

Risk assessment and management for investments in the energy and mining sectors in Africa

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22 September 2017

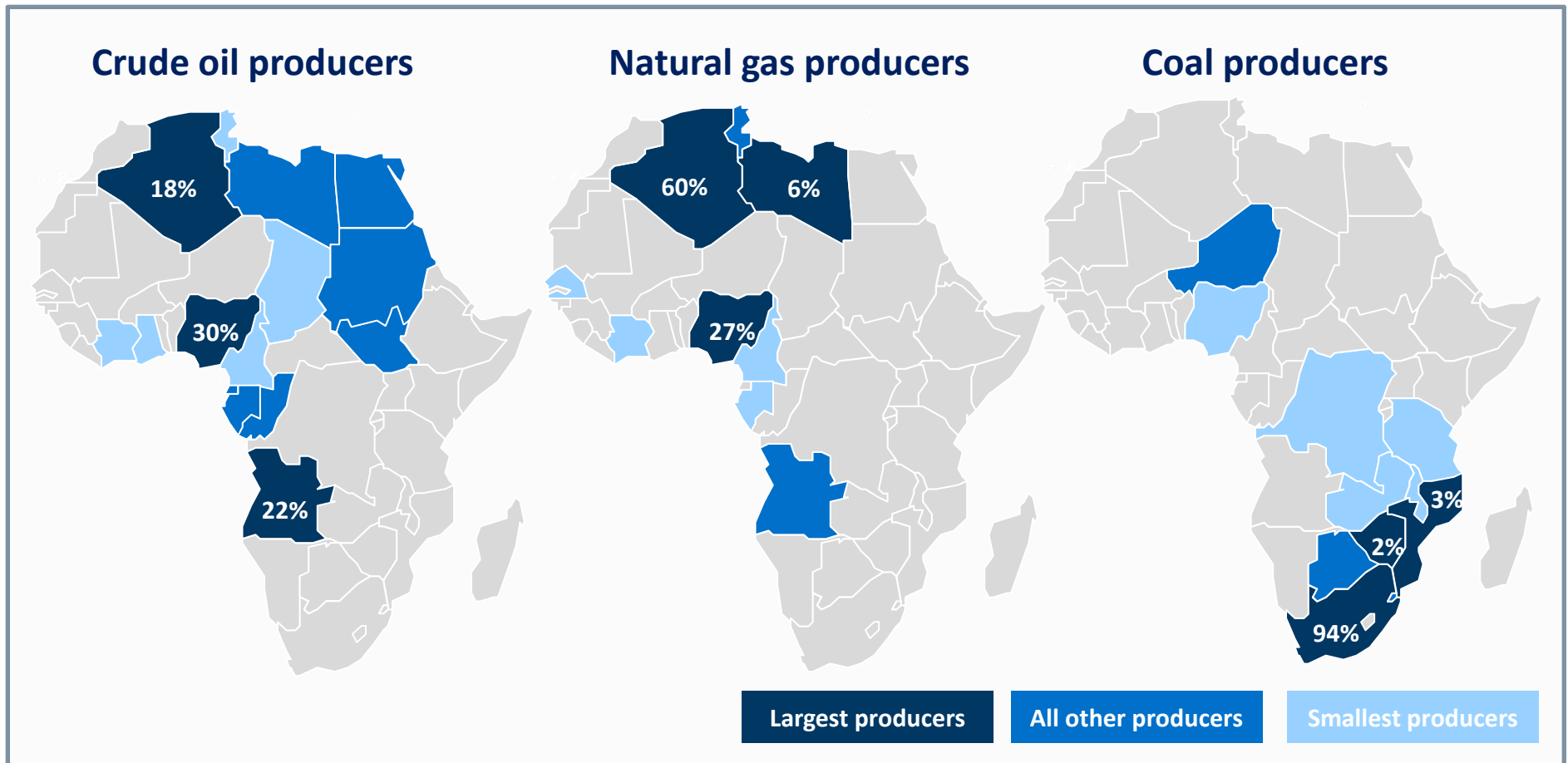
Presented To:



Africa's main energy resources are oil, natural gas, and coal

- In 2015, Africa's share of global energy production comprised **9% of oil, 6% of natural gas, and 4% of coal production**.^[1]
- The majority of Africa's proven oil reserves are located in North Africa (50%) and West Africa (29%), and its proven natural gas reserves are located in North Africa (40%) and West Africa (22%).^[2]

2014 African energy production – countries classified by annual production amount^[3]

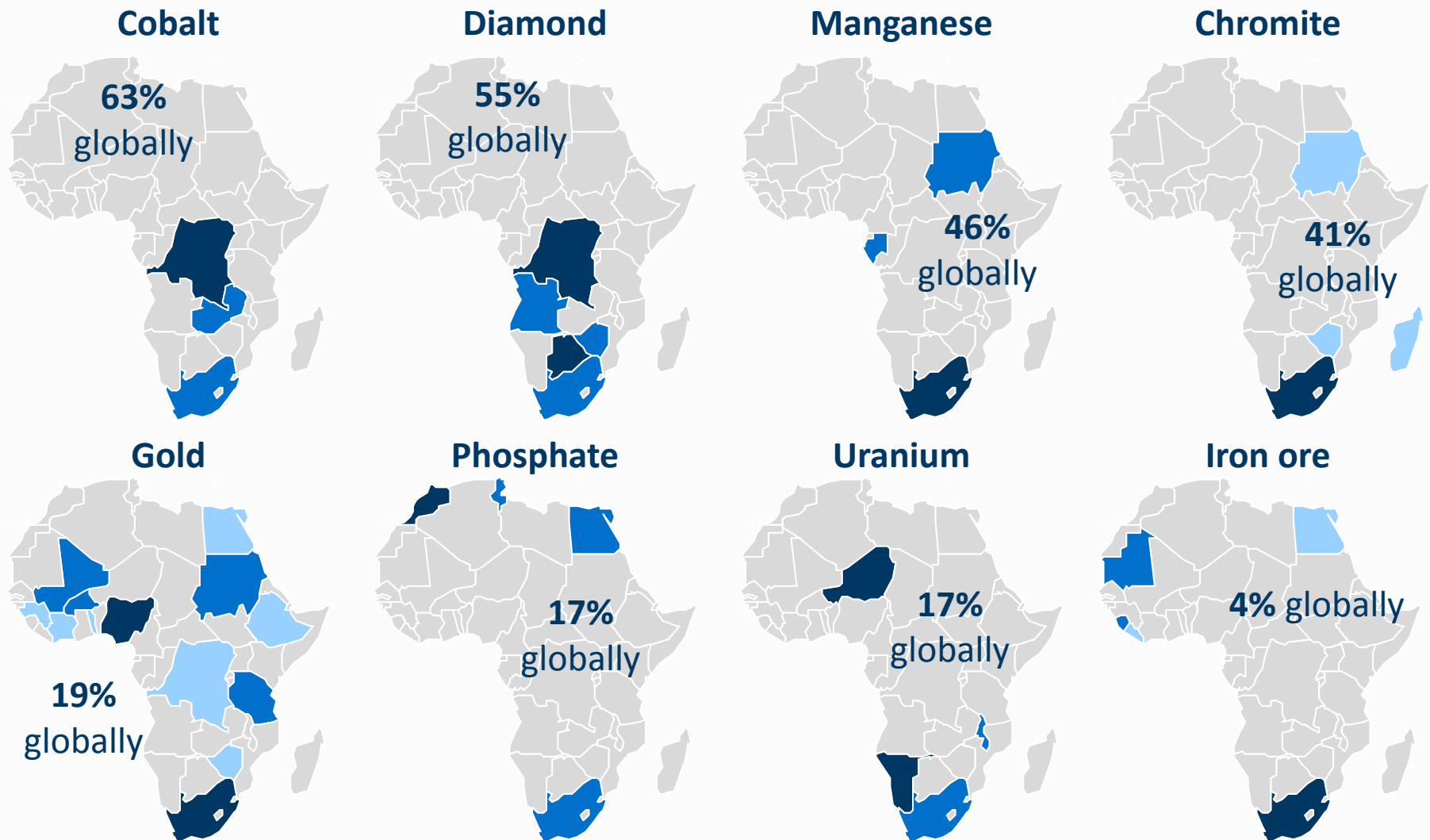


1. Source: BP 2017 Outlook data tables, downloaded 19 Sep 2017.

2. Source: IEA, Africa Energy Outlook 2014, page: 52 - 53.

3. Crude oil includes lease condensate. Source: U.S. EIA data, downloaded 19 Sep 2017.

A significant amount of worldwide mining resources originate from Africa



Data as of 2013

Source: USGS Minerals Yearbook, August 2016, downloaded 19 Sep 2017.

Largest producer(s)

Second largest producer(s)

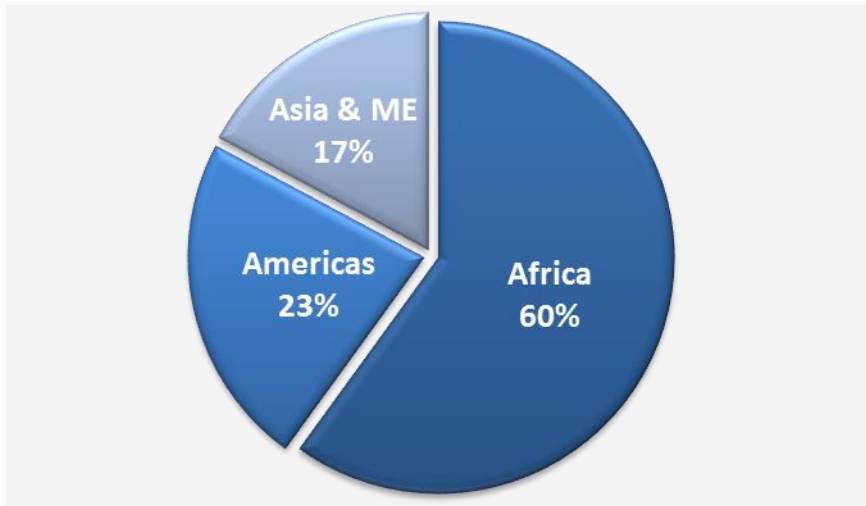
Third largest producer(s)

Trends in the African energy and mining industries

Energy industry ^[1]

- Declining commodities prices have shifted focus towards **cutting costs**
- Industry's primary focus until 2020 is **optimisation and operational excellence**
- Exploration capex decreased **38%** from 2014 to 2015
- The potential impact of **alternative energy** still unknown
- **Untapped African energy resources** will continue to incentivize energy investment

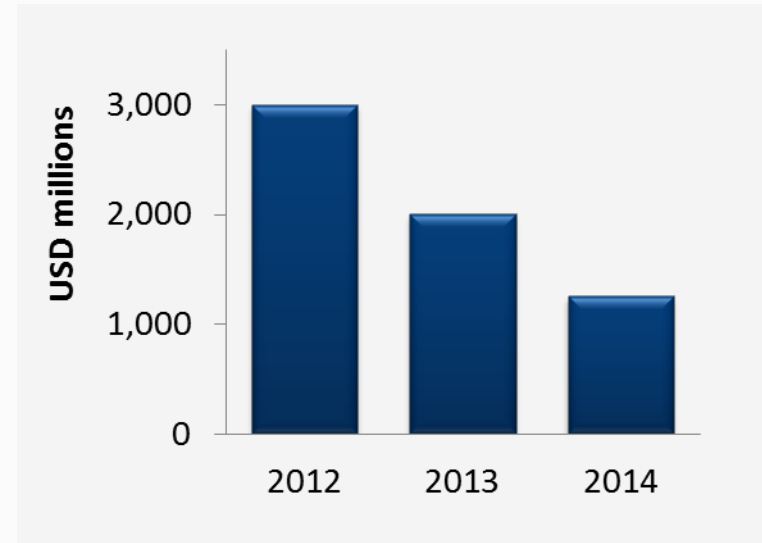
2015 top-20 discoveries in oil and gas by size of reserves



Mining industry ^[2]

- **Demand is expected to continue rising** but exploration activity is down, possibly due to infrastructure issues

African mining exploration spend



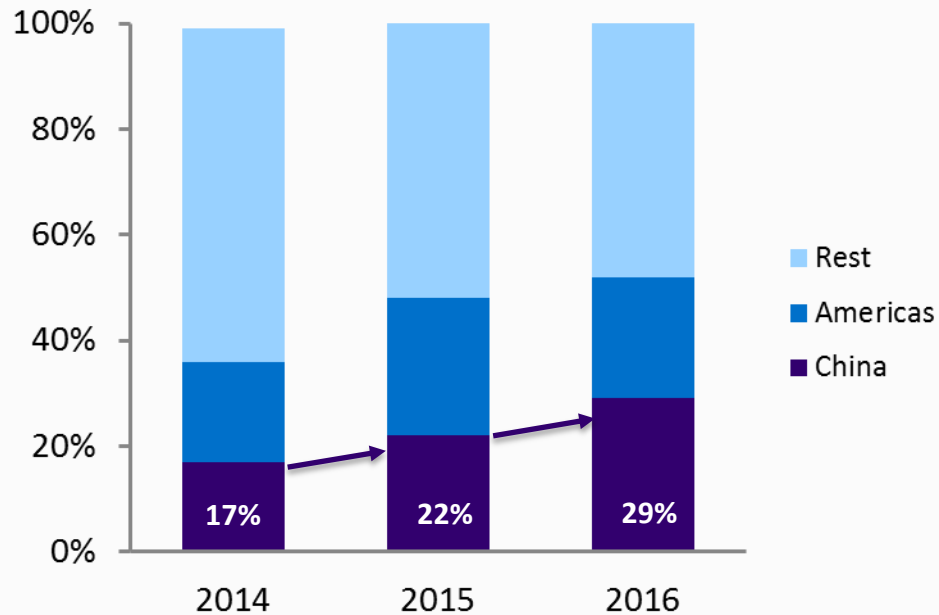
- Investors are still interested in the large amounts of untapped African mining resources
- **USD 18 billion** is currently invested in **about 30 projects** across **9 different types of metals and minerals**

Foreign investment is one of the main sources of funding for energy and mining in Africa

Energy industry ^[1]

- Supported by **direct investments from foreign commodities firms**, such as Glencore, Total, and BHP
- China's foreign direct investment to the industry is steadily rising
- Nearly USD 10 billion** came from China into sub-Saharan energy from 2005 – 2011

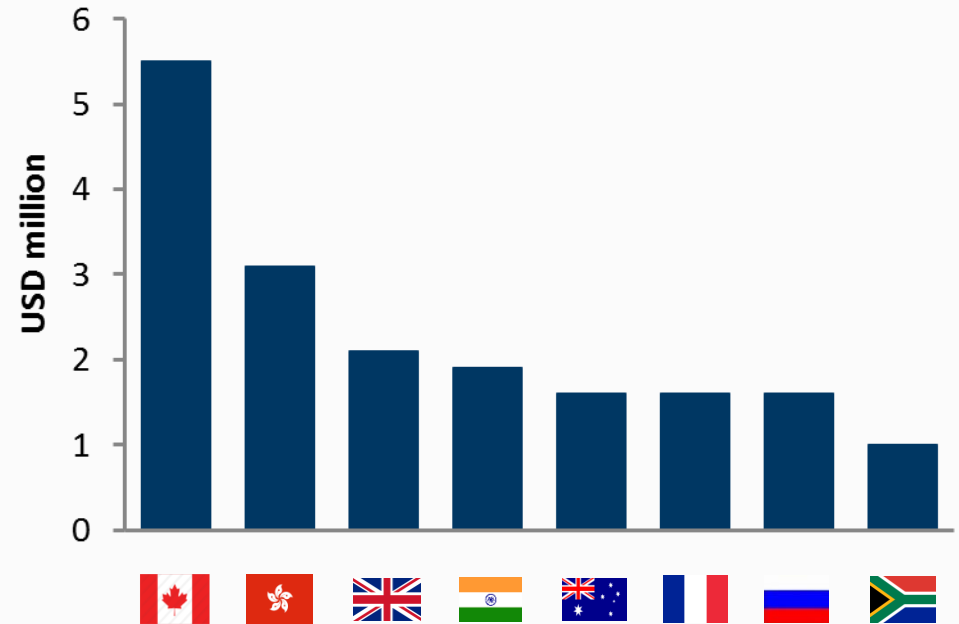
Contribution to oil & gas FDI in Africa by region



Mining industry ^[2]

- Equity markets** have become the main source of finance in recent years
- Asian and emerging stock markets are expected to capture an increasing share of this activity
- Nearly **USD 130 billion** was raised by miners through stock exchange funding in 2009 – 2011

Stock exchange funding of the 29 African mining projects currently in development

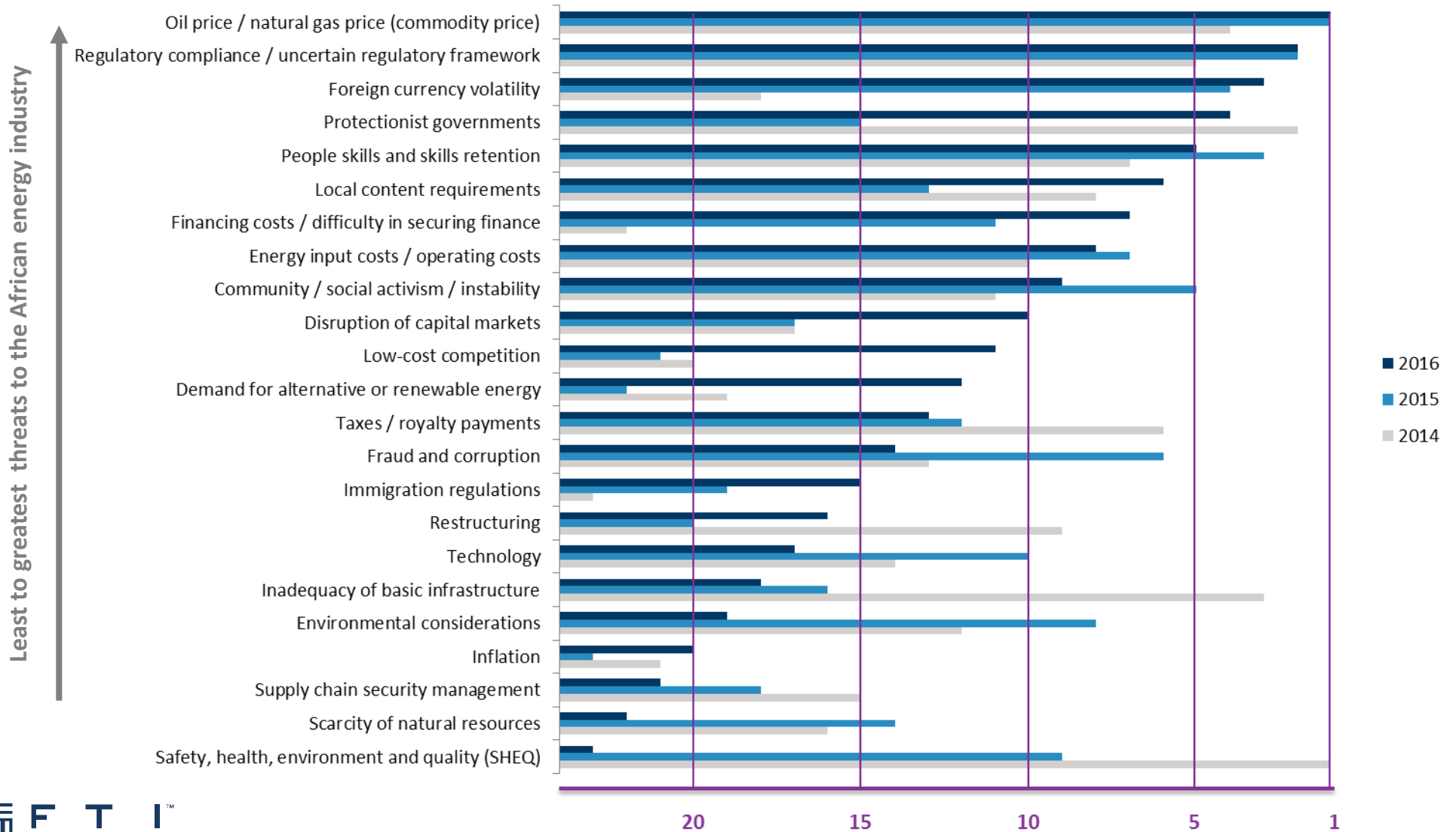


1. Source: FTI analysis; IEA, Africa Energy Outlook, 2014, page: 24; and PWC 2016 Oil & Gas Review, page 20.

2. Source: Economic Commission for Africa, Minerals and Africa's Development, page 33; Deloitte, State of Mining in Africa, 2015, page: 9; and PWC, Executing a successful listing Markets for miners, Feb 2012, page: 3

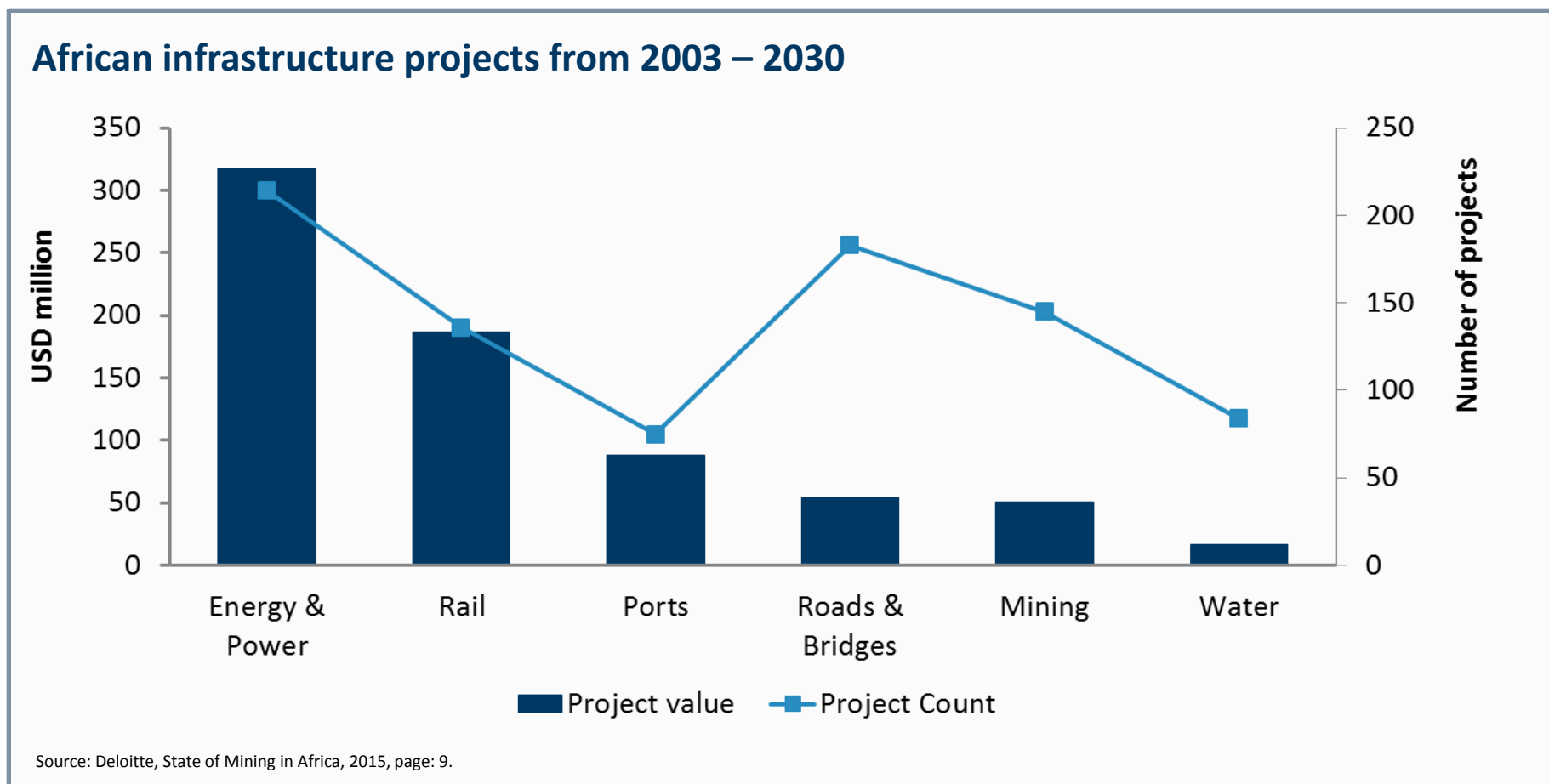
Low commodity prices and regulatory uncertainty are the biggest risks for the African energy industry in the near future

- An industry survey conducted by PwC found that oil & gas industry respondents' view of the greatest upcoming risks to the energy industry in the near future have changed over the last 3 years.



Slow infrastructure development and regulatory inefficiency are the great issues for the mining industry in Africa

- **Regulatory:** includes ineffectiveness of regulatory regimes and a lack of policies to mitigate rent-seeking and corruption
- **Infrastructure:** well-developed infrastructure can raise economic reliability and lower costs for mining operations, but the focus is currently on energy & power projects





Strategic communication and intelligence is a key tool in mitigating regulatory, compliance and dispute risks

Risks exist in emerging markets, particularly when entering a market, exiting a market, and negotiating contracts ^[1]

- **Fast-changing regulations** according to government's current agenda
- Increased **compliance** burden
- Risks associated with **public – private contracts**, due to complexity of process and size of financial interests
- Further risk when dealing with a business or industry with **no track record** (eg. Renewables)
- Higher risk of error, fraud and corruption when there is a **lack of central oversight**, which risks complicating negotiations and transaction prices
- **Expropriation** risks are particularly high in these markets

These problems can be mitigated with sufficient market and strategic intelligence

- **Mapping risks**, such as power-mapping, can be helpful
- Understanding all the issues at stake prior to and during a dispute is strategic

Case Study from FTI Consulting

FTI Consulting demonstrated the value of **power-mapping and investigative skills** when it was hired by some government body to perform a forensic audit at an entity, to unravel the extent of fraud, determine the perpetrators, and advise on the next course of auction.

1. Source: Standard Chartered, Managing risk in Emerging Markets, 2016, page: 7; and OECD, Preventing corruption in public procurement, page: 6.

Out of 44 ICSID disputes in African energy and mining since 1978, there are four most commonly occurring underlying causes

| Underlying cause | Claimant | Respondent | Industry | Registered |
|--------------------------------|-----------------------------|--------------|--------------------------------------|------------|
| I. Breach of contract | Maritime Int'l Nominees | Guinea | Mineral transportation | 1984 |
| | SIREM | Burkina Faso | Mining | 1997 |
| | Joy Mining Machinery | Egypt | Mining | 2003 |
| | RSM Production Corp | CAR | Petroleum exploration and production | 2007 |
| | Ampal-American Israel | Egypt | Natural gas export | 2012 |
| | Lundin Tunisia | Tunisia | Oil exploration and production | 2013 |
| II. Illegal seizure | AGIP | Congo | Oil products distribution | 1978 |
| | Ilunga Jean Mukendi et. al. | DR Congo | Mining | 2003 |
| | Shell Nigeria Ultra Deep | Nigeria | Hydrocarbons exploration | 2007 |
| | Carnegie Minerals | Gambia | Mining | 2009 |
| | Sudapet Company | South Sudan | Hydrocarbons exploration | 2012 |
| | Interocean Oil Development | Nigeria | Oil exploration and production | 2013 |
| | AngloGold Ashanti | Ghana | Mining | 2016 |
| III. Licensing / titles | Ridgepointe Overseas | DR Congo | Mining | 2000 |
| | Daniela Contri et. Al. | South Africa | Quarrying and trading | 2007 |

Out of 44 ICSID disputes in African energy and mining since 1978, there are four most commonly occurring underlying causes

| Underlying cause | Claimant | Respondent | Industry | Registered |
|---|----------------------------|----------------|--------------------------------------|------------|
| III. Licensing / titles (cont'd) | Diamond Fields Liberia | Liberia | Mining | 2011 |
| | RSM Production Company | Cameroon | Hydrocarbons exploration | 2013 |
| | African Petroleum Gambia | Gambia | Petroleum exploration and production | 2014 |
| | BSG Resources | Guinea | Mining | 2014 |
| | Bumi Mauritania | Mauritania | Mining | 2014 |
| | Cortec (Pty) Limited | Kenya | Mining | 2015 |
| IV. Tax | Alain Goetz et. al. | Burundi | Mining | 1995 |
| | Mærsk Olie et. al. | Algeria | Hydrocarbons exploration | 2009 |
| | Lundin Tunisia | Tunisia | Oil exploration and production | 2012 |
| | Tullow Uganda Operations | Uganda | Petroleum exploration and production | 2012 |
| | Société des Mines de Loulo | Mali | Mining | 2013 |
| | Tullow Uganda | Uganda | Natural gas liquefaction | 2013 |
| | Total E&P Uganda | Uganda | Oil exploration and production | 2015 |
| Miscellaneous | Guadalupe Gas Products | Nigeria | Natural gas liquefaction | 1978 |
| | National Oil Corp | Libyan Sun Oil | Oil exploration and production | 1985 |

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| Miscellaneous | Alain Goetz et. al. | Burundi | Mining | 2001 |
| | Compagnie Minière et. al. | DR Congo | Mining | 2010 |
| | National Gas SAE | Egypt | Gas pipelines construction | 2011 |
| | Unión Fenosa Gas | Egypt | Natural gas liquefaction | 2014 |
| | SA Interpétrol Burundi | Burundi | Petroleum products supply | 2014 |
| Insufficient information | Société Kufpec | Congo | Petroleum exploration and production | 1997 |
| | Banro American et. al. | DR Congo | Mining | 1998 |
| | Société Mines d'Or de Sadiola | Mali | Mining | 2001 |
| | TG World Petroleum | Niger | Oil exploration and production | 2003 |
| | Russell Resources Congo | DR Congo | Mining | 2004 |
| | RSM Production Corp | Cameroon | Hydrocarbons exploration | 2011 |
| | Hess Equatorial Guinea et. al. | Eq. Guinea | Hydrocarbons exploration | 2012 |
| | Equatorial Guinea | CMS Energy | Oil and gas enterprise | 2012 |
| | BSG Resources et. al. | Guinea | Mining | 2015 |

Key issues in quantum aspects for energy and mining cases

Energy industry

- Sources may differ on projected **prices**
- **Capex projections**, which may include the future investments required to close the facility
- Cost structure
- The **discount rate** to be determined can be hard to estimate, and should reflect inter alia:
 - Country risk
 - Capital structure
 - Rates applied to similar comparables



Mining industry

- Key inputs to the mining industry **are similar to the ones of the energy industry**
- Price must take into account:
 - The **source** to use for projection of prices
 - The **purity** of the metal
 - **Transport**
- The **volume** of metal that is expected to be extracted
- The **determination of the stage of development** of the mine is often key in the debate as it influences the valuation methodology to be used

| Valuation | DCF | Market comparables | Costs |
|-----------------|------------|--------------------|------------|
| Exploration | No | Yes | Yes |
| Pre-development | Some cases | Yes | Some cases |
| Development | Yes | Yes | No |
| Production | Yes | Yes | No |

Source: Code VALMIN 2015; ICMVaL Standards and Guidelines

Experts with Impact TM

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