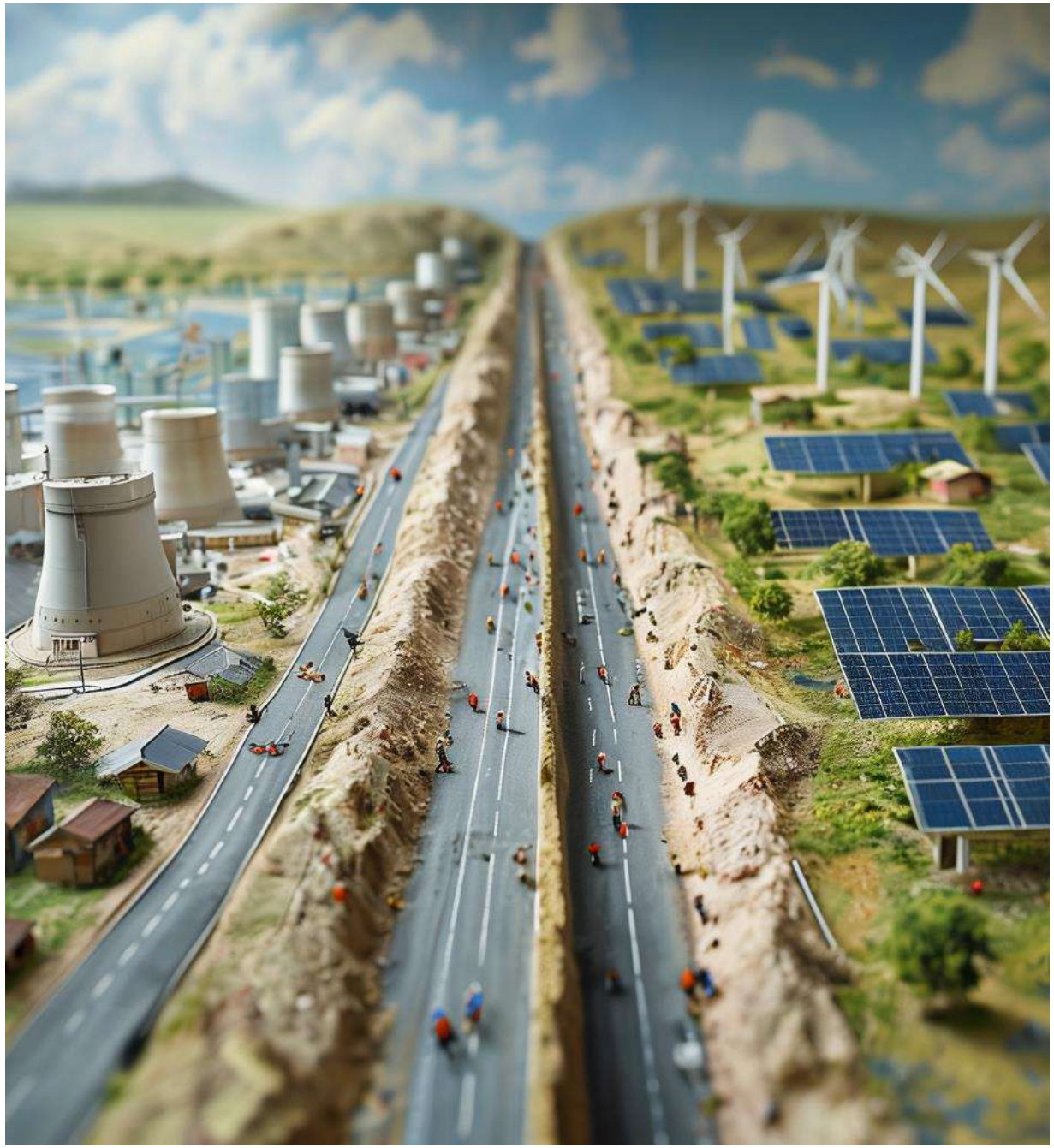
# China

## The big investment

- China dominates the energy transitions supply chains with control over 80% of solar PV module supply.
- Total spending in solar and wind from $150 billion in 2020 to nearly $400 billion in 2023. (per capita investments higher than in USA and EU.
- Still high reliance on coal

# The EU

- Significant policy measures to support the energy transition. Especially after Russian invasion of Ukraine
- Higher production costs (up to 45%higher)
- Differences in the policies among members
- An energy union?



# Africa

- Vast renewable potential,
- 570 million people in sub-Saharan Africa lack access to electricity,
- Yet less than 2% of global investments in the continent (Irena)
- The issue of NDCs

# Africa

## Multilateralism

- Africa-EU Energy Partnership: long term framework for strategic dialogue between EU and the African continent (EU Commission)
- Nairobi Declaration (2023): unified framework for addressing climate change and promoting sustainable energy development
- Accelerated Partnership for Renewables in Africa: provide vision and political leadership and accelerate transition in countries (IRENA).

# Africa

## Differences

- Varying Energy Access: rates differ significantly across African countries.
- Diverse Resource Endowments: different renewable resource potentials and different roles in global value chains
- Various political and economic profiles.

# Scenarios

## Looking Forward

- What are the defining factors and variables?
- Who will be the main actors?
- What major mechanisms and relations?
- What strategy to reduce risks and maximize opportunities?

Istituto Affari Internazionali
Inspiring Ideas for Italy, Europe and the World

# GEOPOLITICAL ISSUES AND ENERGY SECURITY STRATEGIES IN THE EURO-MEDITERRANEAN REGION

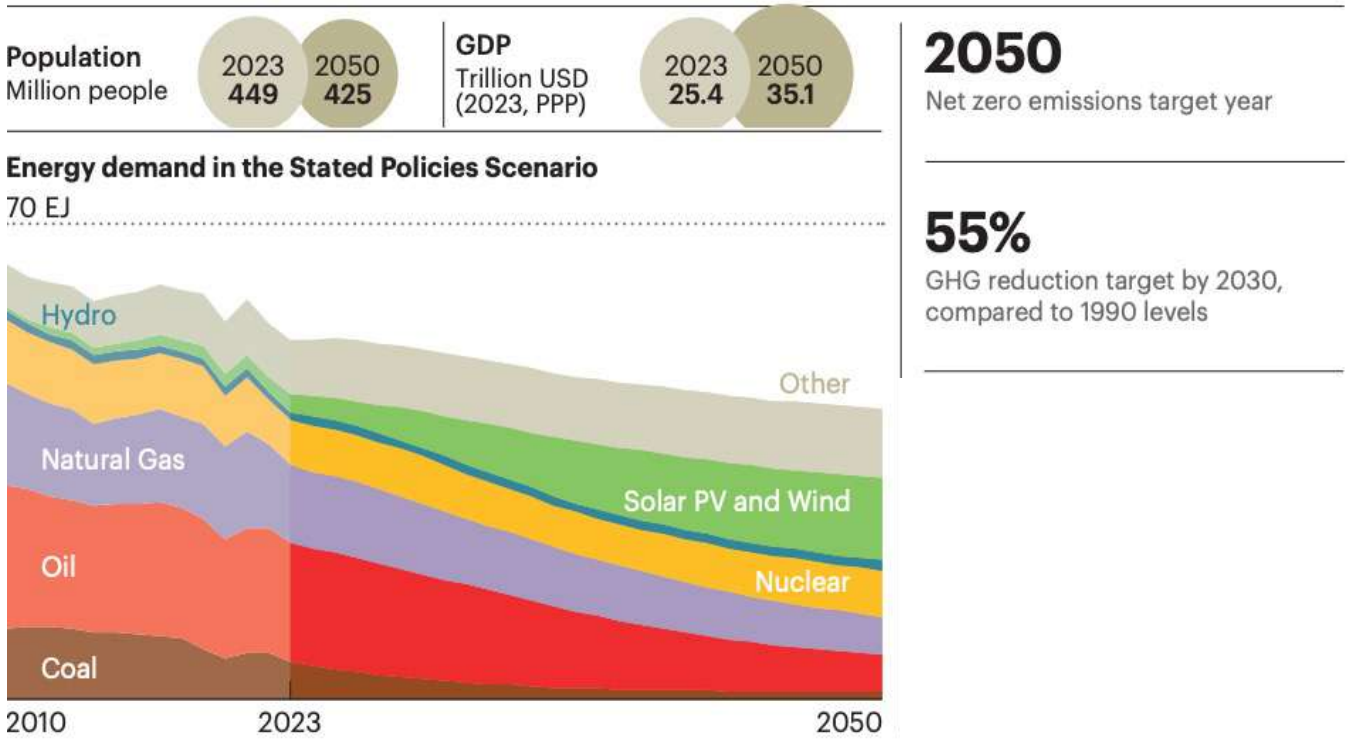
PIER PAOLO RAIMONDI
ISTITUTO AFFARI INTERNAZIONALI, ROME
CATHOLIC UNIVERSITY, MILAN

"GLOBAL PUBLIC DIPLOMACY AND SUSTAINABLE DEVELOPMENT"
EXECUTIVE MASTER, LUISS & UNITAR

12.03.2024

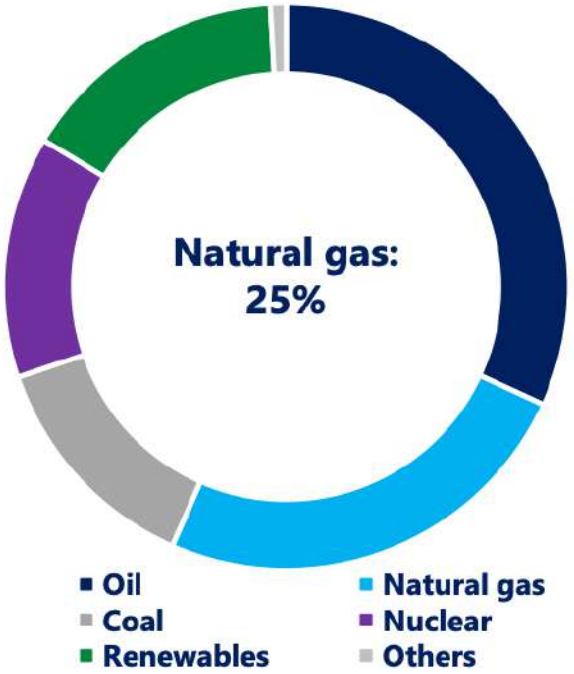
# EU energy policy and security

- Energy was a key factor of early EU integration process. Energy policy is a shared competence between EU institutions and MSs.
- Energy security was addressed by regulatory decision leveraging on the competence of the EU: competition and the single market
- Great heterogeneity of energy mixes among Member States (MSs) depeneding on different energy source availability of different, political preferences (e.g., nuclear) and financial capabilities.
- Since 2010s, rising climate ambition – with a steep acceleration since 2019 (the European Green Deal).

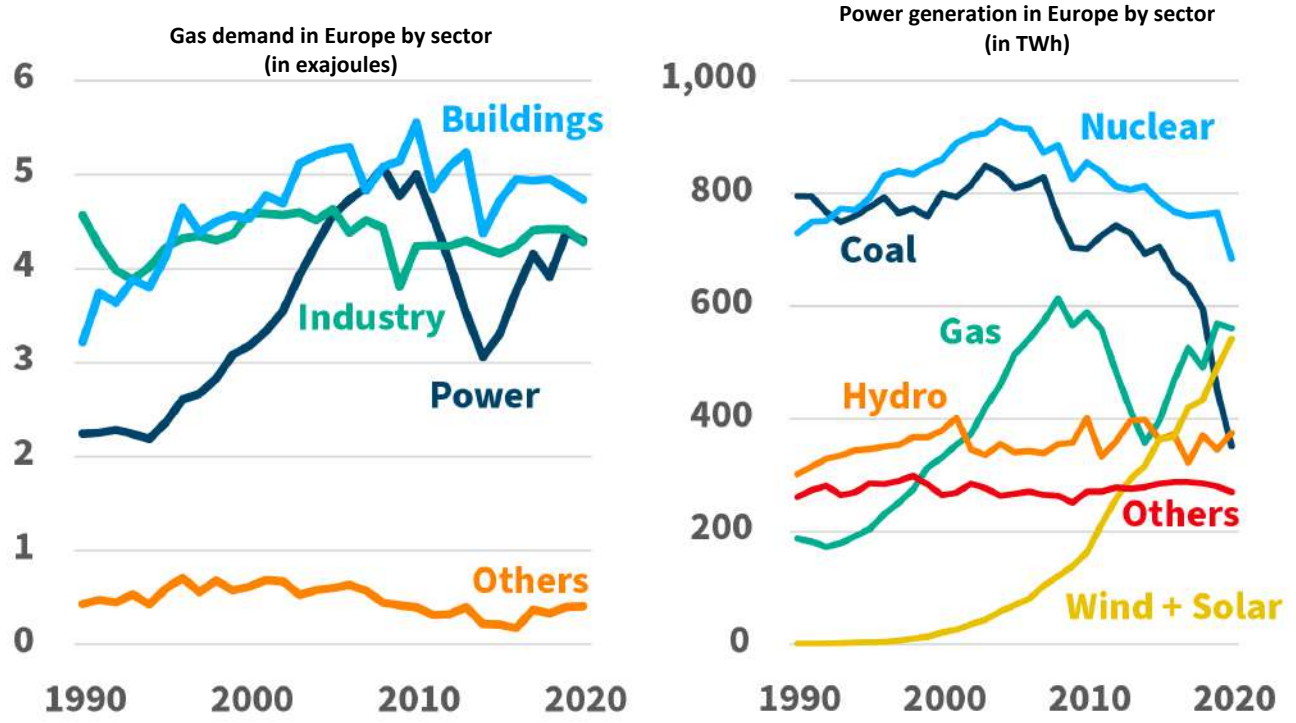


# Natural gas' role in the European energy system

EU energy demand by fuel




EU gas demand (400 bcm in 2021) is consumed by around:
1/3 in the residential,
1/3 in the power,
1/3 in the industrial



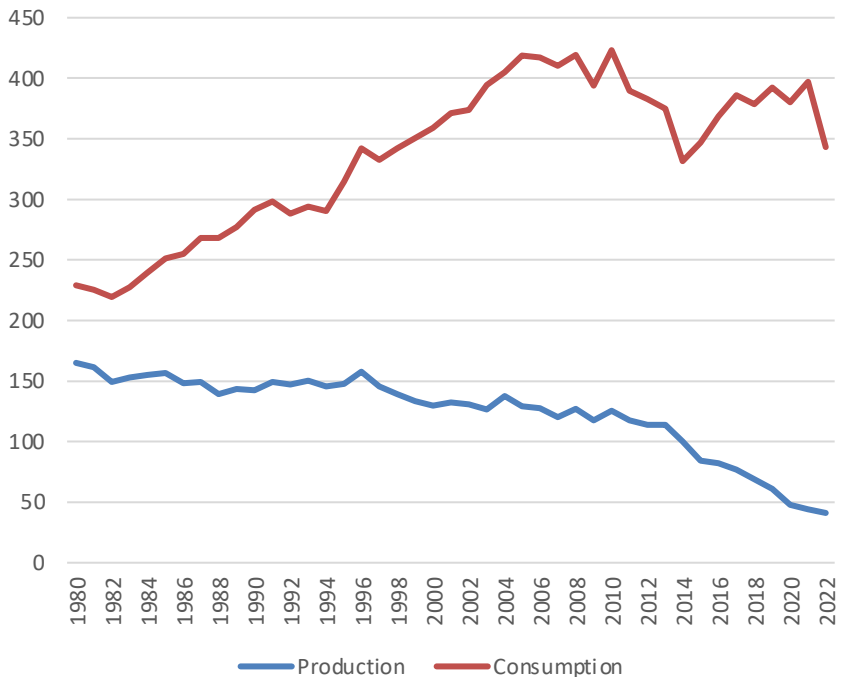

Source: Eurostat, Production of electricity and derived heat by type of fuel (NRG_BAL_PEH) and Simplified energy balances (NRG_BAL_S); both updated January 25, 2022. Gas use in industry includes non-electricity transformation, energy industry own use, and non-energy use. Data for the European Union (EU-27).

*Source: IEA (2022) CSIS (2021)*

# Rising dependence on imports – especially on Russian gas

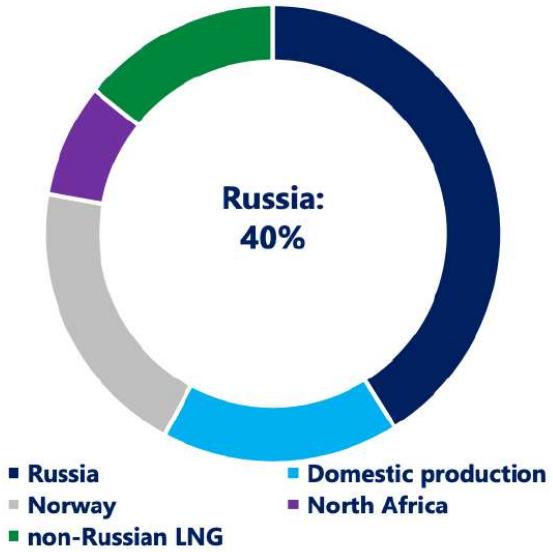
Over the decades, the decline of domestic production was coupled with high gas consumption => higher imports

**Europe's gas supply and demand balance, bcm**



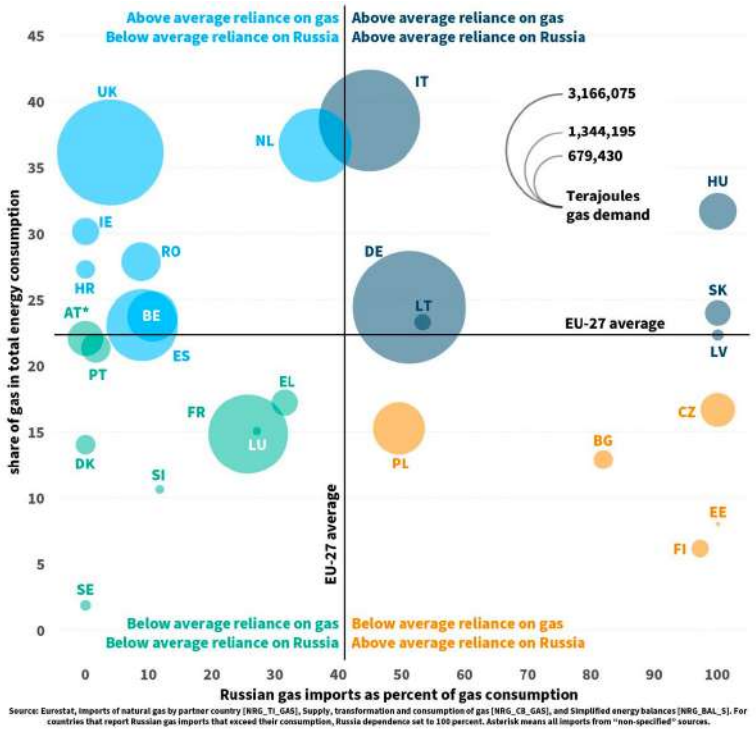

Russia had enhanced its dominant role. In 2021, the EU imported about 155 bcm from Russia (140 bcm via pipeline and 15 bcm of LNG).

EU gas supply by source



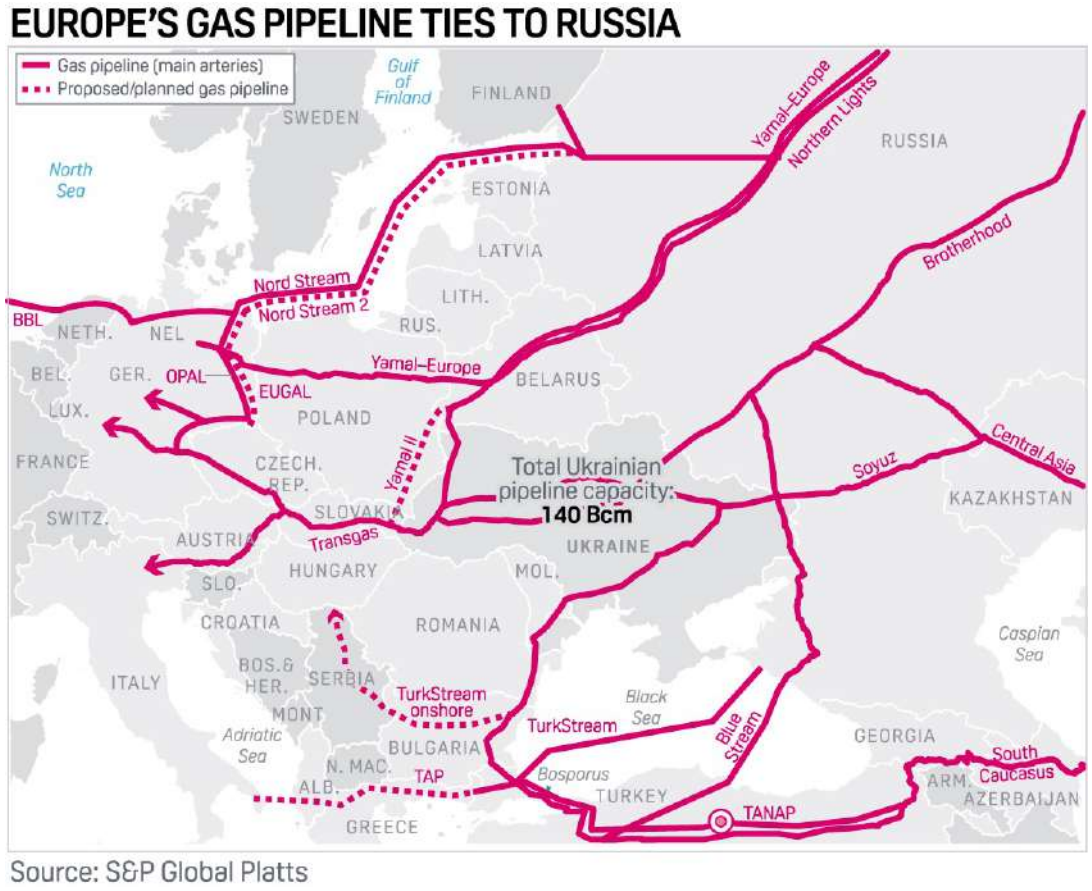

Dependence on Russian gas varies among European countries

**European reliance on Russian gas imports and on gas for energy (2019)**




Source: Eurostat, imports of natural gas by partner country [NRG_TI_GAS], Supply, transformation and consumption of gas [NRG_CB_GAS], and Simplified energy balances [NRG_BAL_S]. For countries that report Russian gas imports that exceed their consumption, Russia dependence set to 100 percent. Asterisk means all imports from "non-specified" sources.

# Natural gas' political dimension: the bridge between EU and Russia (former USSR)



Source: S&P Global Platts

- The EU dependence on Russian gas has always been at the center of harsh debate (economics vs geopolitics).
- The energy crisis is the end of a paradigm.
- The end of an era dominated by the idea "Wandel durch Handel" (change through trade)

# The 2021/2023 energy crisis: evolution, response and consequences

# Volumes and prices: two interlinked issues

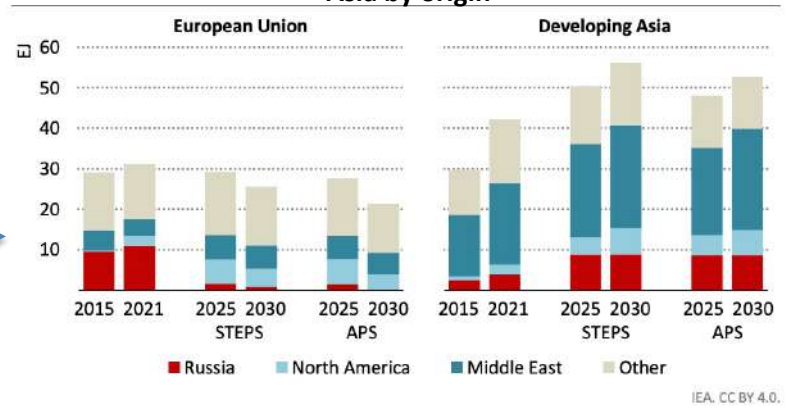
In 2022, Russia's gas imports were nearly halved to 80 bcm, they further fell to 43 bcm in 2023.
Only TurkStream and Ukrainian route still operating.


# The energy crisis: policy and market consequences

EU Energy Crisis and the end of the energy bridge between EU and Russia


Change in priorities: the comeback of energy security?

**Crude oil and natural gas imports to EU & developing economies in Asia by origin**

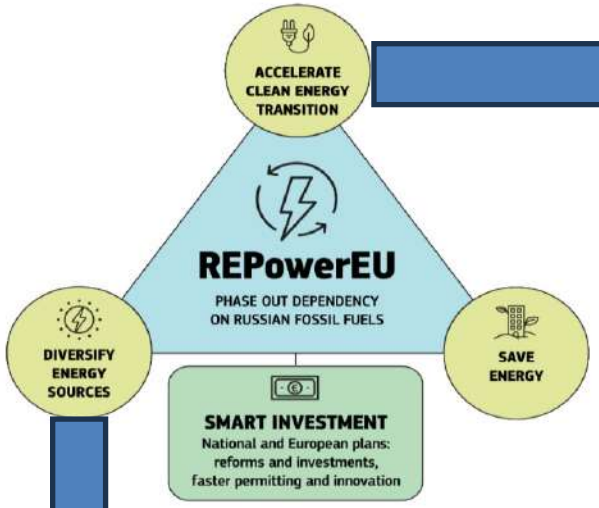



*Russia's oil and gas exports switch focus to developing Asia in the STEPS and APS, but gains in these new markets are less than losses in exports to Europe*

Reconfiguration of global oil and gas flows

*Source: The Economist and IEA 2022*

# EU response and the major political consequences




EUROPEAN COMMISSION

HIGH REPRESENTATIVE OF THE UNION FOR FOREIGN AFFAIRS AND SECURITY POLICY

Brussels, 18.5.2022
JOIN(2022) 23 final

**JOINT COMMUNICATION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**EU external energy engagement in a changing world**

{SWD(2022) 152 final}

LNG is seen as the new mode to ensure energy security and displace Russian imports.

Non-Russian piped gas holds a more limited role in the REPowerEU Plan.

1) Renewables are essential for security

2) Externalization of climate policy – engaging with third countries about clean energy

# The EU managed to cope with the crisis

- Shifting places: LNG replaced Russian pipeline gas as Europe's new base load
- This makes Europe more dependent on global market dynamics
- LNG accounted for a record 35% of EU gas supply in 2023 – with a critical role of the US LNG (48%).

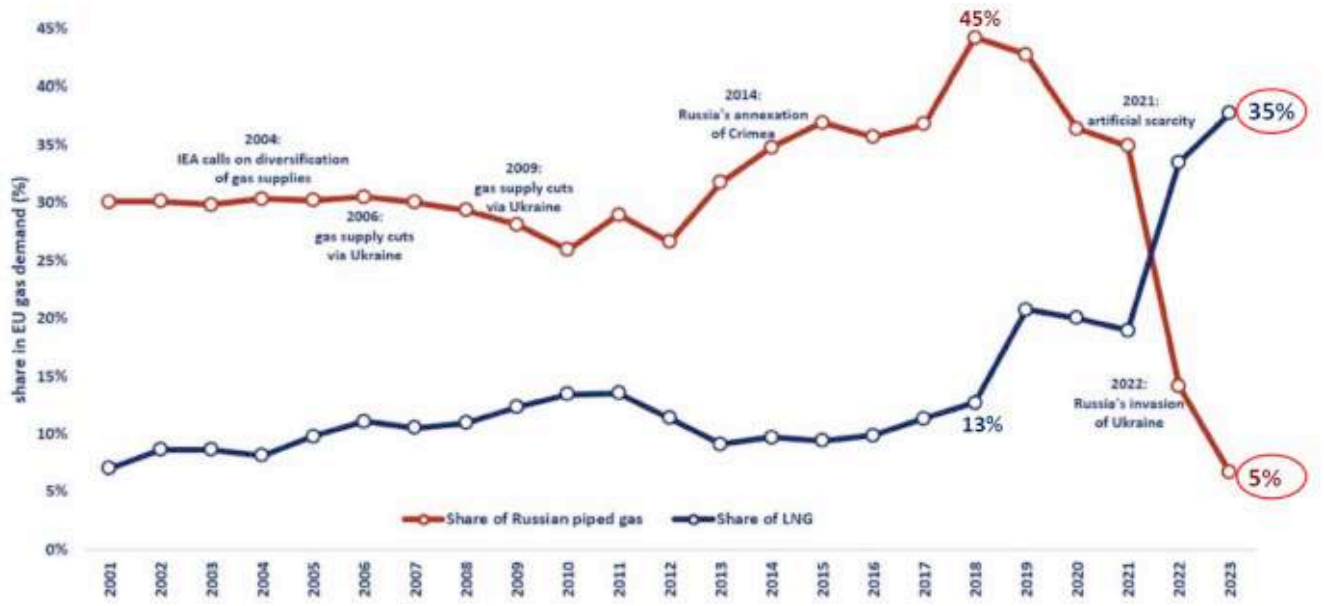
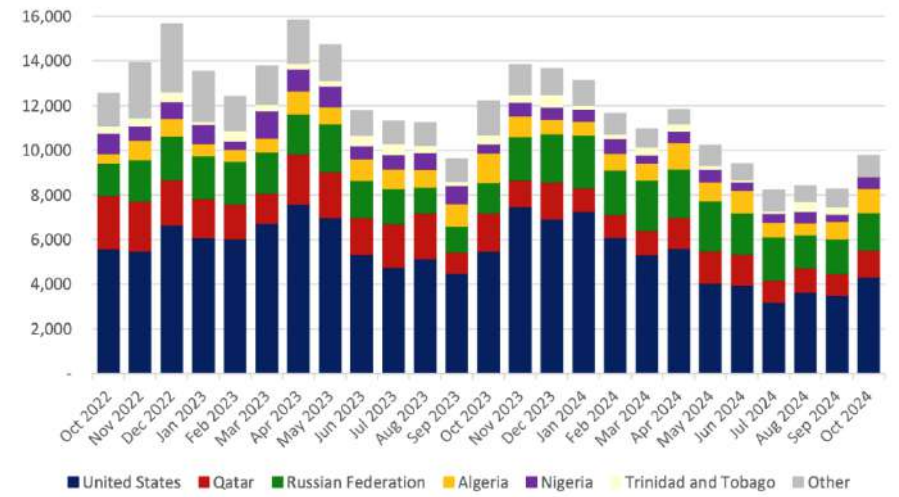
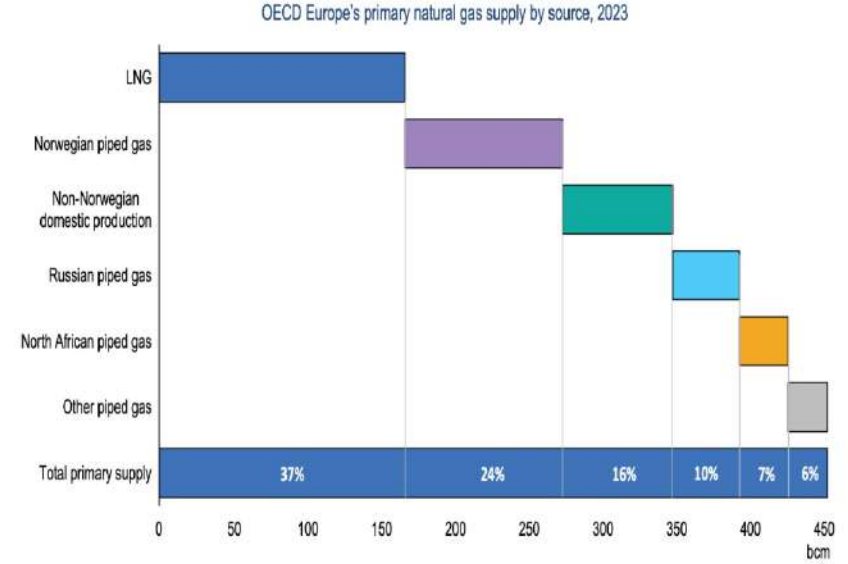


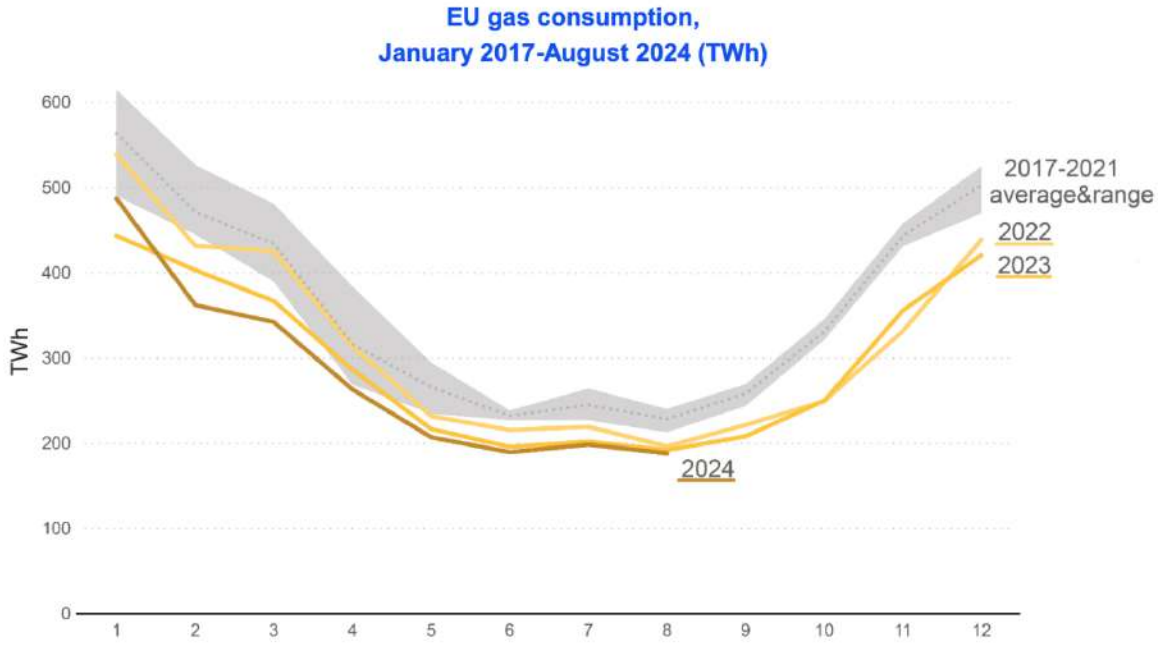

Figure 7: EU-27 plus UK LNG imports by source (MMcm per month)



# EU gas demand in decline and the end of gas golden era

- The demand side has gained a newfound relevance for energy security. The EU has managed to substantially reduce gas demand thanks to fuel switching, higher renewable capacity, milder temperature and demand reduction (or destruction).
- However, this development, coupled with higher climate ambitions, discourages new long term contracts for gas supply.
- The end of natural gas golden era in Europe?
- Current colder winter and potential supply disruptions (Ukraine transit route) enflame price volatility again.



# Focus on the Euro-Mediterranean

# A new emphasis on the Mediterranean in an uncertain context

- The reconfiguration of energy flows provides an opportunity for a new momentum for the Mediterranean due to its characteristics (geographical proximity, existing interconnections and natural resources).
- Italy seeks to seize such opportunity (the Mattei Plan)
- Structural and multidimensional challenges: rising domestic consumption, political instability and insecurity, environmental footprint, and socio-economic challenges.
- The new EuroMediterranean energy cooperation si characterized by the need of ensuring new fossil fuels supplies following Russia's war to Ukraine, while promoting new decarbonised patterns of energy interdependence with its Southern neighbours.

# Structural and multidimensional challenges

- Complex interplay of pressures: rising energy demand driven by domestic consumption, compounded by political instability, insecurity, and socio-economic inequalities, intensifies regional vulnerabilities.

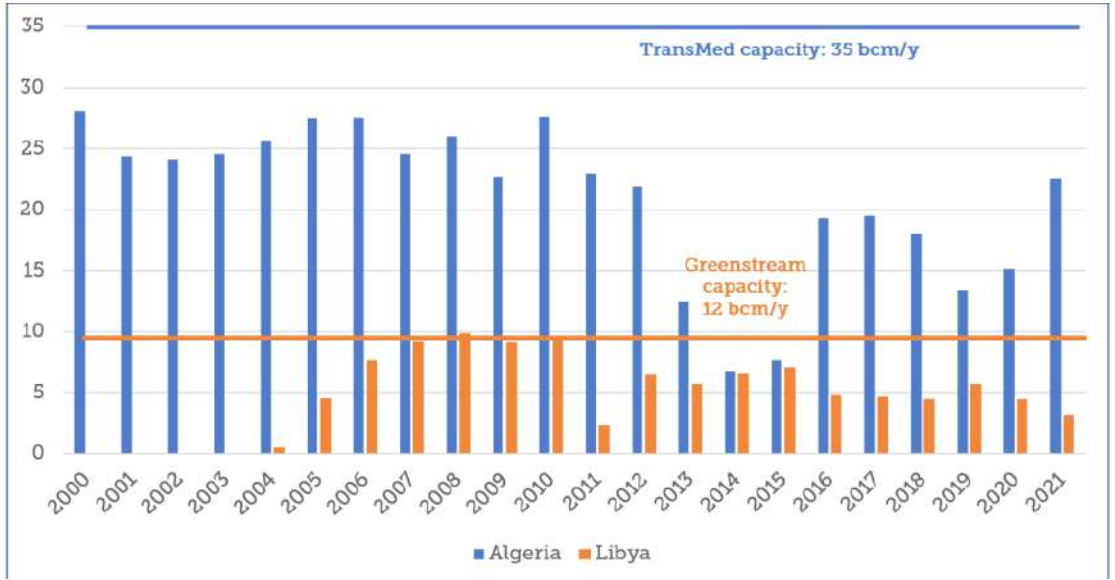
- Environmental and sustainability strains: resources over-exploitation demands urgent integration of climate adaptation and resilience strategies into energy policies.

- Holistic and coordinated approaches: addressing interconnected challenges requires multi-stakeholder engagement, bridging policy silos to align energy strategies with governance, security, and socio-economic frameworks.

# Algeria and Libya: underutilized pipelines but structural challenges

- Among gas exporters, Algeria and Libya are particularly favorable as they have underutilized pipelines (least cost options to enhance security of supply). Algeria return to be the first gas supplier for Italy.
  - Italy benefitted better political cooperation with Algeria compared to Spain. Spain focuses more on LNG given its large import capacity.
- However, both North African countries failed to fully seize such opportunity as they are struggling to keep up production and attract required investments.

| Exporter | Pipeline | Importer | Transit country | Capacity (bcm) | 2023 exports (bcm) |
|---|---|---|---|---|---|
| Algeria | TransMed | Italy | Tunisia | 35 | 23 |
| Algeria | Gas Maghreb Europe (GME) | Spain | Morocco | 12 | 0 |
| Algeria | Medgaz | Spain | / | 10 | 8.4 |
| Libya | Greenstream | Italy | / | 12 | 2.4 |



# Eastern Mediterranean: a potential gas export hub with massive challenges

Since 2009, several export options (both pipeline and LNG) have been considered. However, export ambitions were hindered by geopolitical and commercial barriers.

Egypt holds the least cost option (LNG terminals) although it has increasingly relied on Israeli gas due to rising domestic consumption. This is something pursued by the EU with the trilateral MoU with ISR and EGY in June 2022.

The Israel-Hamas War has increasingly undermined the political and security stability for further cooperation.

So far, **oil prices have not soared**. It remains so if the conflict will not spread across other actors (i.e. Iran)

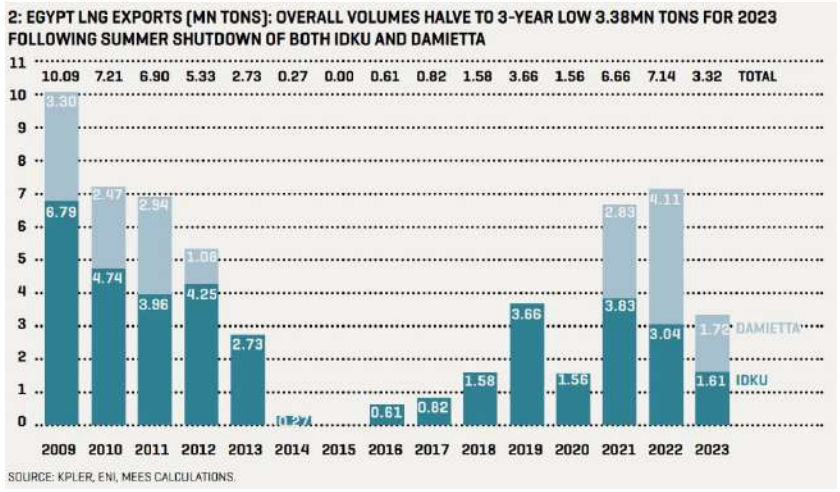

**Export options proposed over time**

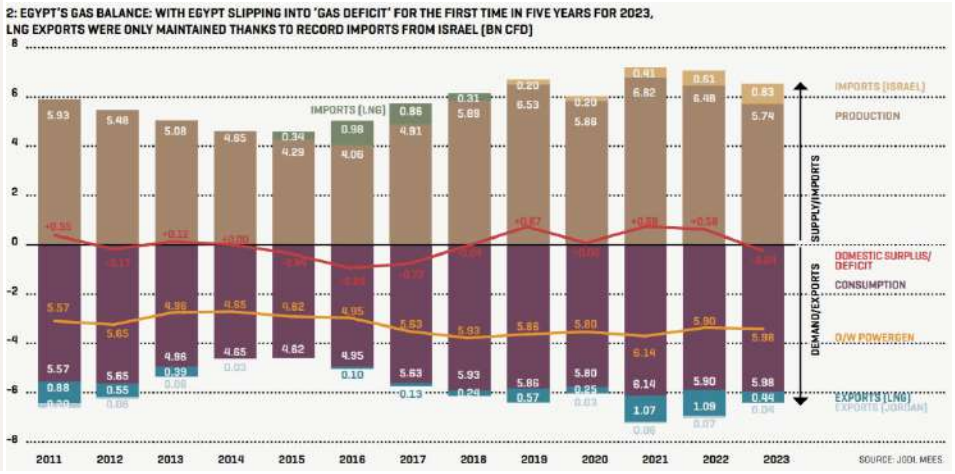
# The very limited impacts on energy security due to East Med tensions (post-October 7th 2023)

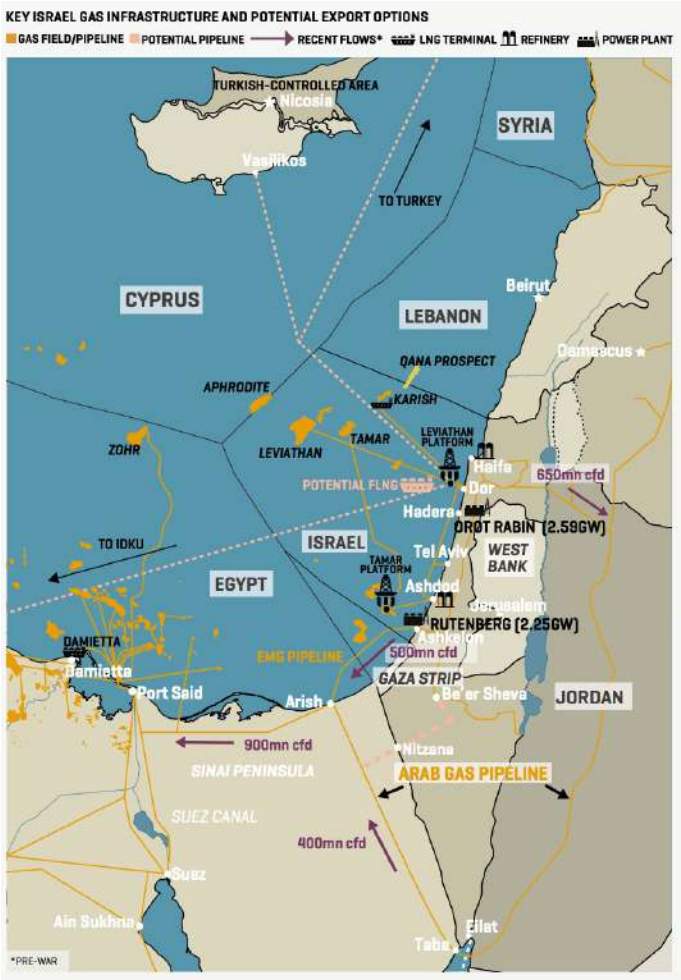
- Israel-Hamas war has caused no impact on oil, while in the first days heavily affected Israel's natural gas production and exports to Egypt.
  - Chevron ceased temporarily production in Tamar field. Israel's gas exports to Egypt halted temporarily as well. Israel's gas is not directly sold to Europe, but it's essential for Egypt's LNG exports.

- Egypt exported only 3.3 Mt of LNG in 2023 (down from 7.1 Mt in 2022). Europe and Turkey amounted to 2.17 Mt (64% of the total), while 1.1 Mt headed to Asia in 2023.
  - Europe (+UK, TR) imported 125.5 Mt in 2023 => European countries are not particularly exposed to Egypt's LNG.

- Egypt is facing serious challenges to satisfy its domestic demand, despite record Israeli gas imports.

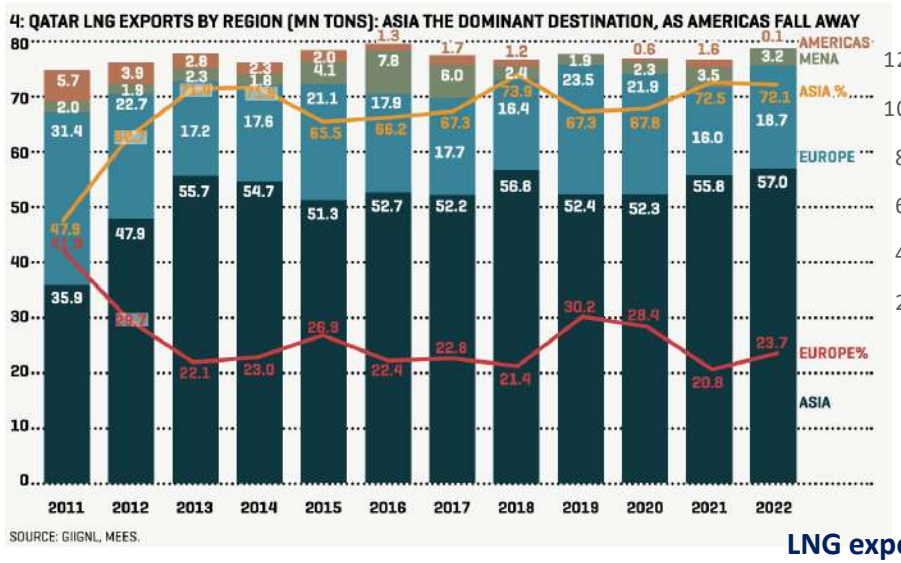


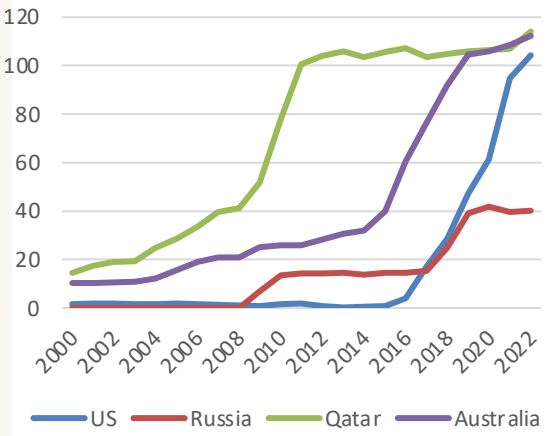



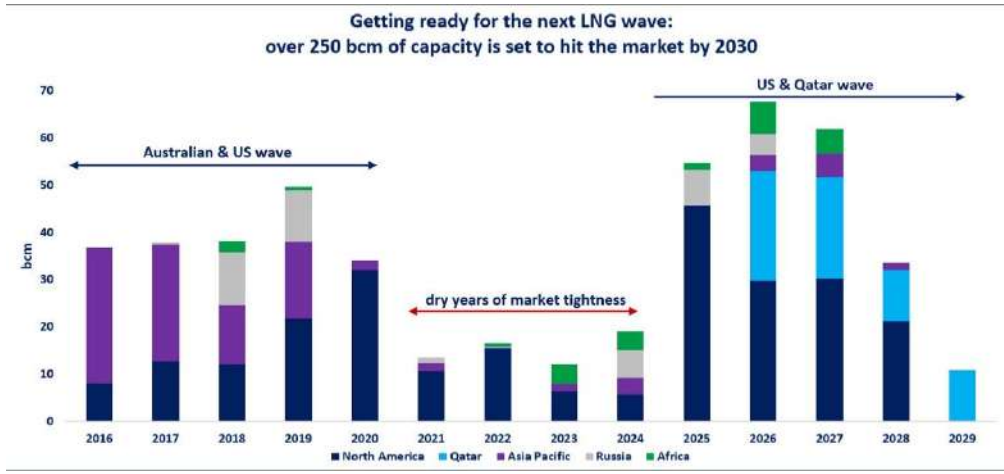
# If Europe's energy security is based on LNG, Qatar is a key player (in the long-term)

- Qatar used to be the largest LNG player – however it is largely dependent on Asia since 2010.
- Qatar has felt the pressure of growing competition from other LNG producers. It decided to lift the moratorium while the prices were low (2017) and leverage on its competitive advantages.
- New wave of LNG export capacity will be mainly located in the US and Qatar. This two producers can supply both the EU and Asia due to their geographical position.

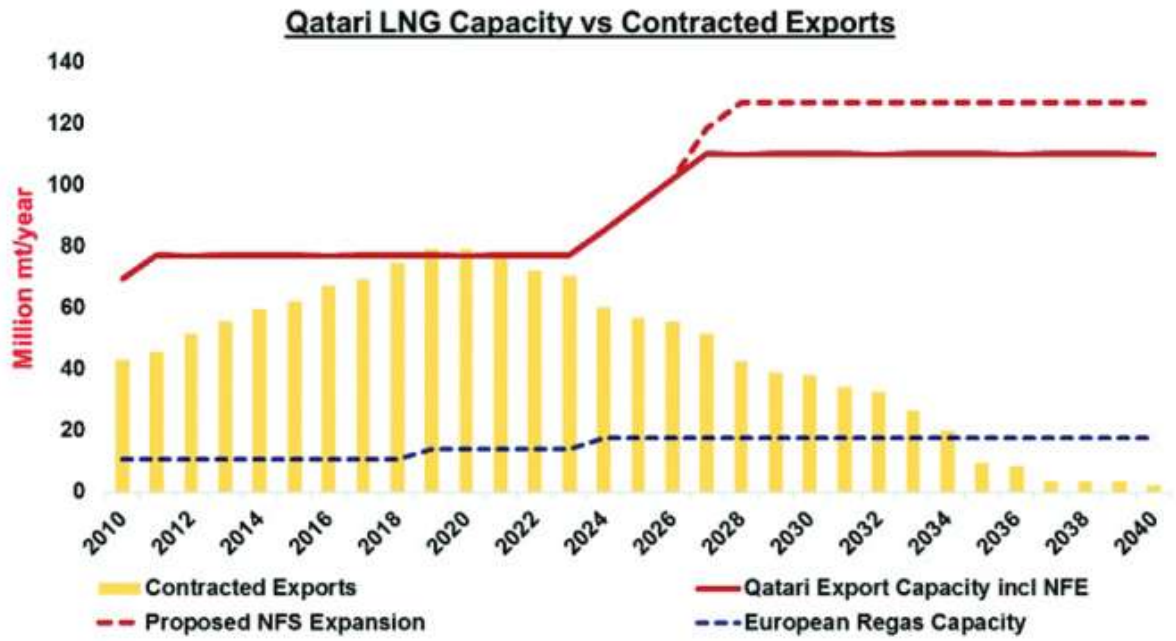



LNG exports by main exporting country, bcm, 2000-2022



# Expansion plans and new contracts for Qatar




Soure: S&P Global Platts Analytics; Does not include Golden Pass

23 October 2023

QatarEnergy, Eni sign 27-year LNG supply agreement for up to 1 MTPA to Italy

Affiliates of QatarEnergy and Eni

18 October 2023

QatarEnergy, Shell sign 27-year LNG supply agreements for up to 3.5 MTPA to the Netherlands

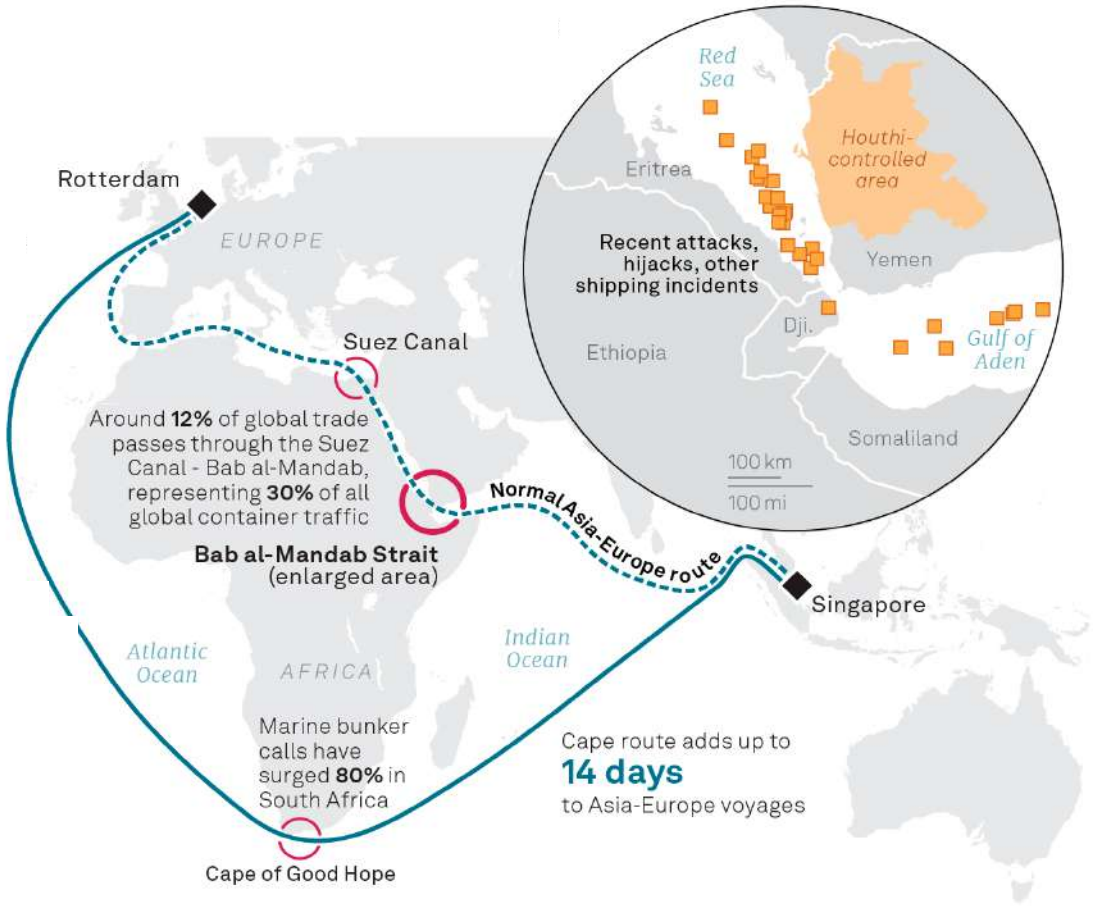
Affiliates of QatarEnergy and Shell

11 October 2023

QatarEnergy and TotalEnergies sign a 27-year LNG supply agreement for up to 3.5 MTPA to France

For Qatar, the challenge will be to ensure enough contracts both for the existing and new volumes.

# Since late 2023, Houthis have started to attack and disrupt shipping through the Bab el Mandeb Strait (10-15% of World trade)




**Timeline of events**

2023

**10-Oct** Houthis warn of missiles, drone attacks if the US intervenes in the Israeli war on Gaza

**19-Oct** USS Carney shoots down missiles and drones fired toward Israel by the Houthis

**31-Oct** Houthis announce official entry into the war to support Palestinians

**19-Nov** Houthi forces seize Galaxy Leader container ship

**12-Dec** Missile hits Norwegian vessel Strinda off Yemen

**15-Dec** A.P. Moller-Maersk, Hapag-Lloyd become first major shippers to avoid Red Sea

**31-Dec** US sinks three Houthi vessels off Yemen after attempted attack on Maersk Hangzhou

2024

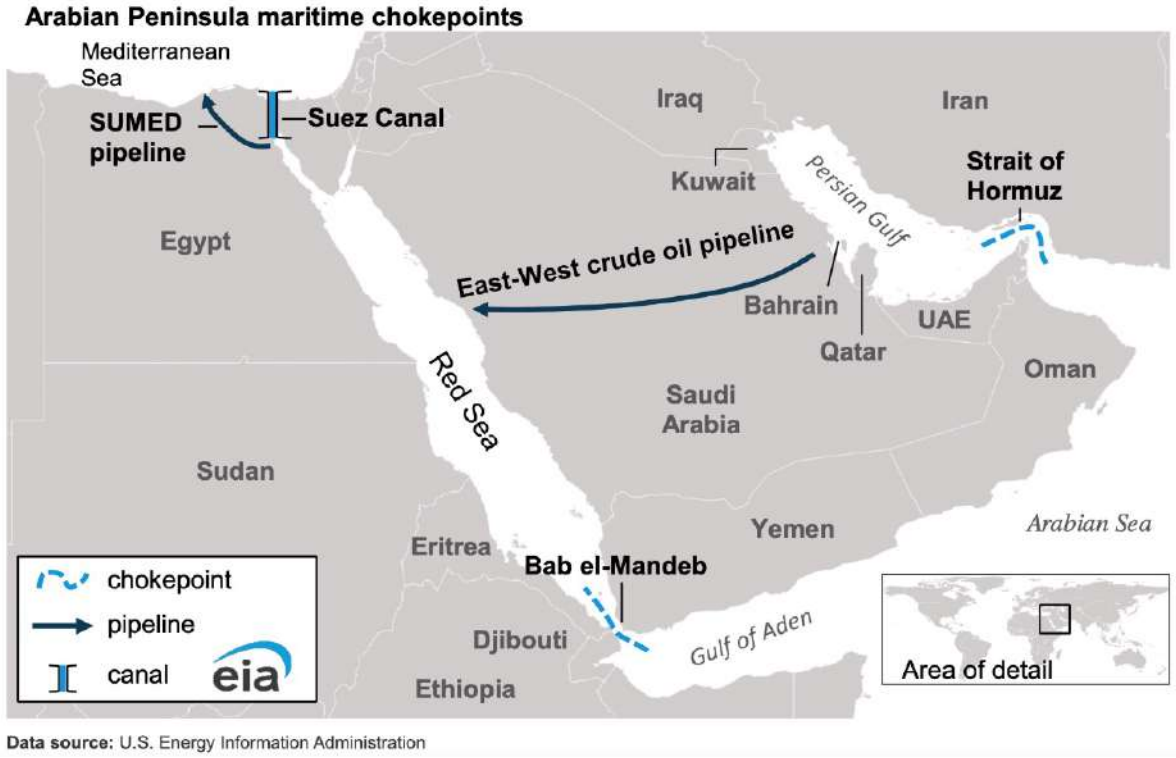
**11-Jan** US-led forces hit 60 Houthi targets in first 'self-defence strikes' over ongoing attacks

**15-Jan** Houthis missile damages US-owned cargo ship Gibraltar Eagle in the Gulf of Aden

**16-Jan** A Houthi drone damages the US-owned bulk carrier Genco Picard

**23-Jan** Houthis vow to retaliate for latest US-led wave of strikes in rebel-held Yemen

# The Gulf is home of key maritime chokepoints for international trade and energy




**Data source:** U.S. Energy Information Administration

**Volume of crude oil, condensate, and petroleum products transported through the Suez Canal, SUMED pipeline, and Bab el-Mandeb Strait (2018–1H23)**
million barrels per day

| | 2018 | 2019 | 2020 | 2021 | 2022 | 1H23 |
|---|---|---|---|---|---|---|
| **Total oil flows through Suez Canal and SUMED pipeline** | **6.4** | **6.2** | **5.3** | **5.1** | **7.2** | **9.2** |
| crude oil and condensate | 3.4 | 3.1 | 2.6 | 2.2 | 3.6 | 4.9 |
| petroleum products | 3.0 | 3.1 | 2.6 | 2.9 | 3.6 | 4.3 |
| **LNG flows through Suez Canal (billion cubic feet per day)** | **3.3** | **4.1** | **3.7** | **4.5** | **4.5** | **4.1** |
| **Total oil flows through Bab el-Mandeb Strait** | **6.1** | **5.9** | **5.0** | **4.9** | **7.1** | **8.8** |
| crude oil and condensate | **3.0** | **2.7** | **2.2** | **1.9** | **3.3** | **4.5** |
| petroleum products | **3.1** | **3.2** | **2.8** | **3.1** | **3.8** | **4.4** |
| **LNG flows through Bab el-Mandeb Strait (billion cubic feet per day)** | **3.1** | **3.9** | **3.7** | **4.5** | **4.5** | **4.1** |

**Data source:** U.S. Energy Information Administration analysis based on Vortexa tanker tracking
**Note:** LNG=liquefied natural gas. 1H23=first half of 2023.

The Suez Canal, the SUMED pipeline, and the Bab el-Mandeb Strait are **strategic routes for Persian Gulf oil and natural gas shipments to Europe and North America**.

Total shipments via these routes accounted in the first half of 2023 for about

- **12% of total seaborne-traded oil**, and
- **8% of global liquefied natural gas** (LNG) shipments

# EU-Middle Eastern LNG: a very limited interdependence

**LNG exports in 2022, bcm**

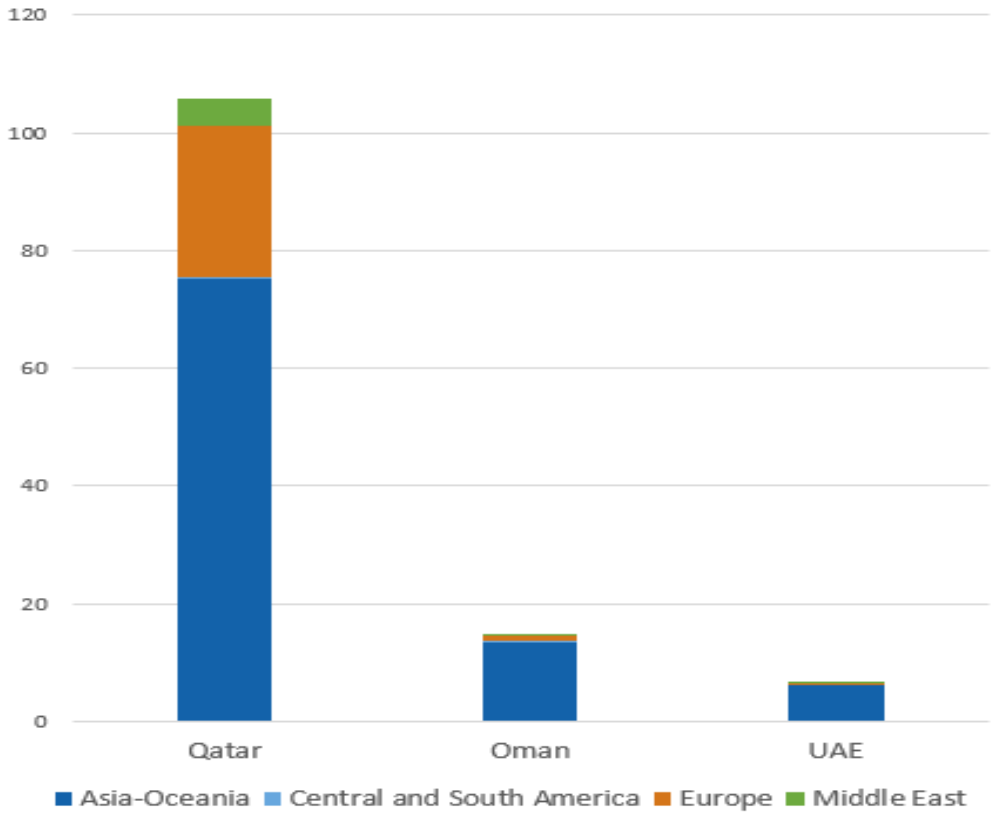
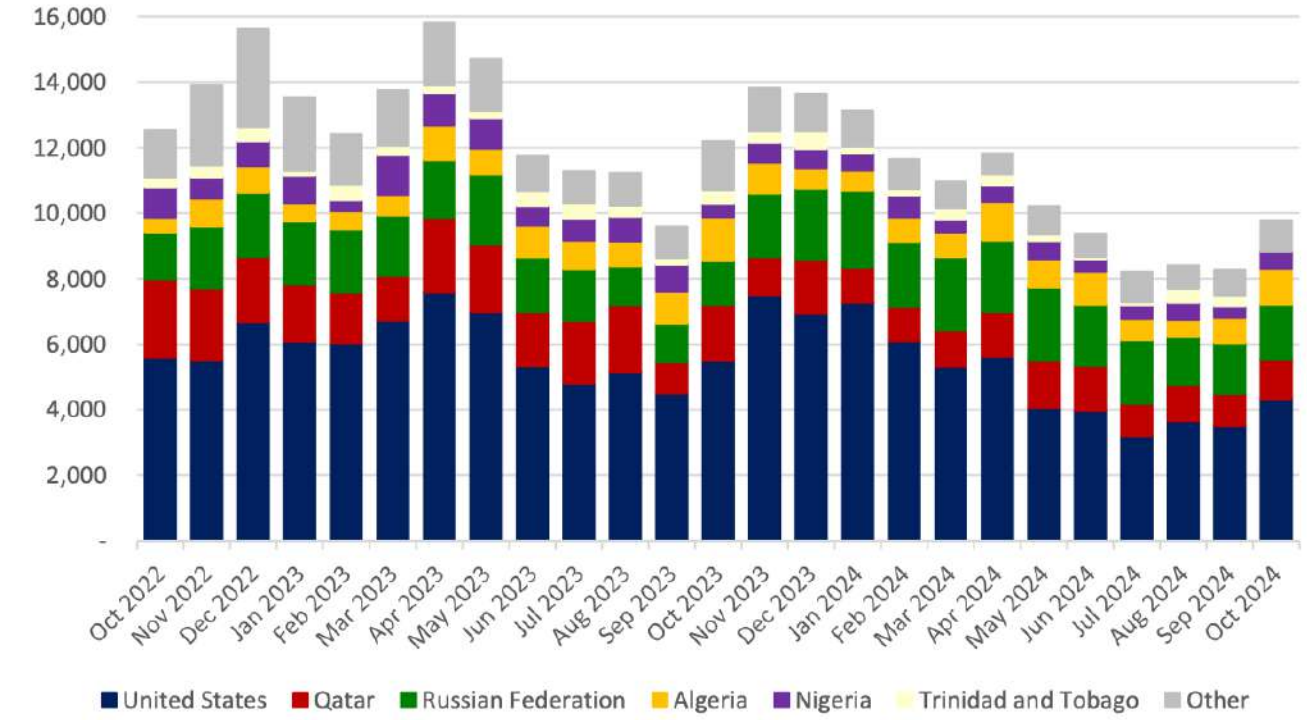
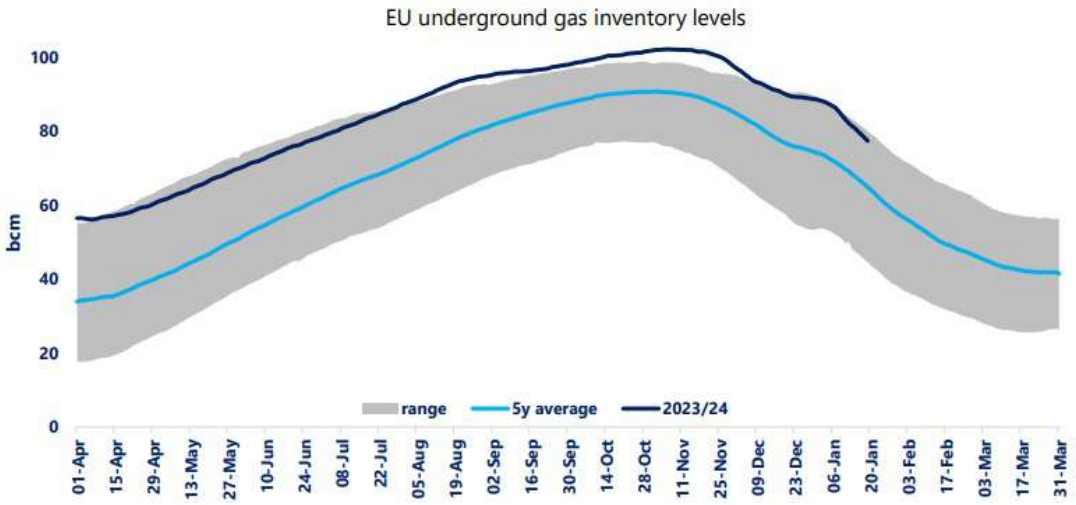


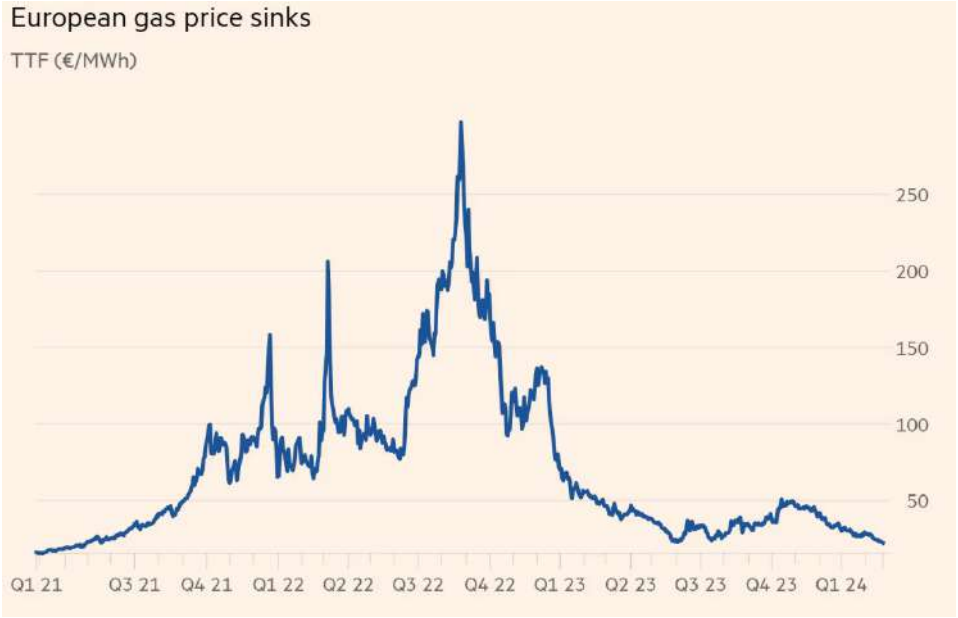

**Figure 7: EU-27 plus UK LNG imports by source (MMcm per month)**




**In 2023, only 20% of Qatari LNG was heading to Europe**

# The small impact of supply, combined with lower demand and full EU storage levels, explain the relaxed European gas prices




- The small impact from Qatari LNG deliveries, which need to go around the Cape of Good Hope for European markets, combined with the availability of additional US (and Russian) LNG as well as...
- ... full storages thanks to a mild 2023/24 winter so far and continued demand reductions...
- ...explain the relaxed gas market European gas prices
- Some concerns remain however for the longer term, depending how the Middle East conflict and security situation evolves as well as EU market fundamentals.

# After an initial nervosity after October 7, energy markets have relaxed due to market fundamentals. Concerns over the duration of disruptions and tensions remain however.




# What about US energy and foreign policy under the new Trump administration? What effects for MENA countries?

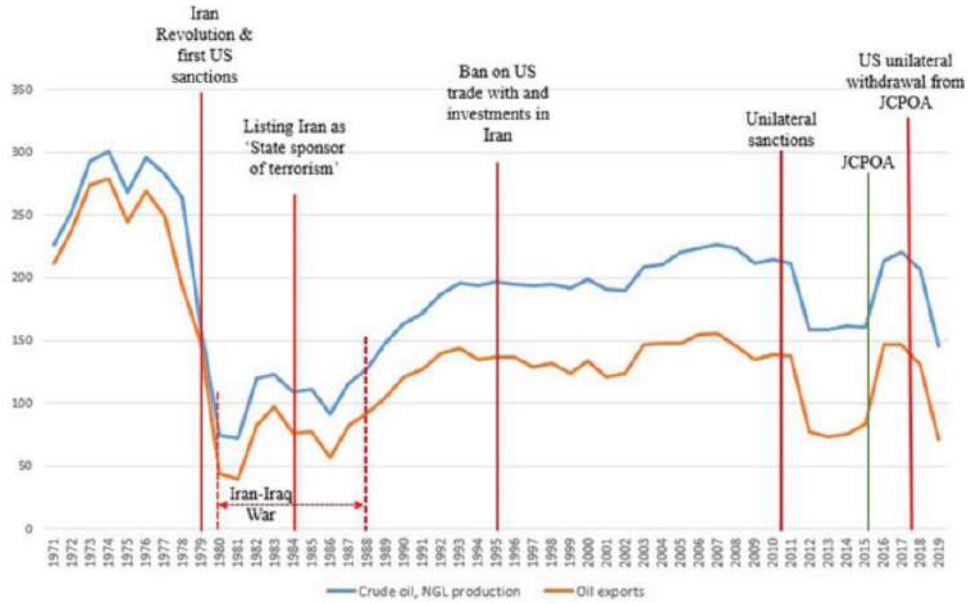
- Donald Trump has made clear that he will seek to unleash American oil and gas production to grow the US economy and advance American geopolitical interests. The mantra will be ‘Drill, baby, drill’. This approach has both domestic and international consequences.

- Internationally, this could lead to **lower oil prices** which would **undermine other hydrocarbon producers**, whose economies depends on oil prices, notably the MENA countries.

- This **could also trigger another price war**, if MENA countries (with lower production costs) tried to defend market share. Moreover, it could entail both opportunities and challenges for OPEC+ coordination.

- At the same time, higher US fossil fuels production could be paired by **more assertive foreign policy – especially against Iran**. This, however, could result in supply disruptions, higher prices, and geopolitical tensions.

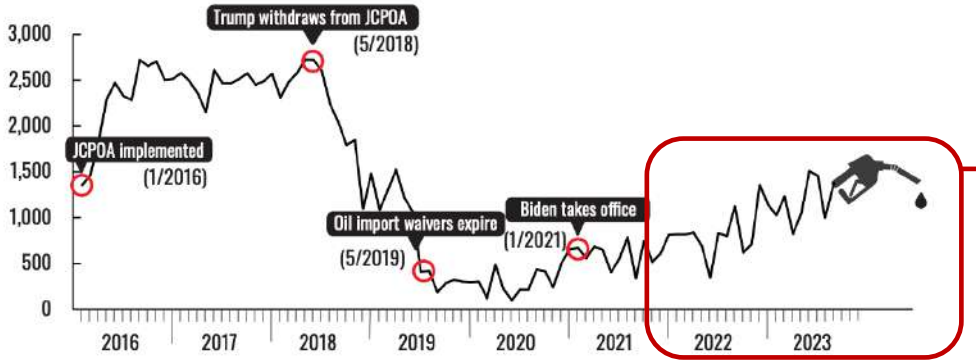
# Iran: international sanctions and recent developments




*Source: Authors' elaboration on ENERDATA*

- Iran's oil production heavily affected by the evolution of international sanctions.
- Natural gas almost entirely consumed domestically and no LNG export capacity

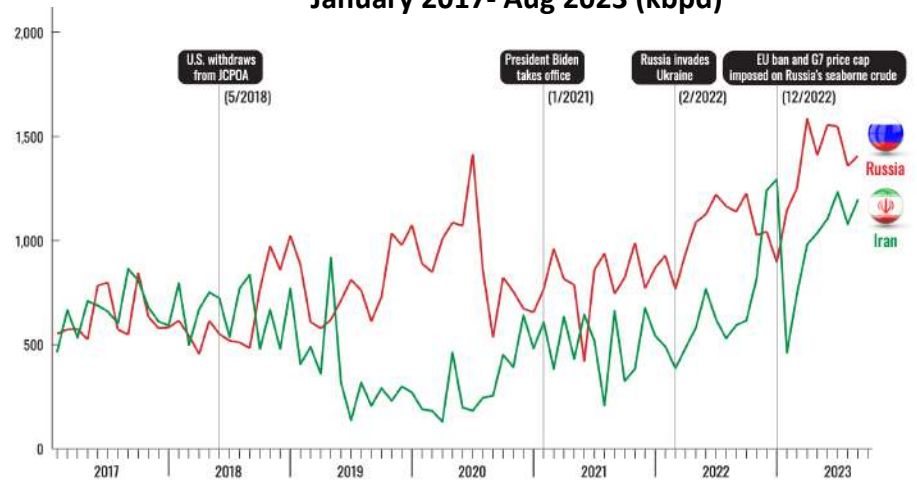
**Iranian Crude and Condensate Exports, 2016-23 (kbpd)**




Source: Kpler

Result of **relaxed sanction enforcement**.

**China's Seaborne Oil Imports from Iran and Russia, January 2017- Aug 2023 (kbpd)**

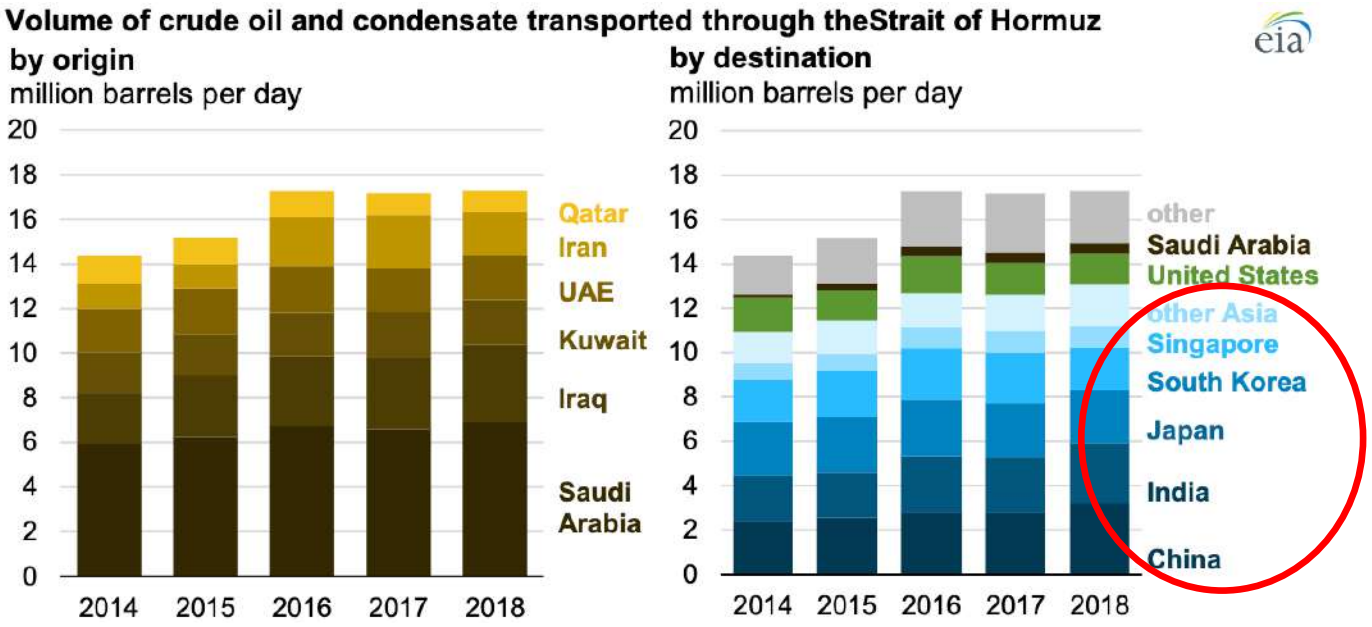


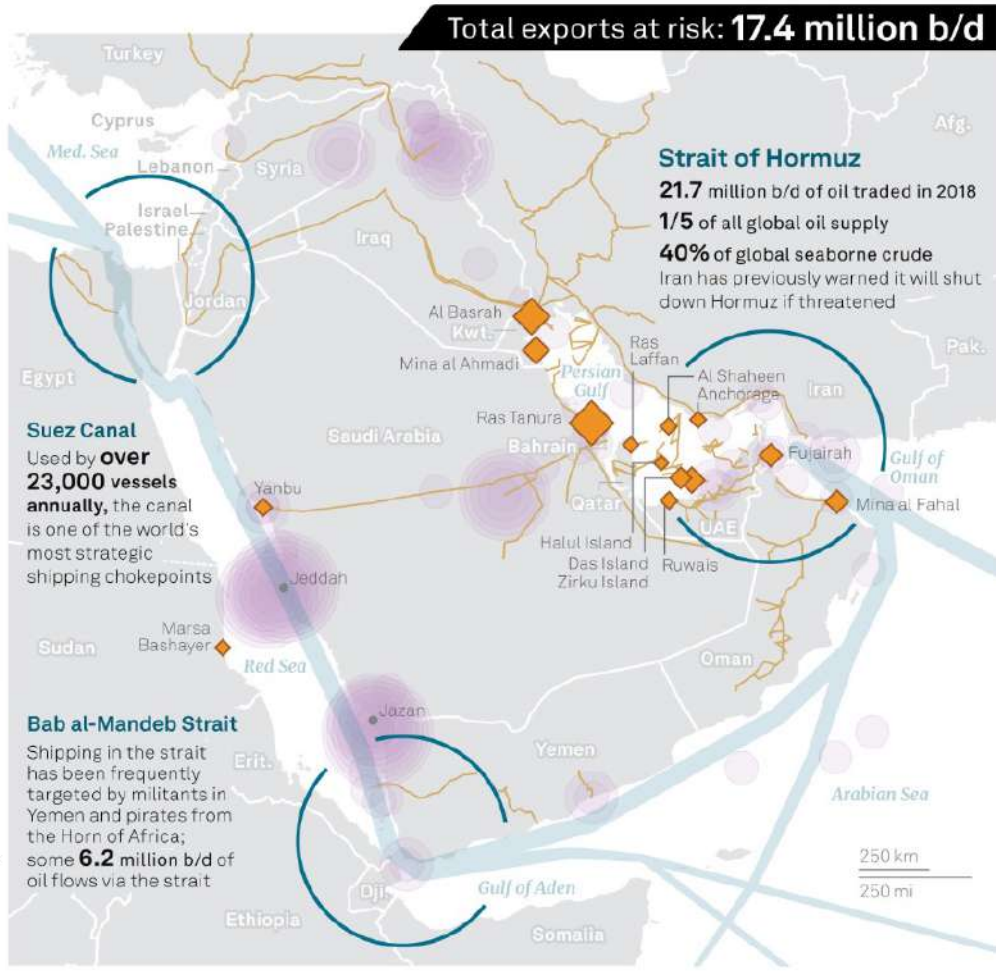

Source: Kpler

Iran heavily reliant on **China**.

China has become crucial for countries under sanctions (Russia and Iran)

# Potential security risks: disruptions will affect all in terms of prices, but mainly Asia in terms of volumes




- Previous attacks in 2019 had very limited impact on global oil prices because the market was oversupplied.

# A globalized gas market allows to absorb disruptions

**Following the US shale revolution, the gas markets are much more globalized.**

**The Panama drought crisis has in 2H2023 rerouted some US LNG cargos for Asia.**

**+**

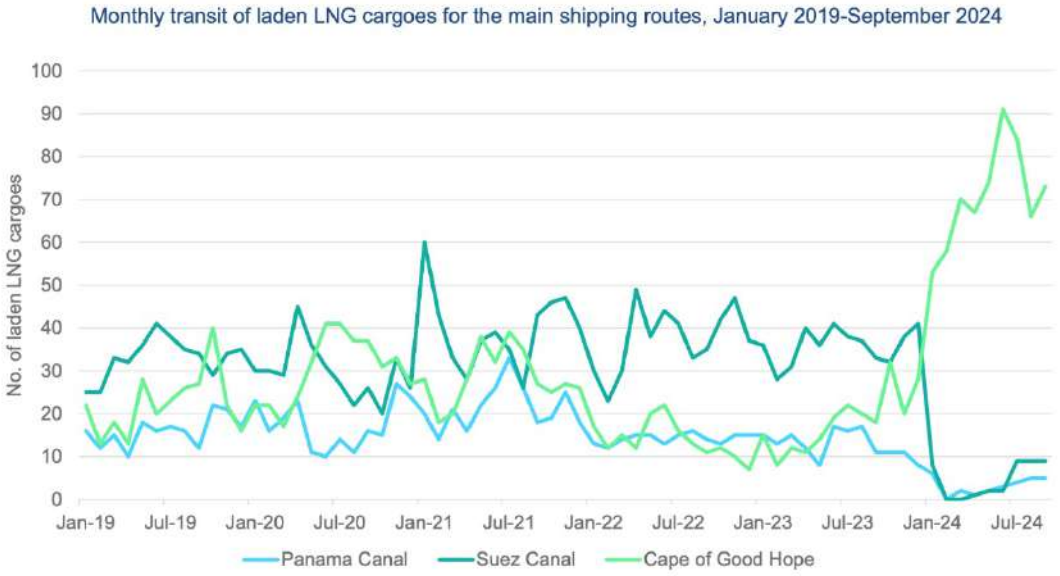
**If there remains a security risk over several months in the Red Sea, we may see new pattern of LNG flows:**

- **more Qatari LNG going to Asia**
- **more US LNG going to Europe**

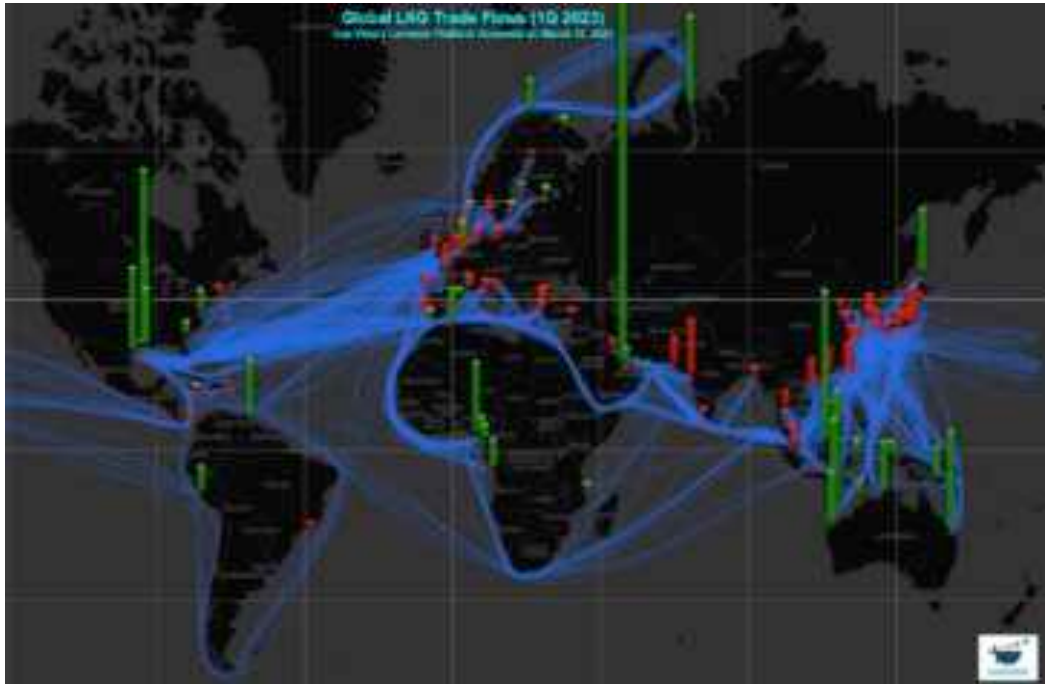
**=>**

**Swaps between US and Qatari LNG**
- **US maximizing Atlantic basin deliveries,**
- **Qatar maximizing Asian deliveries**

**would make a lot of sense.**




Red Sea disruption and Panama Canal bottleneck make **LNG flows more regional**, but also mean longer voyages via Cape of Good Hope



# EU efforts to reconciliate energy security with climate

- The EU also continues to pursue cooperation on decarbonisation including on methane emissions with all fossil fuel suppliers in the region, such as Egypt, Israel and Algeria, besides renewables and hydrogen.
- In contrast to the EU-Egypt Strategic Partnership of 2018, the trilateral partnership of 2022 – with the addition of Israel – recalled climate commitments and did not refer to the establishment of new gas infrastructure, pushing for the optimization and decarbonisation of existing logistical chains
- To create win-win opportunities for both the region and the EU, the European Commission is working on a Mediterranean Green Hydrogen Partnership between the EU and countries in the Southern Mediterranean. This work builds upon the existing new Agenda for the Mediterranean and its Economic and Investment Plan and will start with the EU-Egypt Hydrogen Partnership.

- Lack of a unified vision: the EU's approach towards North-African partners remains fragmented, with insufficient coordination with regional actors, undermining strategic coherence.

- Adaptation efforts in a critical region: accelerated climate change impacts in the Mediterranean call for urgent and targeted adaptation efforts, aligning energy and environmental strategies with local realities.

- Green Deal’s external dimension: while effective internally in balancing energy security and climate goals, the EU must enhance external action to integrate climate resilience and security priorities in a cohesive framework.

# Electricity trade: great hopes, modest results

- The idea of **electricity trade between MENA and Europe** has a **long history** (e.g. Desertec), but **modest results** due to multiple obstacles.
  - Low RES penetration;
  - Lack of electricity interconnections between the two Mediterranean shores. There are 10 interconnections between the EU and its neighboring countries: only two are in the southern and eastern Mediterranean: Morocco and Turkey


Source: ENTSO-E

# The new momentum for hydrogen

- **Hydrogen trade** is **gaining momentum** as electrification shows some constraints and the EU seeks to play a role in the hydrogen economy. Yet, the EU may need to turn to hydrogen imports due to limited domestic production.

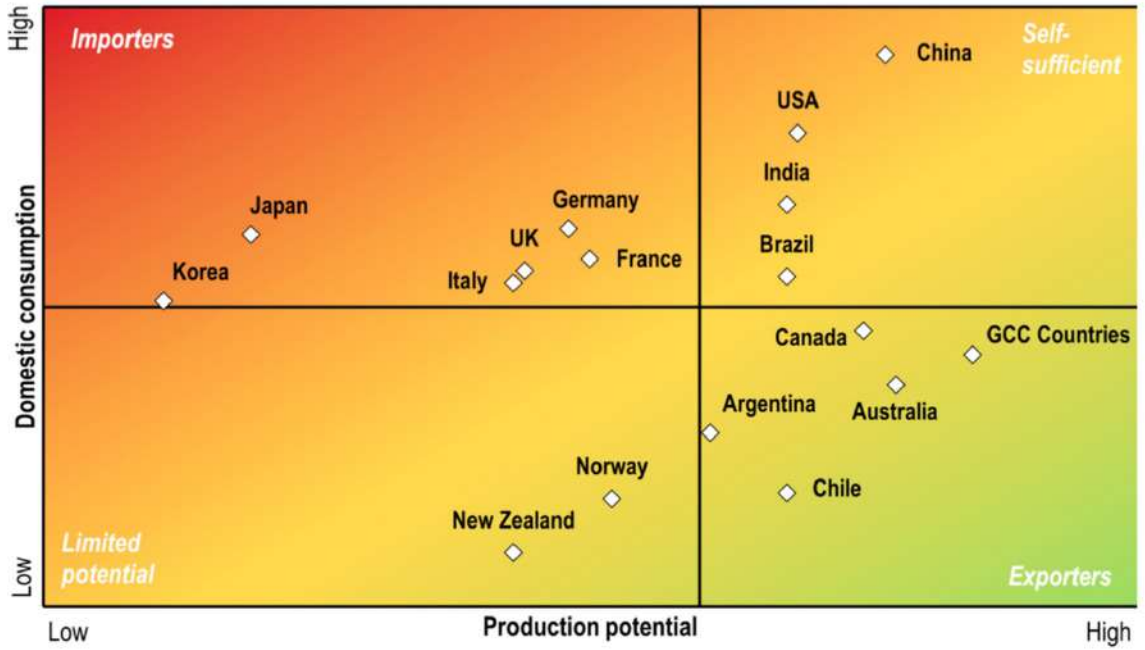
- This would provide the **opportunity** to the MENA countries to **exploit their renewable potential**, but also their gas reserves (coupled with CCS potential). Meanwhile, it would give the chance to the EU to rebrand its energy and climate partnership with the Mediterranean countries.

- **Ideally, North African have a competitive advantage compared to Gulf countries: existing pipelines with the EU (an expected hydrogen importing region). But they faces other challenges.**

**Technical potential for producing green hydrogen under US$ 1.5/kg by 2050, in EJ**


Source: IRENA (fothcoming-a). Map source: Natural Earth, 2021

**Green hydrogen domestic consumption versus production potential**

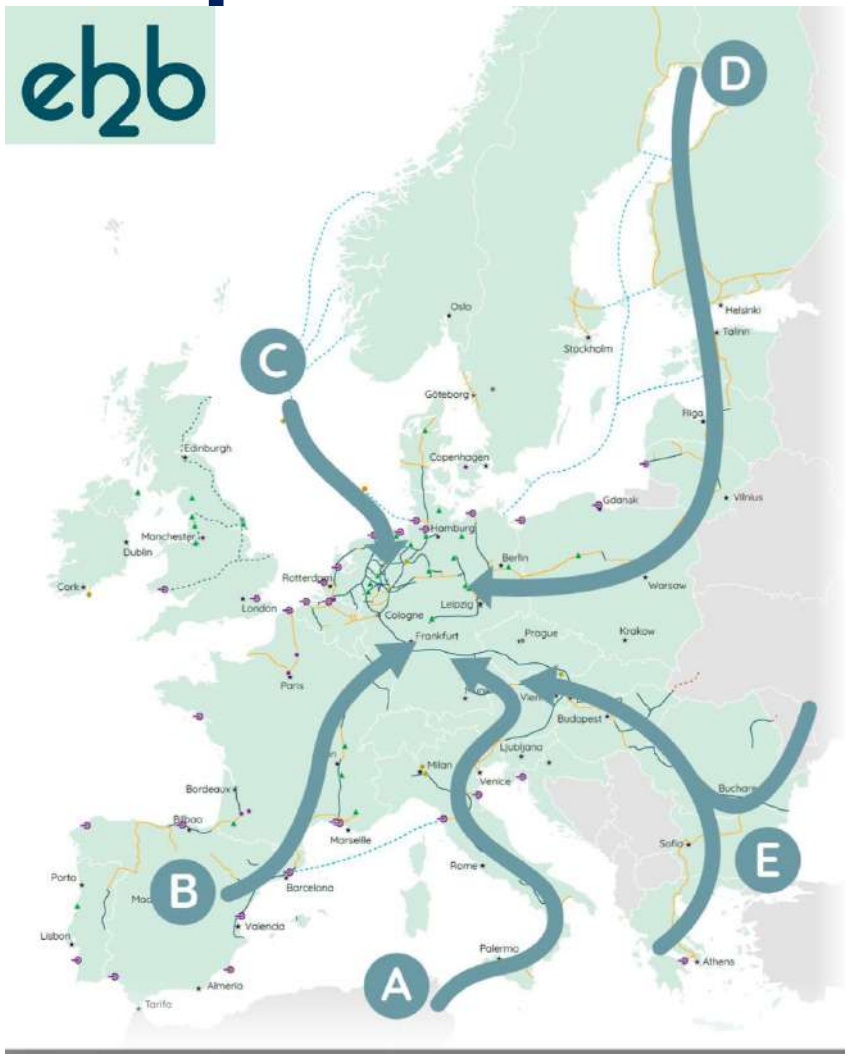


# North Africa-EU hydrogen trade: opportunities and plans

Hydrogen is gaining a new momentum especially in the EU.

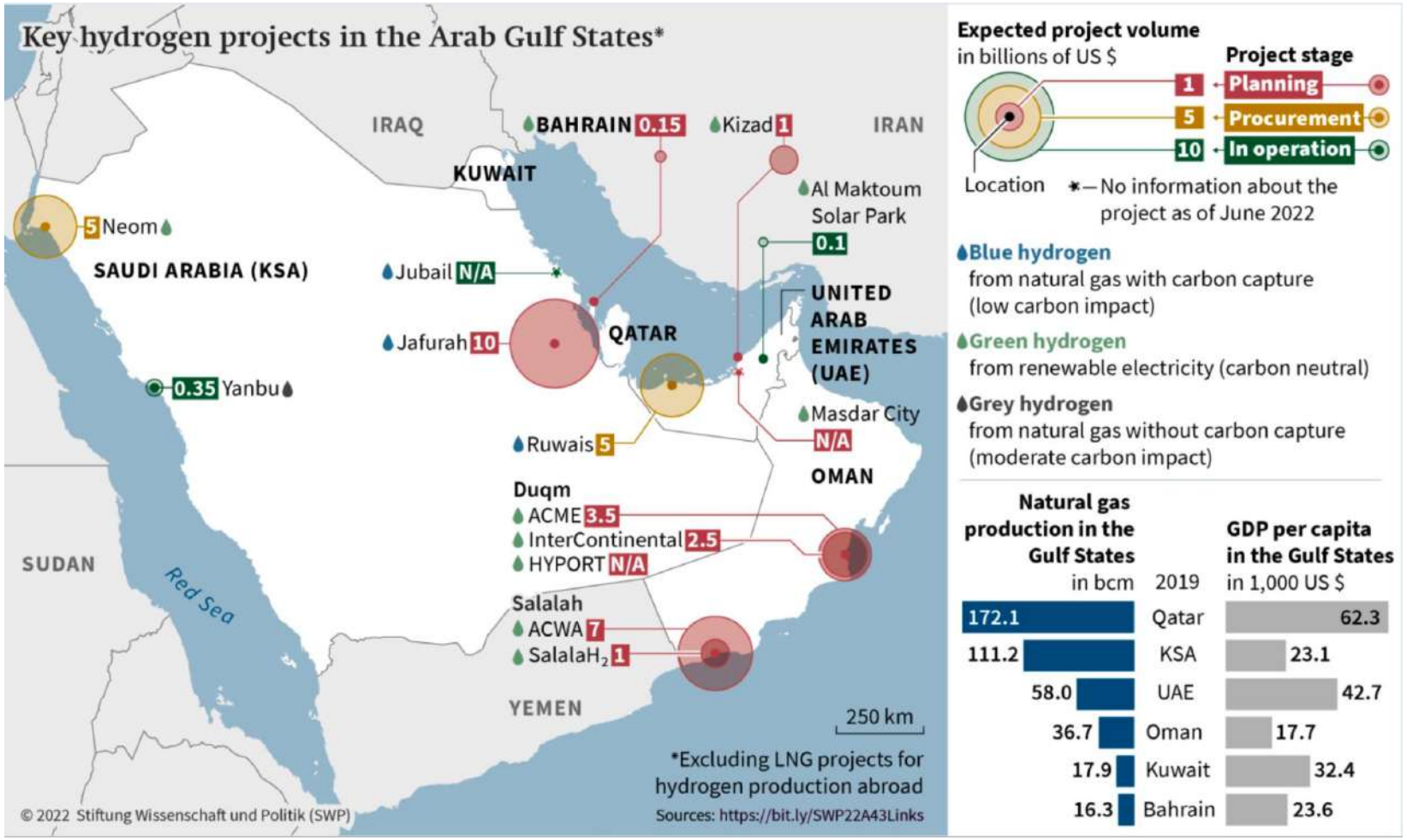
- In 2020, the UE was evaluating the possibility to import 40 GW of green hydrogen from North Africa by 2030.
- In 2021, FF55 envisages a target of 6.7 Mt/y
- In 2022, the REPowerEU Plan envisages a hydrogen target of **20 Mt/y (more than threefold) by 2030**, of which 10 Mt domestically produced and 10 Mt imported. These are very optimistic targets!
- So far **little concrete interest from North African** countries

Despite the challenges, **North African countries could become in the long run a crucial hydrogen partner for the EU** given its strategic geographical location and the existing infrastructure (pipelines from Algeria and Libya).




**SoutH2 Corridor (promoters speak of 4 Mt/y H2 import potential by 2030)**

# The hydrogen quest in the Gulf states




**Gulf countries** are increasingly considering to develop hydrogen to position themselves in a low-carbon energy trade. Given their hydrocarbon reserves, these countries are considering also the production and export of blue hydrogen.

For trade, they are working on projects to **export hydrogen (ammonia) to the Asian countries** as in the case of Saudi Arabia and Japan deal.

Saudi Arabia, the UAE and Oman have been the first movers in the region. Recently, Qatar has recently joined the race.

# The challenges to international hydrogen trade

## CHALLENGES


**Water scarcity**
Expansion of water desalination: adding costs and rising energy consumption.
Competition with other water-intense industries

**Developing enough renewable energy capacity to power hydrogen export AND decarbonize the domestic sector.**
otherwise it would be a paradox (green exports for abroad while still burning fossil fuels at home).


**Certification and standards**
Lack of coherent and universal certification and standards undermine hydrogen trade and off-takers

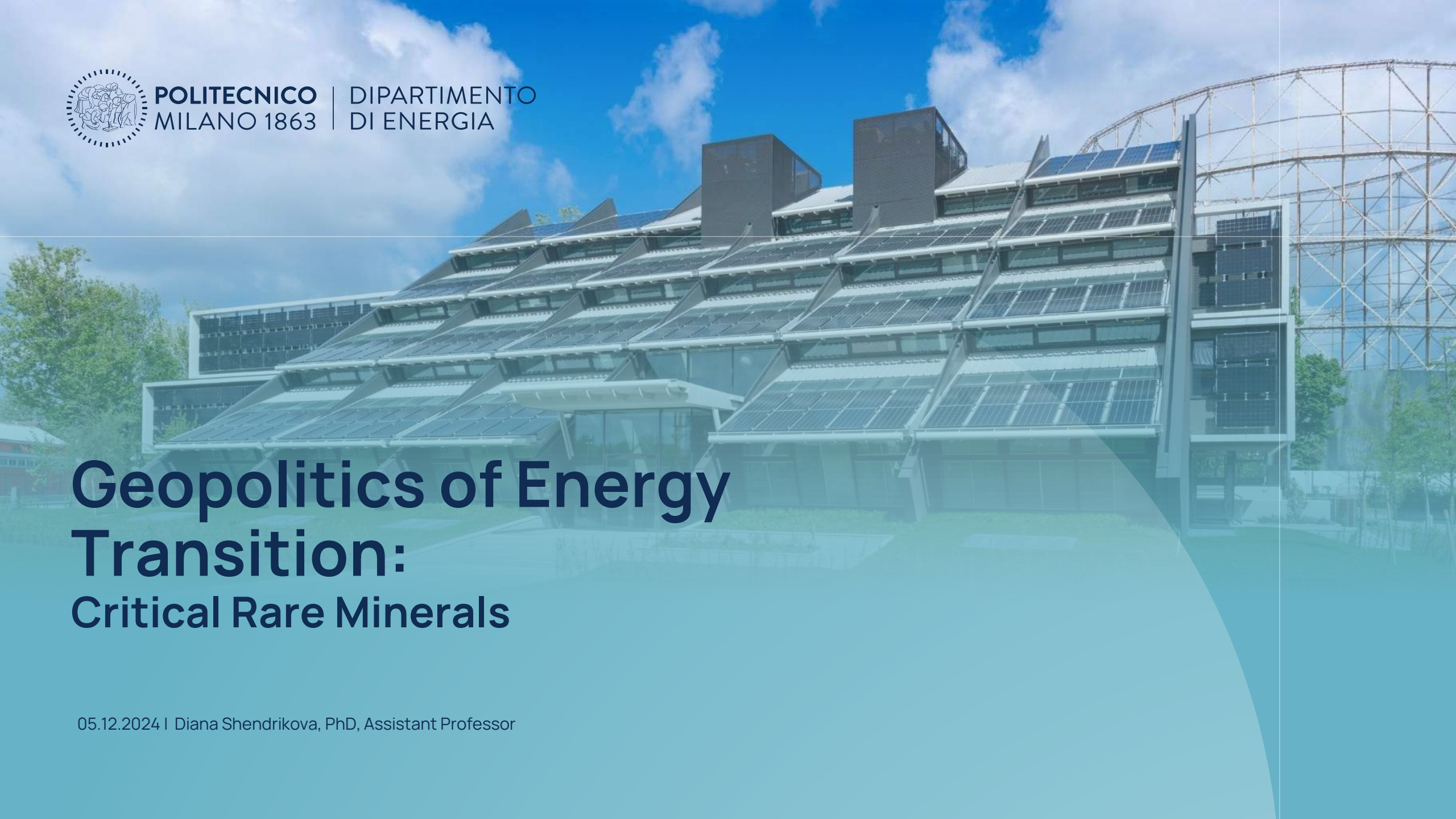
## POTENTIAL STRATEGY

Against this backdrop, it's better for these countries to **to produce decarbonized final products** (steel, cement and fertilizers) **with domestic clean hydrogen and export them**. In doing so, they will be able to:

- Pursue industrial policy;
- Overcome some transportation issues;
- Protect these products from carbon pricing (e.g. EU CBAM);
- Have higher returns
- Allow the world to decarbonize at a lower cost

# Thanks for your attention!

Pier Paolo Raimondi
email: pp.raimondi@iai.it
X: @PierRaimondi



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# Geopolitics of Energy Transition:
## Critical Rare Minerals

05.12.2024 I Diana Shendrikova, PhD, Assistant Professor

# Geopolitics of Energy towards new interdependences

- Geopolitics remain at the very heart of the changing energy landscape
- Shift from fossil fuel-based capacity to RE capacity pushes interdependence to a different part of the energy mix: from hydrocarbons to metals, from ores to rare earths
- Africa, Asia and Americas and Australia are likely to emerge as global mineral hubs, and the routes these new commodities might pave new geostrategic highways
- New commodities' processing locations will be like new refineries and petroleum complexes and their distribution potential linked to key consumption centers will be crucial (Straits of Hormuz today)

**The notion that domestic renewable production will free countries from energy dependance is misguided**

# Geopolitics of Energy towards new interdependences

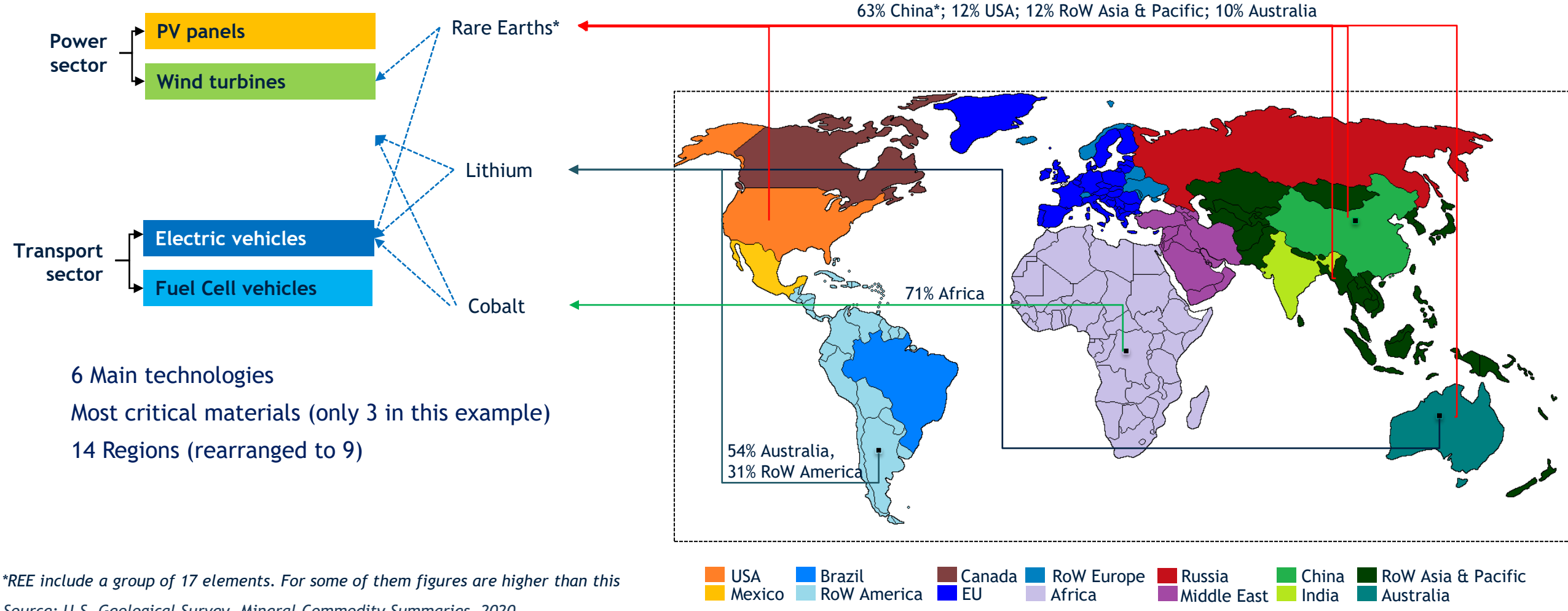
| Mineral | China's share in total global production | Global Rank |
|---|---|---|
| Aluminum | 55.75% | Largest Producer |
| Chromium | 0.17% | 15th largest producer |
| Cobalt | 2.40% | 7th largest producer |
| Copper | 8.14% | 3rd largest producer |
| Graphite | 61.78% | Largest Producer |
| Indium | 54.69% | Largest Producer |
| Iron | 14.25% | 3rd largest producer |
| Lead | 42.21% | Largest Producer |
| Lithium | 8.76% | 3rd largest producer |
| Manganese | 6.30% | 6th largest producer |
| Molybdenum | 37.77% | Largest Producer |
| Neodymium* | 65.24% | Largest Producer |
| Nickel | 3.86% | 7th largest producer |
| Silver | 12.38% | 3rd largest producer |
| Titanium | 29.83% | Largest Producer |
| Vanadium | 62.02% | Largest Producer |
| Zinc | 33.04% | Largest Producer |

*Source: World Mining Data, https://www.world-mining-data.info/?World_Mining_Data___Data_Section*


*Rare Earths mining*

# Case Study - Rare materials for Energy Transition

## Scope of the analysis




6 Main technologies

Most critical materials (only 3 in this example)

14 Regions (rearranged to 9)

**REE include a group of 17 elements. For some of them figures are higher than this*

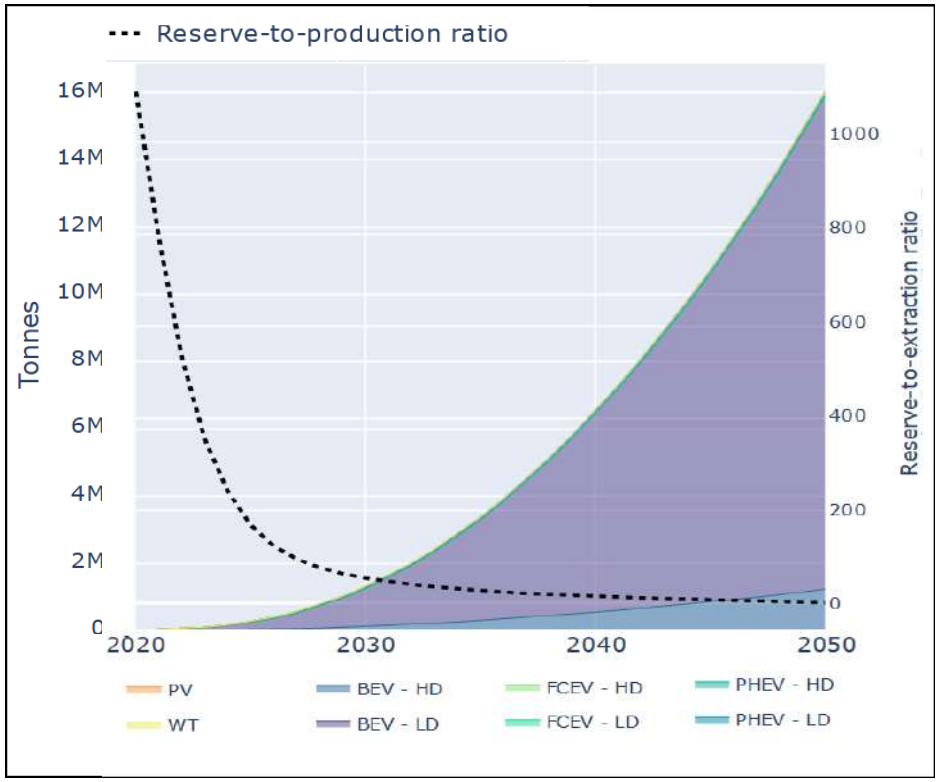
*Source: U.S. Geological Survey, Mineral Commodity Summaries, 2020*

# Case Study - Rare materials for Energy Transition

## Results

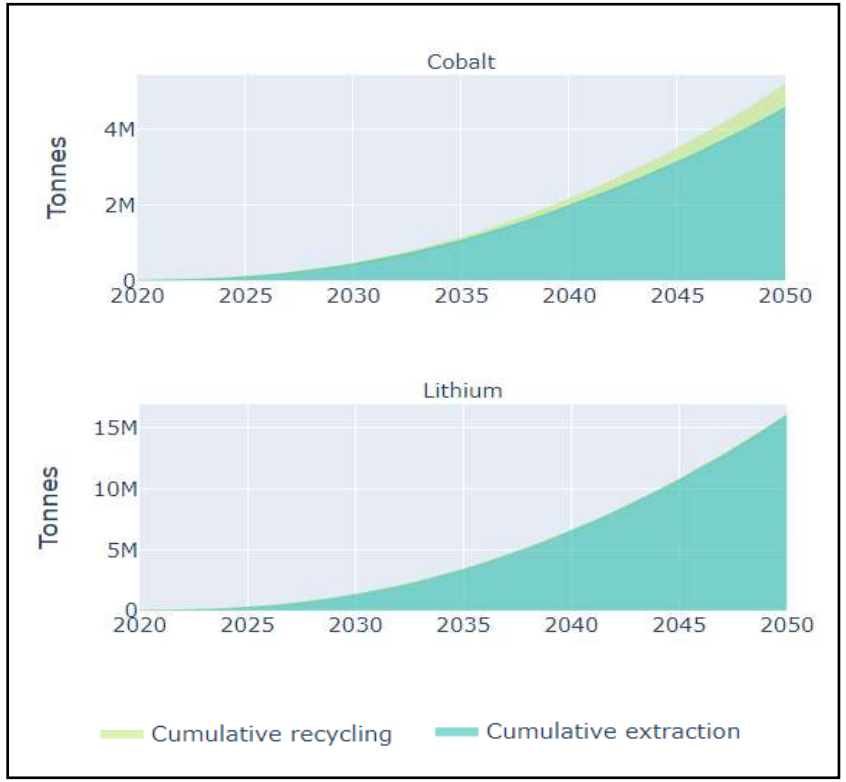
Global cumulative extraction (left axis) and reserve-to-production ratio (right axis) of Lithium by technology

- The main technology requiring lithium are battery electric vehicles (BEV)
- Under the scenario hypotheses, lithium reserves are going to be overexploited




Global cumulative extraction and recycling of Lithium and Cobalt

- The reference period 2020-2050 is **not long enough** to appreciate the effect of recycling. Most of the technologies considered, in fact, have a useful lifetime of 20-25 years



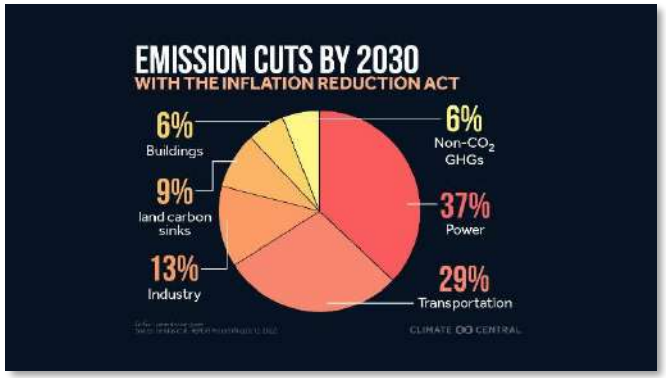
# Green Technologies Race

## EU Vs. US Vs. China

| | European Union | United States of America | People's Republic of China |
|---|---|---|---|
| Flagship Investment Policy | EU Green Deal Industrial Plan | Inflation Reduction Act | 14th Five-year plan |
| Total Investment in Green Technologies | $503 billion | $369 billion | $280 billion |
| Time span | 2021-2027 | 2021-2031 | 2021-2025 |
| Total Investment s in Green Transition in 2022 | $180 billion | $141 billion | $546 billion |
| Emissions cuts by 2030 | 55% | 40% against 2005 | "peak" by 2030 |
| Renewables share in power mix | 40% | 80% | 1,200 gigawatts (GW) |

EU Green Deal Industrial Plan

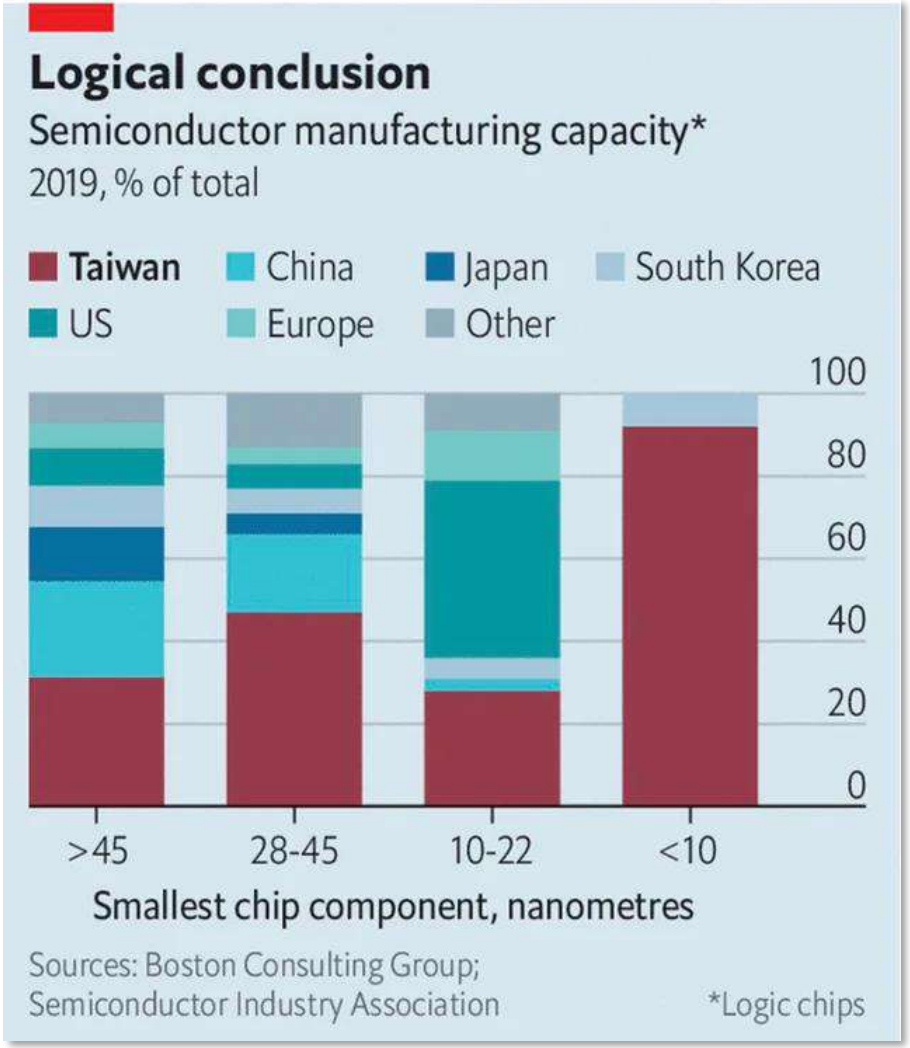

Inflation Reduction Act




14th 5-year Plan

# Enabling Technologies

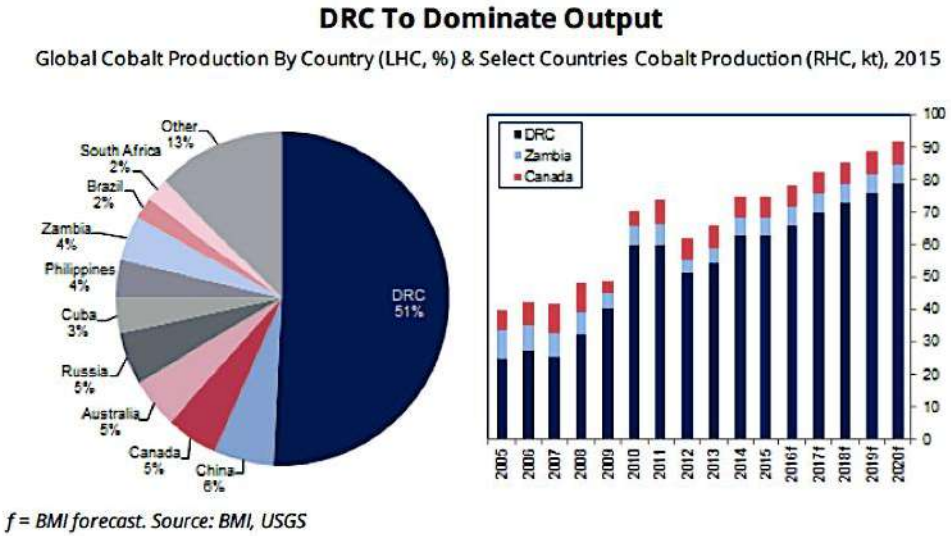
## Semiconductors

# Geopolitical challenges of Energy Transition

**The main geopolitical challenges the policy-makers are facing in regards to the Energy Transition:**

- Guarantee **energy security** and access to energy
- If **affordability, reliability, or security of the supply** of energy or other national security imperatives comes into conflict with ambitious responses to climate change, the risk to undermine the energy transition
- Investigate whether and how the **revenues** can be generated from renewable energy (throughout the entire supply chain)
- **Make-or-buy decision:** is energy security best attained via isolationist self-reliance or via continental interconnection and trade
- **Just energy transition**. Developing cooperative (and multilateral) partnerships that built on sustainable energy pathways may help to hedge risks at the international level.



# Geopolitical domination in green revolution

## Innovation and cheap capital

**Sources of dominance:**

1. The power to set standards for clean energy (Chile, Australia for low-carbon ammonia)
2. Control of the supply chain for minerals such as cobalt, copper, lithium, nickel and rare earths
3. Ability to cheaply manufacture components of new technologies (90% of semiconductors wafers are produced in China)
4. Through the production and export of low carbon fuels (hydrogen and ammonia)



**Possible energy policy solutions**

1. Policymakers need to expand their toolkits to increase energy security and reliability and prepare for inevitable volatility
2. Maintain maximum flexibility on energy sources even as they phase of brown energy
3. Governments can boost energy security by reducing supply chain risks - but not encouraging protectionism. Flexibility in a diversified and interconnected systems instead of chimera of independence.
4. Addressing some of the ways in which the jagged energy transition may exacerbate already deep inequalities in society and potentially produce a political backlash against clean energy

# How Energy Transition will reshape geopolitics of Energy? Six clusters

1. Geographically dispersed nature if renewable energy sources (most countries possess some form of renewable energy) – **“prosumer countries”**
2. RES facilitate a shift to a **two tier and more resilient energy system** which includes centralized facilities and decentralized modes of generation run by local actors
3. Electricity is the energy carrier of most renewable, the **electrification** of energy system is expected
4. **Change** in the volume and nature of **energy trade**, with energy services and technologies taking the lead
5. **Creative destruction** process in energy markets: rivalry over market shares in clean energy generation technologies
6. Use of **critical minerals and earths** and know-how in clean tech can increase competition for access to these

# Thank you for your attention

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## Contatti

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LUISS School of Government

unitar United Nations Institute for Training and Research

# CLIMATE-RELATED SECURITY CHALLENGES IN AFRICA: THE CASE OF CRITICAL MINERALS

Executive Master "Global Public Diplomacy and Sustainable Development" a.y. 2023/2024

Silvia Orioli, University for Foreigners of Perugia
December 5th, 2024

# PRESENTATION OUTLINE

1

**CRITICAL MINERALS IN AFRICA**

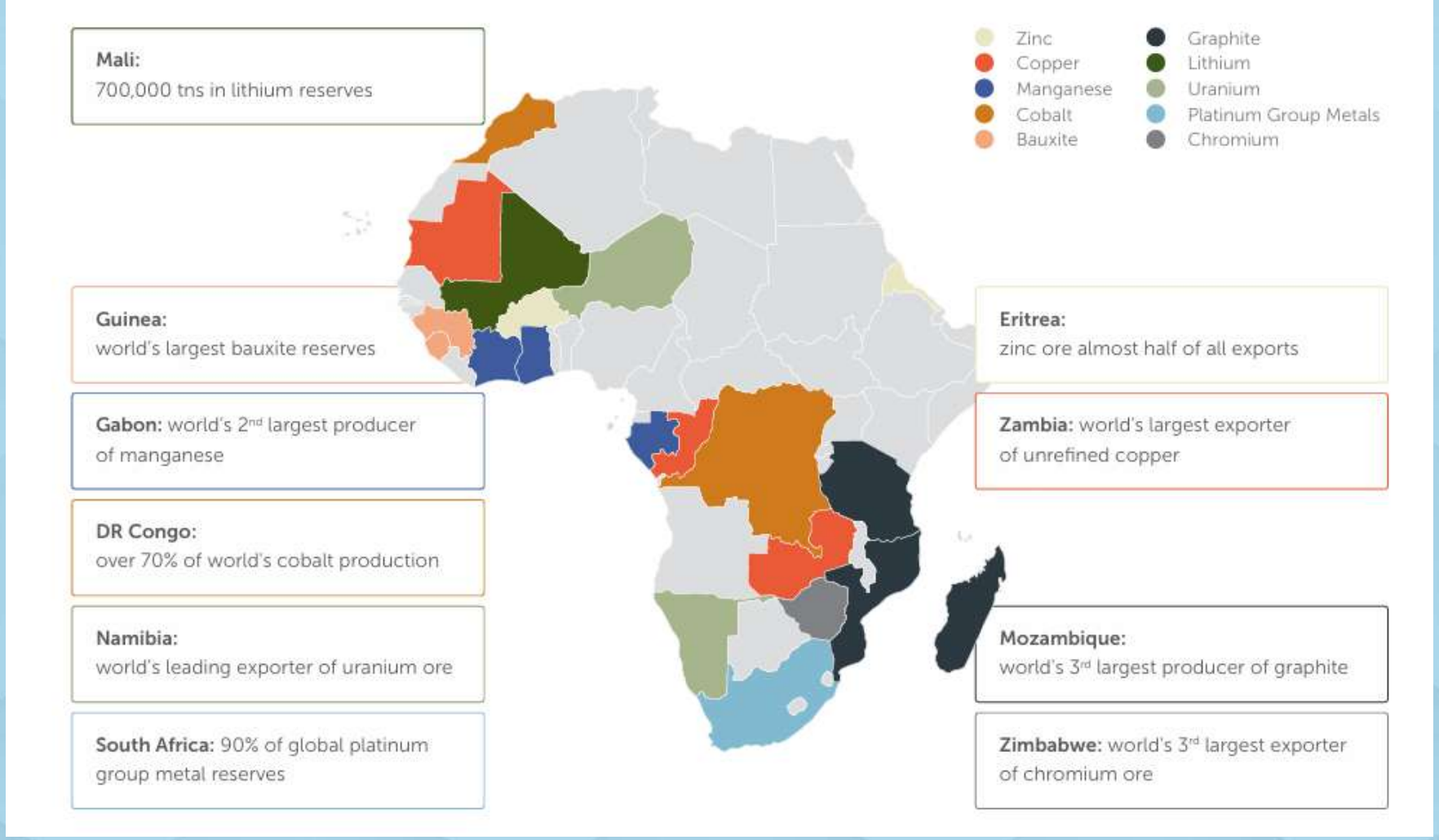
2

**AFRICAN POLICY FRAMEWORK**

3

**EU-AFRICA PARTNERSHIPS**

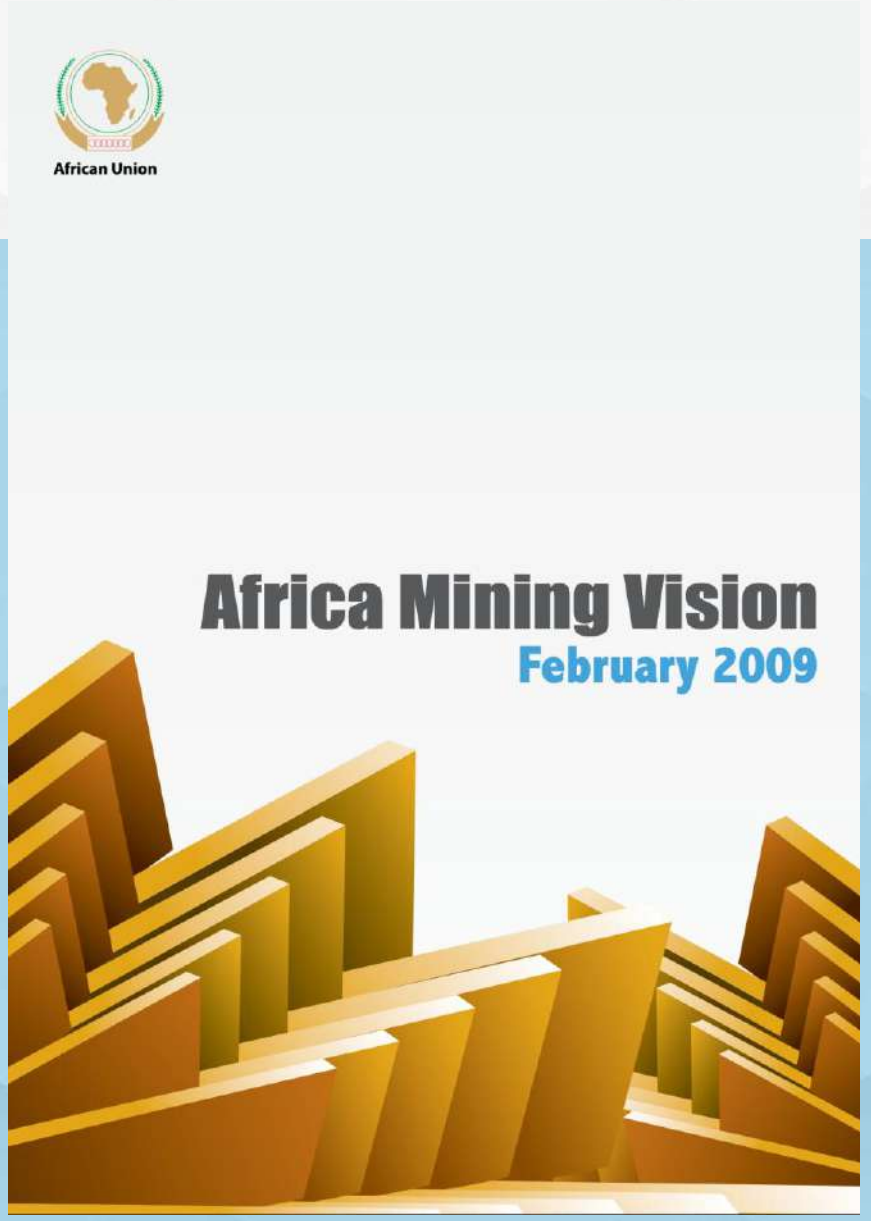
# CRITICAL MINERALS IN AFRICA



# AFRICA MINING VISION (2009)

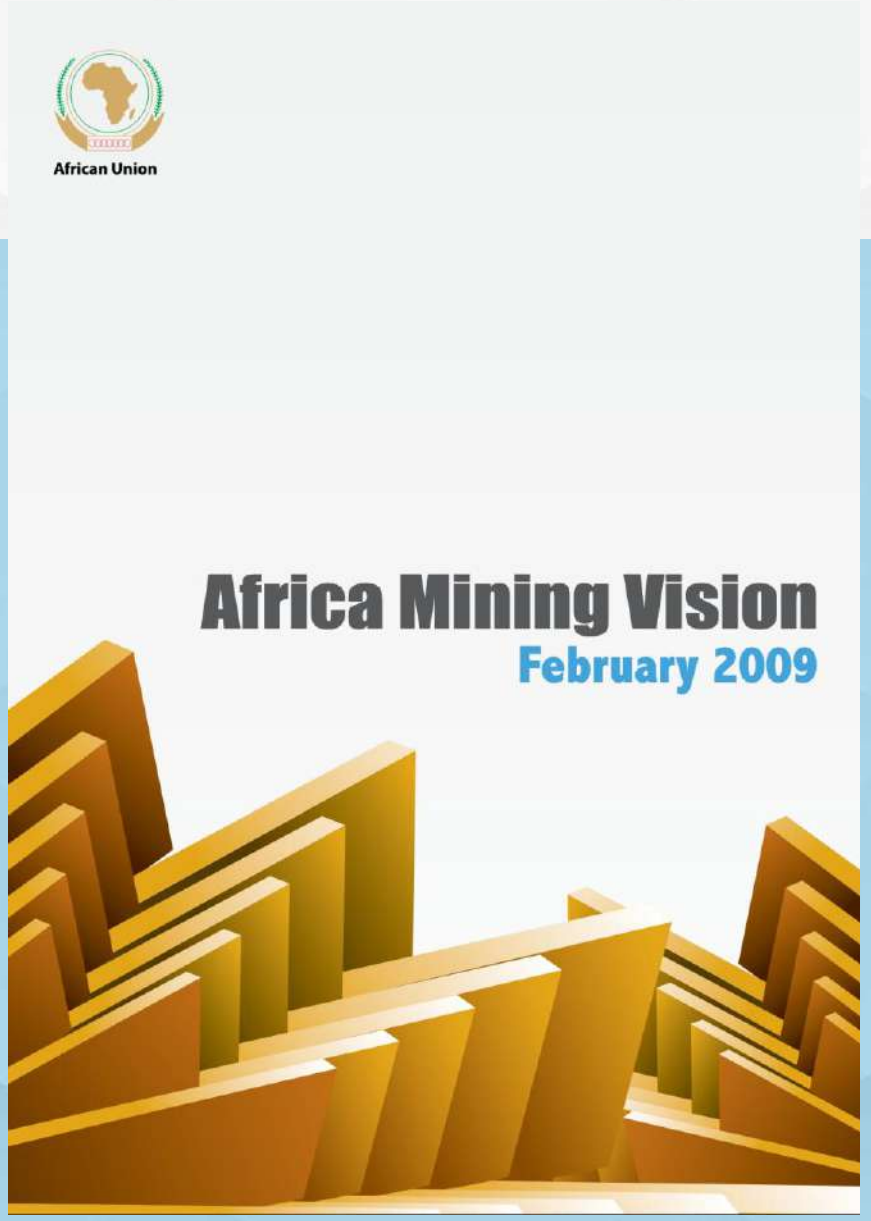
The primary and long-term goal is to support a "*transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development*".

- Building a mining sector fully integrated into a **single African market** that optimises and husbands Africa's finite mineral resource endowments.
- Harnessing the potential of **small-scale mining** to improve livelihoods and integration into the rural and national economy.
- Fostering **environmentally and socially responsible mining**, which is safe, healthy, gender and ethnically inclusive and includes communities and all other stakeholders.



# AFRICA MINING VISION (2009)

- Building **human and institutional capacities** towards a knowledge economy that supports partneships, innovation, research and development.
- Developing a diversified and **globally competitive African mineral industry** which contributes to broad economic and social growth through the creation of local and regional economic linkages.
- Fostering a **transparent and accountable mineral sector** in which resource rents are optimized and utilized to promote broad economic and social development.
- Promoting **good governance** of the mineral sector, communities and citizens participation in mineral assets and equity in the distribution of benefits.



# ACTION PLAN OF THE AFRICAN MINING VISION (2011)

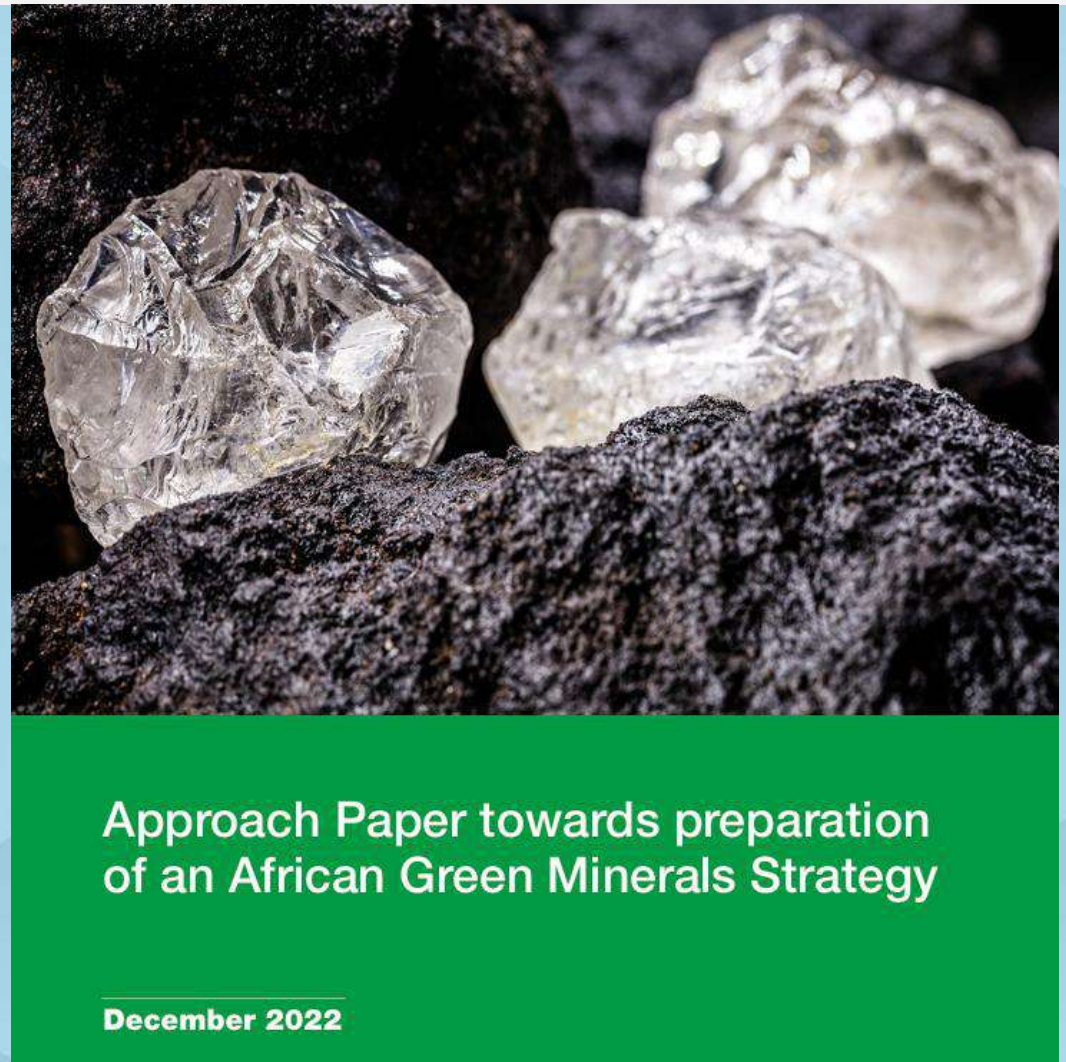
Activities have been grouped into 9 programme clusters based on AMV's pillars:

- Programme cluster 1 – mining revenues and mineral rents management
- Programme cluster 2 – geological and mining information systems
- Programme cluster 3 – building human and institutional capacities
- Programme cluster 4 – artisanal and small-scale mining
- Programme cluster 5 – mineral sector governance
- Programme cluster 6 – research and development
- Programme cluster 7 – environmental and social issues
- Programme cluster 8 – linkages and diversification
- Programme cluster 9 – mobilising mining and infrastructure investment

# APPROACH PAPER TOWARDS PREPARATION OF AN AFRICAN GREEN MINERALS STRATEGY (2022)

It is the precursor study for a fully-fledged **African Green Mineral Strategy (AGMS )** which is to follow.

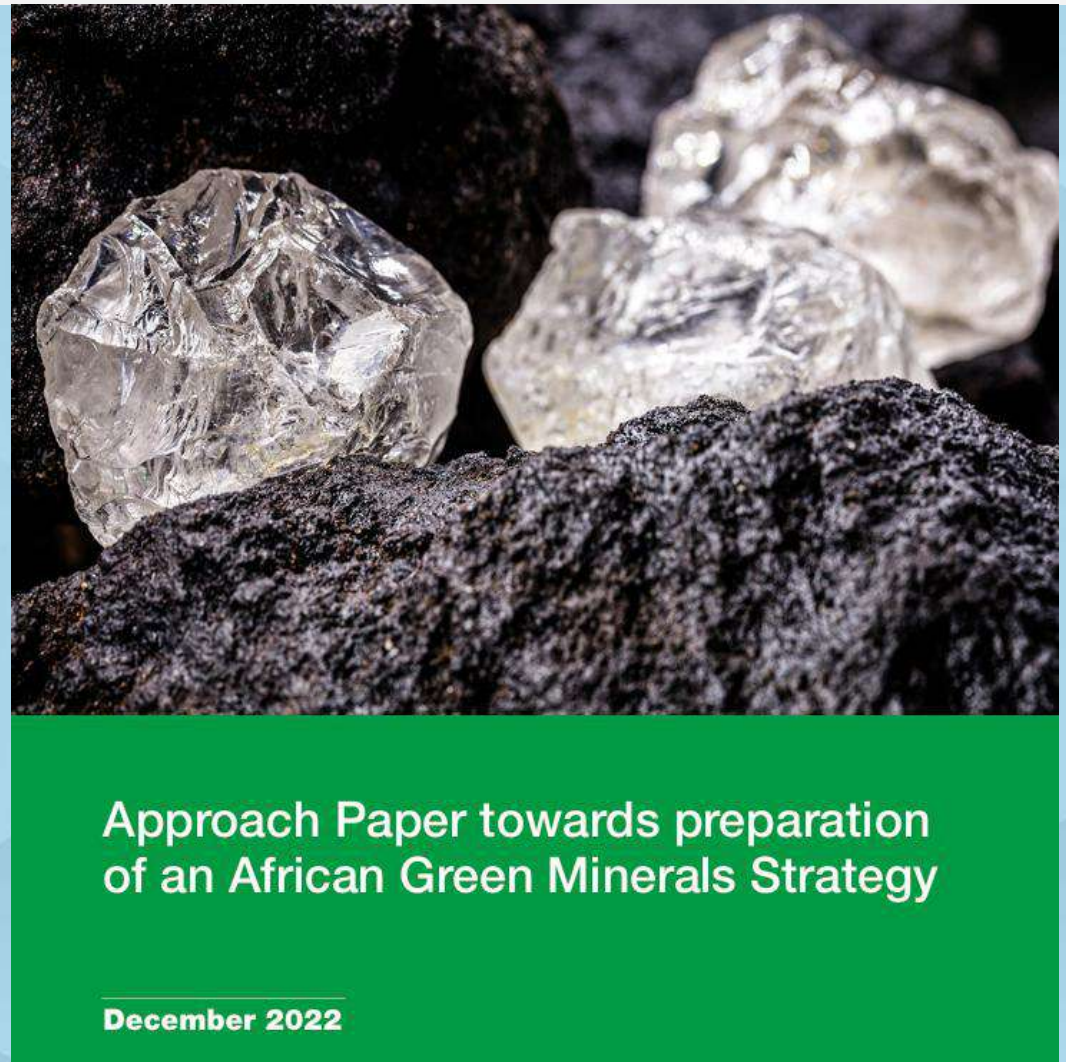
- **Advancing mineral development** by increasing geological knowledge, conducting feasibility studies to attract investment, establishing the infrastructure to create an enabling environment and aligning mineral resource management with the African Mining Vision (AMV).
- **Developing people and technology capabilities** by identifying the skills needed to capitalise on opportunities and building the institutions ready to generate them.



# APPROACH PAPER TOWARDS PREPARATION OF AN AFRICAN GREEN MINERALS STRATEGY (2022)

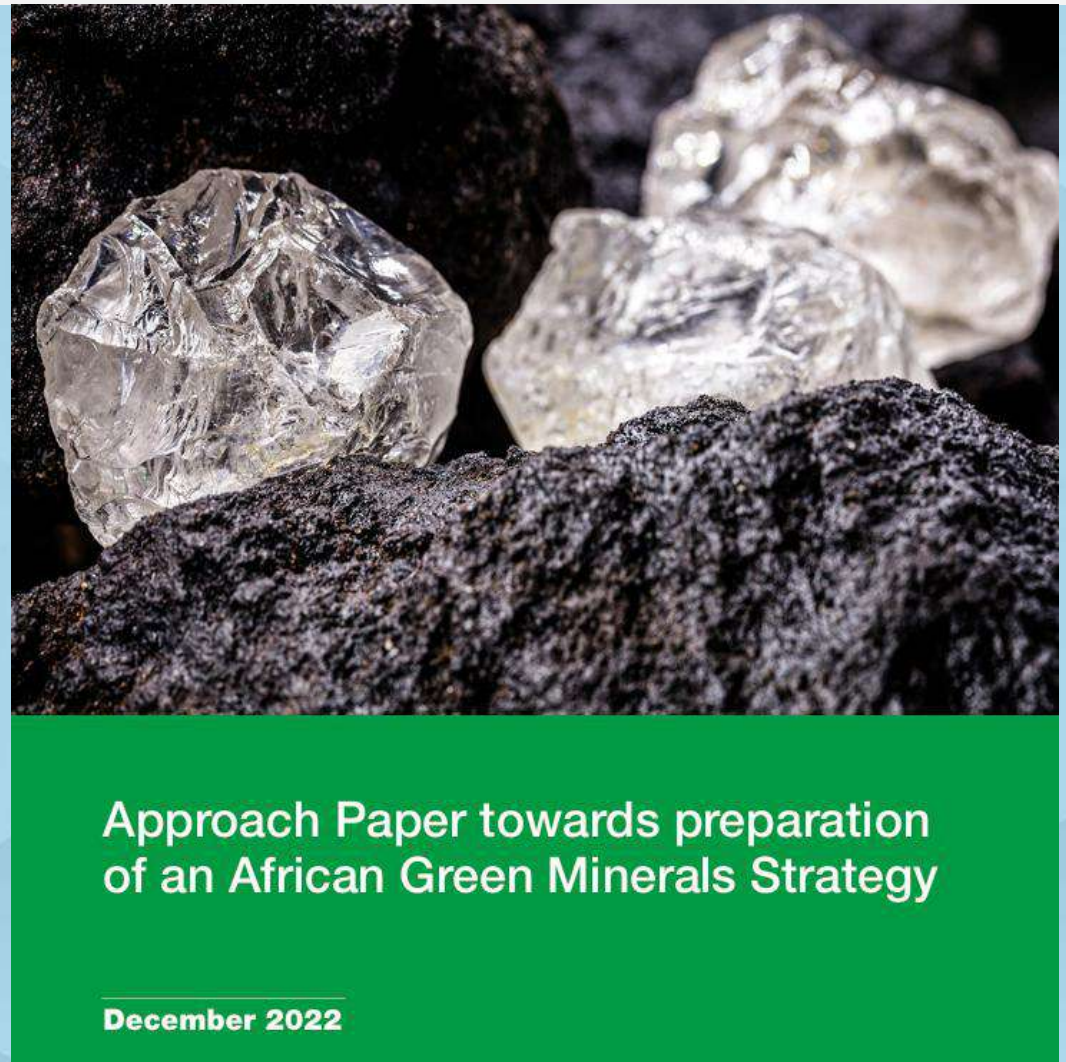
- **Building key value chains** to achieve resource-based industrialisation and access wider regional and continental markets through the African Continental Free Trade Area (AfCFTA).
- **Promoting mineral stewardship** to responsibly guide the environmental, social and governance aspects of green minerals, together with increasing material reuse and recycling.

What matters for the strategy to be impactful is for it to be translated into manufacturing activity to transform mineral feedstocks into final products.



# APPROACH PAPER TOWARDS PREPARATION OF AN AFRICAN GREEN MINERALS STRATEGY (2022)

- Effective **mobilisation of funding** for the AGMS needs to draw on established sources and search for new approaches.
- Encouraging **wider collaboration** among universities, training institutes and research organisations to form relevant high-level human capital and launch investigations to solve problems confronting green minerals mining, processing and manufacturing.
- Commissioning **pre-feasibility studies** for potential investment projects along the mining, battery, electric vehicle, renewable energy or other green technology value chains.



# EU-AFRICA STRATEGIC PARTNERSHIPS

The **Global Gateway Africa** – Europe Investment Package (2021-2027) aims to support Africa transformation by:

- Accelerating the green transition
- Accelerating the digital transition
- Accelerating sustainable growth and decent job creation
- Strengthening health systems
- Improving education and training


The EU, its Member States and European financial institutions work together to support concrete and transformational projects jointly identified in priority areas like **critical raw materials**.

The EU is developing **bilateral partnerships** with resource-rich countries to identify key thematic areas to take advantage of the AfCFTA and to promote investment along the raw materials value chains, supporting partner countries to integrate their raw materials and resources into sustainable global value chains.

# MOU WITH ZAMBIA, DRC (2023) AND RWANDA (2024)

These MoUs are part of the EU's Global Gateway strategy and identify 5 areas of collaboration:

- **Integration of critical raw materials** and renewable hydrogen value chains, including networking, new business models and promotion and facilitation of trade and investment linkages.
- Mobilisation of funding for the **development of infrastructure** required for project development.
- Co-operation to leverage **environmental, social, and governance (ESG) criteria** and align with international standards, including through increased due diligence and traceability.
- Co-operation on **research and innovation** along the raw materials value chain.
- **Capacity building** to enforce laws and regulations and increase training and skills.

An **operational roadmap** for concrete activities across the 5 key areas should follow in six months from the date of signature.

# ROADMAP FOR THE EU–NAMIBIA STRATEGIC PARTNERSHIP ON SUSTAINABLE RAW MATERIALS VALUE CHAINS AND RENEWABLE HYDROGEN

- **Integration of value chains** to identify, promote and facilitate cooperation in the exploration and commercial development of critical raw material projects.
- Mapping and assessing abandoned mines and supporting Namibia in using Earth Observation and remote sensing methods for resource exploration, land use planning and management.
- Mobilising funding for **soft and hard infrastructure**, including for selected mining, refining and mineral green processing and for the upgrade of main transport corridors.
- **Capacity building, training and skills development**, by identifying training and skills needs along the raw material and green hydrogen value chains and enhancing the relevant technical and vocational training.
- **Co-operation on research and innovation**, including facilitating studies and joint research projects and research and business networking along the entire critical raw material value chain.
- **Regulatory alignment**, including supporting the development of a national strategy for CRM and a fuels act for hydrogen and synthetic fuels industry, ensuring compatibility with international certification.

# MOU WITH THE ANGOLA, DRC, THE UNITED STATES, ZAMBIA, THE AFRICAN DEVELOPMENT BANK, AND THE AFRICA FINANCE CORPORATION

It supports the development of the **Lobito Corridor** to connect the mining regions in Southern DRC and Northern Zambia to ports in Angola.

The Lobito Corridor could enhance export possibilities for Zambia, DRC and Angola, boost the regional circulation of goods and promote the mobility of citizens as well as lower the logistics costs and carbon footprint for exporting raw materials and other products.

# CONCLUSIVE REMARKS

The implementation and success of these partnerships will depend on the ability of aligning EU's and African countries different priorities:

- EU is driven by **geopolitical issues**, searching for secure sources of CRM to reduce its vulnerability and dependence on single country-dominated supply chains.
- African demand for a local value chain of critical minerals is instead driven by **industrialization** and **socioeconomic development needs**. African countries can choose from many different partner i.e., China.
- EU should consider that the **industrial agenda would have priority over the security agenda** and clarify which aspects of the CRM value chain wants to participate in (upstream, midstream, or downstream).
- EU will need to engage with the **private sector** by providing financing instruments to de-risk and catalyze investments that will unlock the local production and value addition.
- Africa's countries generally lack of **strategic policies** and long-term vision on CRMs; they should develop comprehensive national policies that set out the criteria for classifying strategic minerals as well as economic, industrial, and geopolitical objectives.

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# THANK YOU!

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