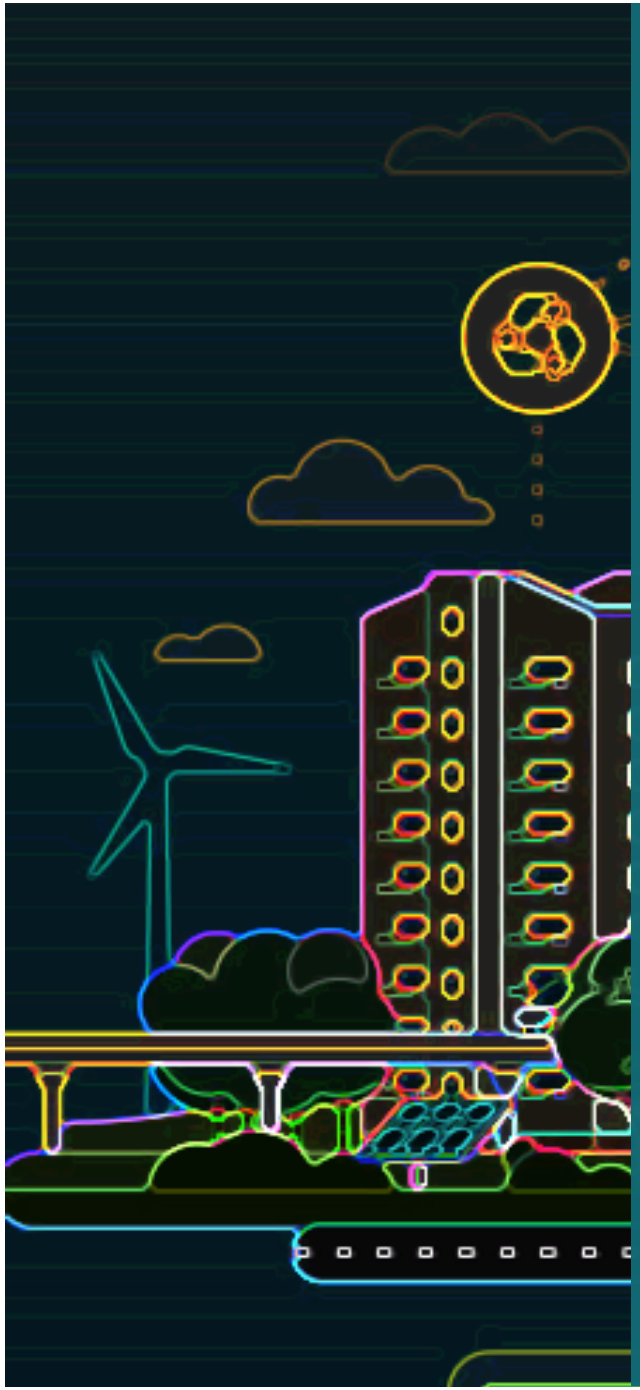

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Quantifying firm-level barriers to more effective private sector involvement in the transition towards low carbon energy system

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University of Otago

Research Objective

Quantify barriers to more effective private sector involvement in low carbon investment

- Measure the intensity of barriers that influence low carbon investment
- Explore how these barriers are being played out in low carbon projects

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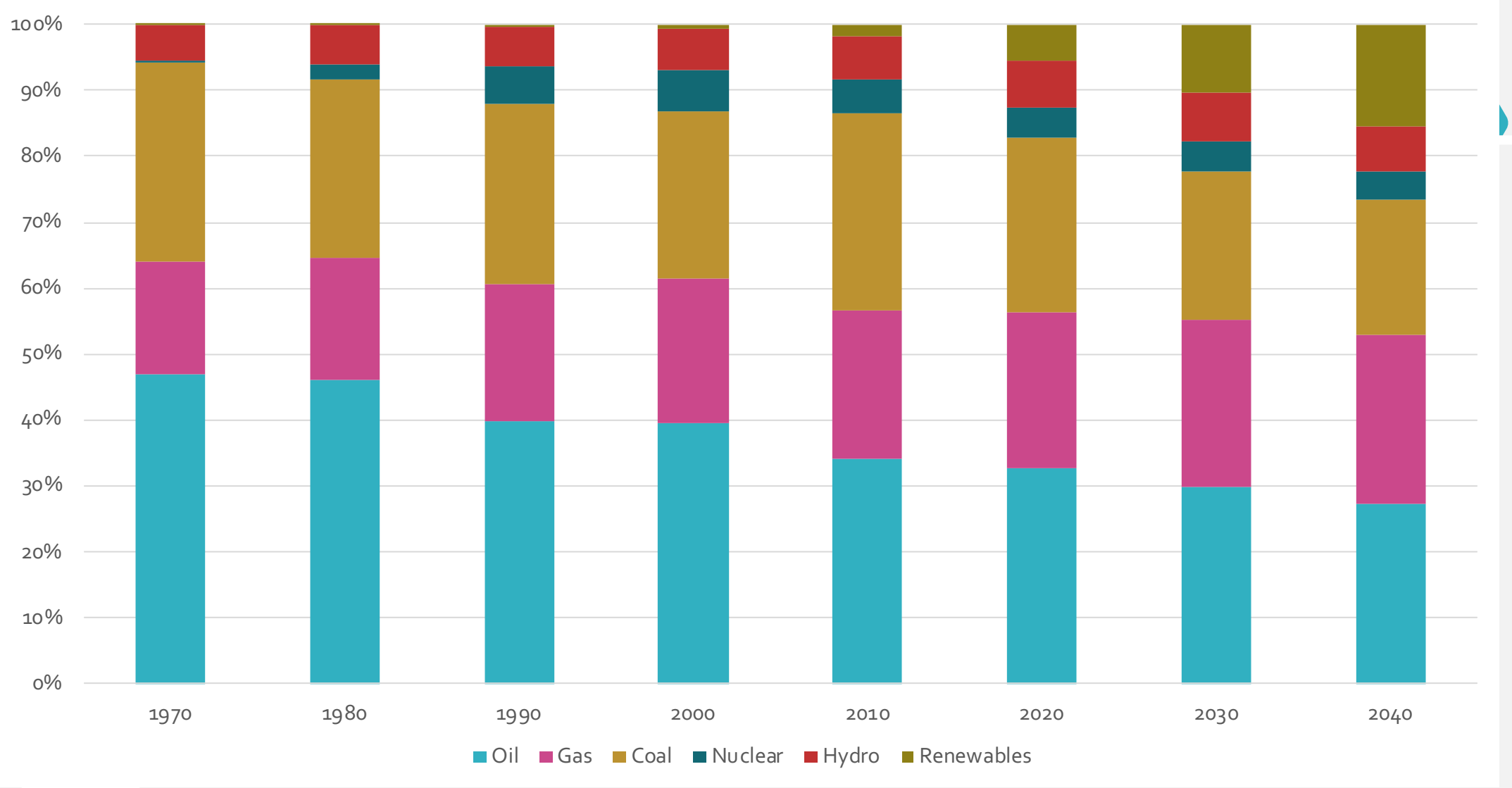
Total primary energy supply by fuel type (global)



Source: Data retrieved from BP, 2019

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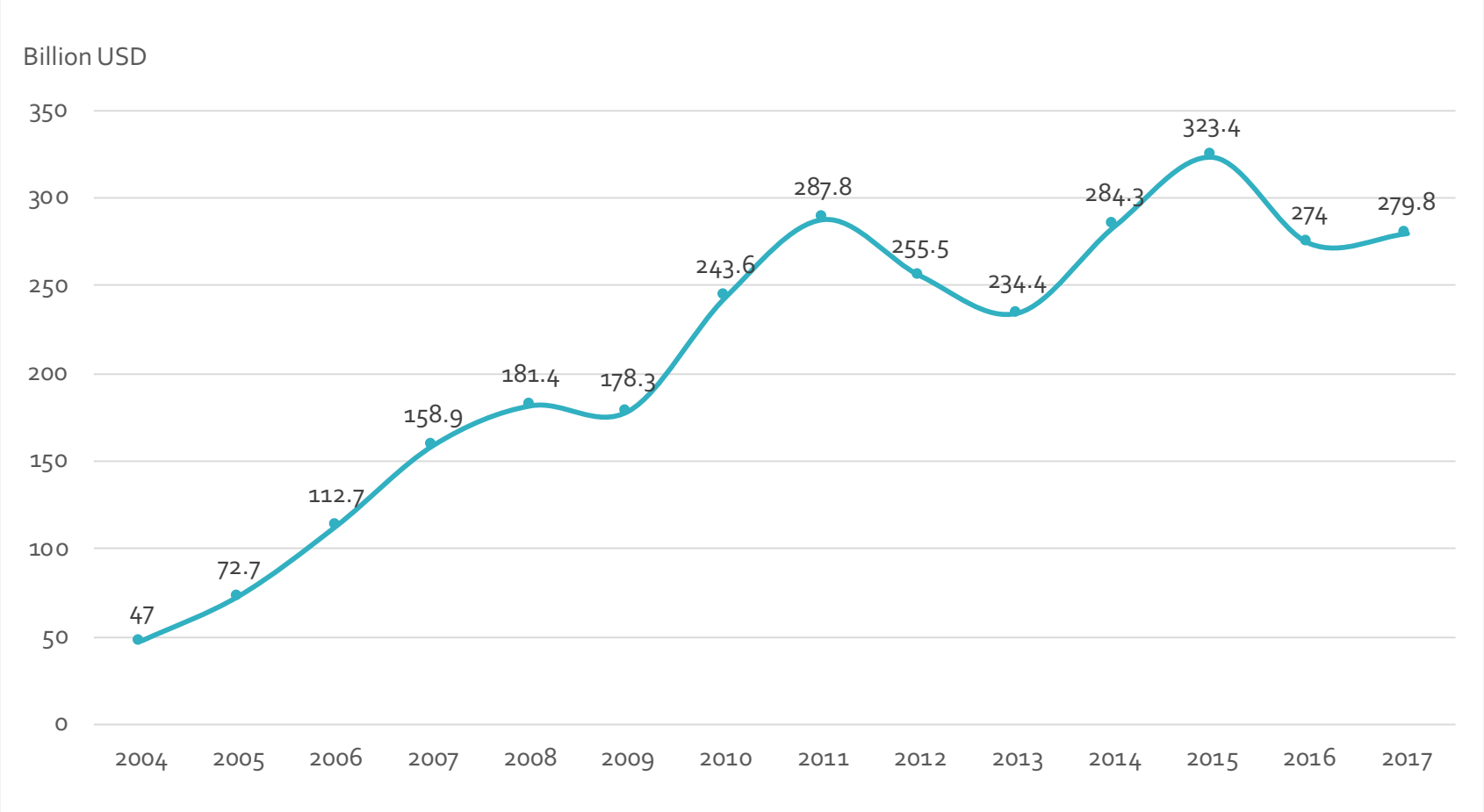
Low Carbon Investment Trend (global)



Source: Data retrieved from Bloomberg Energy Finance, 2018

Low carbon investment (LCI) in this study is defined as the ongoing capital spending in the upstream area of energy supply (i.e., electricity generation) that will add up the low carbon energy capacity.

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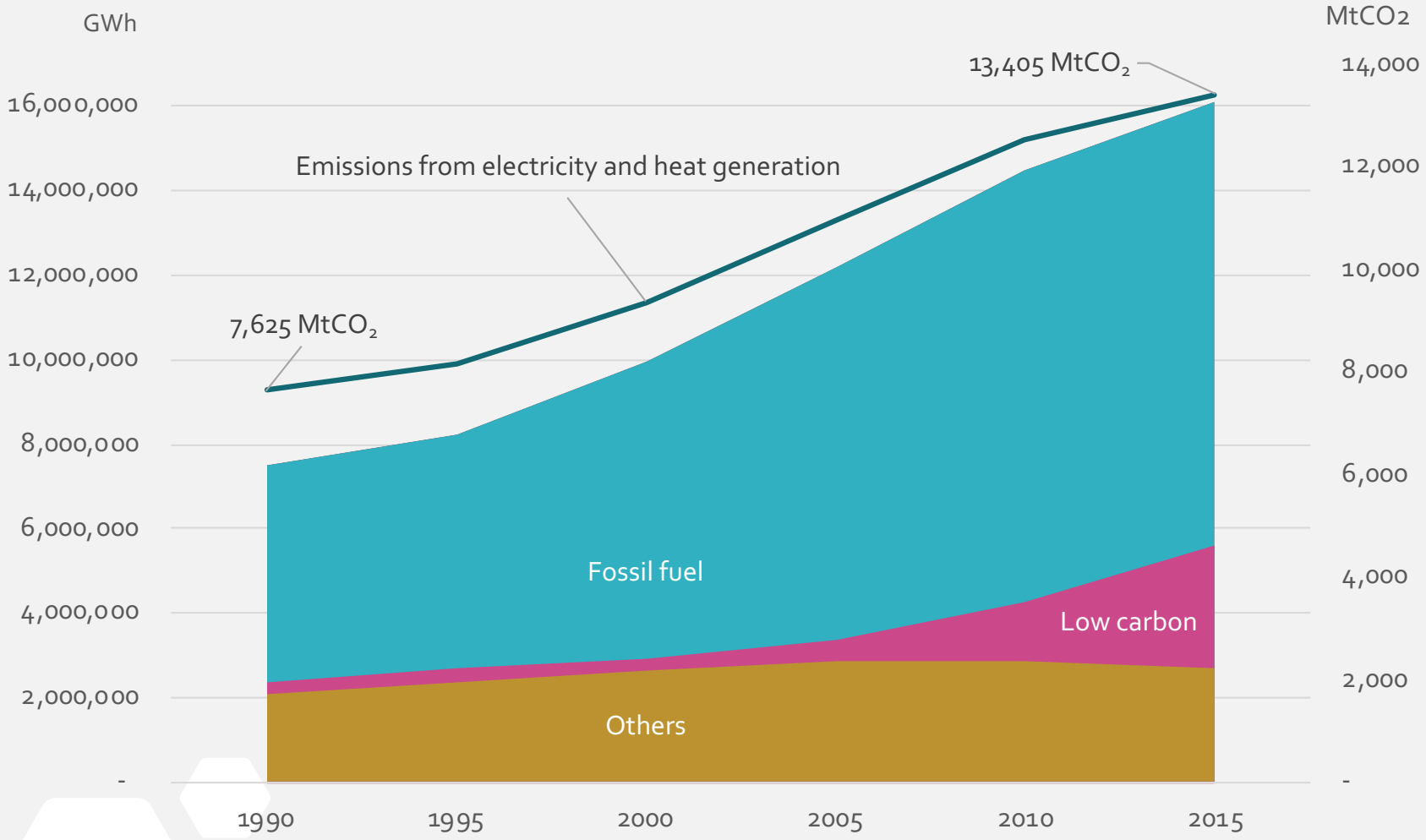
Global electricity generation and emission



Note:

- Other energy source is including waste, heat pumps, electric boilers, and heat from chemical sources.
- Fossil fuel includes oil, gas, and coal.

Source: Data retrieved from IEA Statistics

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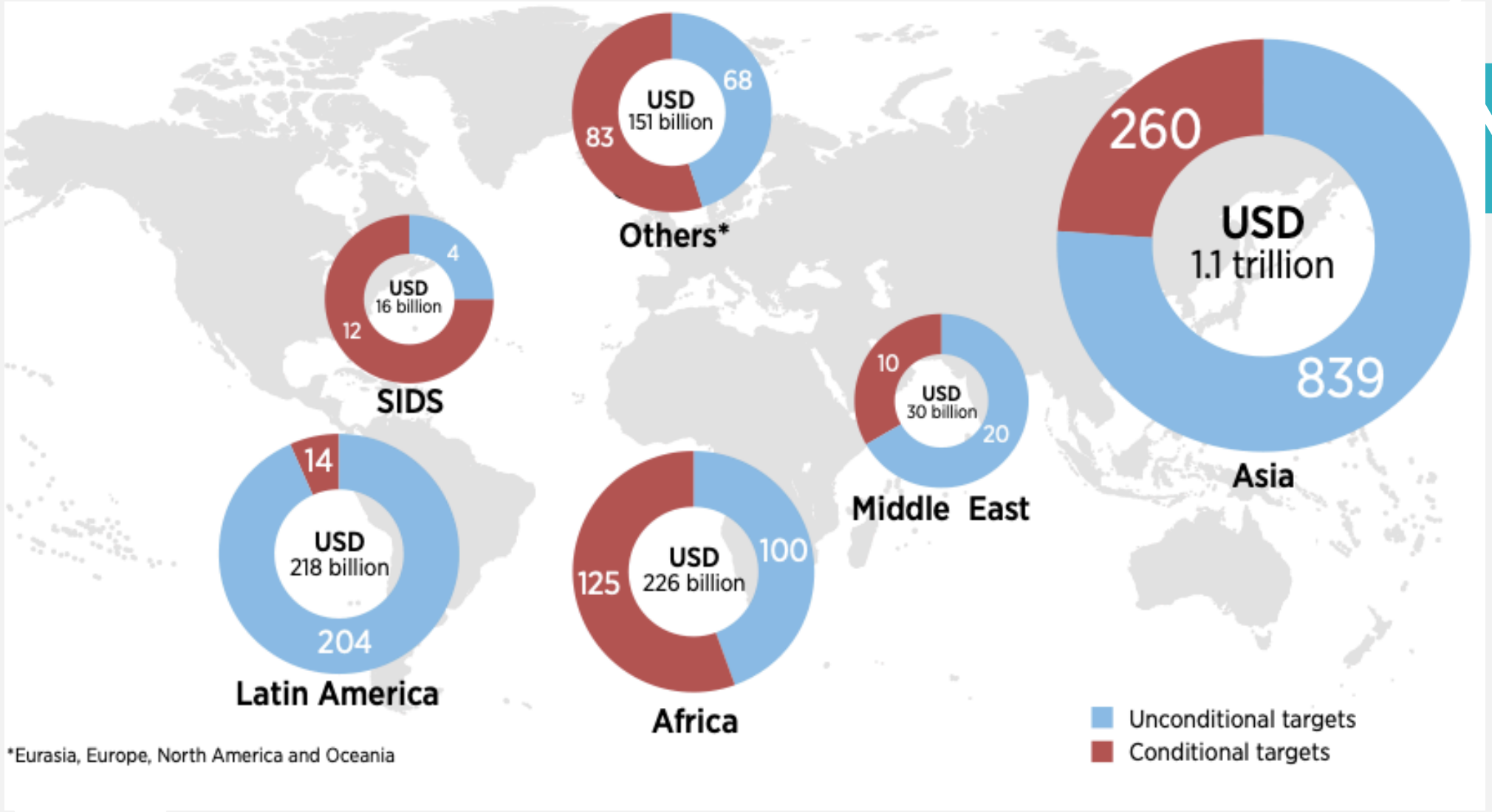
Total investment needed to achieve the NDC targets



Source: IRENA, 2017

Transition towards low carbon energy system

Huge investment needed

Governments are cash-strapped

Private finance mobilization

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Method

Research method

First, using a survey data, we quantify the intensity of investment barriers perceived by different countries, region, company size, and respondent targets

Barriers are classified into:

Second, using interviews data, we explore how these barriers and enablers are being played out in low carbon projects.

- Geothermal investments in Indonesia and New Zealand

  Upstream area and indirect use (i.e., electricity generation)

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Results

Low carbon investment barriers

- Perceived barriers are more uniform at the firm level, and are more divergent at the broader level (e.g., policy- and market-level)
- ASEAN respondents have generally positive coefficients on the LCI barriers variables compared to OECD respondents

Some of the most significant barriers are including:

- Lack of financing options
- Lack of capability on investment assessment
- High upfront costs
- Volatile energy prices
- Overlapping policies

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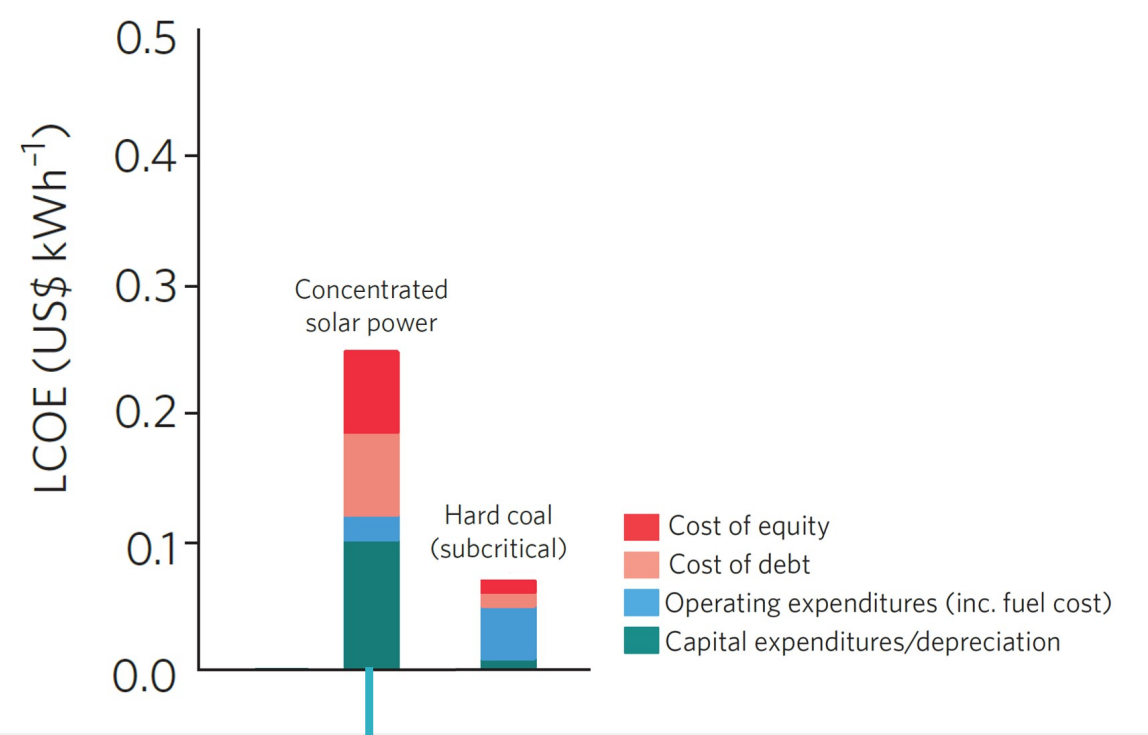
Low carbon investment barriers



(Schmidt, 2014)

High upfront cost
High risk
Immature technologies

High financing cost
(cost of equity and cost of debt)

Uncertain revenue stream

Price

Price volatility
Undesirable price level

Demand

Expected future demand?

High upfront cost
High risk
Immature technologies

High financing cost
(cost of equity and cost of debt)

Uncertain revenue stream

Price volatility
Undesirable price level

Expected future demand?

Lower financing costs:

- Concessional loan
- Grant
- Subsidy
- Other financial incentives (e.g., tax break)

Develop local supply chain

Favourable PPA

- Long-term price guarantee

Demand guarantee

- BVGL/offtaker contract

Getting carbon price and electricity price right

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Thank you

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