World Energy Investment 2017

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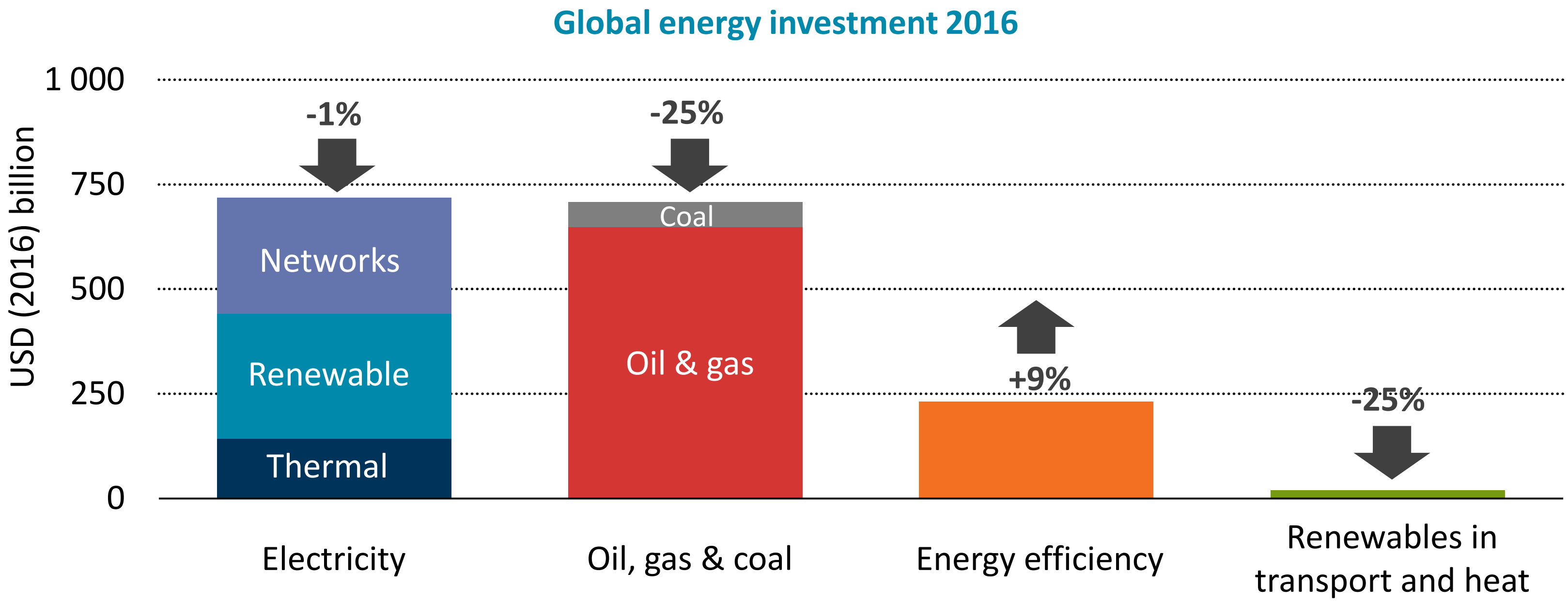
IEA

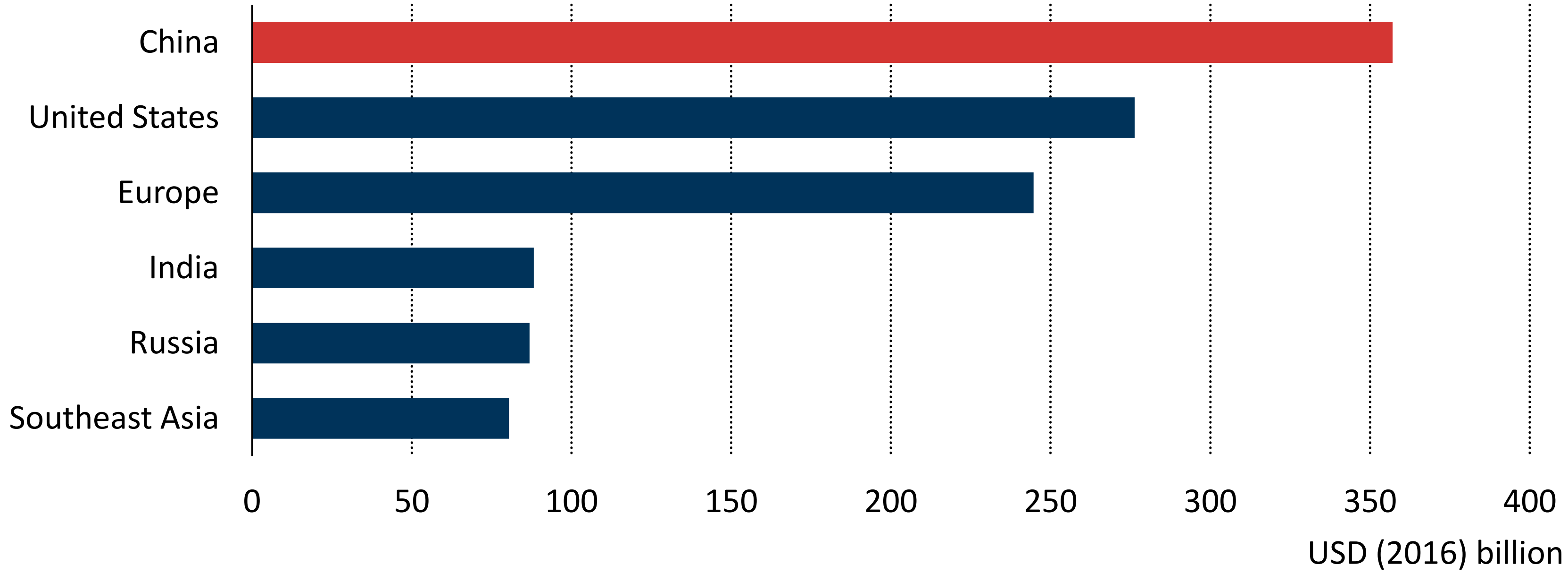
Global energy investment fell 12% in 2016, a second consecutive year of decline



Total energy investment was $1.7 trillion in 2016. Electricity sector investment overtook oil and gas for the first time, while energy efficiency was the biggest growth sector.

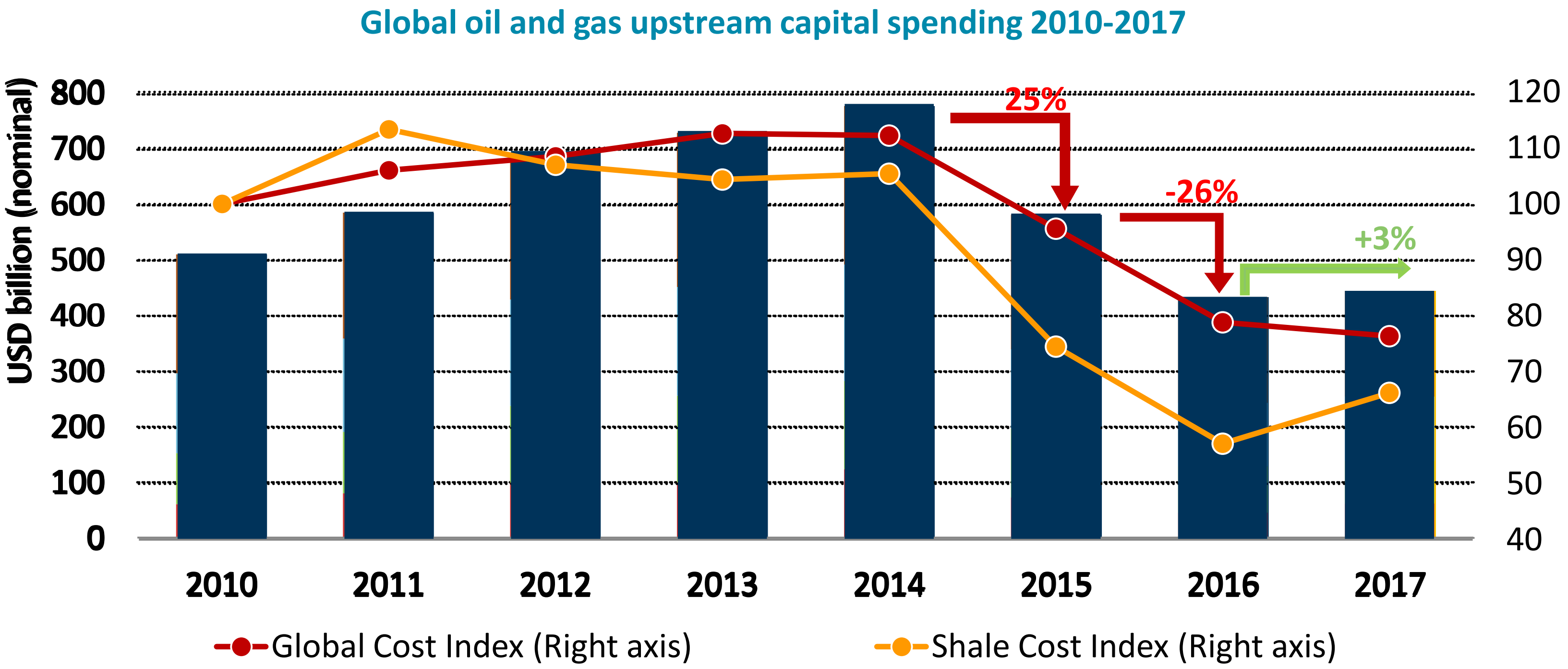
China remains the first destination of energy investment in 2016

Energy investment in selected markets, 2016



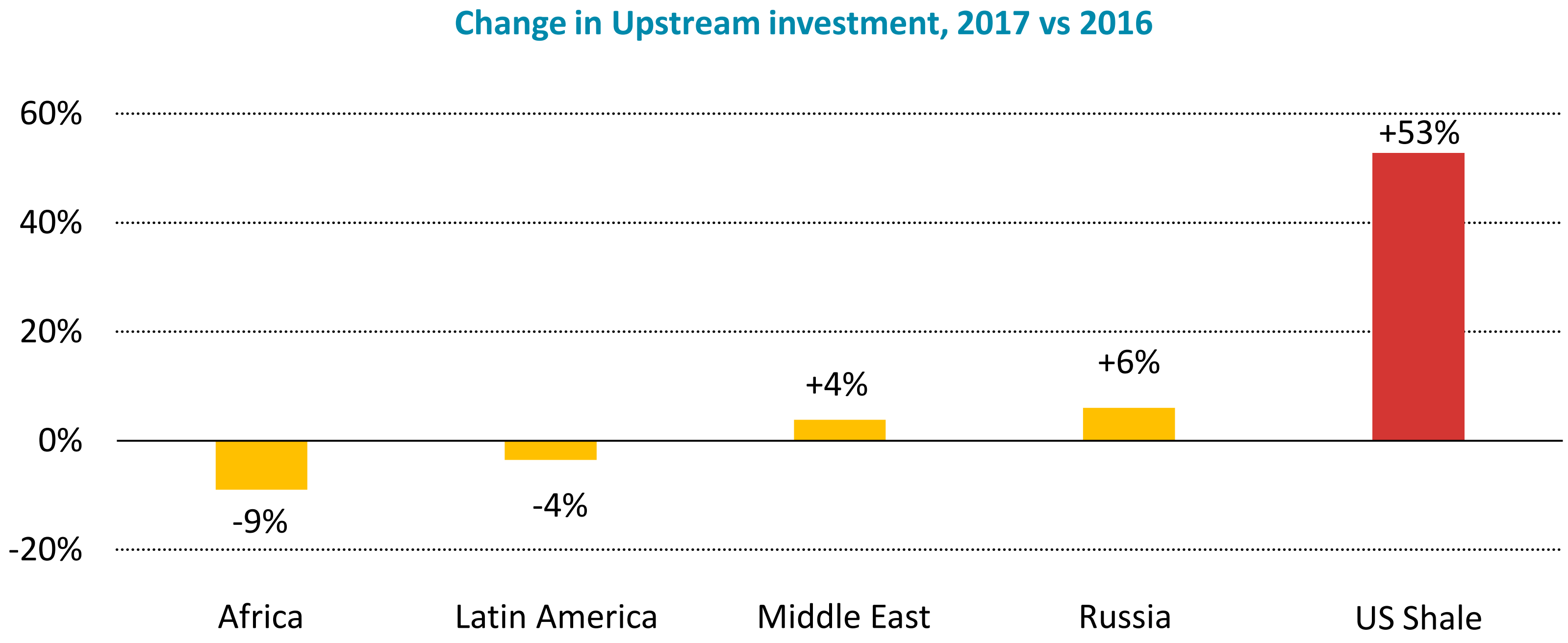
China represented 21% of global energy investment, supported by electricity supply and networks; despite a sharp decline in oil and gas, the US total share rose significantly.

Global upstream investment rebounds modestly in 2017



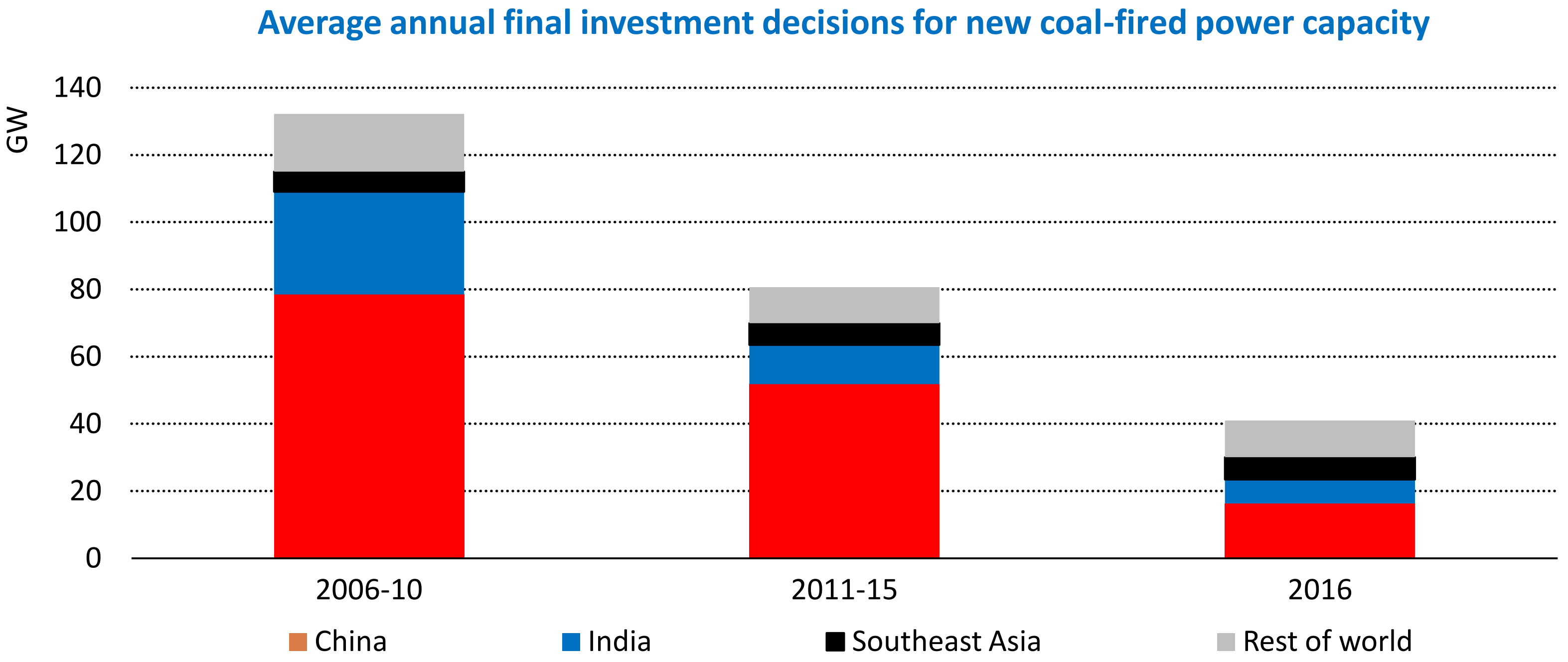
Ramp up of activities leads to cost inflation in US tight oil but elsewhere upstream costs decline further. NOC' share in total investment reaches another record high.

A two-speed world oil market



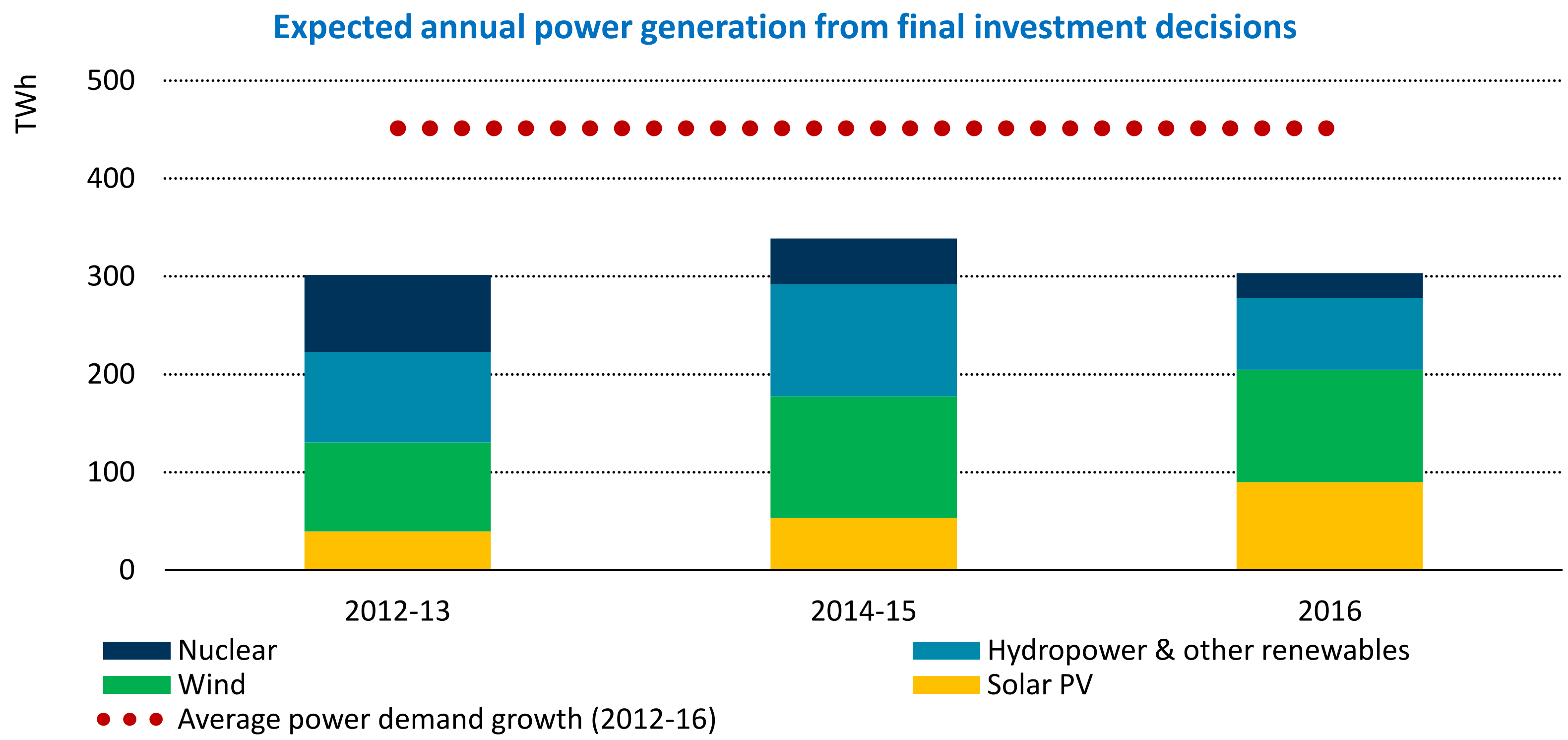
After two years of unprecedented decline, global upstream investment is expected to stabilize in 2017, but downside risks remain

A wave of coal power investment is coming to an end?



In 2016 the sanctioning of new coal power fell to the lowest level in nearly 15 years, hampered by competition from renewables and environmental challenges. Gas power FIDs surpassed coal for only the second time in the past decade.

Investment in clean power is not keeping pace with demand



While the contribution of new solar PV and wind has grown nearly three-quarters in the past five years, FIDs for nuclear and hydropower have slowed. Clean power FIDs in 2016 generate at only two-thirds the level of power demand growth.

Power company moves in 2017 illustrate range of strategic approaches

- **<u>Economic stabilization</u> and <u>diversification</u> of supply**

中国神华 CHINA SHENHUA + Merger 中国国电 CHINA GUODIAN

sembcorp → Acquisition → Solar C&I Holdings

- **<u>Fundamental shifts</u> in supply towards renewables**

DONG energy → Transformation → Ørsted

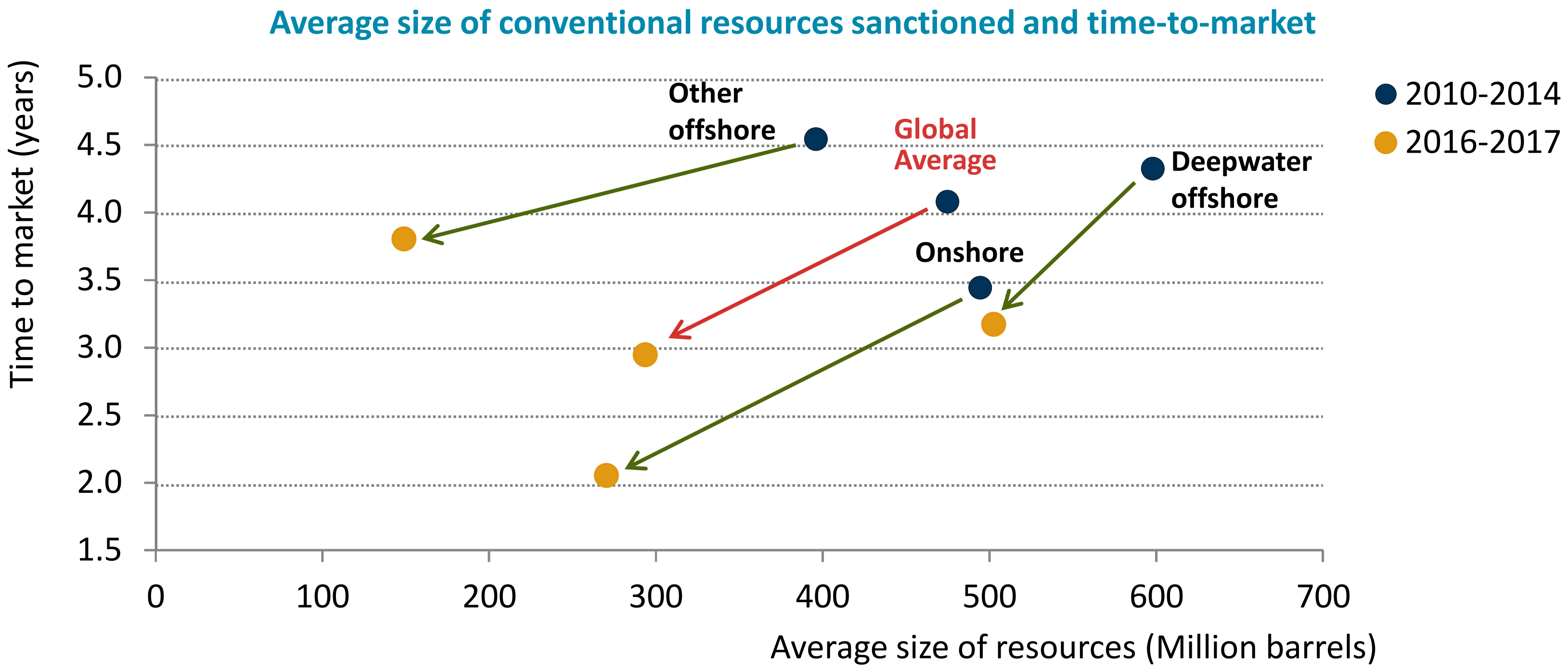
ENGIE ↔ Joint venture ↔ UNISUN 联盛新能源

- **<u>Integration</u> of supply with networks, flexibility, demand management and new services**

enel → Acquisition → ENERNOC, DEMAND energy

COOLTECH 科泰電源 → Acquisition → New Energy Automobiles

Oil and gas projects moving to shorter timelines and smaller sizes



A shift in company strategies and technology developments leads to shorter project cycles across all the oil and gas industry

Conclusions

- **Investment fell by 12% in 2016, a second consecutive year of decline, and electricity sector investment overtook oil, gas and coal investments combined**

- **Despite a decline in coal power investment, China remained the top destination for energy investment due to robust renewables, electricity networks and energy efficiency spending**

- **An upswing of US shale investment is creating a two-speed oil market and triggering a rapid transformation of the oil and gas industry**

- **Although electricity investment remains robust, policies need to focus on maintaining supply adequacy, stimulating an acceleration of clean power and strengthening market signals for investment in flexibility**

- **Investment decisions today will leave their mark on energy on energy infrastructure for decades to come; the IEA will continue to focus on investment as a cornerstone of a secure and sustainable energy system** iea