Global Energy Perspective

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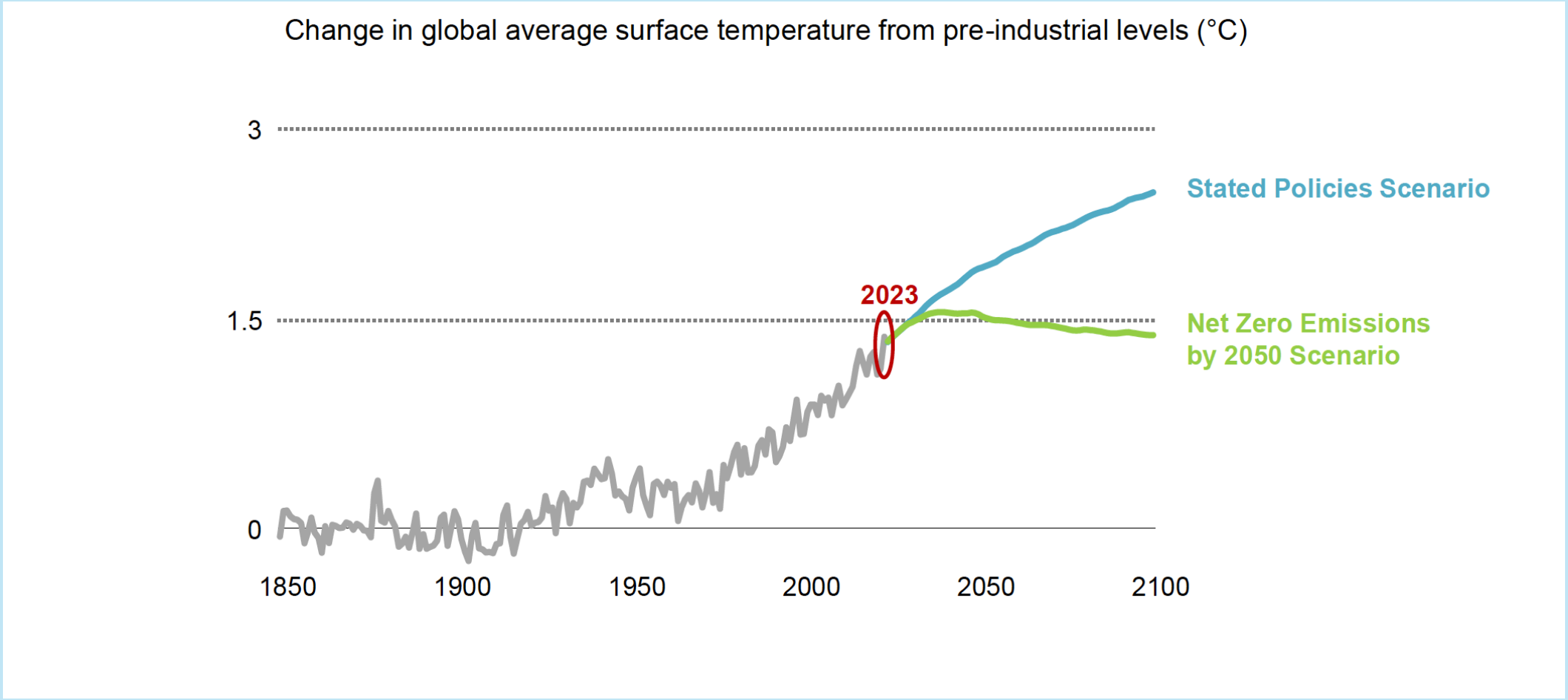
The world is not on track in keeping global warming below 1.5° *C*



Source: 2023. World Energy Outlook 2023: Launch Presentation. International Energy Agency. Paris

Vulnerabilities and risks also persist

- Geopolitics: continued fighting in Ukraine and a brewing protracted conflict in the Middle East does not bode well for the global economy and energy security

- Global temperatures have now reached 1.2° *C* above pre-industrial levels causing extreme weather events. Greenhouse gas emissions have not yet peaked.

- Energy sector accounts for 90% of the world's pollution that has brought more than 6 million premature deaths per year.

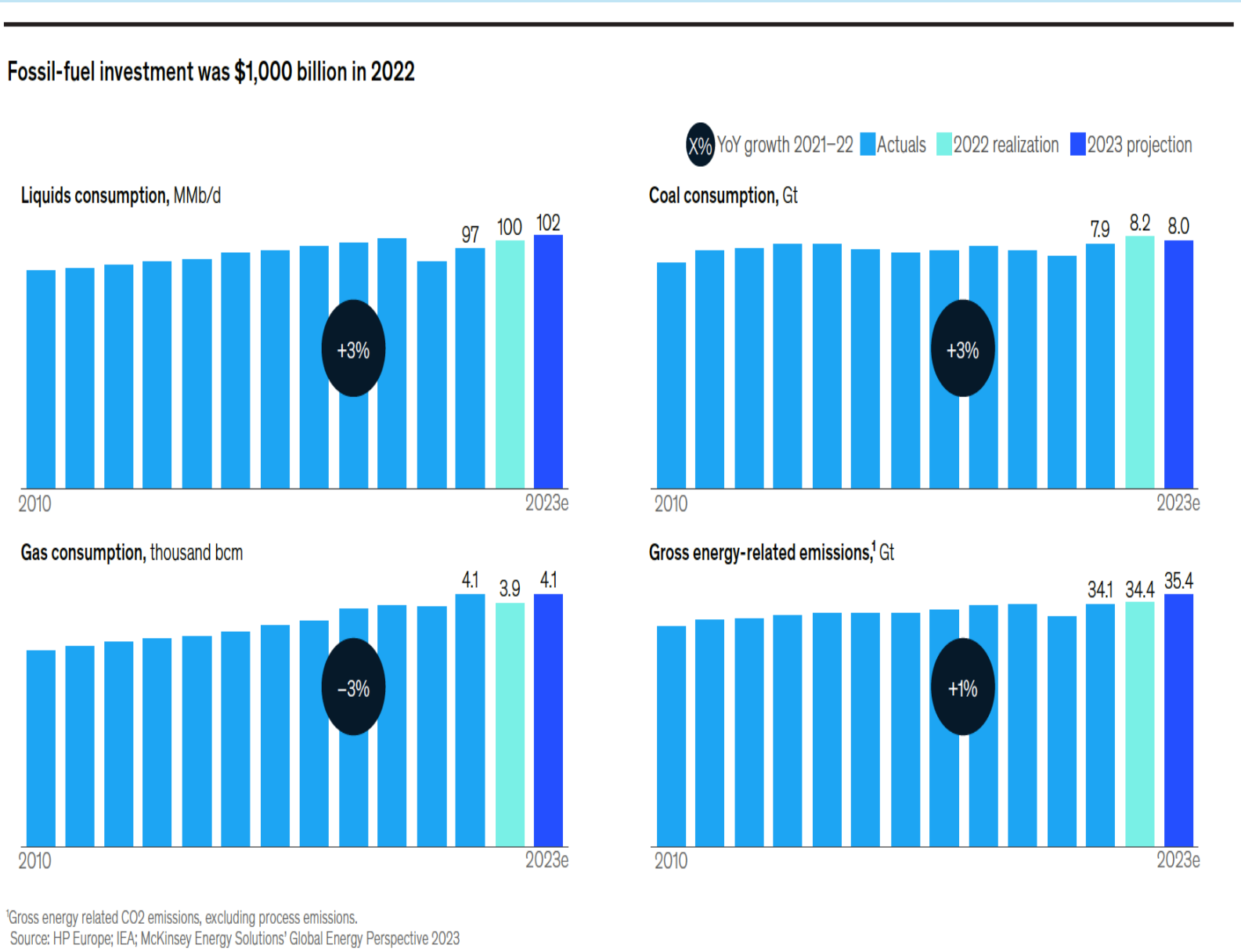
- Electricity access may have improved in recent years but access to clean cooking slowed or even reversed in some countries.

Source: 2023. World Energy Outlook 2023. International Energy Agency. Paris

Persistent fossil fuel demand offset surge i clean energy

Despite the record rise in renewable capacity and surge investments in low-carbon technologies, demand for fossil fuels remain persistent

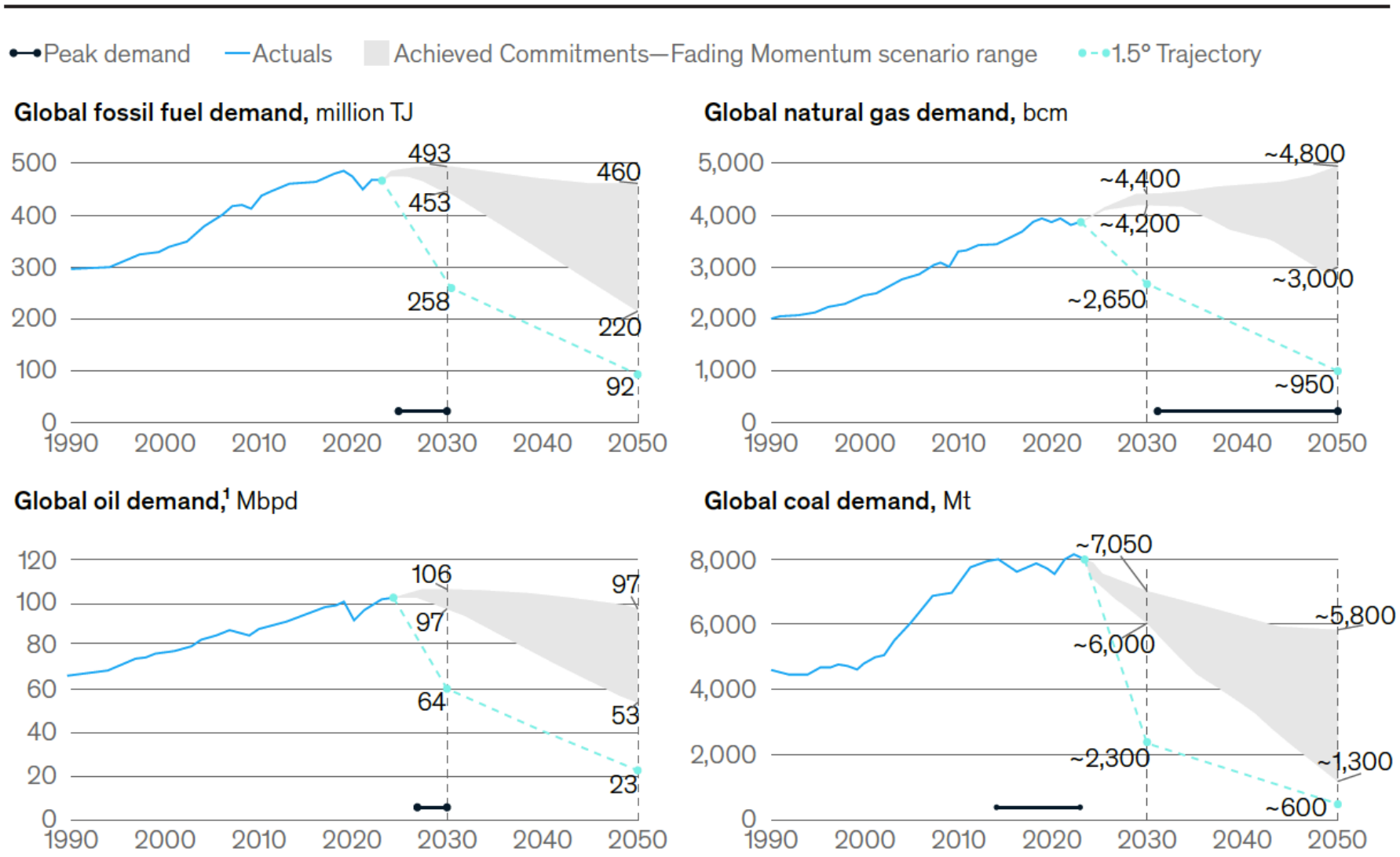
Source: 2023. Global Energy Perspective 2023. McKinsey & Company.



The place of fossil fuels in the future

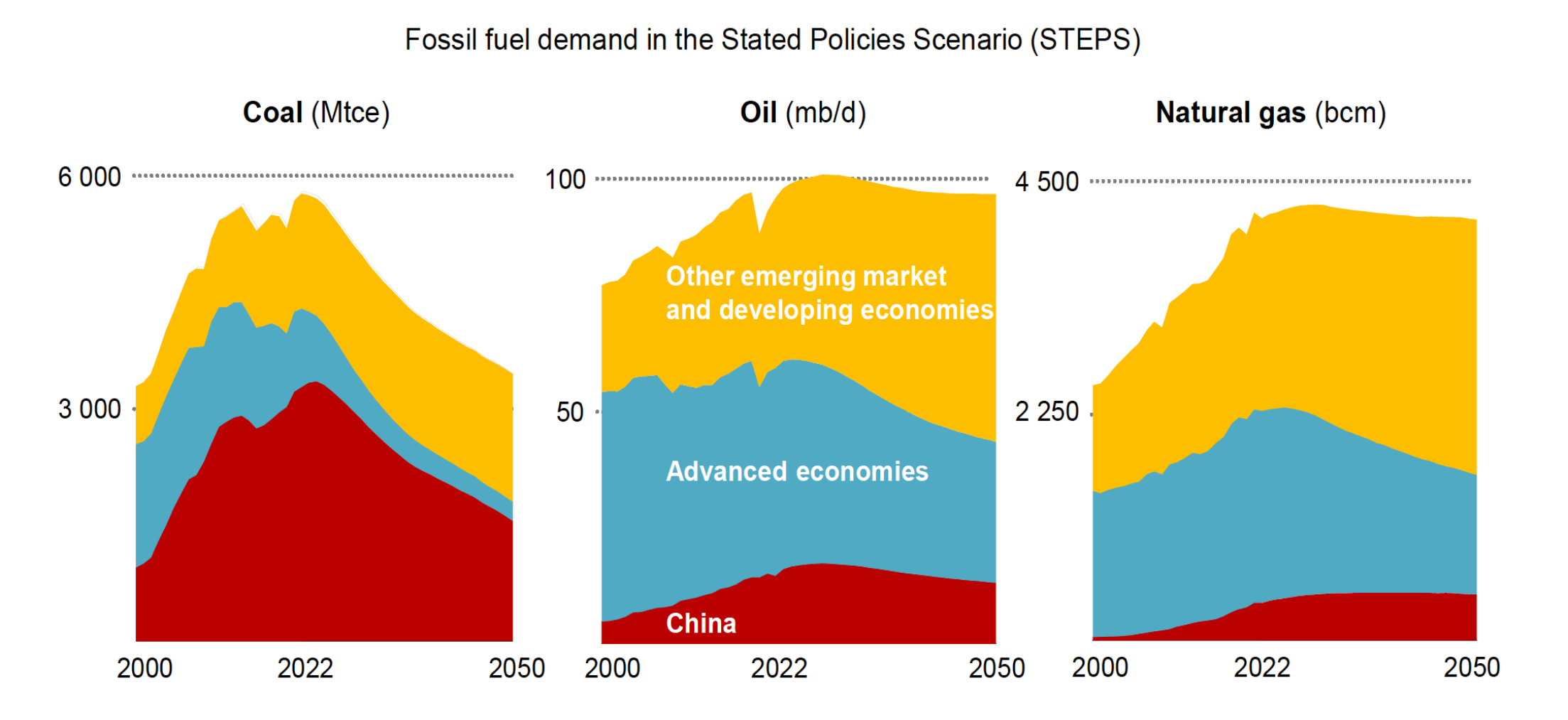
- Oil and gas will remain in the energy system for decades to come with NG demand increasing through 2040 driven largely by its role in backing up renewable generation until battery energy storage will reach commercial scale (McKinsey, 2023)

- Oil demand will increase during the rest of the decade until it slows down after 2030 where the decrease will largely be a function of ‘car-parc’ demand growth, engine efficiency, and the electrification of transport [McKinsey, 2023]



Source: McKinsey, 2023

Total demand for fossil fuels is projected to peak starting from the middle of this decade [IEA, 2023 and McKinsey, 2023]

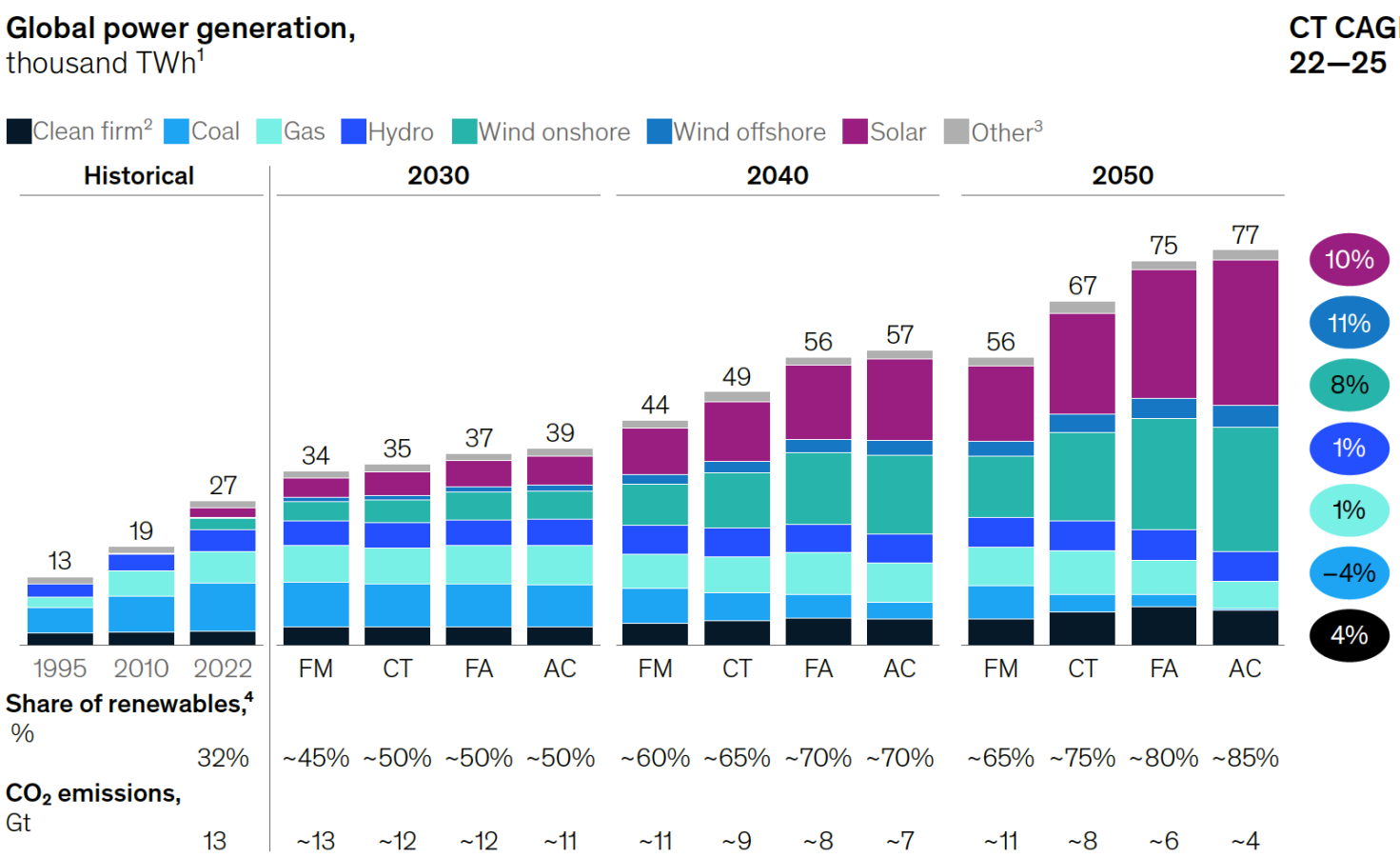


Source: 2023. World Energy Outlook 2023. International Energy Agency. Paris

The foundation has been built to deal with the difficult path ahead

- Share of fossil fuels to start shrinking from 80% in 2023 to 73% in 2030 driven by today's policies [IEA, 2023]
- Coal demand is projected to go down by around 25% from 2019 to 85% in 2050 due to the decommissioning of coal-fired power plants across regions [McKinsey, 2023]
- Renewables is projected to account 45-50% of global generation by 2030 and between 65-85% by 2050 [Mckinsey]
- RE generation will be responsible for reducing emissions by17-71% by 2050 from current levels [McKinsey]
- However, challenges hamper RE development despite the optimistic projections [McKinsey]:
  - Supply chain issues
  - Slow permitting process
  - Limitations in the grid infrastructure

The face of the clean energy transition



[1]Excludes generation from storage (pumped hydro, batteries, LDES).
[2]Includes gas and coal plants with CCUS, nuclear, and hydrogen.
[3]Other includes bioenergy (with and without CCUS), geothermal, hydrogen-fired gas turbines, and oil.
[4]Includes solar, wind, hydro, biomass, BECCS, geothermal, and marine and hydrogen-fired gas turbines.
Source: McKinsey Energy Solutions' Global Energy Perspective 2023; McKinsey Power Model

Source: 2023. Global Energy Perspective 2023. McKinsey & Company.

The face of the clean energy transition

- McKinsey projects an increasing share of electricity and hydrogen in final energy consumption at 27-37% by 2035 and 35-60% by 2050 in all their models
- Electrification will need to adopt new and more efficient technologies:
  - Electric vehicles – that is about 3-4 times more efficient than ICE vehicles
  - Residential heat-pump – about 2-4 times more efficient than NG boiler
  - Industrial heat-pump – about 3-5 times more efficient than coal or gas furnaces for low to medium temperature heat

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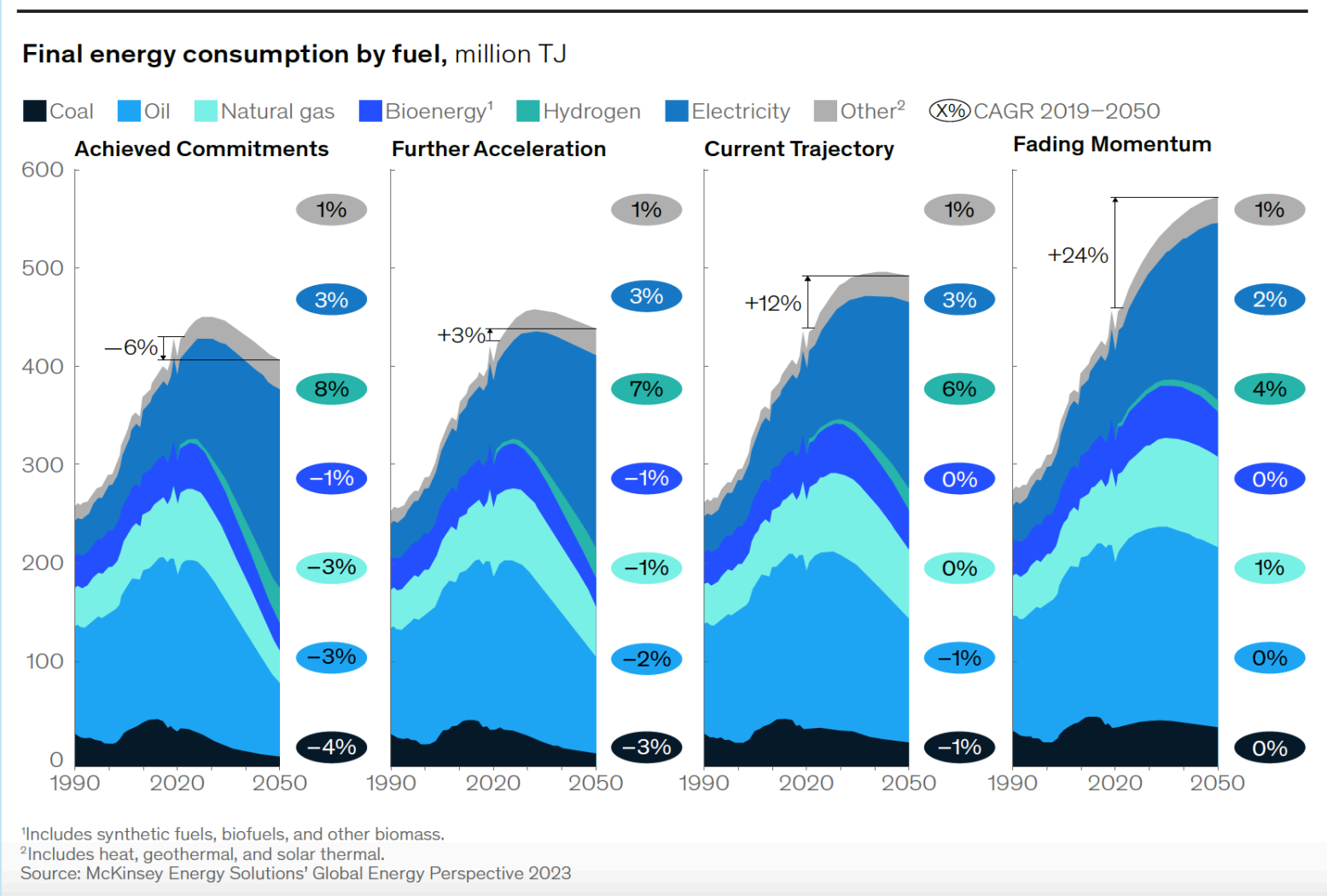
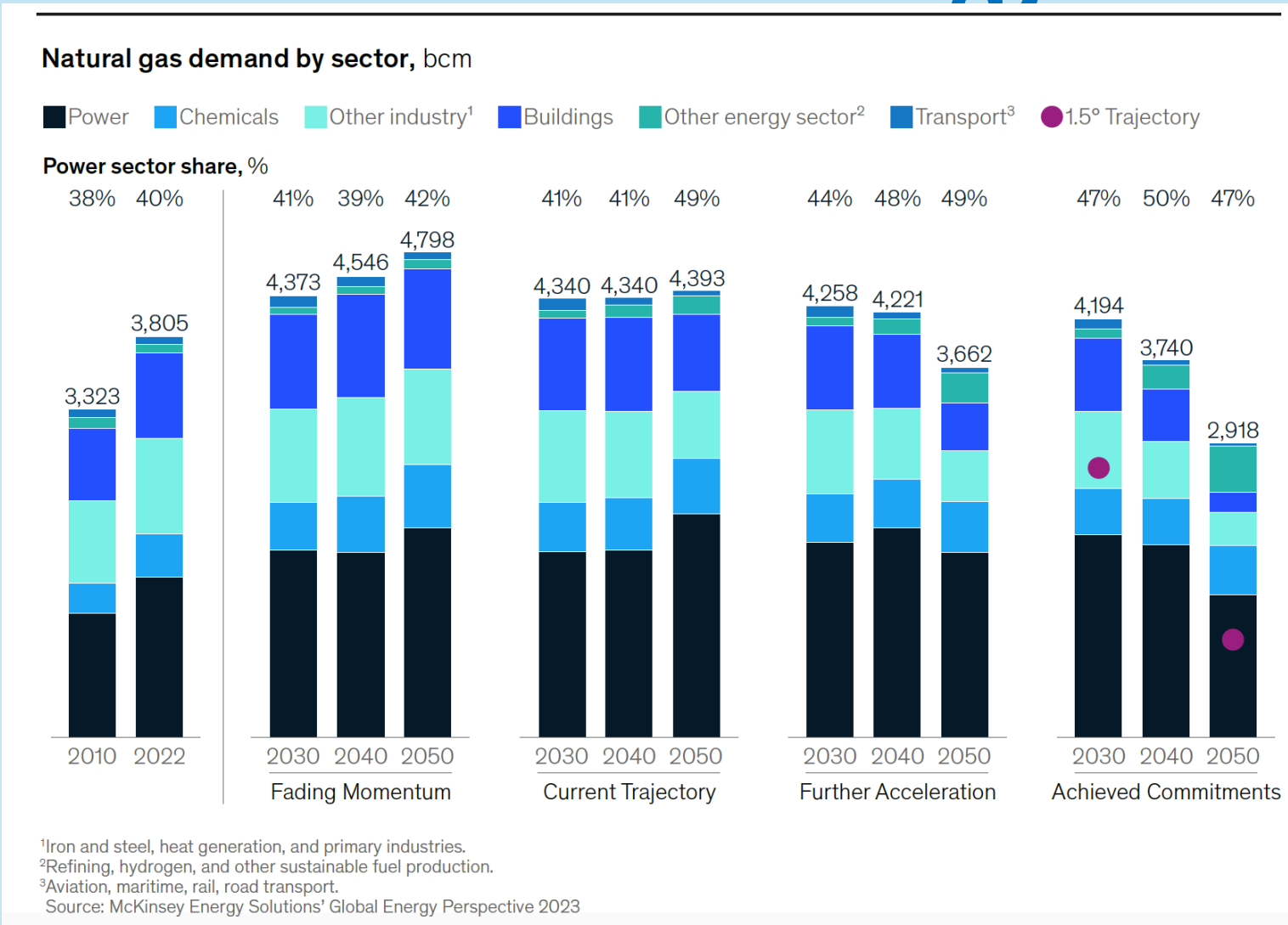


Source: 2023. Global Energy Perspective 2023. McKinsey & Company.

The face of the clean energy transition

- Gas demand from industry (except chemical) and buildings sectors will slow down as electrification and biogas is projected to replace it in buildings and electrification of heat and machine drive in industry (excluding chemical) [McKinsey, 2023]
- Power consumption is seen to increase by 3-4% annually from McKinsey models – from current levels of around 52,000 TWh to 71,000 TWh in 2050 driven by [McKinsey, 2023] :
  - Transport – from the rise of EVs
  - Hydrogen and synfuels – from road transport and chemicals
  - Industry – due to electrification of low to medium heat processes
  - Buildings – due to electrification, heat pumps, cooling that will double power demand by 2030

The face of the clean energy transition



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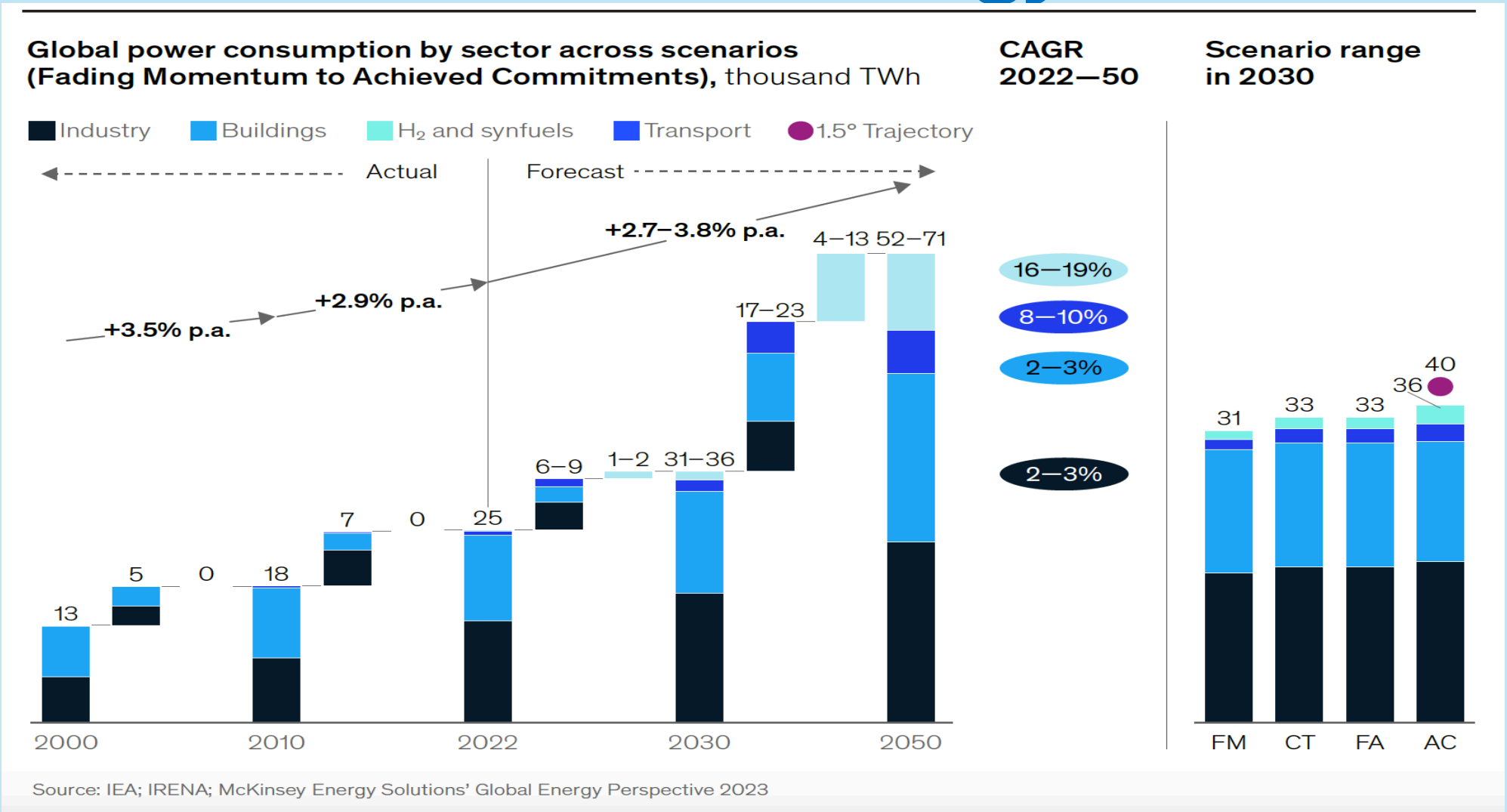
The face of the clean energy transition



Source: 2023. Global Energy Perspective 2023. McKinsey & Company.

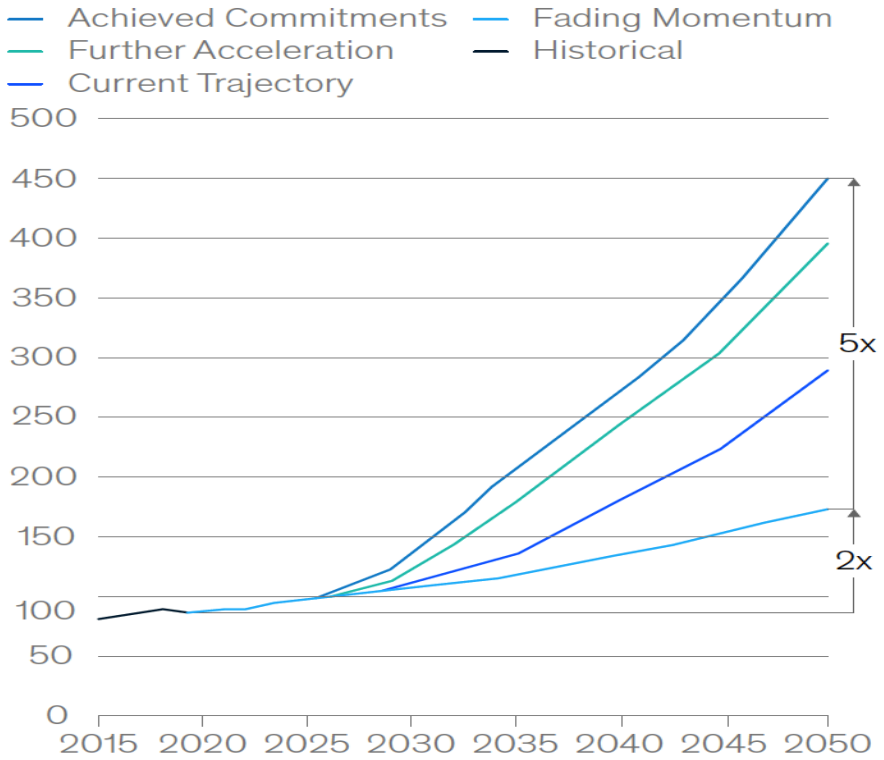
The face of the clean energy transition

- Hydrogen demand is projected to increase twice to 5 times as much as current levels, driven by decarbonization agendas; but how this decarbonization will progress may also pose uncertainties to hydrogen demand in future [McKinsey, 2023]

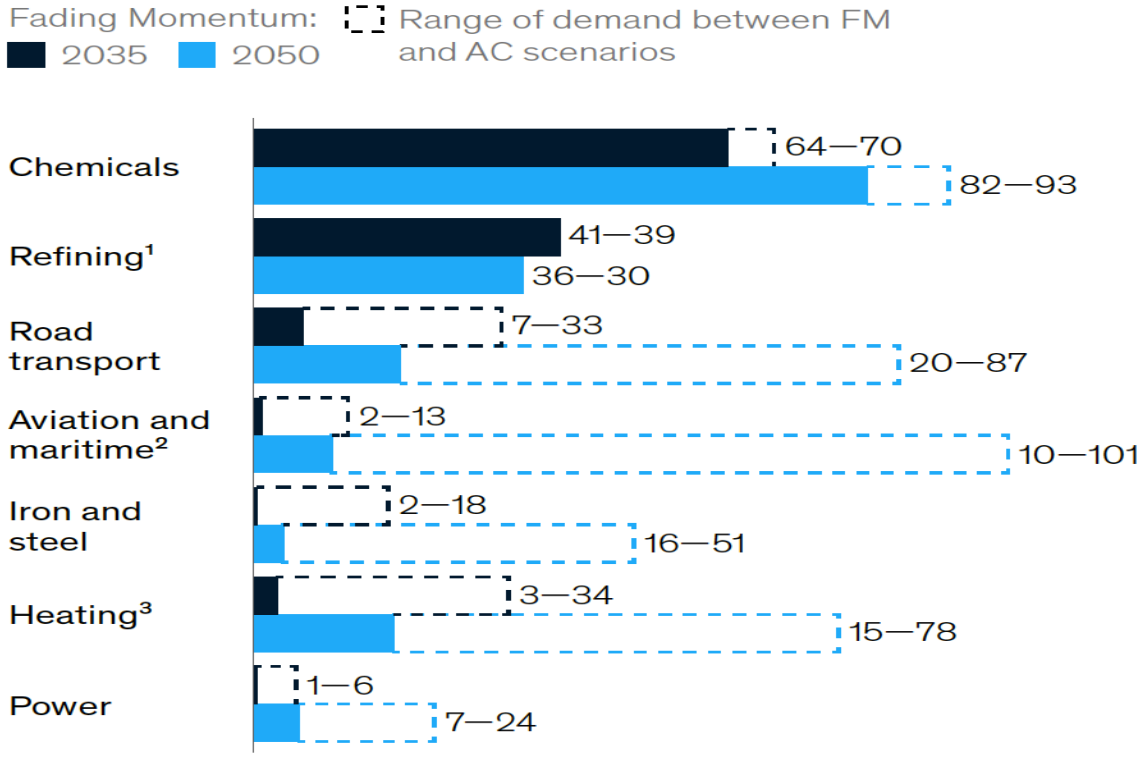
- McKinsey is more optimistic for a more solid demand growth for hydrogen (particularly low-carbon hydrogen technologies in hard-to-abate sectors) after 2030 when stronger policies and faster technological developments are expected

The face of the clean energy transition

Global hydrogen demand outlook by scenario, Mtpa



Global hydrogen demand by sector, Fading Momentum to Achieved Commitments scenarios, Mtpa



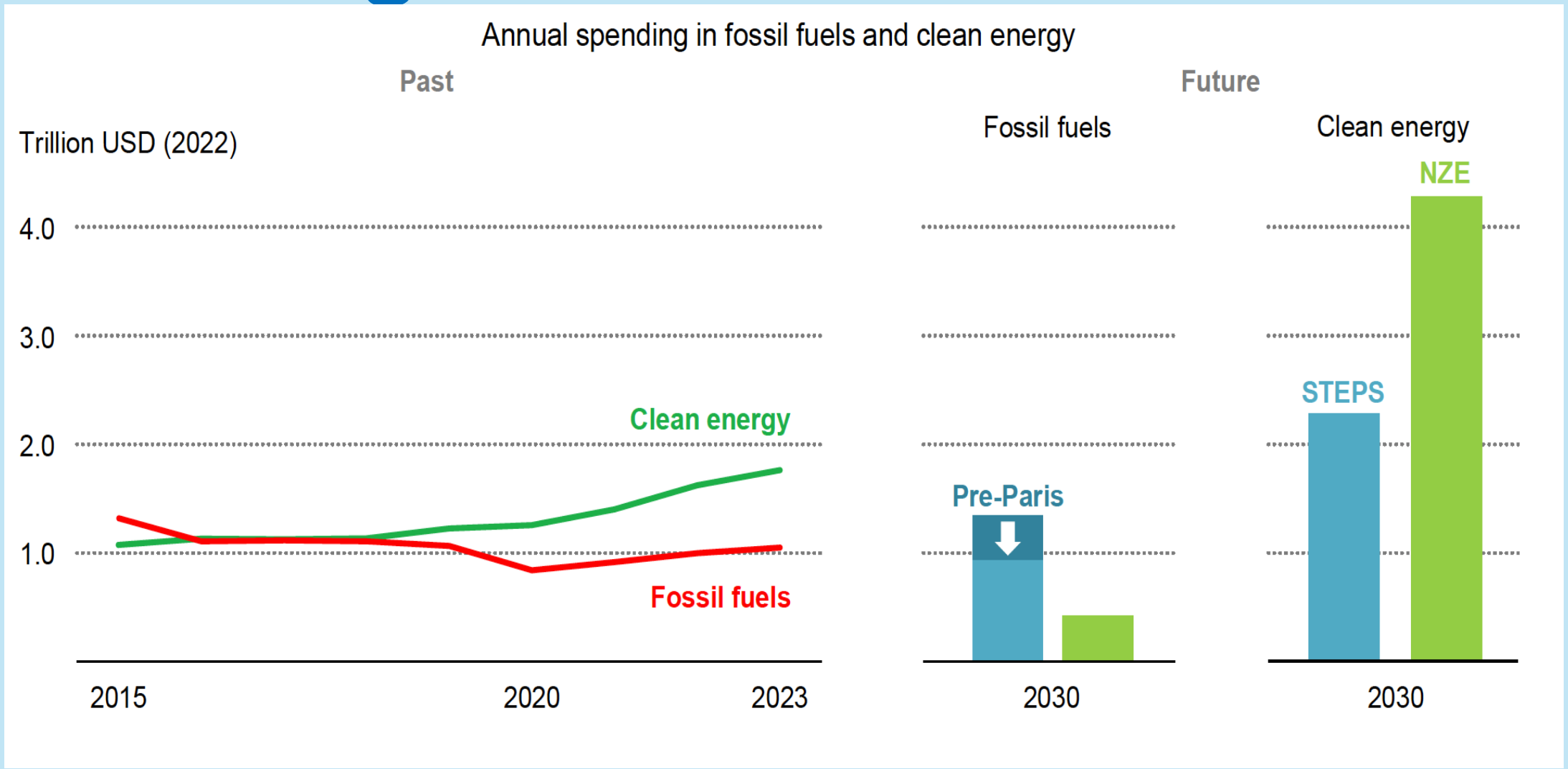
¹Includes conventional fuels refining and biofuels hydrogenation and refining.
²Aviation and maritime include direct use of hydrogen and hydrogen-derived synfuels including kerosene, diesel, methanol, gasoline, and ammonia. The category also includes some hydrogen-derived synfuels in road transport.
³Includes hydrogen demand for heating in other industry and buildings.
Source: McKinsey Energy Solutions' Global Energy Perspective 2023

Source: 2023. Global Energy Perspective 2023. McKinsey & Company.

Financing the transition

- Developing countries will need to increase clean energy investments by 5 times of today's levels to meet the requirements to achieve Net Zero [IEA, 2023]
- Current investments in oil and gas today are almost twice as what is needed to achieve Net Zero presenting the risk of sustained fossil fuel use and compromising the 1.2° C ambition [IEA, 2023]
- Policies should be built around decommissioning inefficient and polluting power plants and preventing entry of new ones [IEA, 2023]
- McKinsey estimates 'a gradual but continuous shift of investment focus from fossil fuels to green technologies from around 25% in renewable generation and decarbonization technologies (excluding T&D) to about 60-80% of total investments (excluding T&D) by 2040

Financing the transition

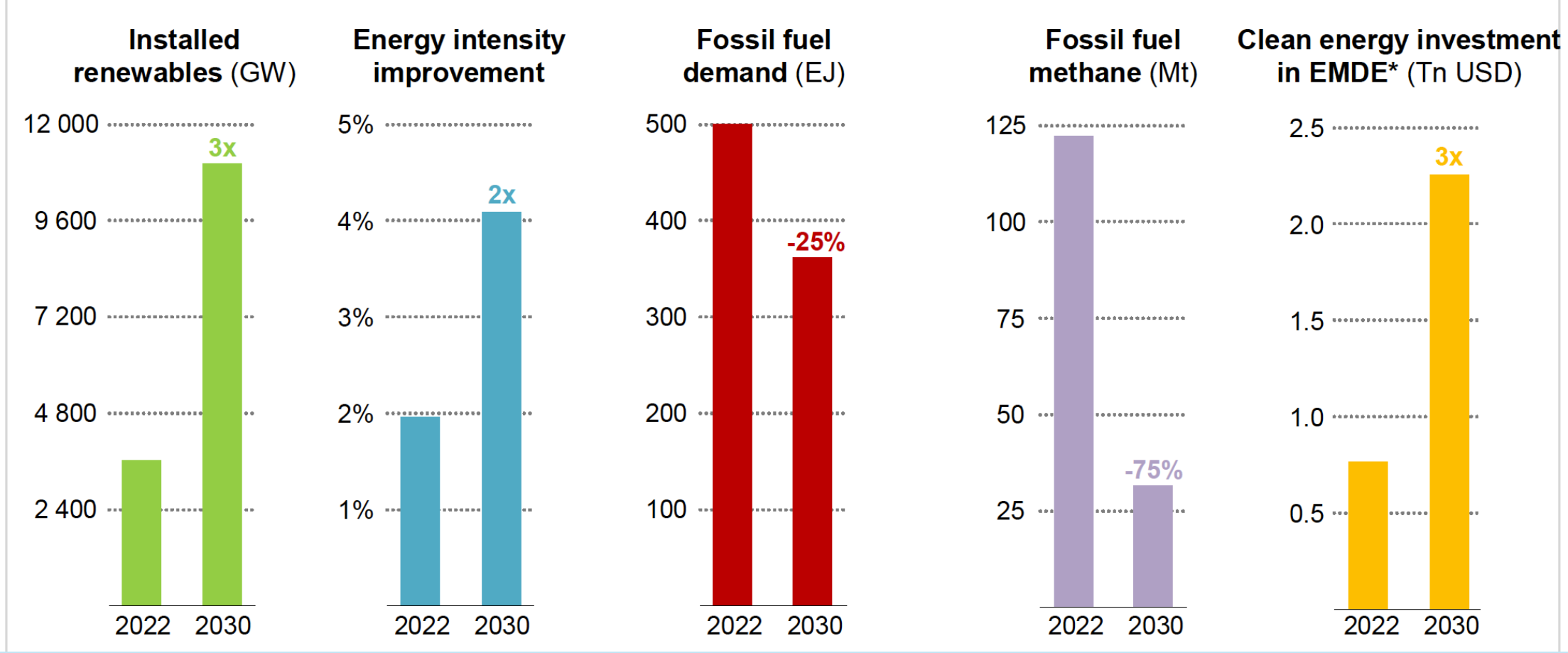


Source: 2023. World Energy Outlook 2023 Launch Presentation. International Energy Agency. Paris

Securing the clean energy transition

- Heightened vigilance over the developments in the Middle East conflict where most of Asia's LNG supply is coming from [IEA, 2023]
- Ensuring affordability, electricity security, and resilience of clean energy supply chains [IEA, 2023]
  - Shielding poorer consumers from high electricity tariffs
  - Robust and digitalized grids with battery energy storage and demand response measures
  - Managing supply chain dependencies and reduce market concentration through diversification of supply, policies that encourage innovation, and mineral substitution and recycling
- Unlocking bottlenecks in green hydrogen due to infrastructure requirements and high investments needed for large-scale deployment [McKinsey, 2023]

Pillars in Keeping 1.5° *C* within sight – IEA



How do we support this transition?

Energy Sector Vision and Approach

Supporting Just Low-Carbon Transition in Asia and the Pacific: Confronting Climate Change Challenge

Principle 1. Securing Energy for a Prosperous and Inclusive Asia and the Pacific

Principle 2. Building a Sustainable and Resilient Energy Future

Principle 3. Supporting Institutions, Private Sector Participation and Good Governance

Principle 4. Promoting Regional Cooperation and Integration

Principle 5. Integrated Cross-Sector Operations to Maximize Development Impact

Areas of Delivery

- Decarbonization
- Decreasing energy intensity
- Digitalization
- Decentralization

No Support

- Upstream or midstream oil projects and limit downstream oil support
- coal mining, processing, storage, transportation and any new coal-fired generation
- Natural gas exploration or drilling activities
- Financing in investments in nuclear energy

Be Selective

- Support for mid-stream and downstream natural gas
- Directly impacts greenfield gas sector investments

What Else

- Aligning operations with the Paris Agreement
  - Full alignment of sovereign operations with Paris Agreement from 2023
  - Non-sovereign operations to 85% by mid 2023 and fully by 1 July 2025
- Enhance investments in Adaptation and Resilience:
  - Double its annual average adaptation and resilience financing in 2021-2024, compared to 2015-2018,
- Holistic Approach to scaling up Adaptation and Resilience
  - ADB will invest in more projects with climate adaptation as their primary purpose
  - Promote strong integration of the ecological, social, institutional, and financial aspects of resilience in ADB's investments

Implementation Focus

Confronting	• Confronting climate change challenge by facilitating just low-carbon energy transition through a common but differentiated approach and integrated energy planning
Supporting	• Supporting DMCs in implementing just energy transition, ETM in particular
Expanding	• Expanding support for advanced clean energy technologies, demand-side energy efficiency including demand response and decentralized energy systems
Increasing	• Increasing digitalization, smart power systems for increased clean energy deployment, real-time demand response and efficient power system management
Leveraging	• Leveraging commercial financing to accelerate the energy transition through One-ADB approach, innovative financing mechanisms and business models

Our Role

- Financing institutions will continue play a major role in the energy sector development
- Focus to shift away from traditional areas
- Support for new and innovative technologies, approaches to take over
- Sovereign financing to be used to maximize leveraging private sector investments
- Increase knowledge contribution
  - Sharing experience
  - Piloting new technologies, business models and support adoption

Our Role

- Developing countries had minimal contribution to past carbon emissions
- However, they suffer most
- Together we need to confront the challenge
- Contribute to the body of knowledge
  - To enlighten the policy makers
  - all other stakeholders
- Help the paradigm shift
  - Shift away from relying on the status quo
  - Learn from lessons around

Thank you!

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