The Implications of low carbon transitions for the African fossil fuels sector: Challenges and Responses

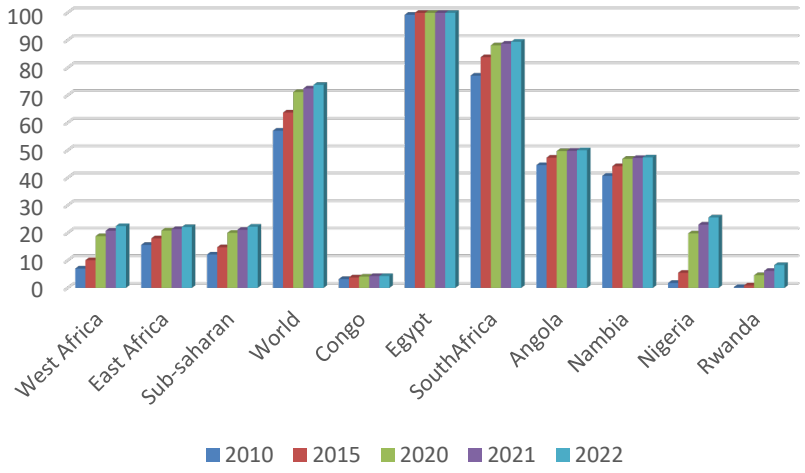
Outline

- The sustainable development challenges for Africa
- Key Persistent gaps in Africa
- A low carbon transition poses a great risk to African Oil& Gas sector
- Gas is a key player for a win-win solution space
- O&G and economy-wide impacts of low carbon transitions – Preliminary modeling results
- Managing O&G transition risks: Responses and Opportunities

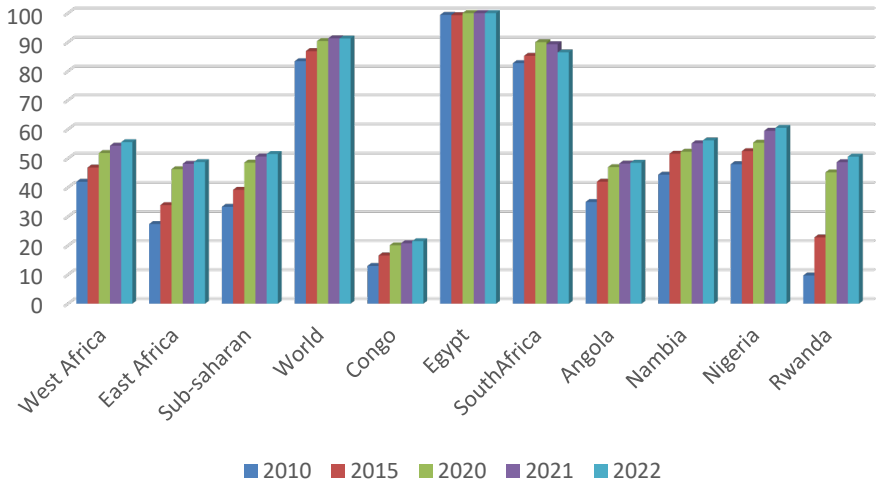
The sustainable development challenges for Africa

- Sustainable development as the right framework for understanding climate change and low carbon transitions in Africa
- Key Persistent gaps:
  - Poor energy access
  - High poverty
  - Young population
    - Africa population projected to double by 2050 and triple by 2100

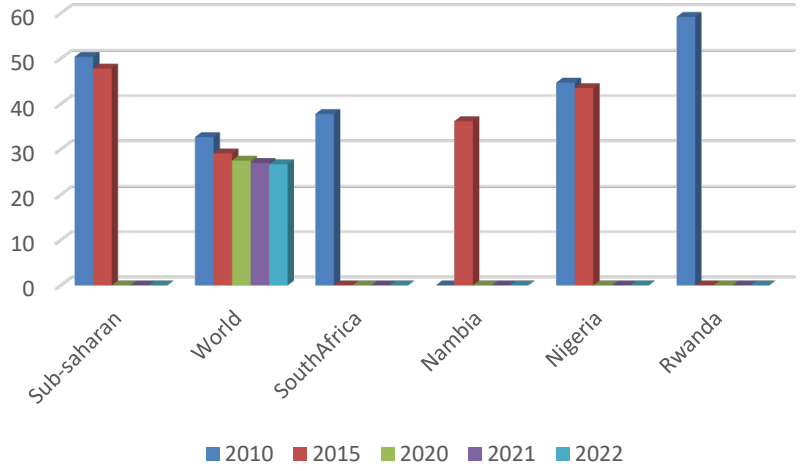
Access to clean cooking fuels



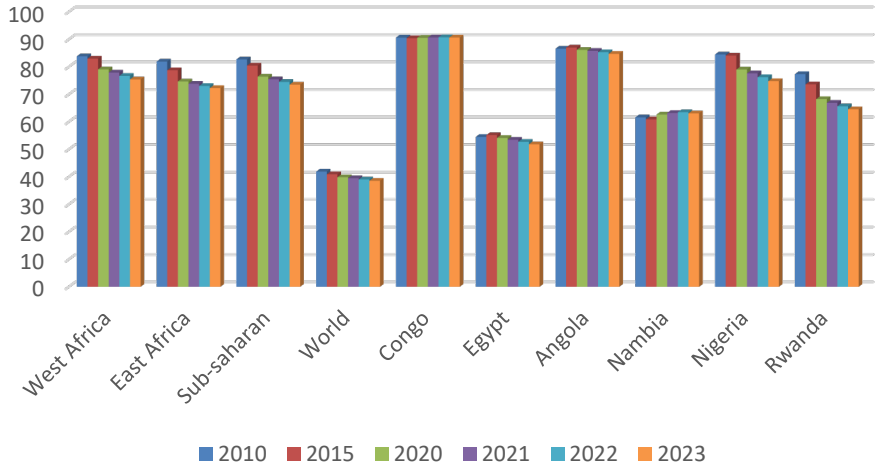
Access to electricity (% of population)



Poverty rate (% of population)



Age dependency ratio (Young as % of working age population)



But Africa is rich in energy resources

- Current estimates of oil and gas reserves amount to 125.3 billion barrels of oil and 624 trillion cubic feet of gas (African Exim Bank)
- Sub-Saharan Africa has 30% of the world's proven reserves of critical mineral resources
- Africa has the second largest natural tropical forests and carbon sinks in the world after Amazonia(Congo basin)
- 5 out of 10 of the countries with the greatest solar energy potentials are in Africa (Nambia, Egypt, Lesotho, Libya, and Botswana)

Africa Needs to exploit these resources to address its development challenges

- To enhance energy access
  - Utilization of existing resources
  - Leveraging new resources (renewables)
- To enable manufacturing and economic growth to reduce poverty
- To create jobs for the growing young workforce

Low carbon transitions pose a great risk to African Oil& Gas sector

- Vulnerability
- Policy induced challenges and risks
- Impacts

Vulnerabilities of O&G

- Exports of fossil fuels contribute 48.5% to total export revenues in Sub-Saharan Africa (1995-2018, World Bank)
- Exports of fossil fuels contribute on average 25% to government revenues in Sub-Saharan Africa and above 80% in countries such as Libya, Nigeria, and Angola
- Dependence on foreign finance
- Stranded assets risk. African assets are 15%-20% more costly and 70%-80% more energy intensive.

Policy induced challenges and risks to African O&G

- COP28 – Transitioning away from fossil fuels
- World wide nations and corporate Net Zero by 2050 pledges/ commitments
- Finance:
  - International O&G companies (IOC) diversifying away from African assets due to national regulations
  - Drain of funding by International banks and financial institutions
- Trade-related policies such as CBAM

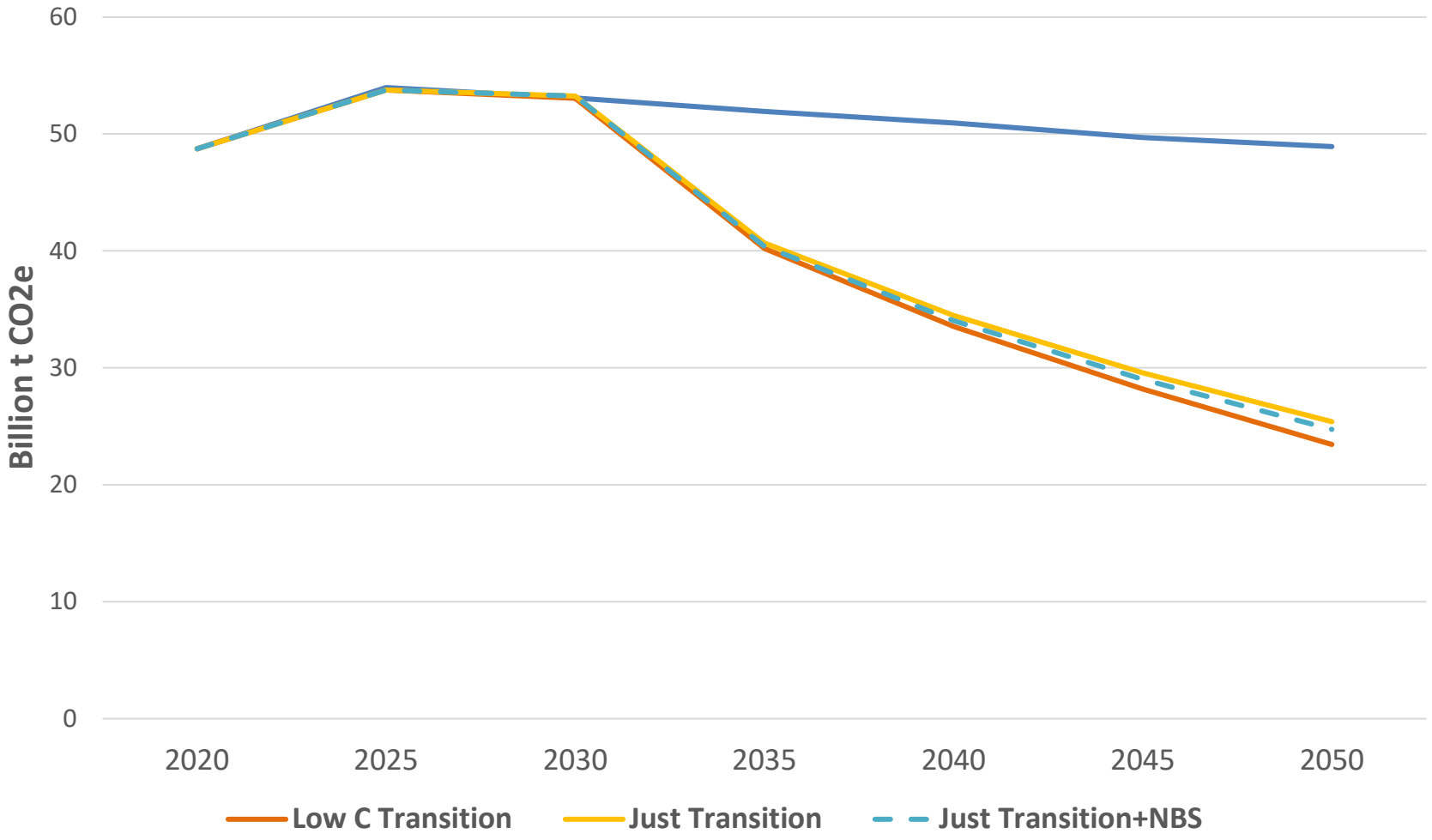
Gas is a key player for a win-win solution space

- Gas to balance and secure the just energy transition for Africa by addressing stability, security, and affordability of energy access
- Has low carbon footprint that if all sub-Saharan Africa were to triple its electricity consumption using only gas it will only add 0.6% to global carbon emissions (ECA).
- Wood fuel produces twice as much emissions as gas
- There are close to 500,000 annual premature deaths due to polluting cooking fuels in sub-Saharan Africa.

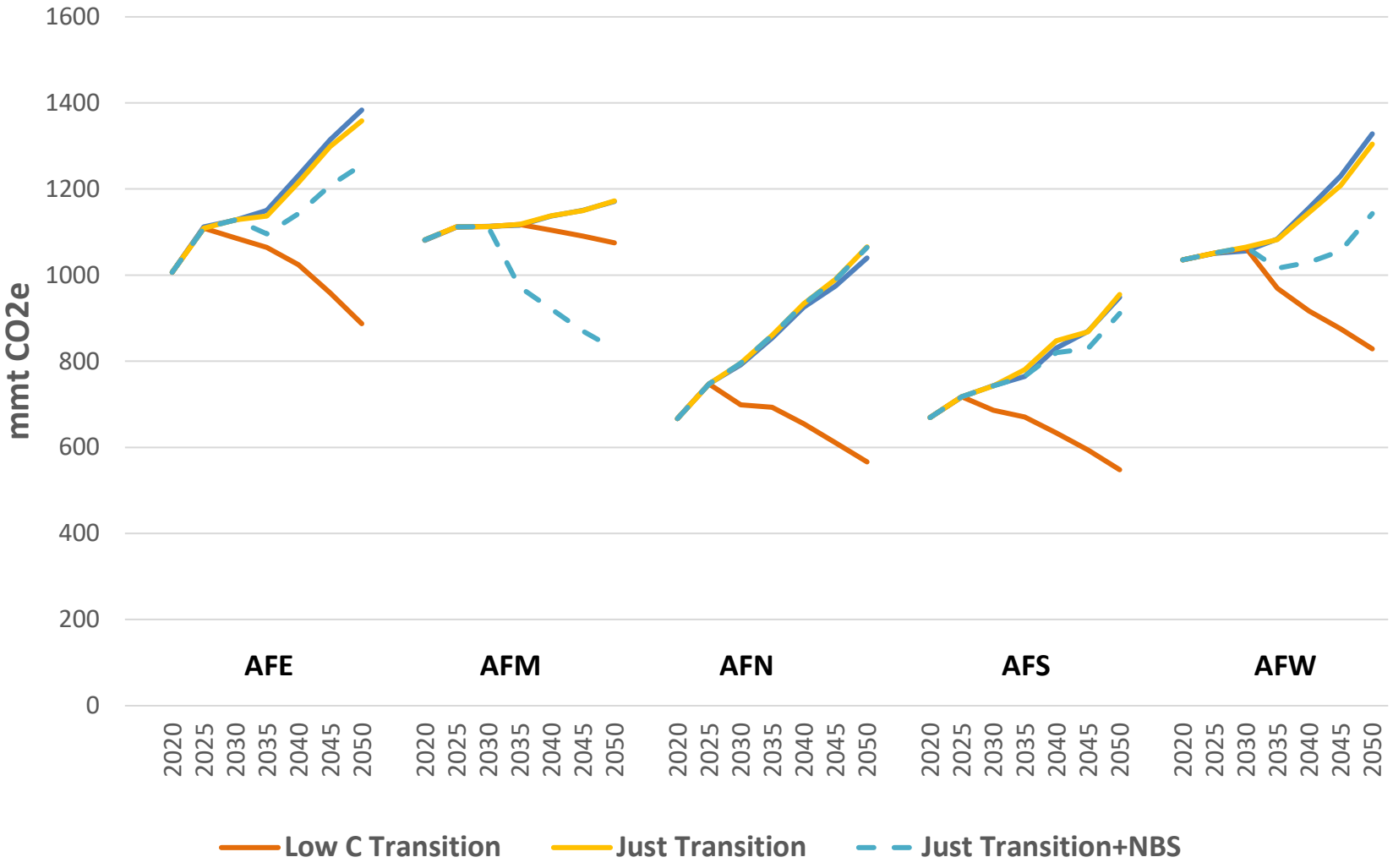
O&G and economy-wide Impacts of low carbon transitions– Preliminary Results from MIT EPPA Model

- **Scenarios:**
  - **Reference Scenario: regional trajectories**
    - **Exports and government revenues from fossil fuels**
    - **Energy access and poverty trends (Not much improvement?)**
  - **Generic low carbon transitions (e.g., IPCC pool)**
    - **Impacts on regional trajectories (Significant implications for O&G)**
  - **Just transition (Complete exemption of Africa of climate)**
    - **Impacts on regional trajectories (still negative impacts due to loss of global demand for fossil fuels)**
  - **Just transition with gas development and nature-based mechanisms**
    - **improved trends and win-win with respect to climate**

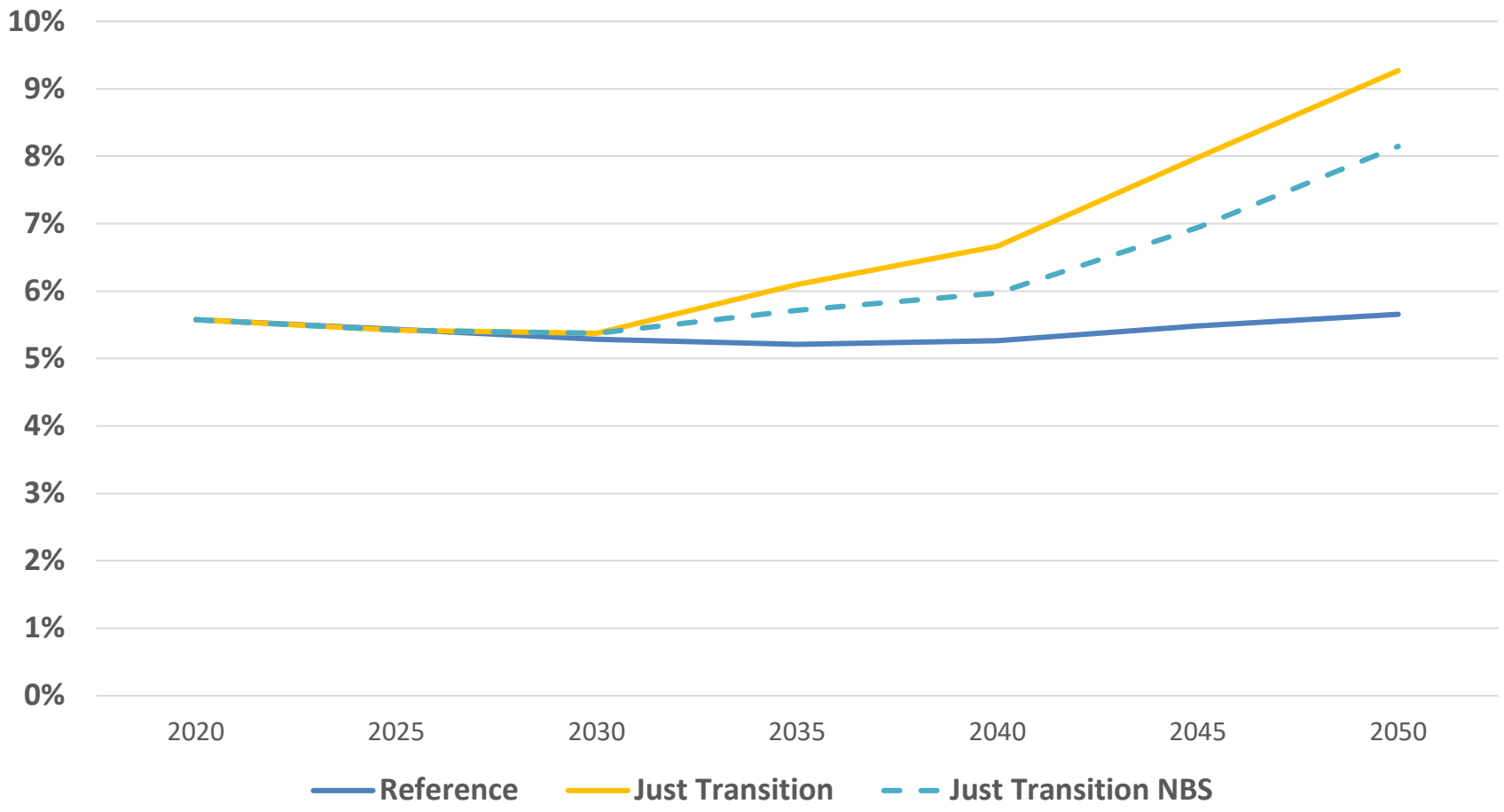
Global GHG emissions



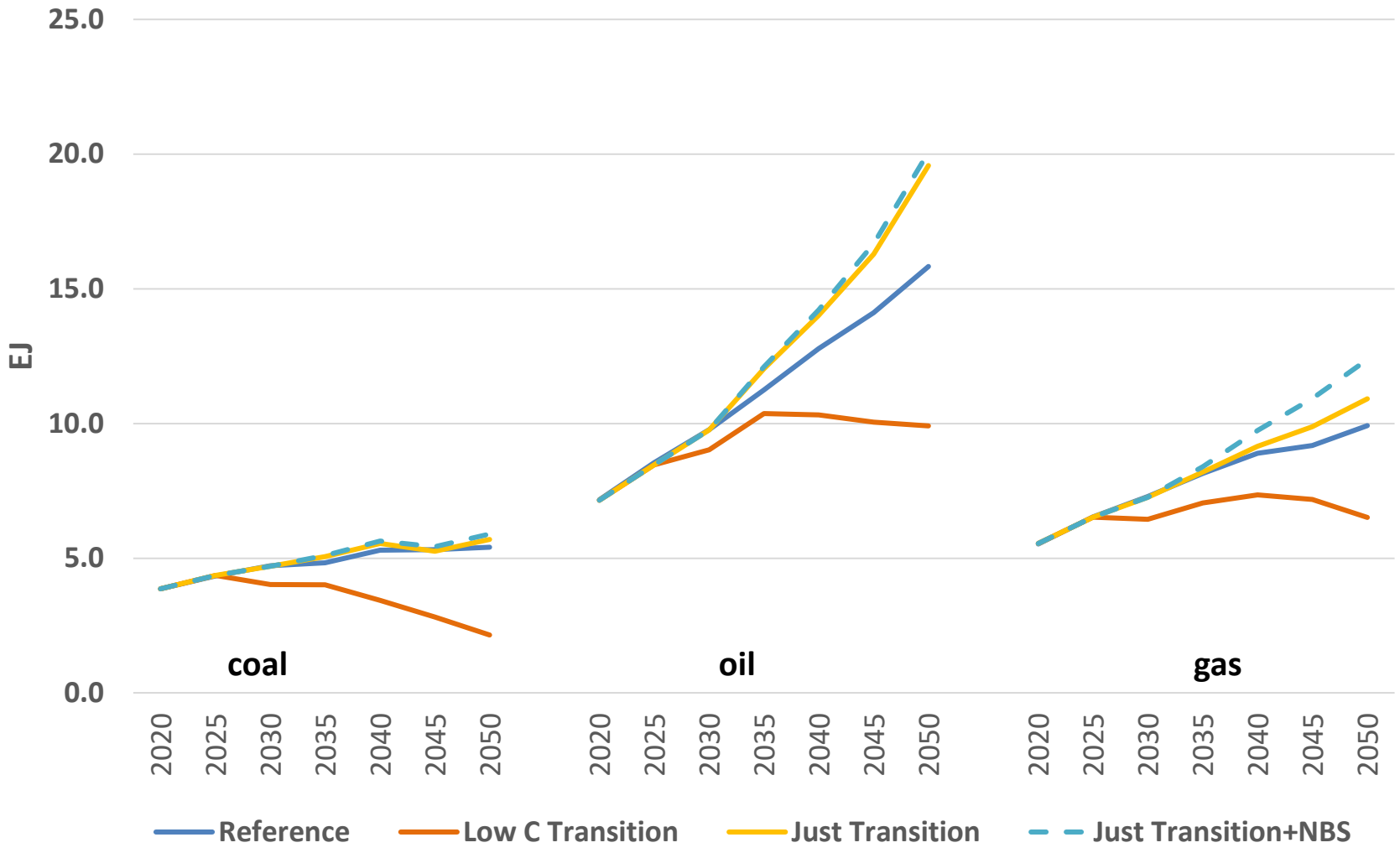
GHG emissions in Africa sub-Regions



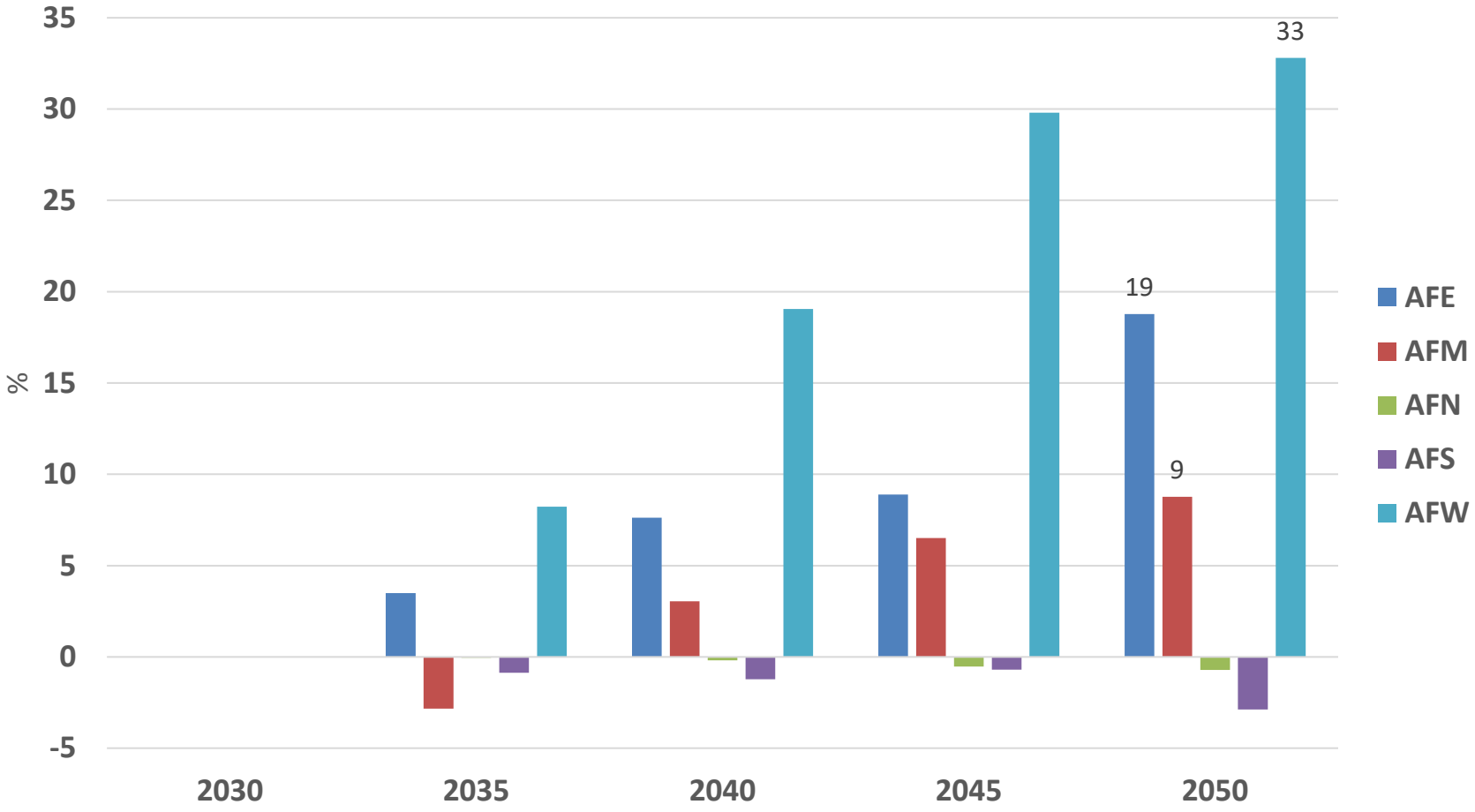
Primary Energy in Africa relative to the Word

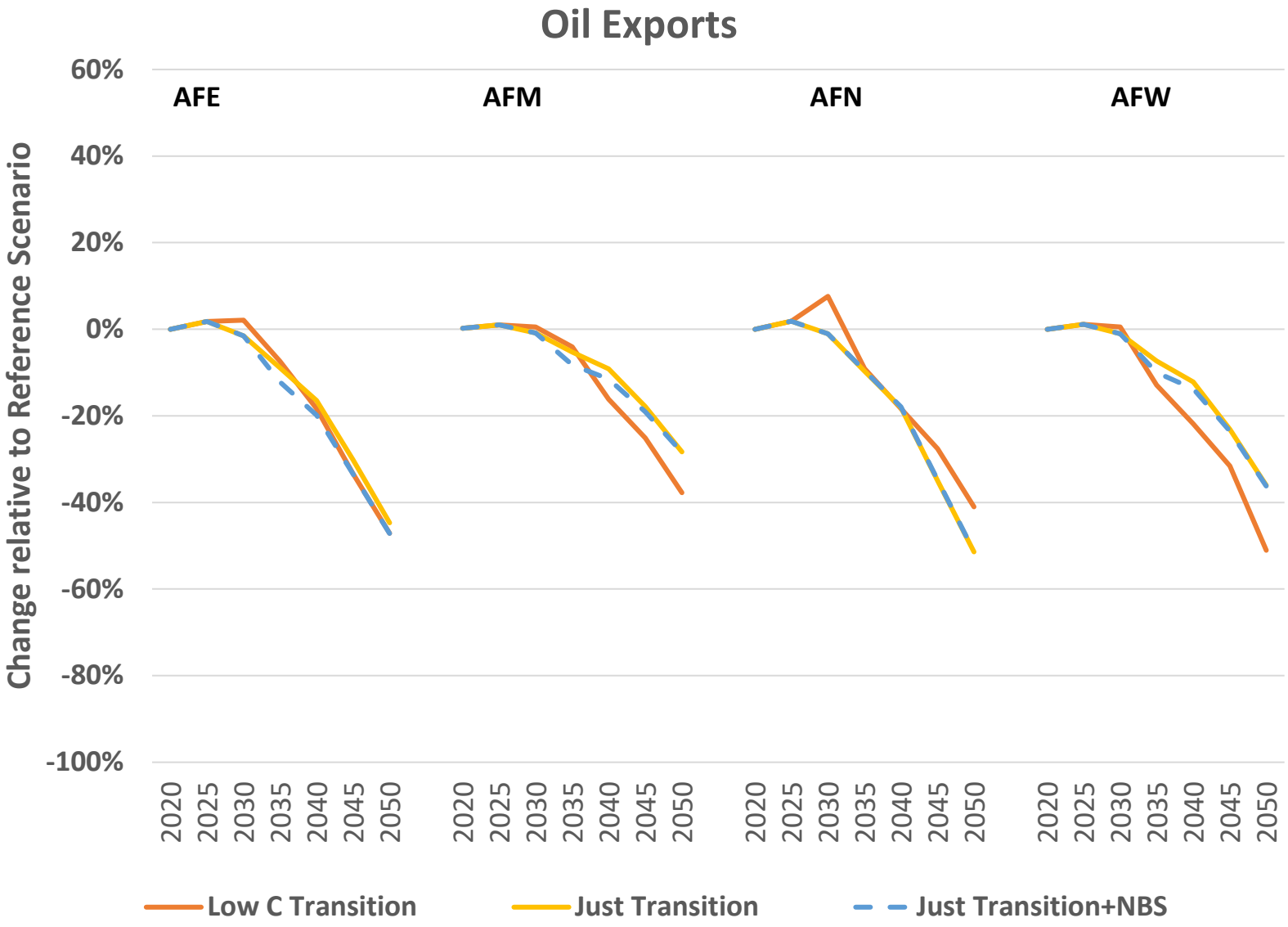


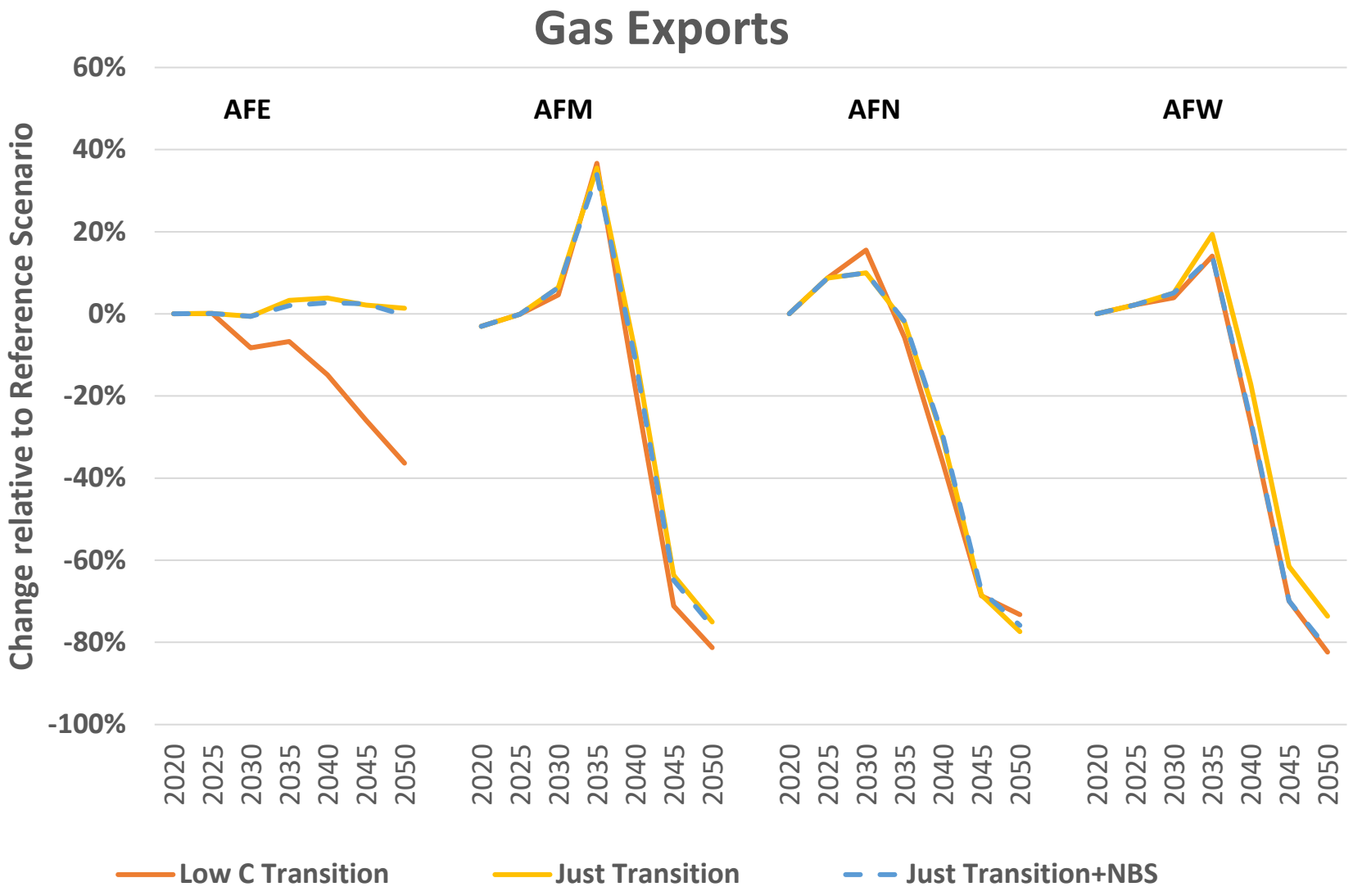
Fossil Primary Energy - Africa



Change in Gas Consumption when moving from “Just Transition” to “Just Transition + NBS” scenarios




Oil Exports
AFE
AFM
AFN
AFW
60%
40%
20%
0%
-20%
-40%
-60%
-80%
-100%
Change relative to Reference Scenario
2020
2025
2030
2035
2040
2045
2050
Low C Transition
Just Transition
Just Transition+NBS


Gas Exports
Change relative to Reference Scenario
60%
40%
20%
0%
-20%
-40%
-60%
-80%
-100%
AFE
AFM
AFN
AFW
2020
2025
2030
2035
2040
2045
2050
Low C Transition
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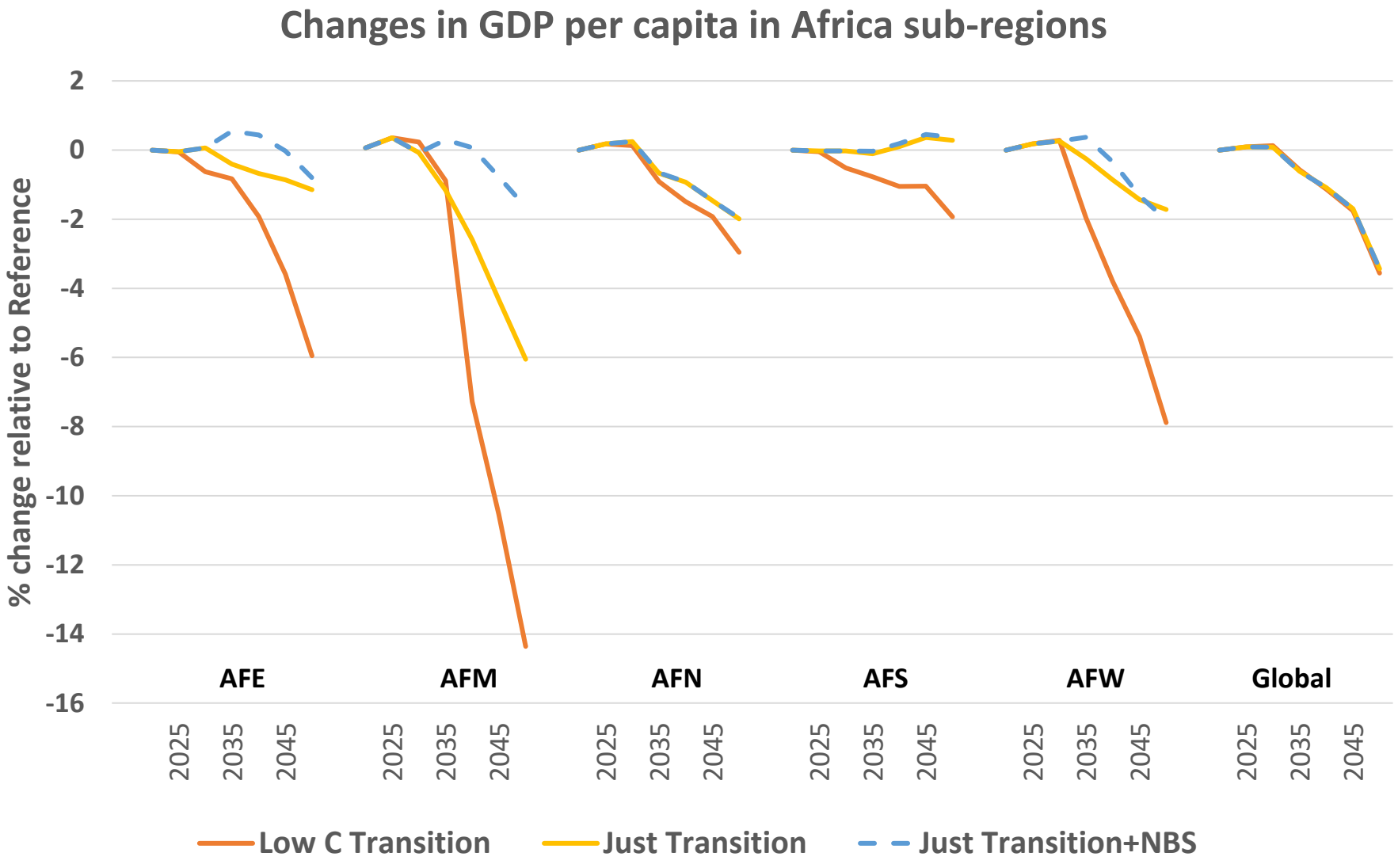
Just Transition+NBS


Changes in GDP per capita in Africa sub-regions
% change relative to Reference
2
0
-2
-4
-6
-8
-10
-12
-14
-16
AFE
AFM
AFN
AFS
AFW
Global
2025
2035
2045
Low C Transition
Just Transition
Just Transition+NBS

Managing O&G transition risks: Responses and Opportunities

- Leveraging Just Transition and fact that Africa is contributing only 3% to global emissions
- Integration/complementarities with critical minerals and manufacturing.
- Infrastructure and intra-regional trade, e.g. monetizing of gas through pipelines, LNG and gasification.
- Decarbonization of existing O&G assets through use of renewables and CCUS and related products, such as hydrogen and nature-based swaps (SSA has 29% of the global mitigation potential through avoided deforestation)
- Explore alternative finance

Thank You

EPPA regional aggregation

USA	USA
CAN	Canada
LAM	Rest of Americas
EUR	Europe
RUE	Russia and Eastern Europe
CHN	China
IND	India
JPN	Japan
ASI	Asian countries besides CHN and IND
ANZ	Australia and Oceania
MES	Middle East
AFN	Northern Africa
AFW	Western Africa
AFE	Eastern Africa
AFM	Middle Africa
AFS	Southern Africa