

CLEAN ENERGY INDEX AS THE UNBIASED APPROACH TO CLEAN ENERGY ECONOMY

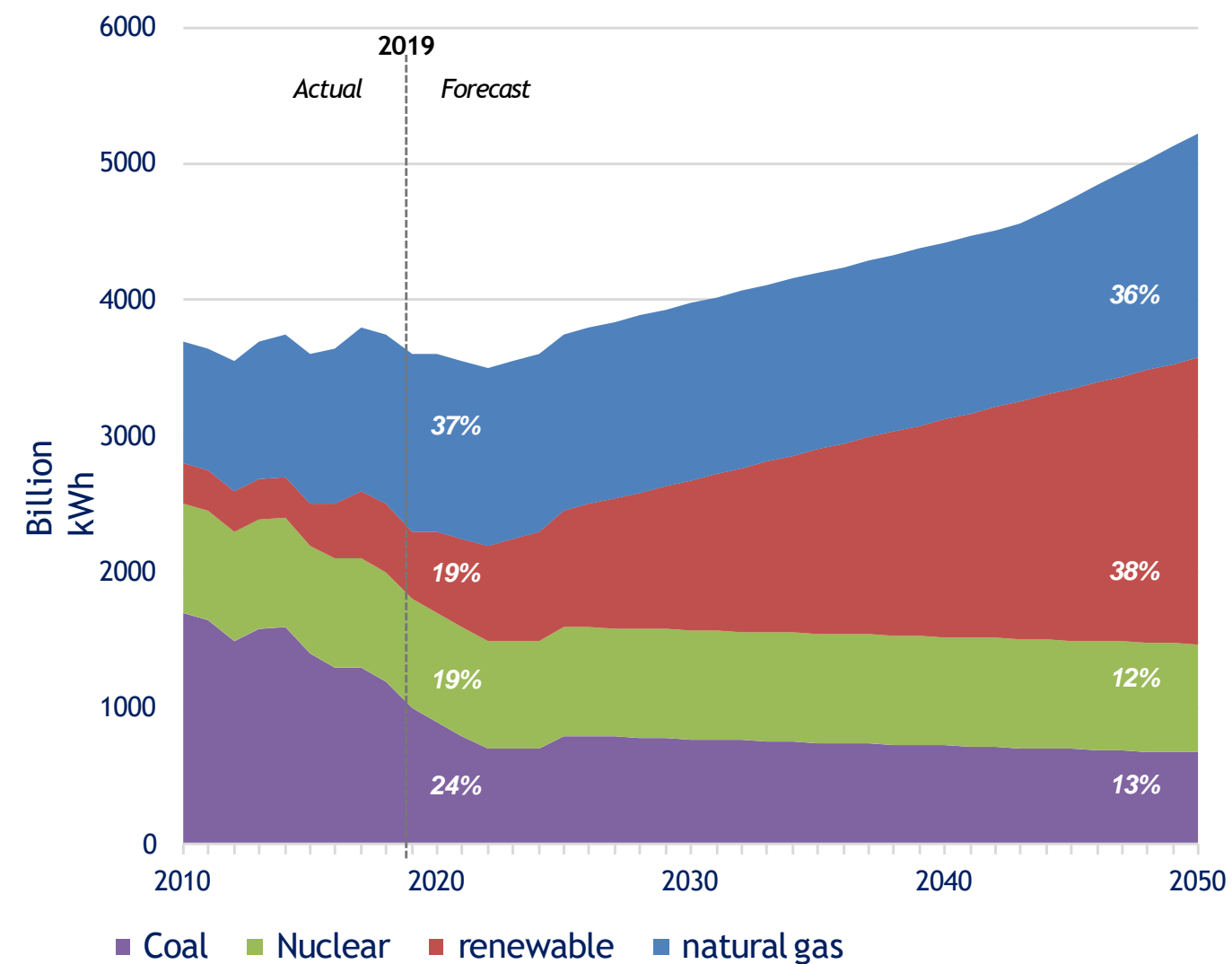
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Organization State Commission on
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INVESTMENT IN RES HAS NOT INCREASED SINCE 2015. ABSOLUTE GAS INCREMENT (AS A SOURCE OF ENERGY) BY 2050 WILL MAKE 35%

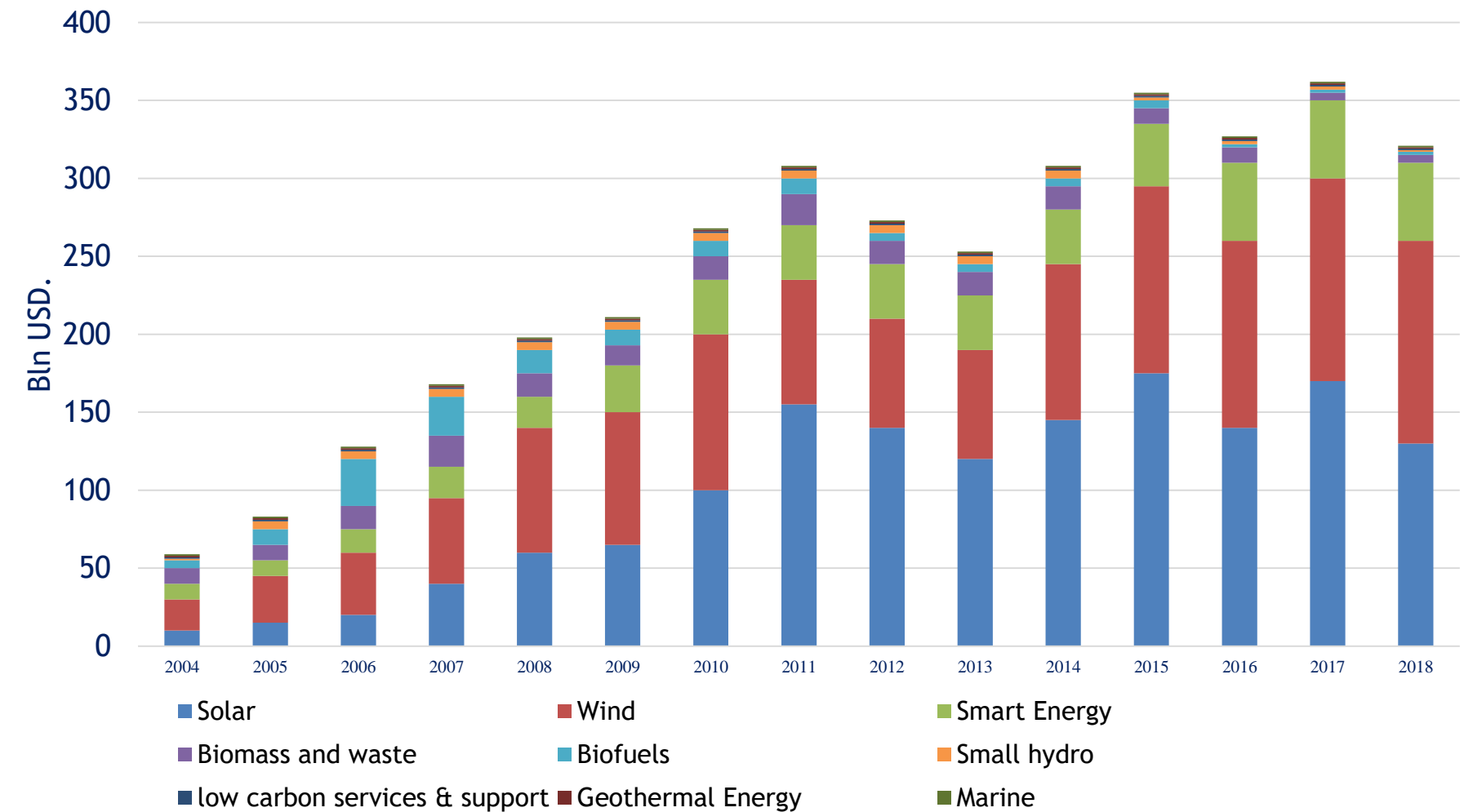
In the United States, power generation from natural gas and renewable energy sources is growing because of drop in price for natural gas and reduction of solar and wind energy value

Power generation from the selected fuel types (Base Case AEO2020)



Source: U.S. Energy Information Administration

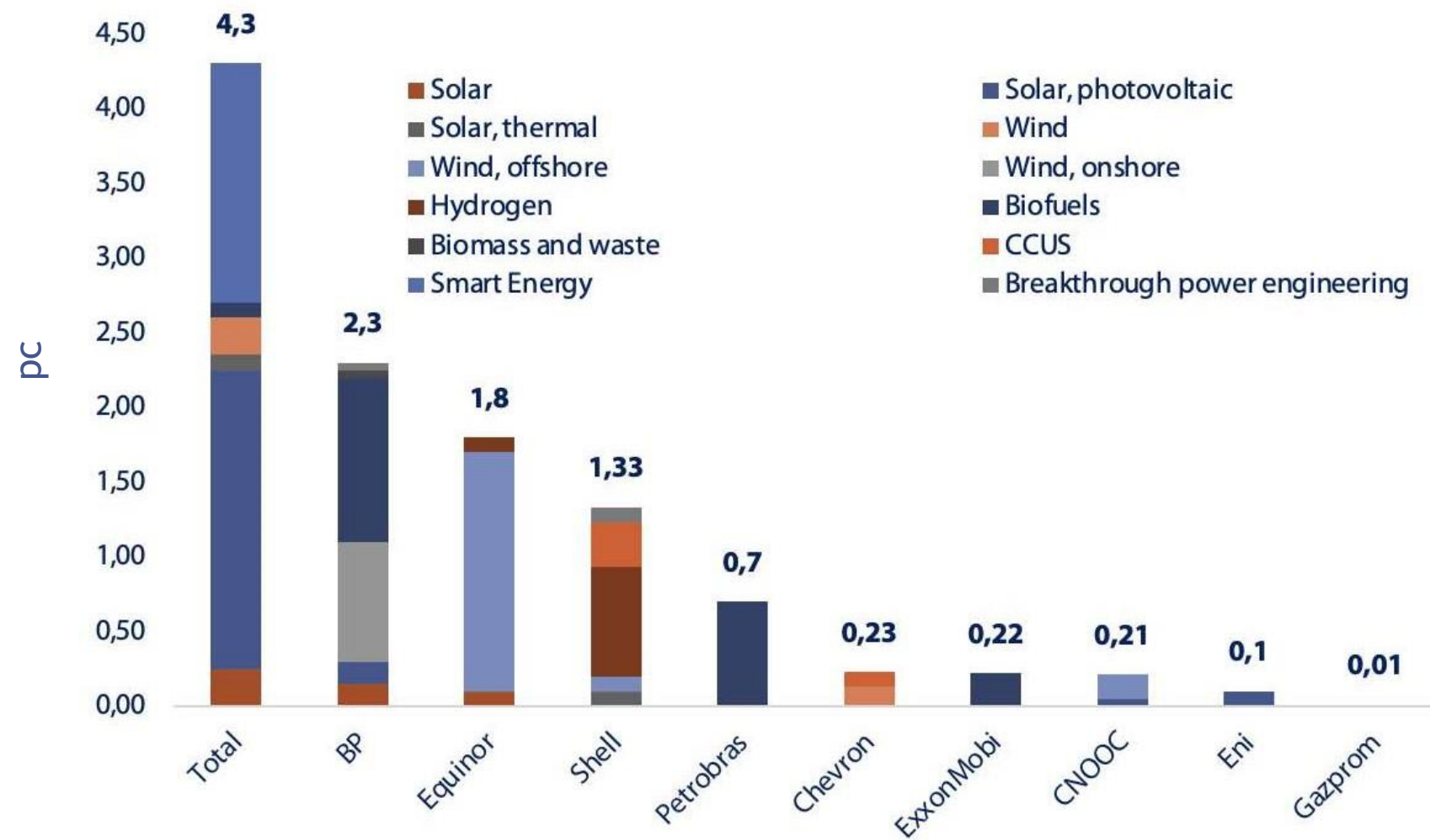
Global new investments in clean energy



Source: Bloomberg NEF

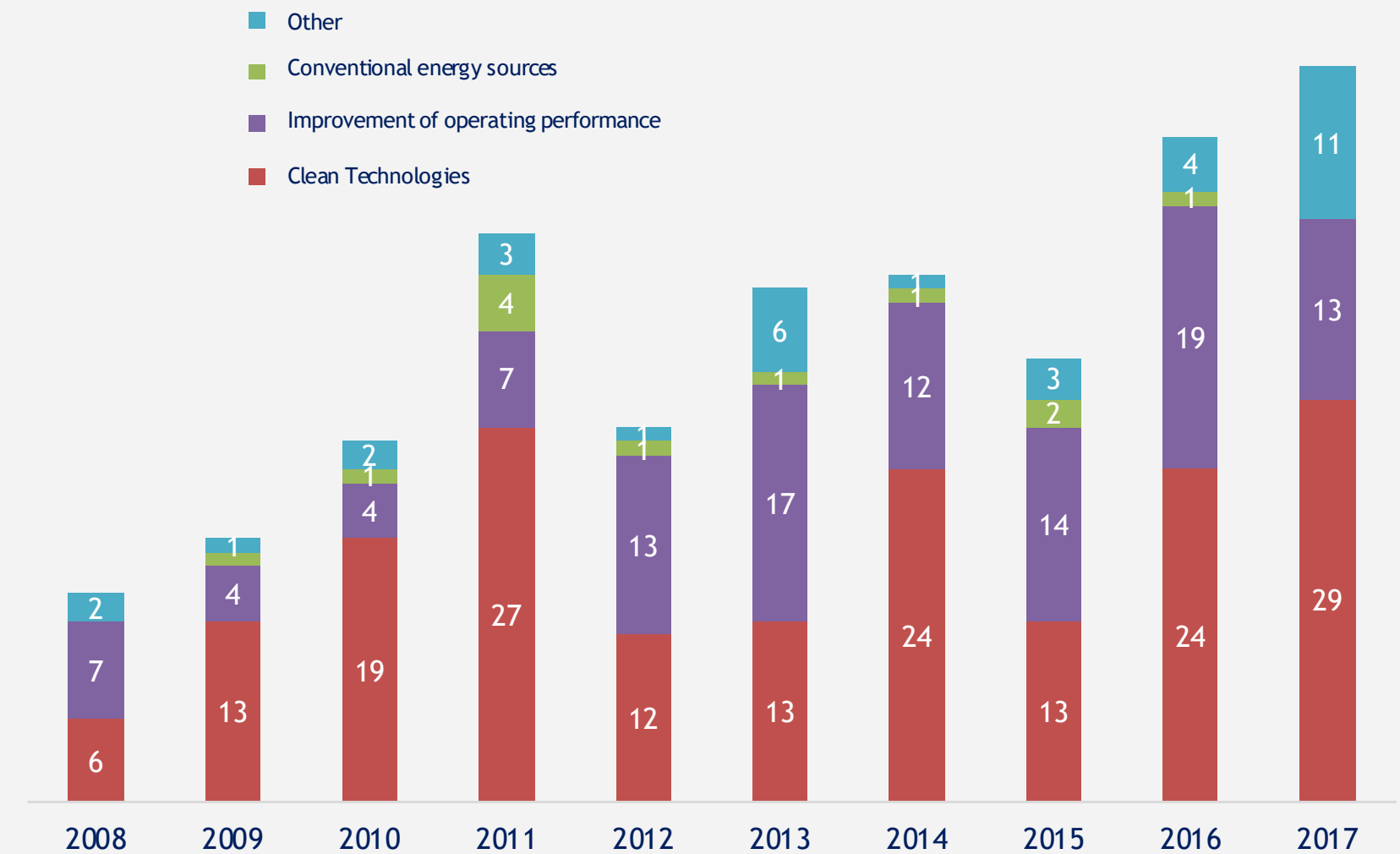
PROPORTION OF INVESTMENT IN RES WAS ONLY 0.5-4.2% OF TOTAL INVESTMENT OF THE LEADING OIL AND GAS COMPANIES FOR THE PERIOD FROM 2016 TO 2019

Proportion of investments of major oil and gas companies in low-carbon technologies



Sources: <https://www.petroleum-economist.com/articles/low-carbon-energy/energy-transition/2020/dividing-lines-appear-in-transition-approaches>

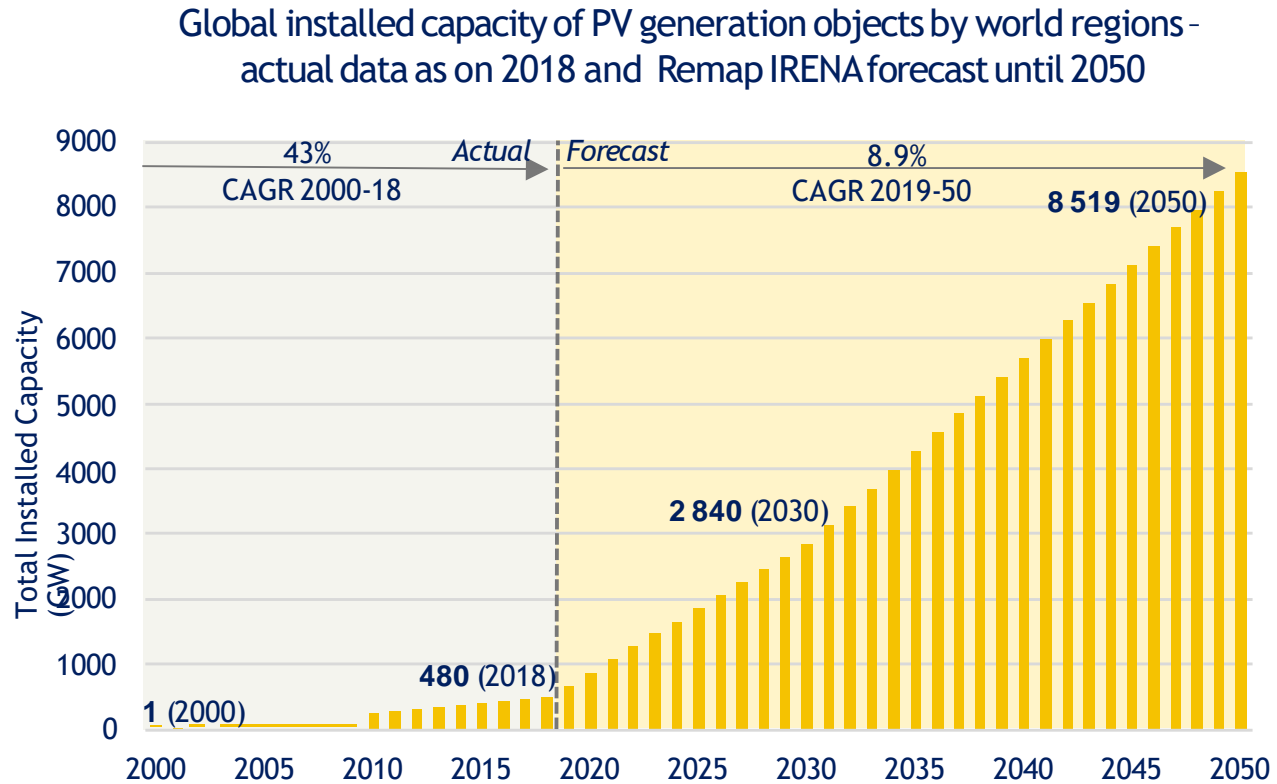
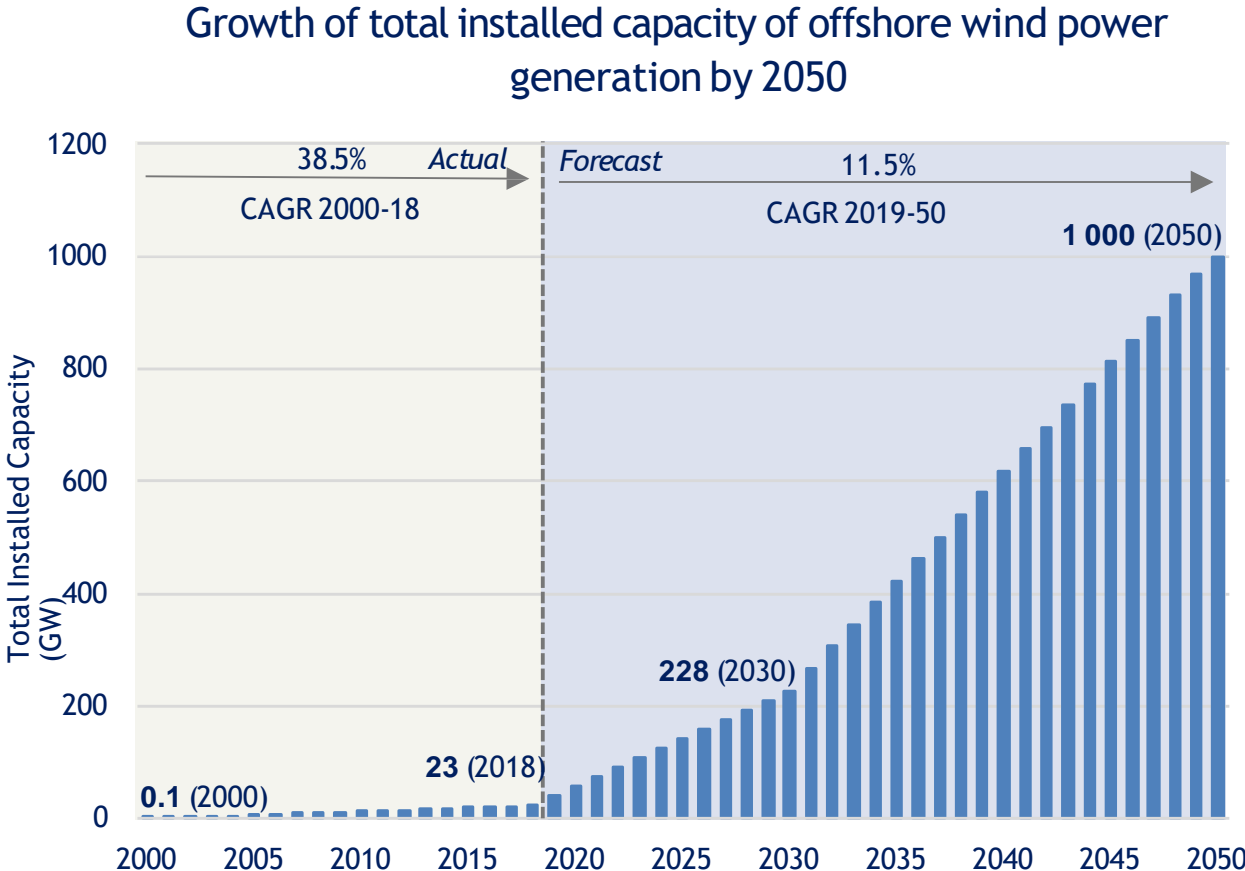
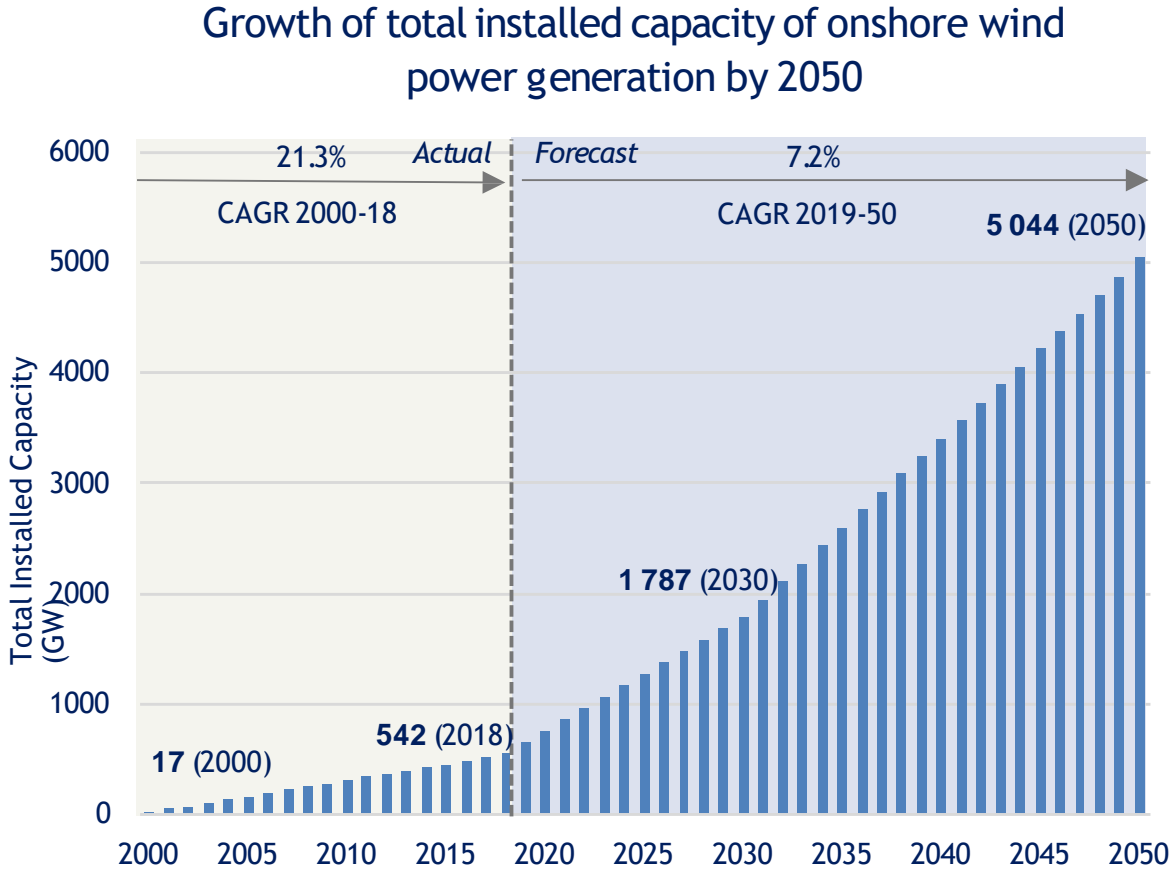
Investments of oil and gas corporations in 2008-2017



Source: CB insights

The main task of oil and gas companies is to create "clean" competitive technologies, which allow maintaining sustainable diversification of the energy market

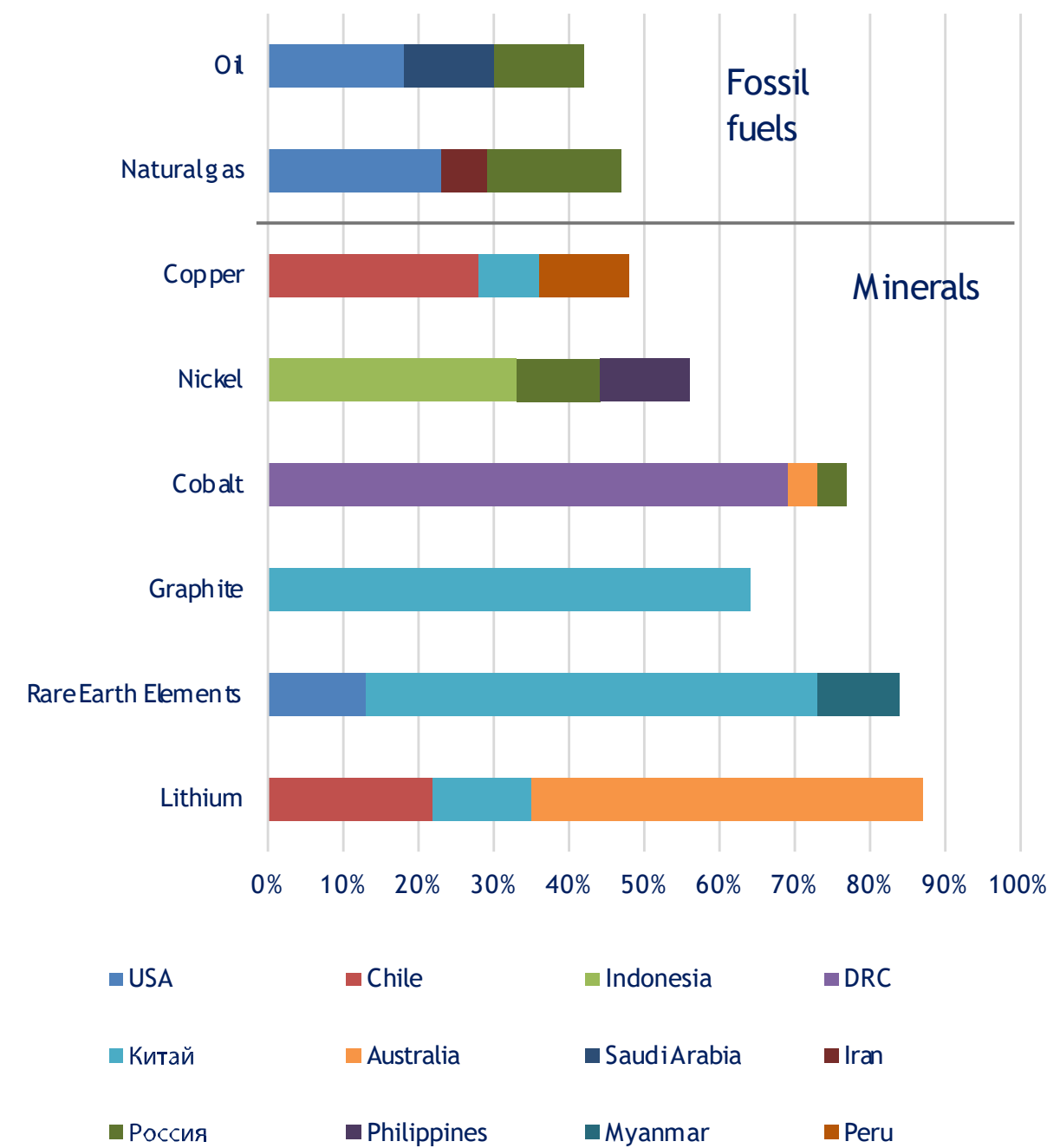
DEVELOPMENT OF RENEWABLE ENERGY SOURCES PROVIDES FOR 10-FOLD GROWTH OF ONSHORE WIND POWER GENERATION, 43-FOLD GROWTH OF OFFSHORE WIND POWER GENERATION, AND 17-FOLD GROWTH OF SOLAR POWER GENERATION BY 2050



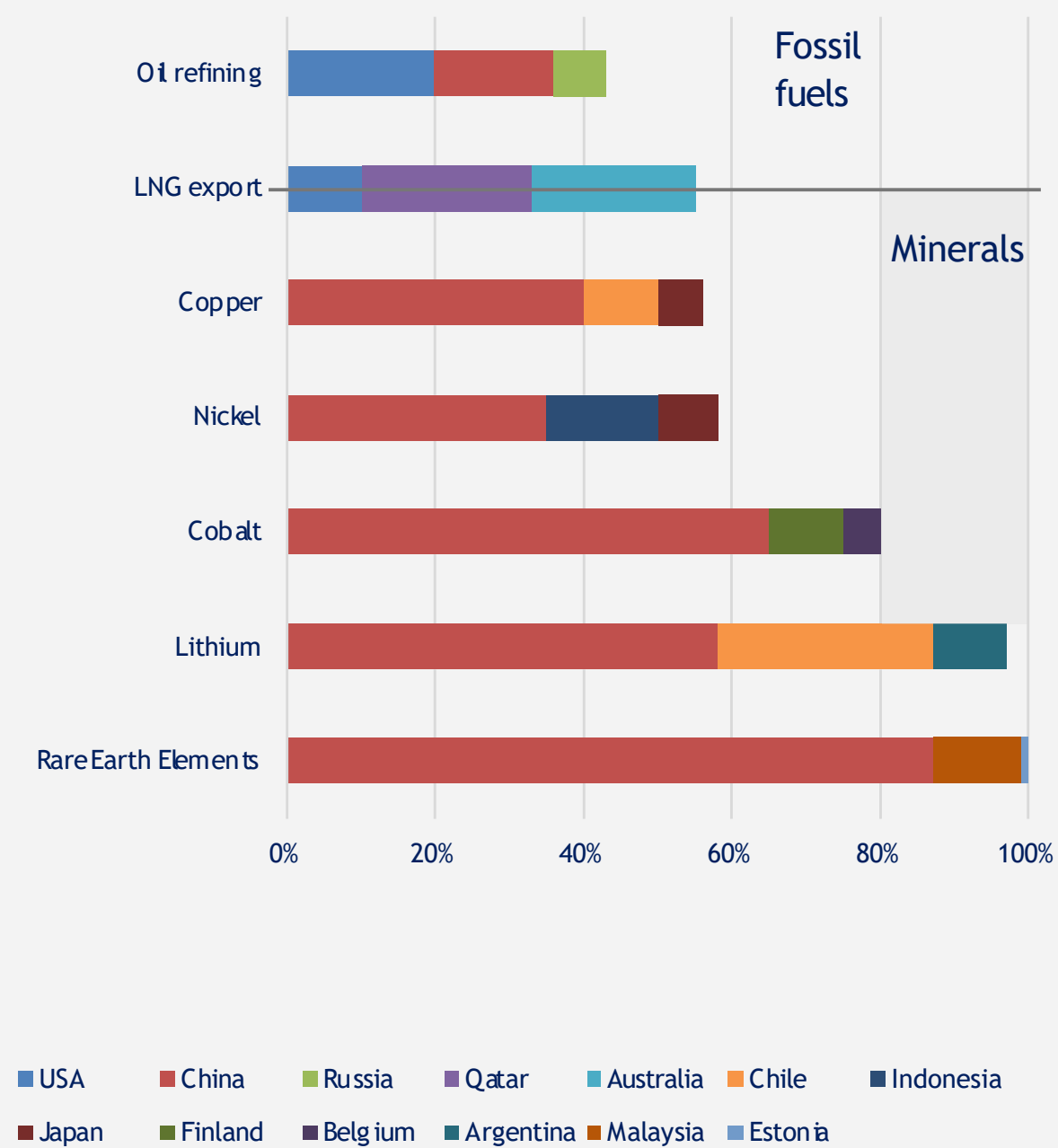
Source: IRENA

ROLE OF CRITICAL MINERALS IN TRANSITION TO CLEAN ENERGY

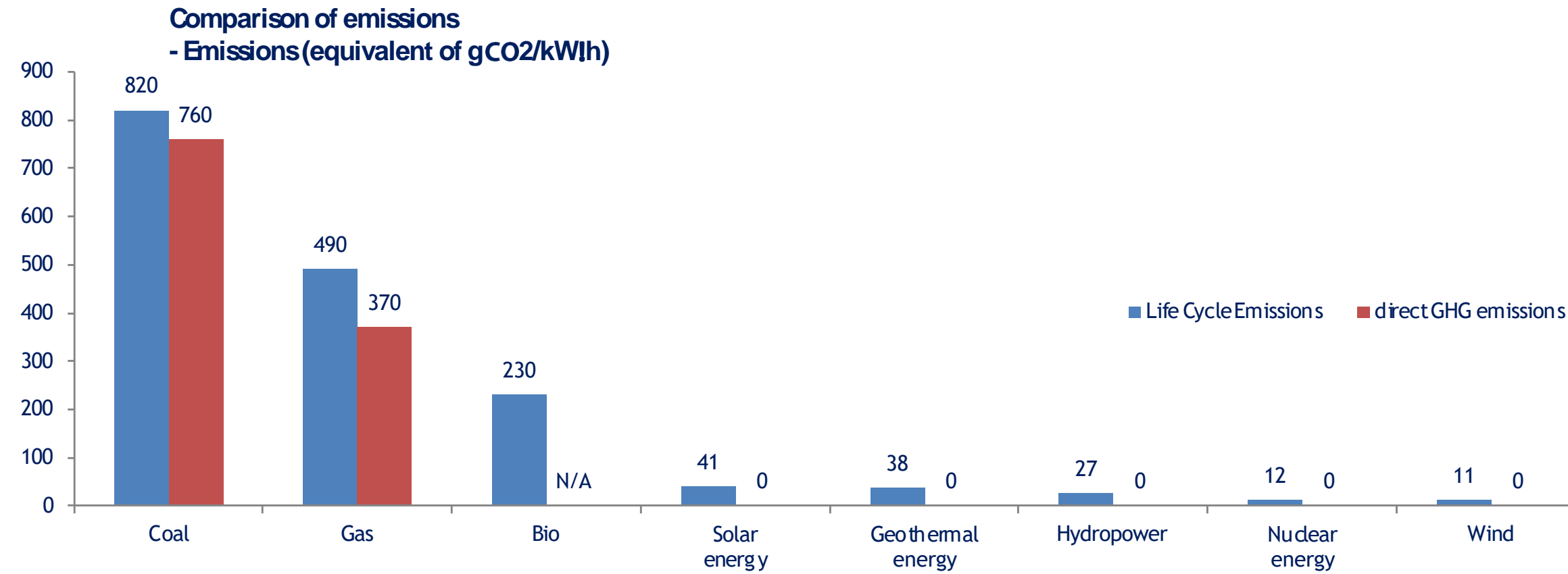
Proportion of top three producing countries in production of key minerals and fossil fuels, 2019



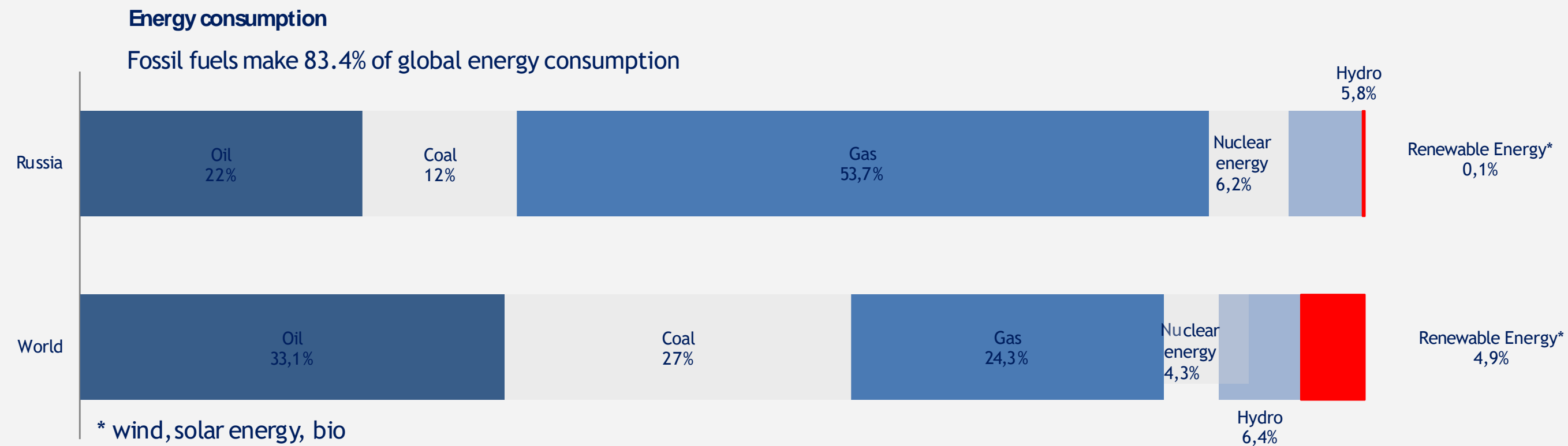
Proportion of top three producing countries in processing of key minerals and fossil fuels, 2019



Source: IEA

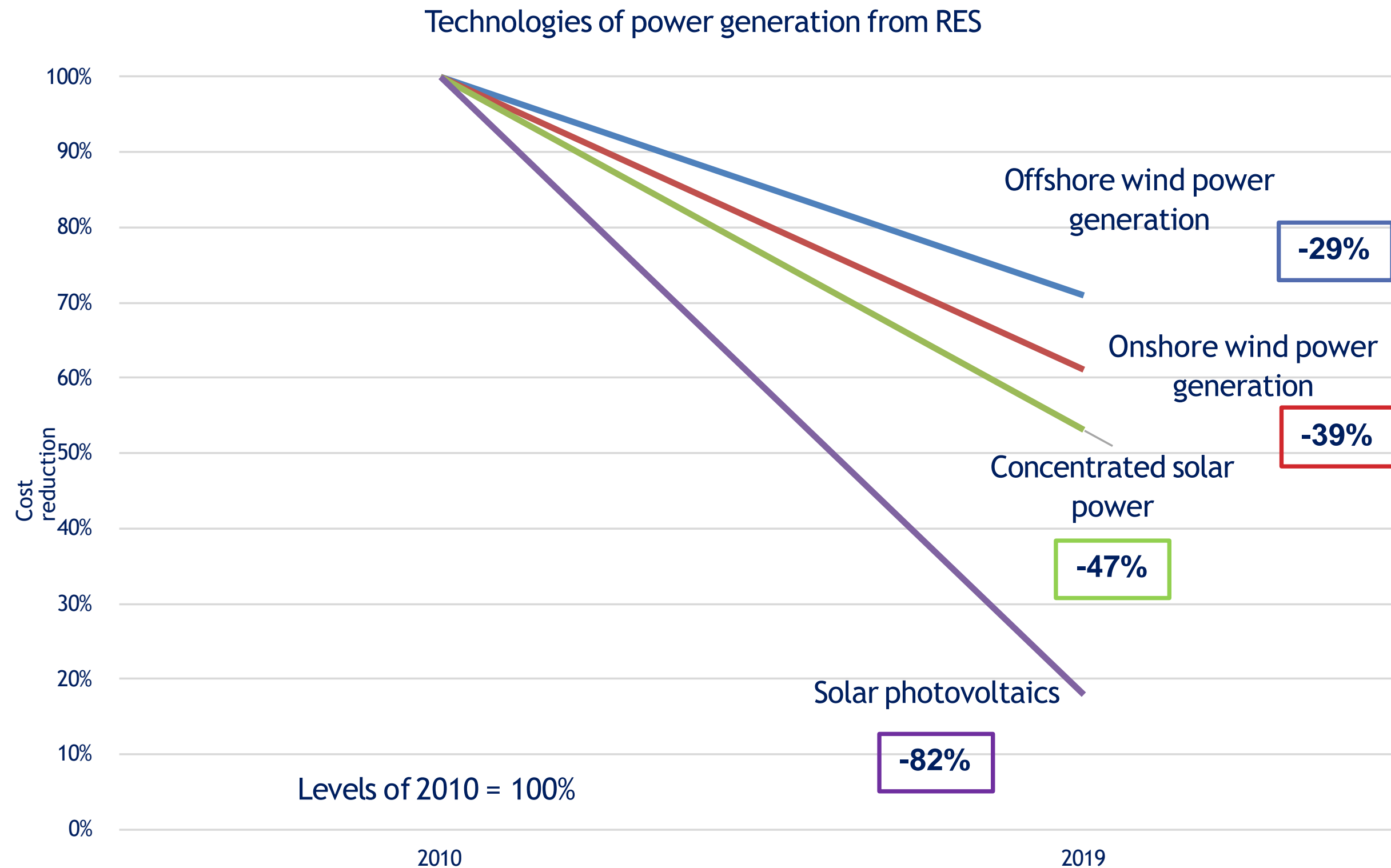


Comparison of direct greenhouse gas emissions and life cycle emissions from different energy sources
Source: Appendix to IPCC Study: Climate Change 2014 year (<http://www.ipcc.ch/report/ar5/wg3>)



Source: BP Statistical Review of World Energy 2020
<https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2020-full-report.pdf>

COST REDUCTION IN POWER GENERATION FROM RES



Source: IRENA

Clean Energy Index should become a key indicator to draw a comparison of the "cleanliness" and efficiency of different types of energy between each other

Clean Energy Index should take into account the full cycle of energy generation — from geological exploration and critical minerals production to disassembling used structures and facilities



THANK YOU FOR THE ATTENTION