

Regional aspects of transitioning to
clean energy growth model and
building green industrial capacities

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Africa's considerable progress and potential is obscured by a veil of prejudice, stereotype and generalization.



MARCH 2019



FEBRUARY 6, 2021



May 13th, 2000



July 15th, 2000



February 24th, 2001



December 3, 2011



July 2nd, 2005



March 15th, 2008



September 26th, 2009



December 3, 2012

Slide adapted from October 2012 Vulnerability, Macro Overview, Portfolio, Risk and Profitability Analysis Presentation by IFC.

Africa is uniquely endowed with natural resources, a youth dividend, labour force explosion, market size and a digital culture

Raw Materials That Fuel THE GREEN REVOLUTION

Even though green energy comes from renewable sources like the sun and the wind – it still requires massive amounts of finite resources to make it all work.

To get off fossil fuels, we will need massive amounts of these other metals and minerals.

Raw Materials That Fuel THE GREEN REVOLUTION

Hardware
 Because of heavy battery weight, EVs tend to use much more aluminum in their bodies than gas-powered vehicles.
 Constructing solar panels and wind farms on a significant scale takes large amounts of metals.
 Photovoltaic cells already accounts for 4% of silver demand.

Electric Motors
 Motors with permanent magnets are more common for EVs, and use rare earth metals like neodymium to create powerful torque. Even the Tesla Model S will use a 120 motor.
 Wind turbines also use permanent magnets to generate electricity.

Energy Storage
 Tesla's AC induction motors for the Model S and Model X – they use no rare earths, but use vast amounts of copper.
 12V 40AH DEEP CYCLE LITHIUM ION BATTERY
 Lithium-ion batteries need materials like lithium, cobalt, nickel, and graphite, but these battery metals all have important and unique supply chain limitations.
 The green revolution is not possible without the ability to economically store energy.

Distribution & Fuel
 While not technically renewable, nuclear energy is cleaner and more sustainable than fossil fuels. In fact, it's the safest type of energy (by far) in terms of deaths per TWh generated.
 Flywheels, pumped hydro, and compressed air are some contenders to store energy on a larger scale.
 Copper is the most in-demand metal for much of the world's wiring and electrical. Silver and aluminum are great conductors, too.
 Drill bits are made of tungsten carbide, so it's used for heavy-duty tools in precision equipment.

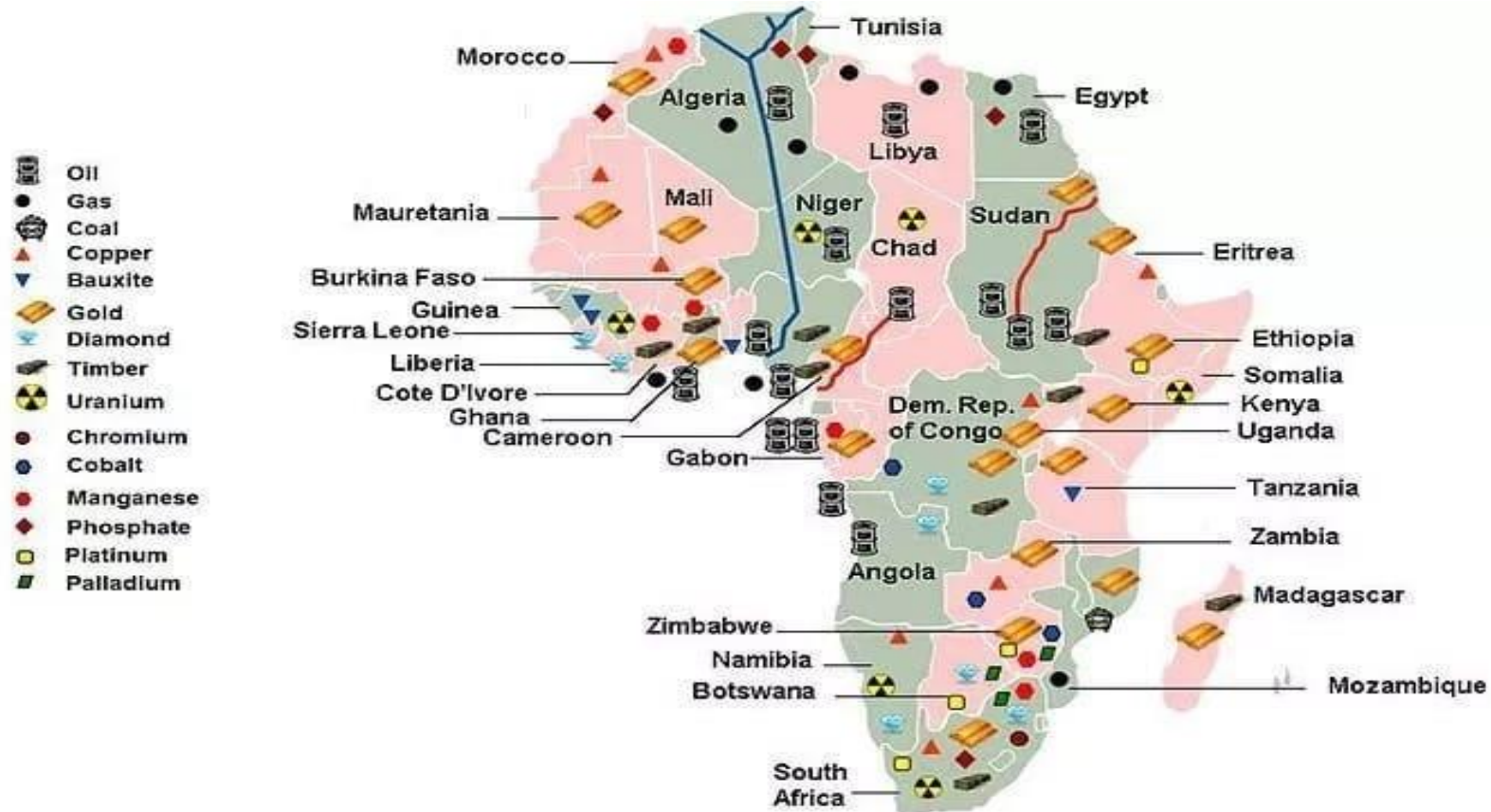
Death Rates
 Nuclear 0.03
 Coal 0.15
 Oil 0.01
 Natural Gas 0.01
 Hydropower 0.01
 Wind 0.01
 Solar 0.01

VRIC Vancouver Resource Investment Conference
 CambridgeHouse.com/vric
 VRIC18 | Vancouver Convention Centre West
CAMBRIDGEHOUSE INTERNATIONAL | **VISUAL CAPITALIST**

AFRICA'S NATURAL RESOURCES:

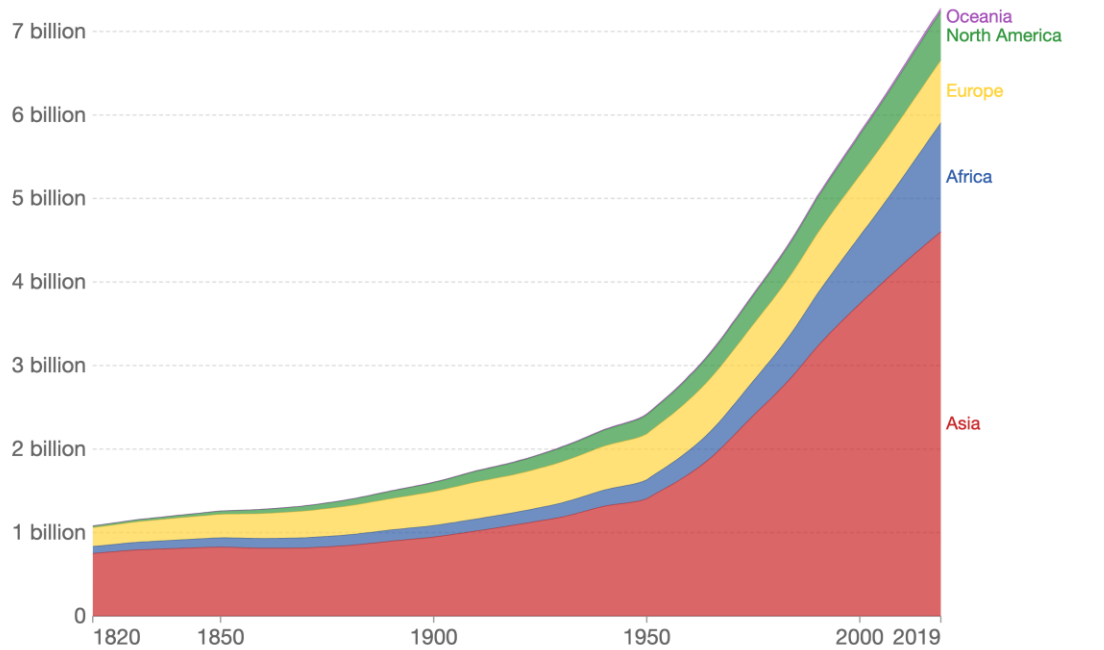
2019: Africa produced nearly 1 billion tonnes of minerals worth \$406bn.

Africa has 30 percent of the world's mineral reserves, 12 percent of the world's oil and 8 percent of the world's natural gas reserves



Plus all the minerals needed for the energy revolution

World population by region

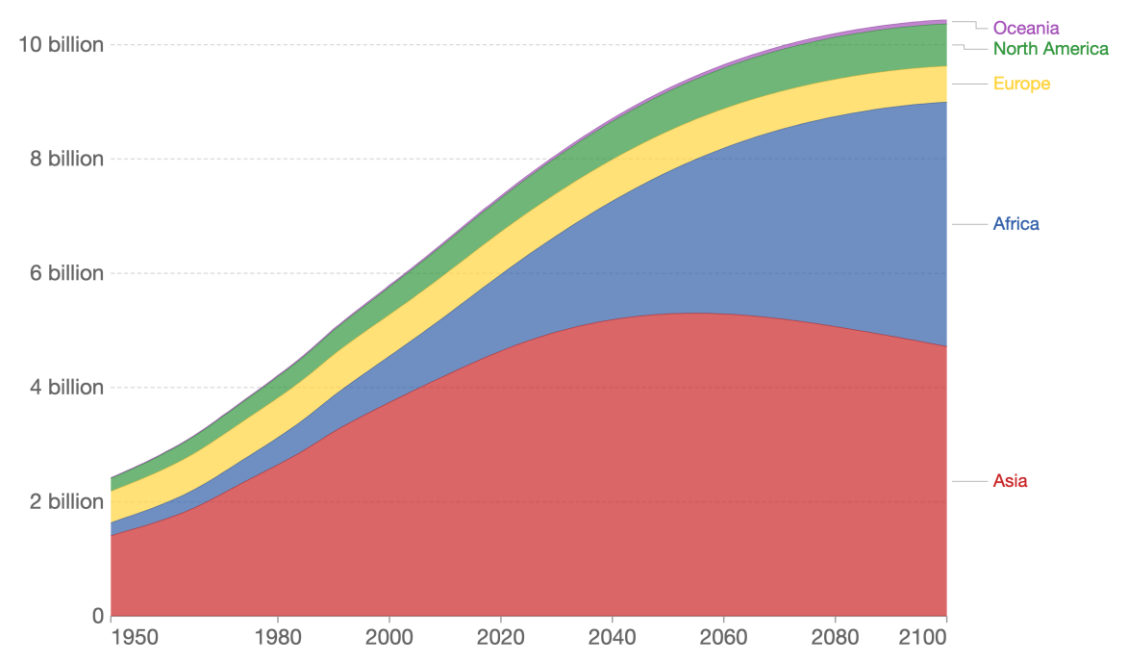


Source: HYDE (2016) & UN (2019)

OurWorldInData.org/world-population-growth/ • CC BY

World population by region, 1950 to 2100

Projected population to 2100 is based on the UN's medium population scenario.

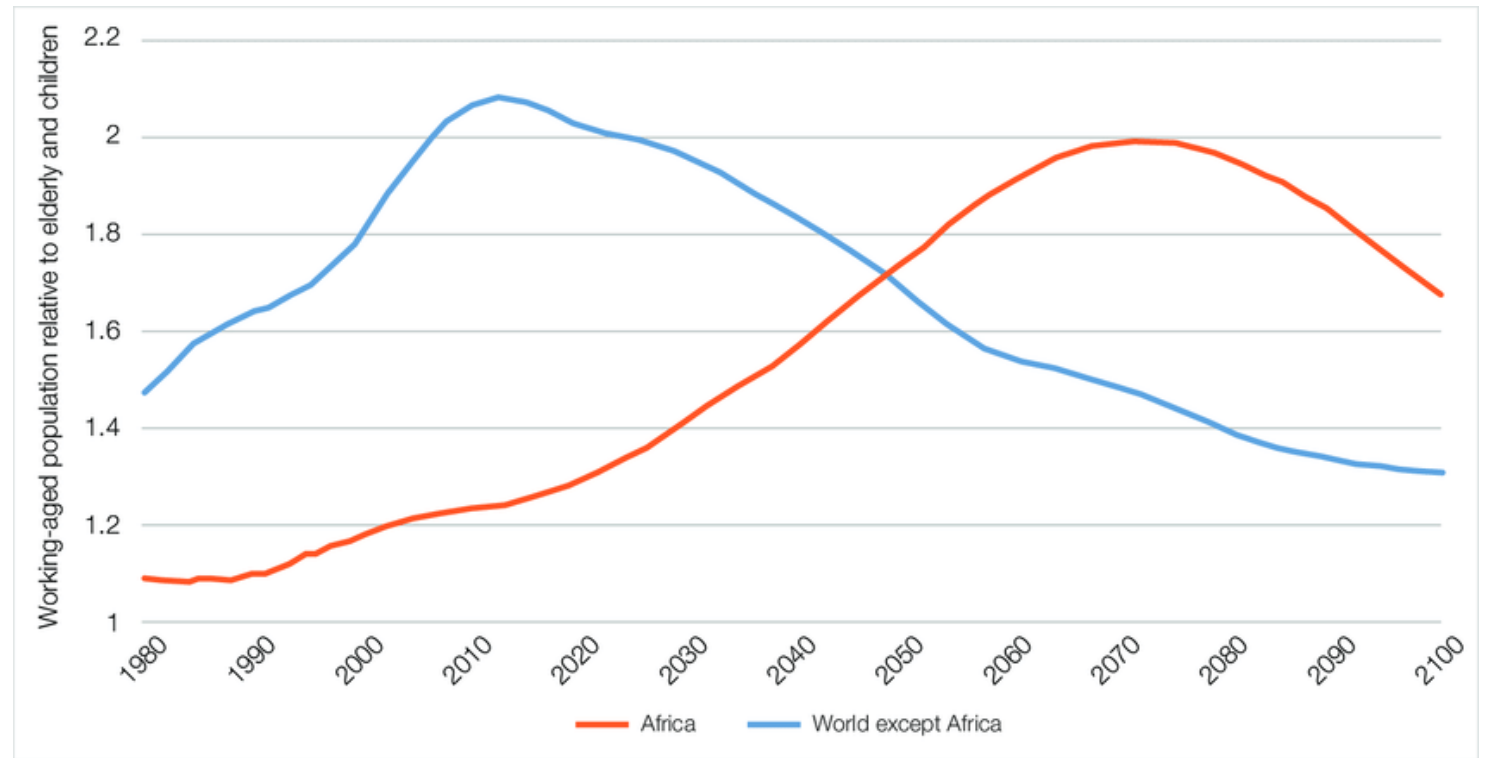


Source: Gapminder (v6), HYDE (v3.2), UN (2019)

OurWorldInData.org/world-population-growth • CC BY

TODAY AFRICA HAS JUST OVER 17% OF THE GLOBAL POPULATION; BY 2100 THIS IS PROJECTED TO RISE TO 40%. ASIA WILL SEE A SIGNIFICANT FALL FROM ALMOST 60% TODAY TO JUST OVER 40% IN 2100.

AFRICA WILL HAVE THE LARGEST LABOUR FORCE BY 2060





AFRICA WILL HAVE THE LARGEST SHARE OF YOUNG PEOPLE IN THE SECOND HALF OF THE 21ST CENTURY



Population Aged Under 30

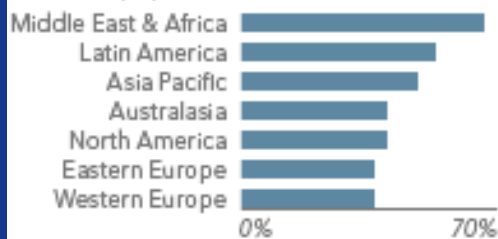
% of total population 2012

- 71.0 - 76.0%
- 61.0 - 70.9%
- 51.0 - 60.9%
- 41.0 - 50.9%
- 25.0 - 40.9%
- ▨ Not Illustrated

Regional Population

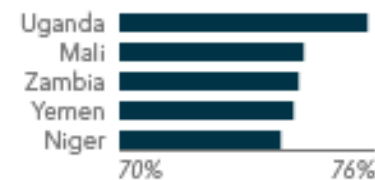
Aged Under 30

% of total population 2012



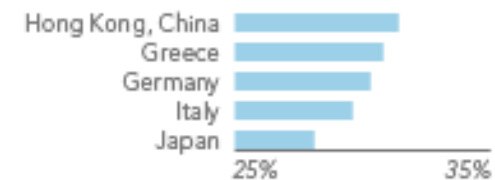
Top 5 Aged Under 30

% of total population 2012



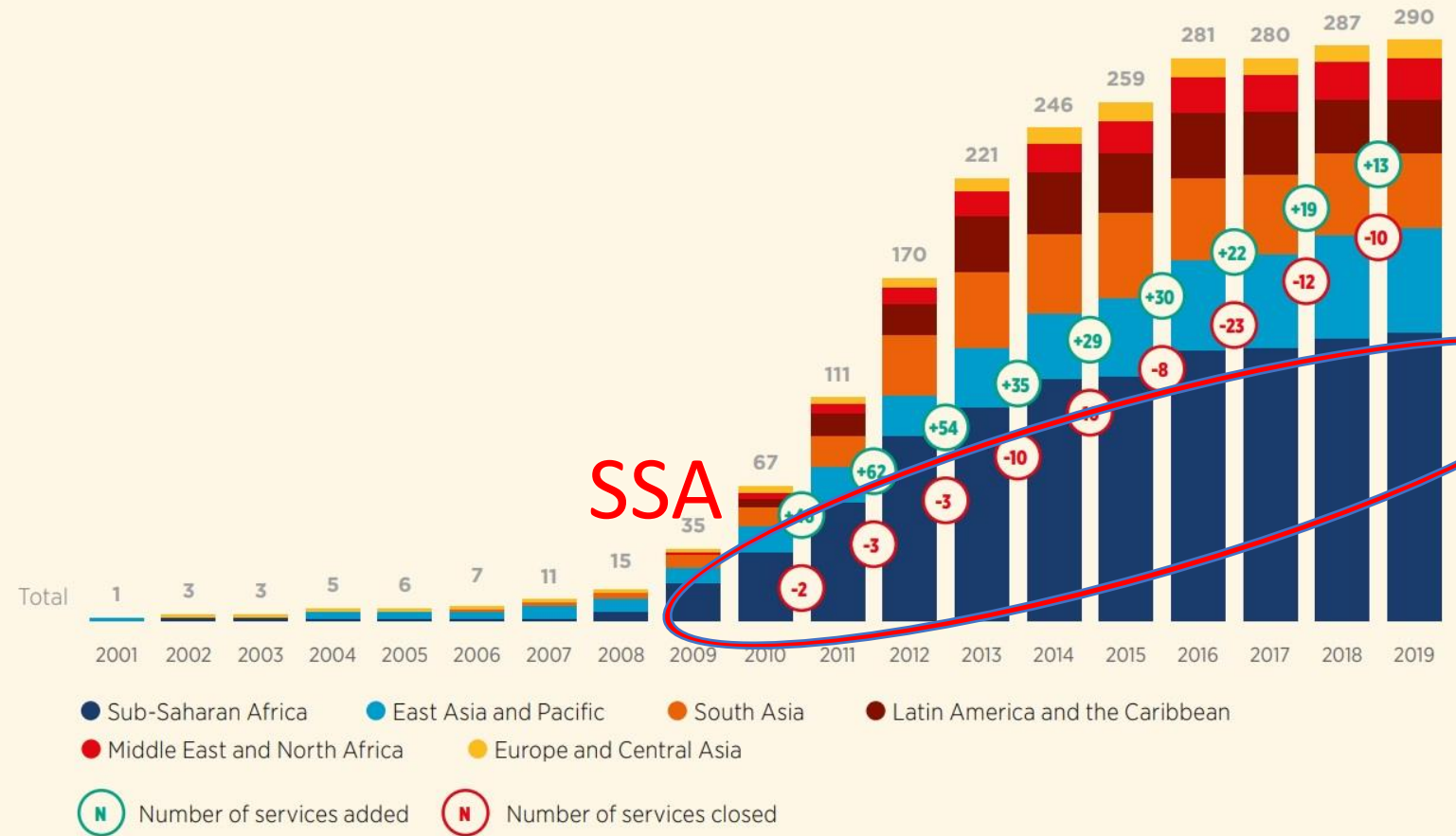
Bottom 5 Aged Under 30

% of total population 2012

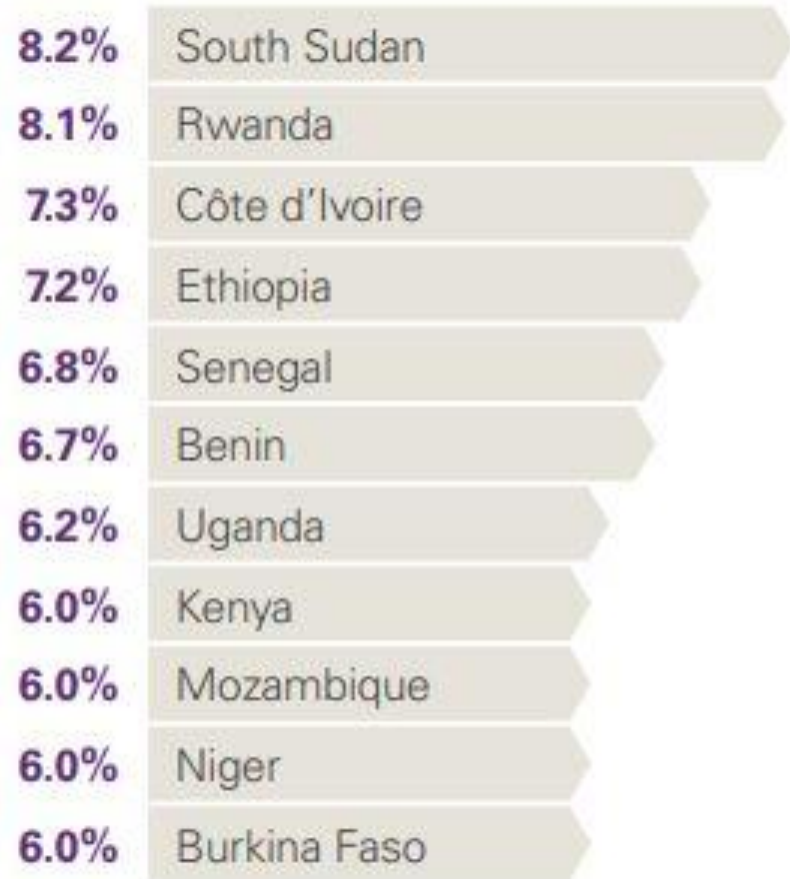


SSA HAS THE LARGEST SHARE OF MOBILE MONEY TRANSACTIONS

Evolution of the global mobile money landscape, 2001 to 2019



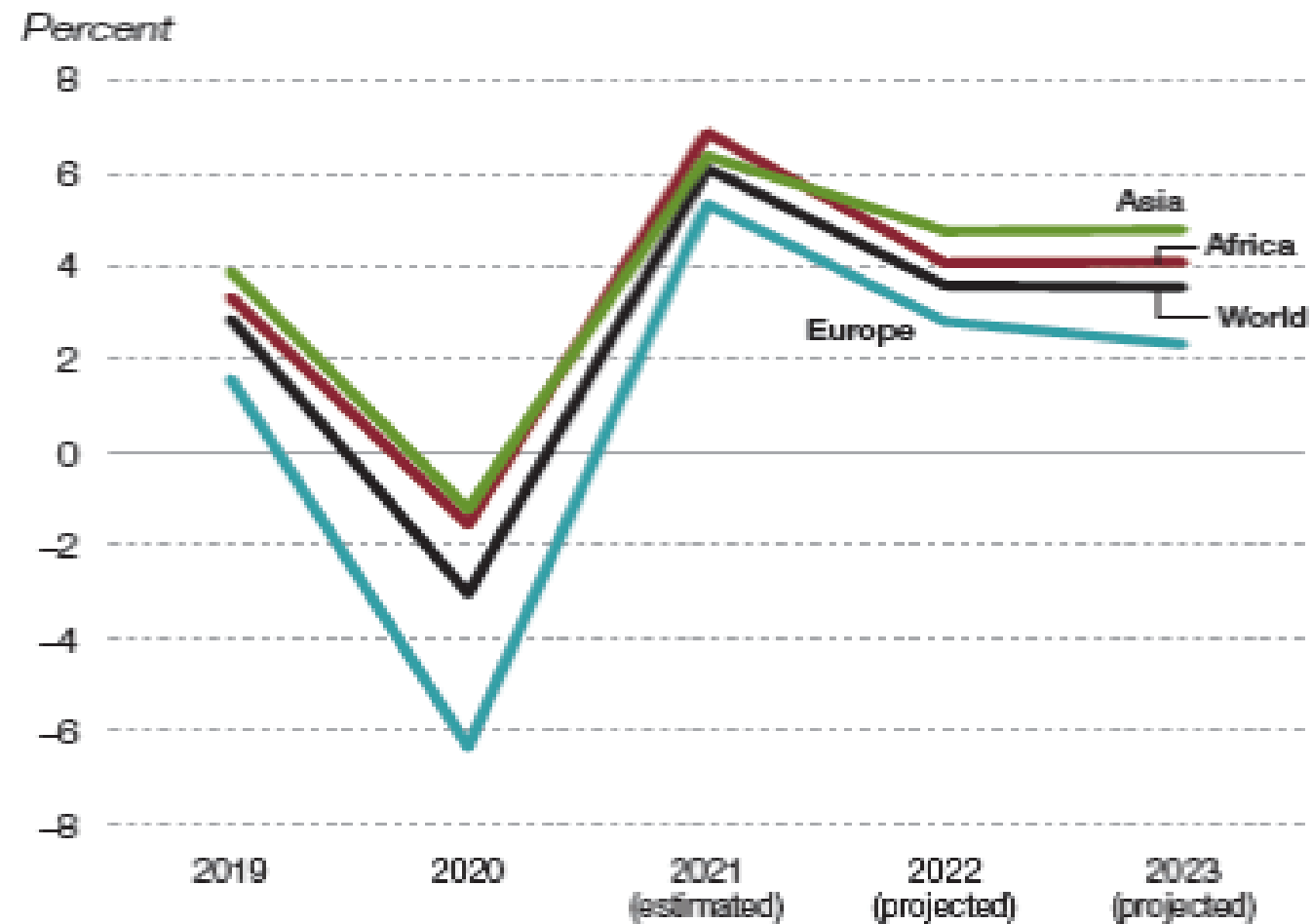
Source: GSMA Report: The state of mobile money 2020



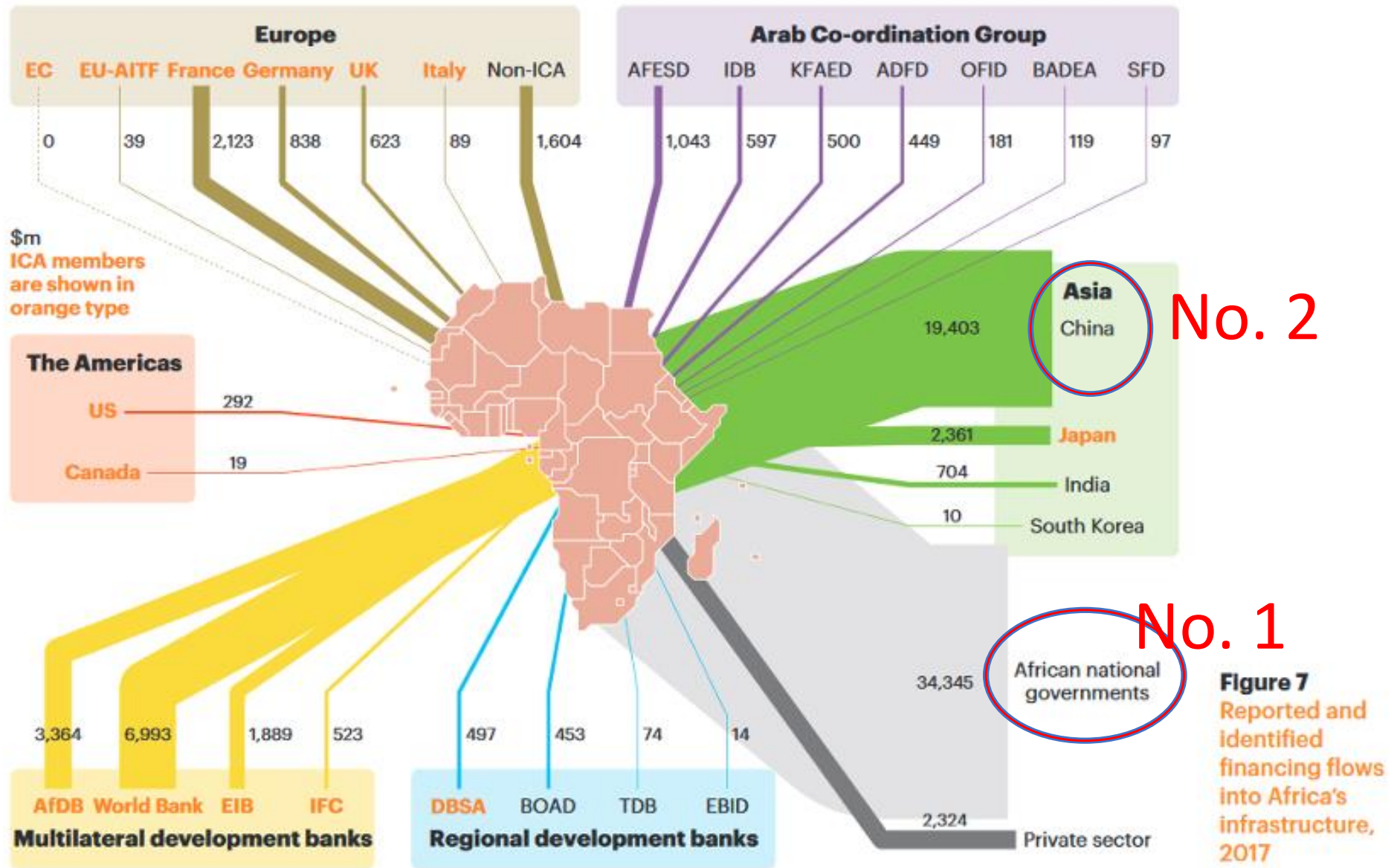
— Source: Quartz Africa

Fastest growing economies by the start of 2020

FIGURE 1.1 Real GDP growth, 2019–23



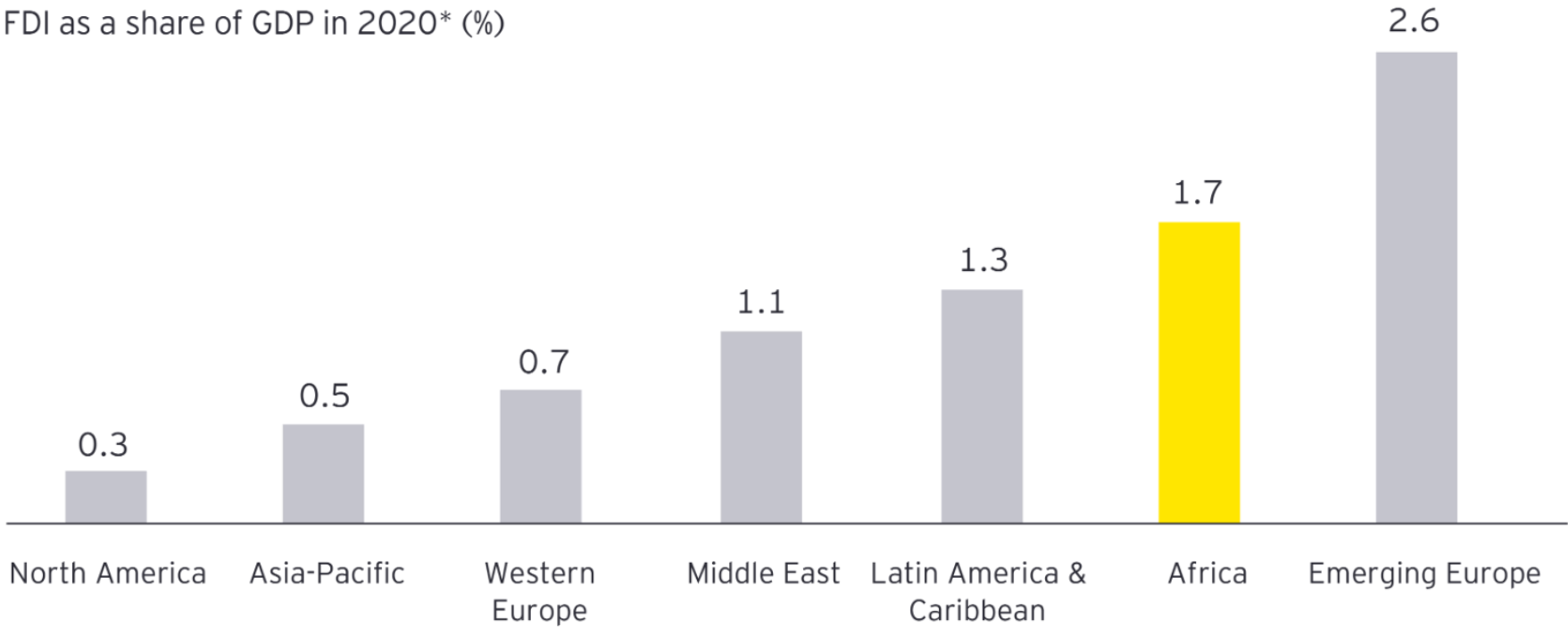
Source: African Development Bank statistics and *World Economic Outlook*, April 2022.



Source: Infrastructure Consortium for Africa, 2018

Africa's FDI relative to GDP compares favourably with other regions

FDI as a share of GDP in 2020* (%)

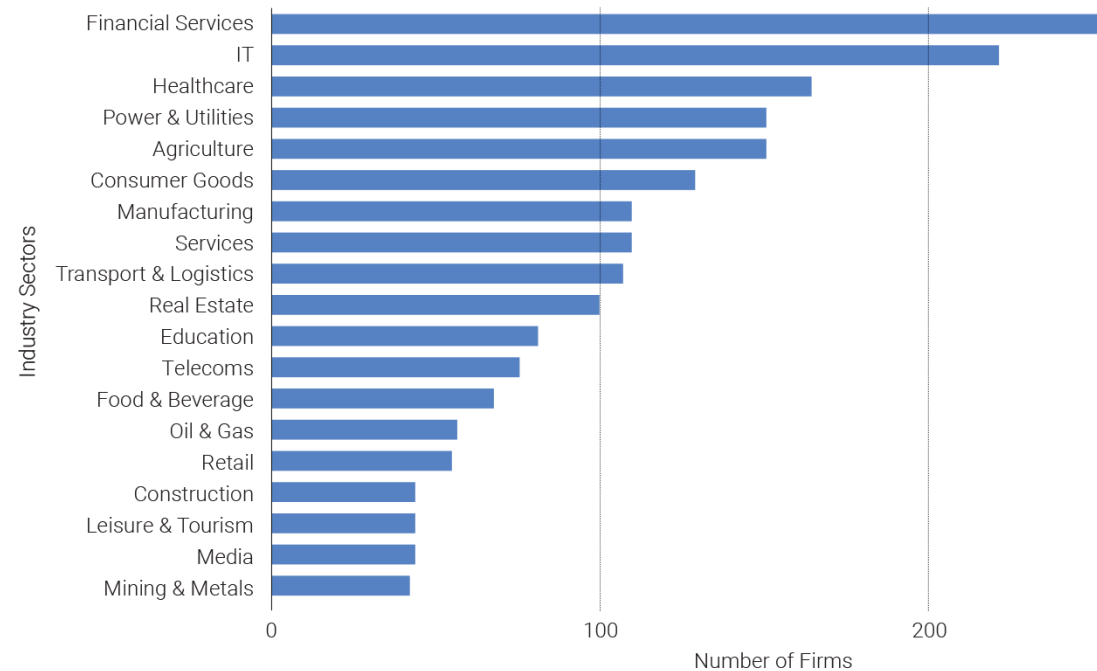


Source: FDI Markets (Financial Times), Oxford Economics, EY analysis.
GDP is measured in nominal terms, FDI is the total capital invested in 'US\$b'.

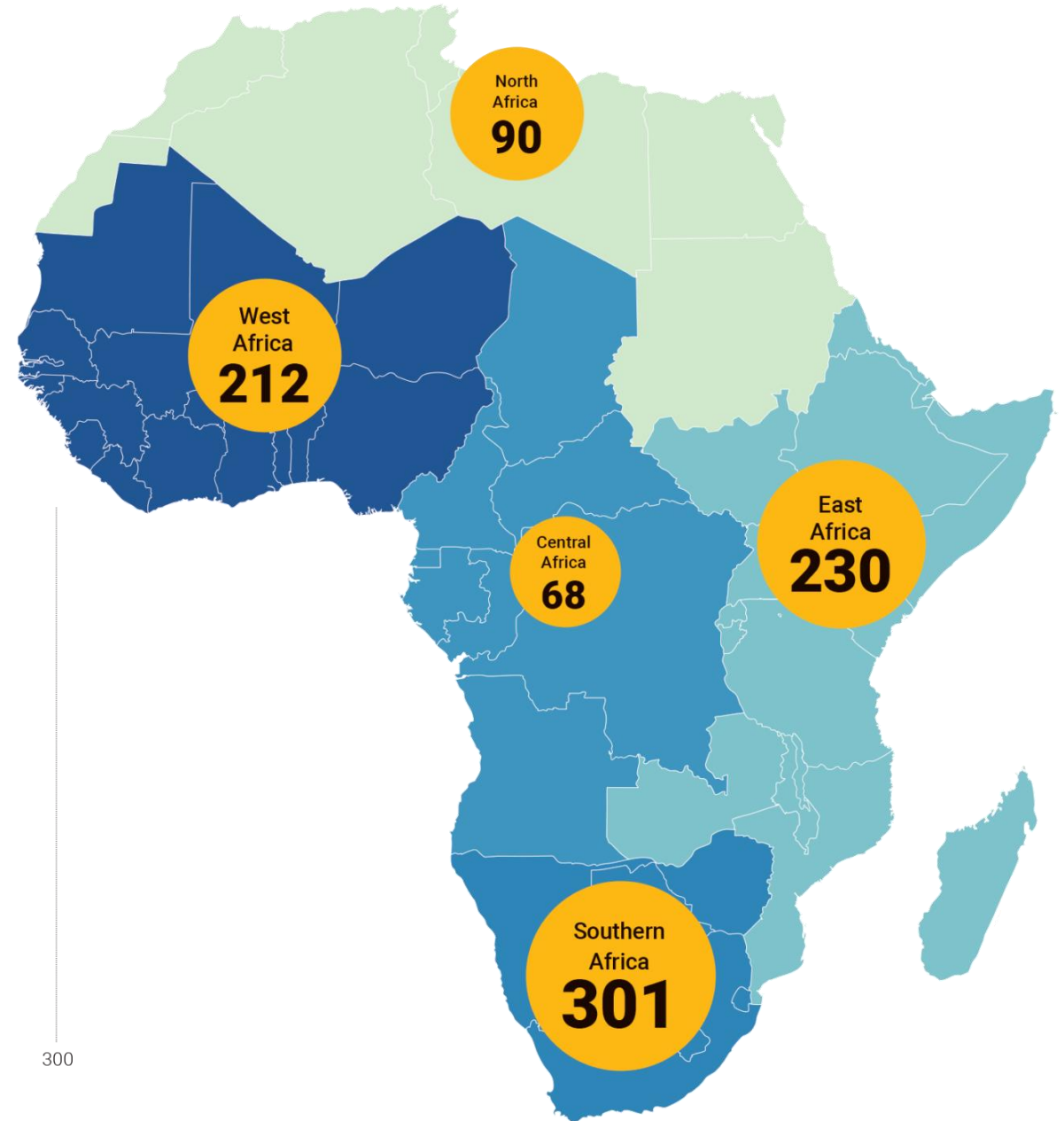
EY Africa Attractiveness Report, November 2021

THE NUMBER OF PRIVATE EQUITY INVESTORS IN AFRICA – 70% ARE AFRICA-BASED

Sector Focus

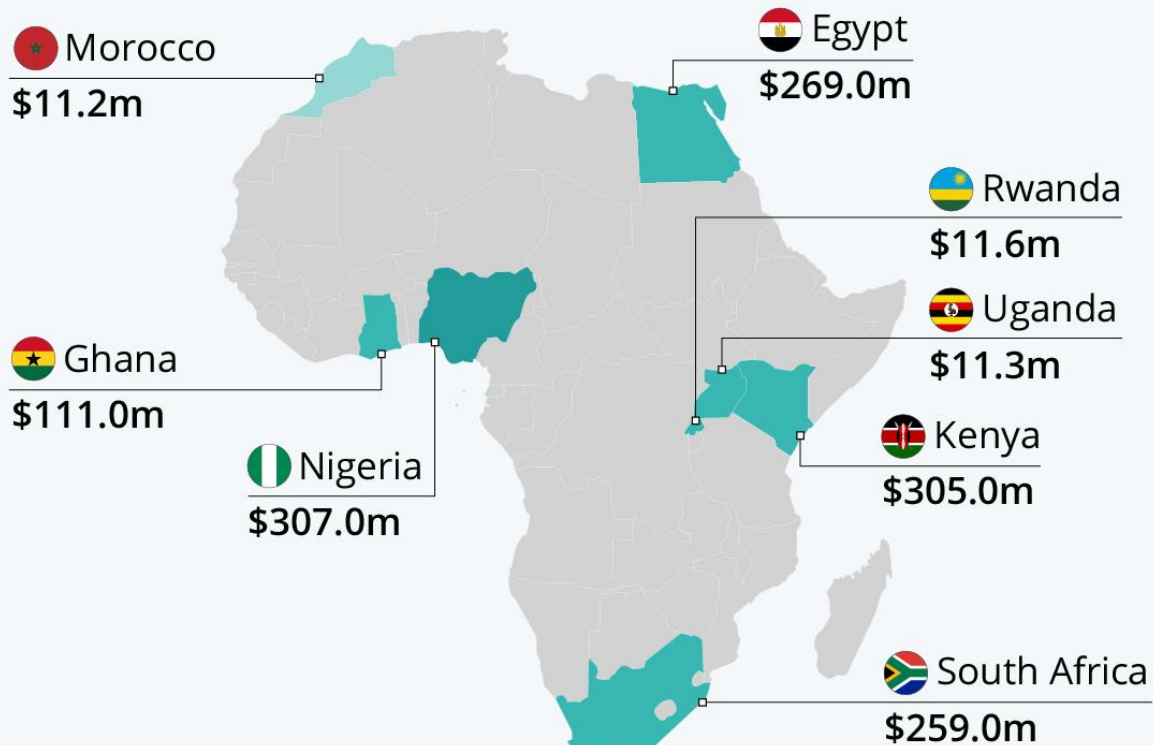


Regional Focus



Where Africa's Startup Activity Is Concentrated

Top countries for VC investment in Africa in 2020
(in million U.S. dollars)

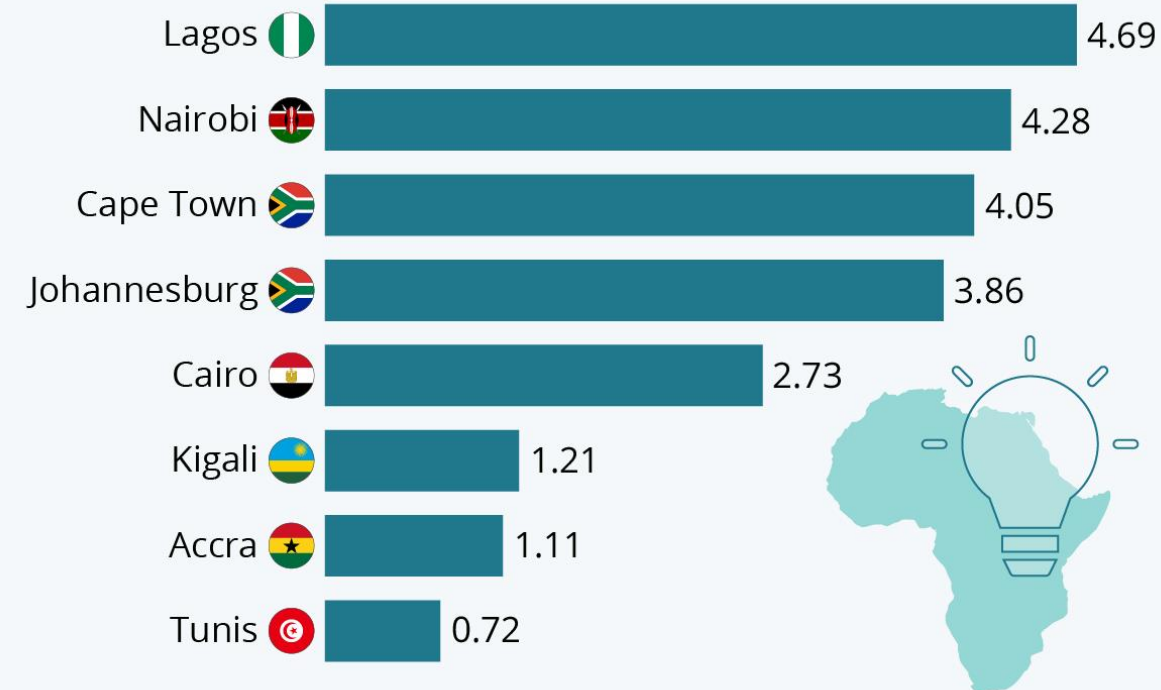


Source: Partech Analysis via AfricArena



Lagos Is Africa's Startup Capital

Leading cities for startups in Africa in 2021 (by total score)*



* Based on quantity (e.g. number of startups/accelerators), quality (e.g. number of unicorns, exits, pantheons) and business (national economic indicators) scores

Source: StartupBlink



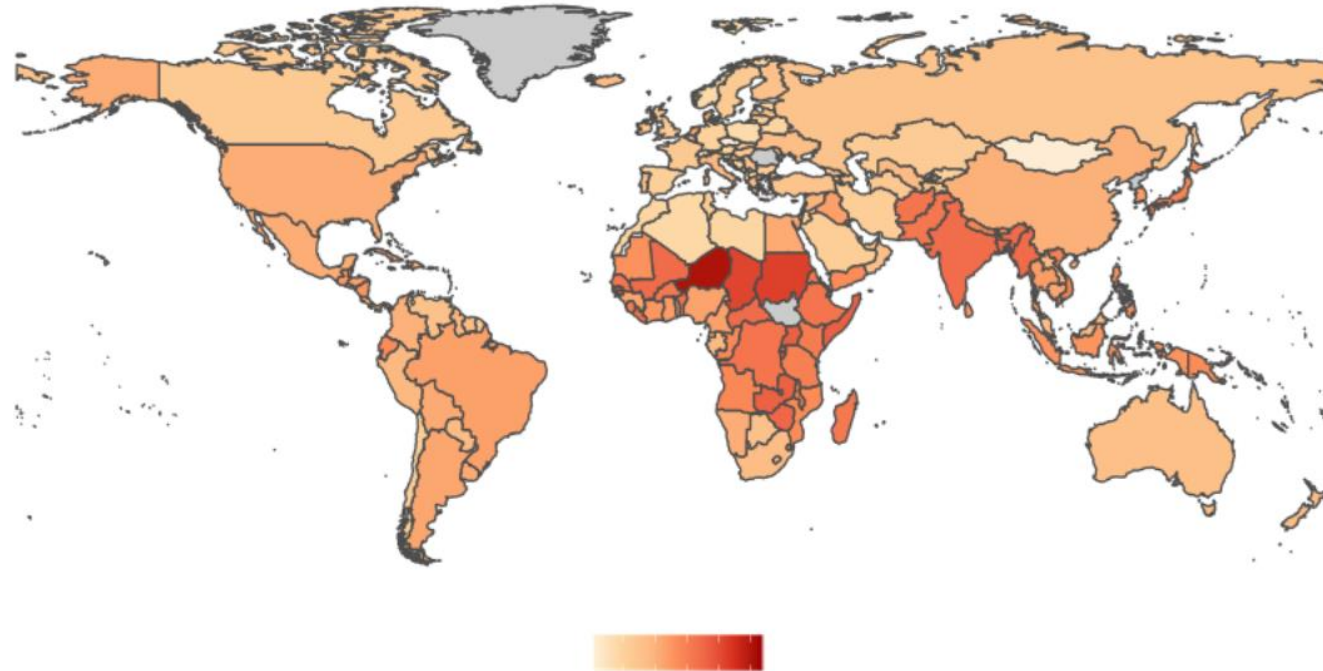
Africa's installed generation capacity is equal to France – if Africa energises using fossil fuels, none of the Paris targets will be achieved and runaway global warming will result. The world has an interest in support the energy transition in Africa. Its happening.



Climate shocks

Africa faces an outsized impact.

(index)

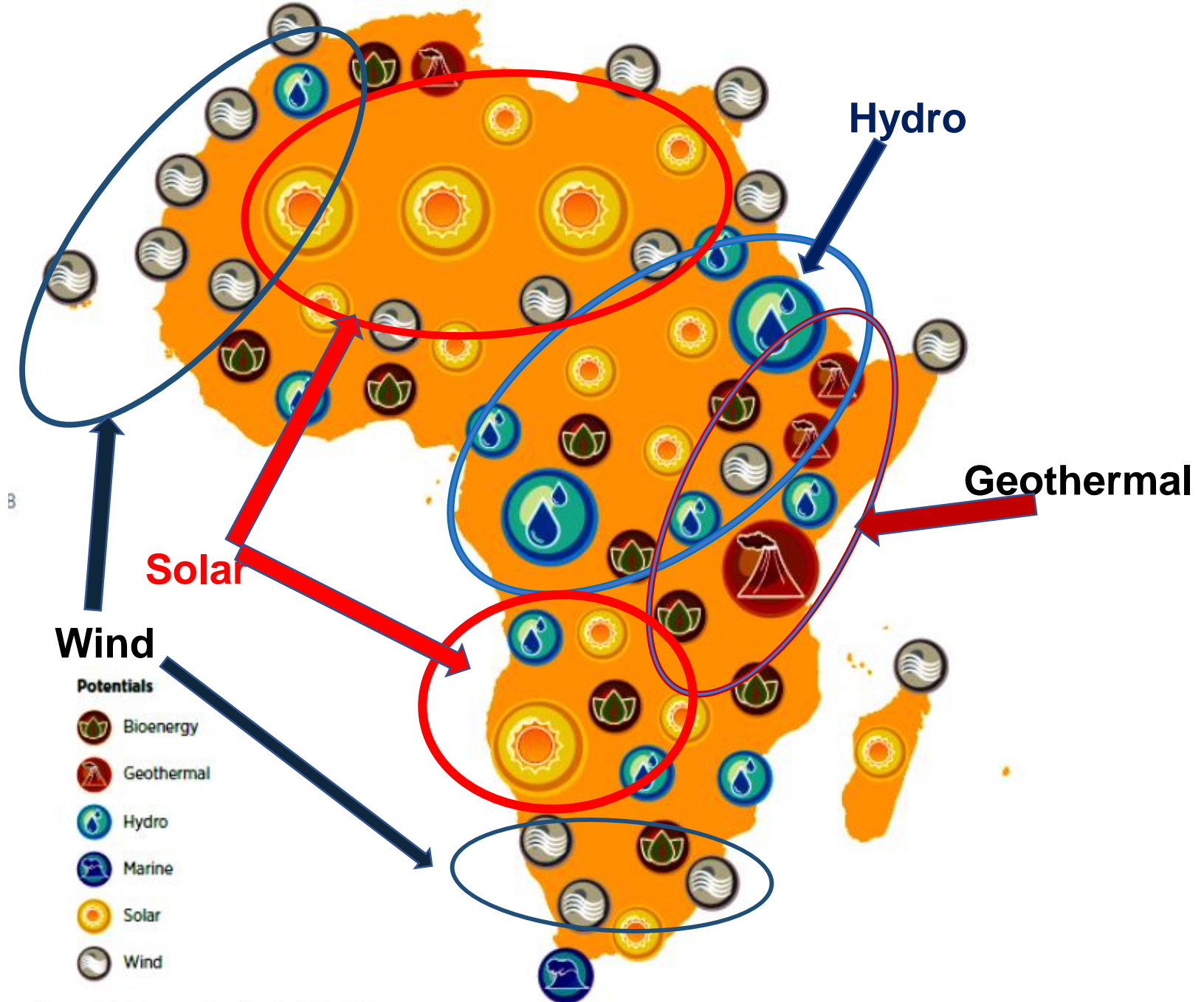


Sources: Notre Dame Global Adaptation Initiative, IMF, World Economic Outlook, and IMF staff calculations.

Notes: Index captures country-level exposure and sensitivity to climate shocks.

Africa's renewable energy resources

- Africa has the best solar resources in the world



Source: IRENA analysis based on the Global Atlas

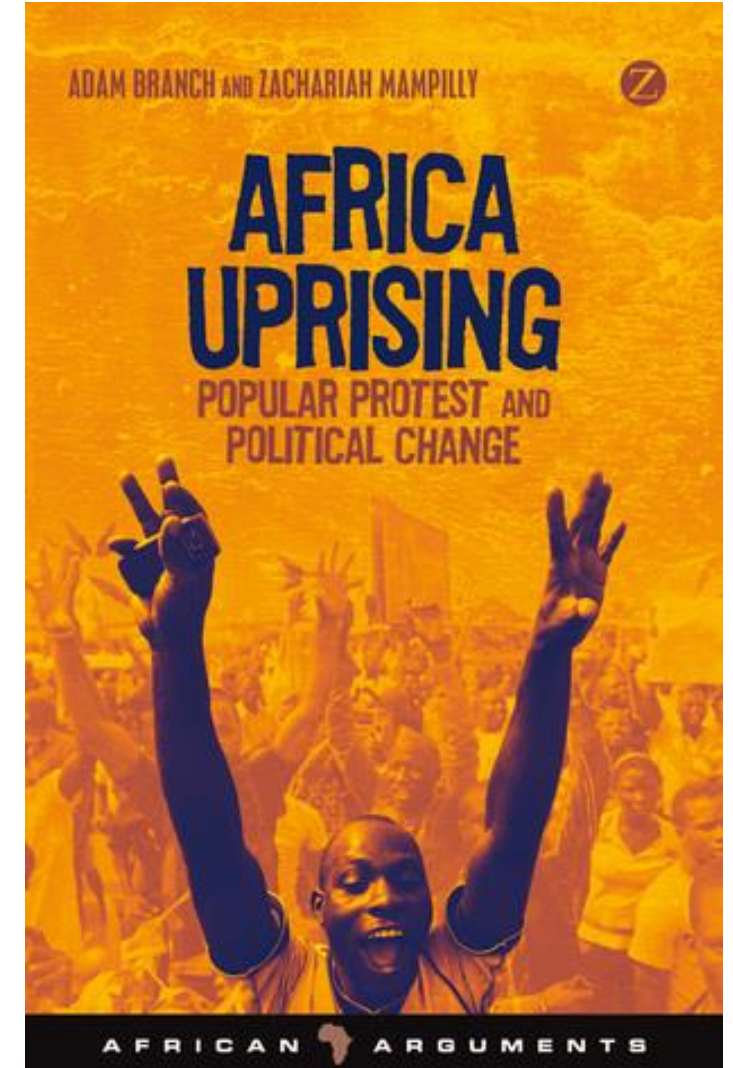
TARGET:
300 GW BY
2050

AREI

Africa Renewable Energy Initiative



Drivers of democratization – from the AU’s African Peer Review Mechanism to Uprisings in 40 countries (hardly reported)



Third wave of uprisings: 1950s, 1990s and today – forces for democracy

AFRICAN CONTINENTAL FREE TRADE AREA CREATING ONE AFRICAN MARKET

#AfCFTA2018 | 17-21 March 2018 | Kigali, Rwanda



Framing the Just Transition

1. Just low carbon – accelerate to RE asap to revive GDP growth, resulting in ‘trickle down’ wealth that will benefit the poor
2. Low carbon energisation plus social mitigation: accelerate RE, but with welfare interventions to mitigate negative impacts on coal & oil workers and their communities
3. Lower carbon plus social mitigation plus upstream industrialization: accelerated RE implementation should be used to instigate upstream industrialization wrt RE components, green hydrogen, electric vehicles, etc.
4. Just transition is only possible as part of a post-capitalist transition where the focus is public and social ownership of the means of energy production – ‘energy democracy’ movement

Greening industrialization means rethinking what industrial policy means.....

- first generation IP: market failure, picking winners, state-driven, often resulting in rent seeking
- second generation: co-creation of value, setting the direction, facilitating joint strategies, political settlement making – not about picking winners or level playing fields to enable the market, but about tilting the playing field for directionality (i.e. green industrial transformation)



CST
Centre for
Sustainability Transitions

A TRIP TO 2030
Fostering Leadership and Transformative Change
for Economic Diversification in Central Africa

Commissioned by UNECA



United Nations
Economic Commission
for Africa

But what about financing the transition?




Africa's many financial challenges....

- 2% of \$2.8 trillion of climate finance invested in RE for 2000-2020 went into Africa
- Cost of capital: 5-15%, compared to developed countries – 1-2%. 63% of all climate finance is debt, only 16% is concessional
- 37 of the 69 poorest countries are in debt distress – most in Africa
- 3-5% of African GDP is already spent on climate responses
- Capital flight: \$2 trillion into tax havens, 1970-2014 – with interest = \$2.4 trillion. 3 x African debt in 2018. Total ODA 1990-2015: \$2.6 trn
-

Maybe its time for a rethink....

- CPI: \$277 bn pa to achieve NDCs. Current level: \$30 bn per annum, with most of this generated within Africa. **Gap: \$247 bn pa.**
- Columbia Center on Sustainable Development: to achieve Net Zero by 2050 - \$136 billion pa. Investment in all sources in 2018 was “less than US\$4 billion”. **Funding gap: \$132 bn.**
- African Development Bank (AfDB): \$1.4 trillion to fund Africa’s NDCs over the period 2020-2030. Average of \$127.8 billion pa. Current flows: \$25-30 bn pa. **Funding gap: \$99.9 bn pa.**
- **Funding gap: \$99 bn pa to \$247 bn pa**
- Maybe it is time for a new financial paradigm: not Keynesian (whether fiscal or monetary focus), and not market-centric. Alternative: monetary architecture approach – the financial eco-system is a web of interlocking balance sheets (Steffen Murau) – I lead the National Planning Commission’s work on this

A young boy in a red shirt is captured in the middle of kicking a soccer ball. The ball is surrounded by a bright, fiery explosion of light and energy, suggesting a powerful impact or a breakthrough. The scene is set against a dramatic, cloudy sky with a mix of dark and light patches, and the boy is standing on a grassy field. The overall mood is one of dynamic energy and transformation.

Can we dare to
break free from
old solutions to
new problems?