

# COP 27 Official Event: Bridging the Investment Gap for Sustainable Energy Transitions



## Closing the Investment Gap to Achieve Paris Agreement Goals

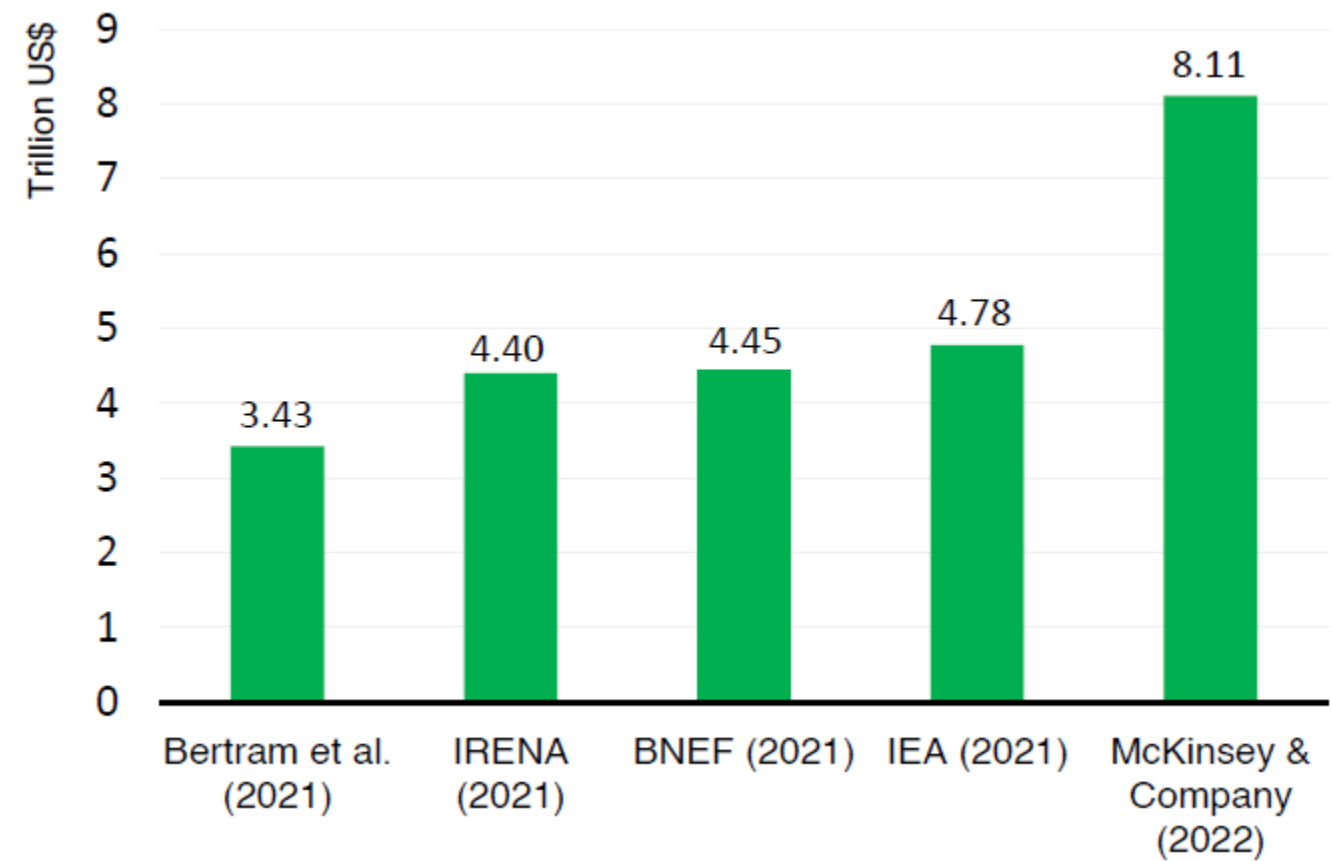
Authors: Fatih Yilmaz, Fahad Alswaina, Fateh Belaid, Mohamad Hejazi, Mari Luomi  
and Salaheddine Soummane

King Abdullah Petroleum Studies and Research Center



# Investment needs are unprecedented

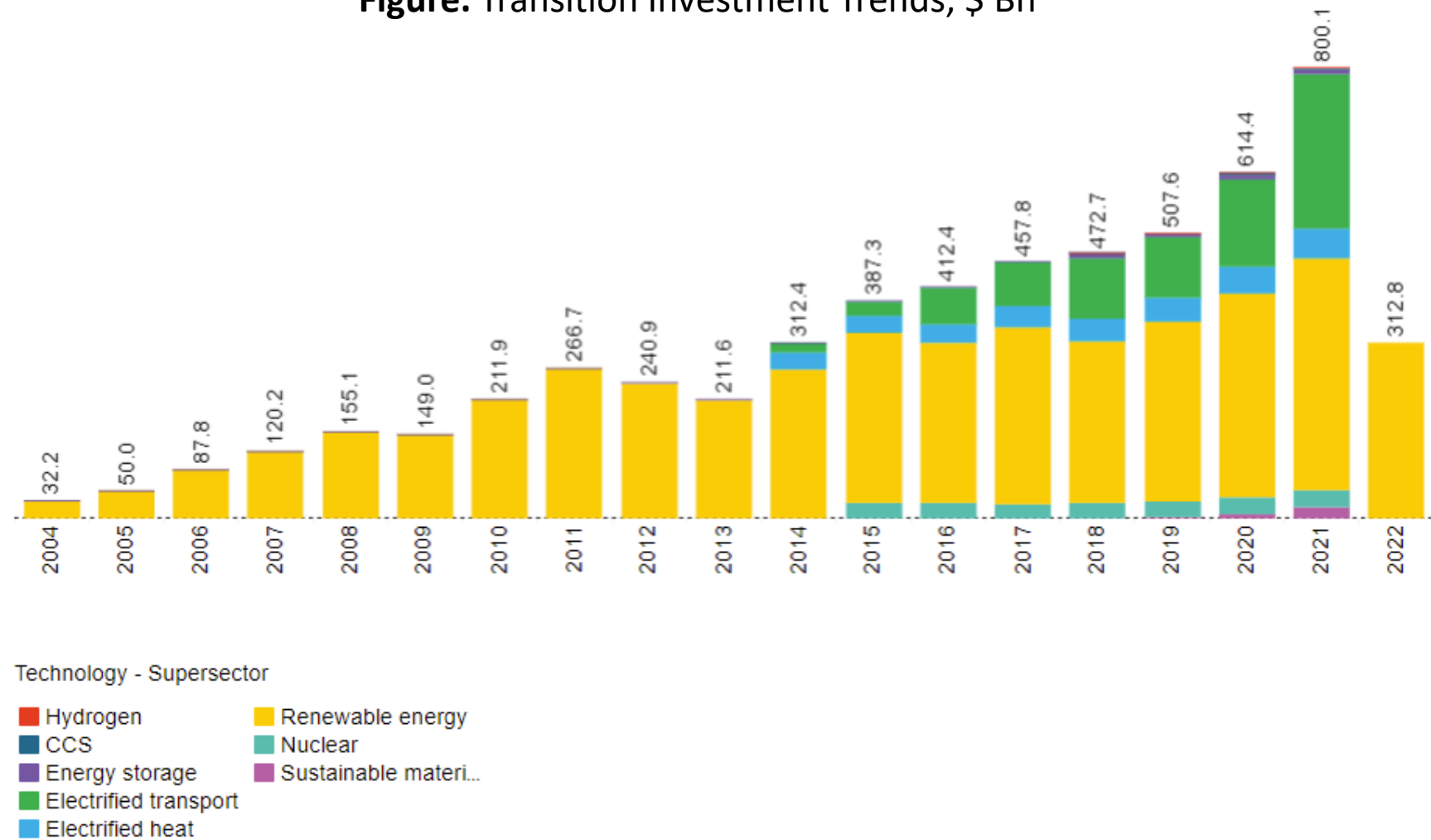
**Figure.** Average annual global investments in selected net-zero scenarios, 2021-2050.



Source: Authors' calculations based on Bertram et al. (2021), BNEF (2021), Gielen et al. (2021) labeled as IRENA in the figure, IEA (2021a) and McKinsey & Company (2022).  
Note: The reported investment figure for Bertram et al. (2021) is the average investment from five models, assuming a linear interpolation up to 2050. Total investments across models range between US\$2.2 trillion and US\$ 4.6 trillion in the year 2030 and between US\$3.0 trillion and US\$5.8 trillion in the year 2050. The reported investment figure for Bloomberg NEF (2021) is the average investment across scenarios, ranging between US\$3.1 trillion and US\$5.8 trillion. The investment value for McKinsey & Company (2022) is based on the reported cumulative investment of US\$275 trillion, excluding forestry.

# Actual investment levels are significantly low

Figure. Transition Investment Trends, \$ Bn

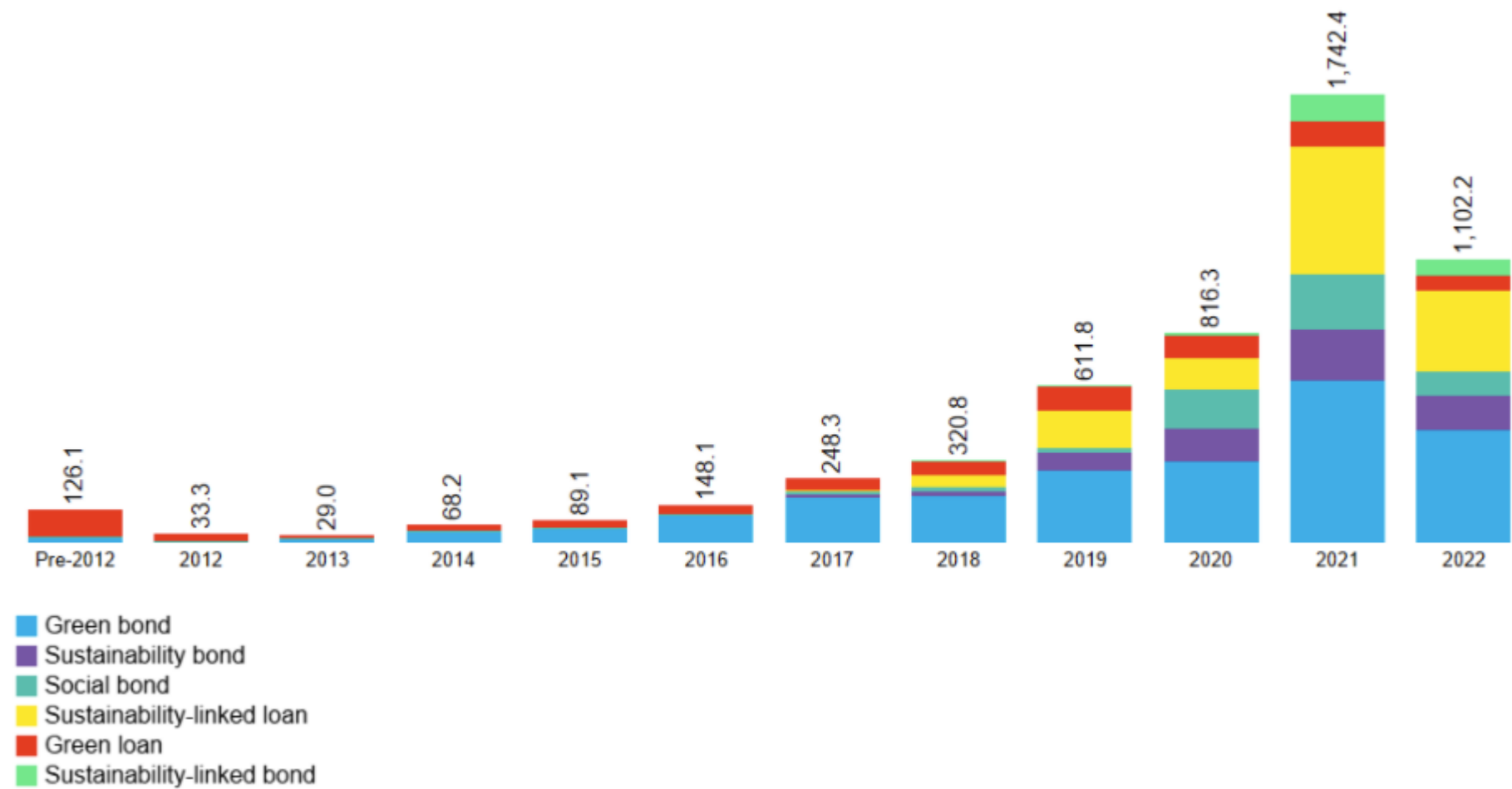


Note: 2022 data ends in September.

Source: Bloomberg NEF

# Available finance remains to be low

Figure. Sustainable (ESG) debt instruments, \$ Bn



Note: 2022 data ends in September.

Source: Bloomberg NEF

# Country level investment gaps

## ➤ Required Investments:

- Build on Global Change Analysis Model (GCAM) emission scenarios developed by Ou et al. (2021) *Science*
- Focus on the scenario for updated NDCs with increased ambition in the second half of the century to be in line with a 2 °C world and the Paris Agreement
- Focus on the power sector
  - Considered a decarbonization lever, widely practiced, data shortages

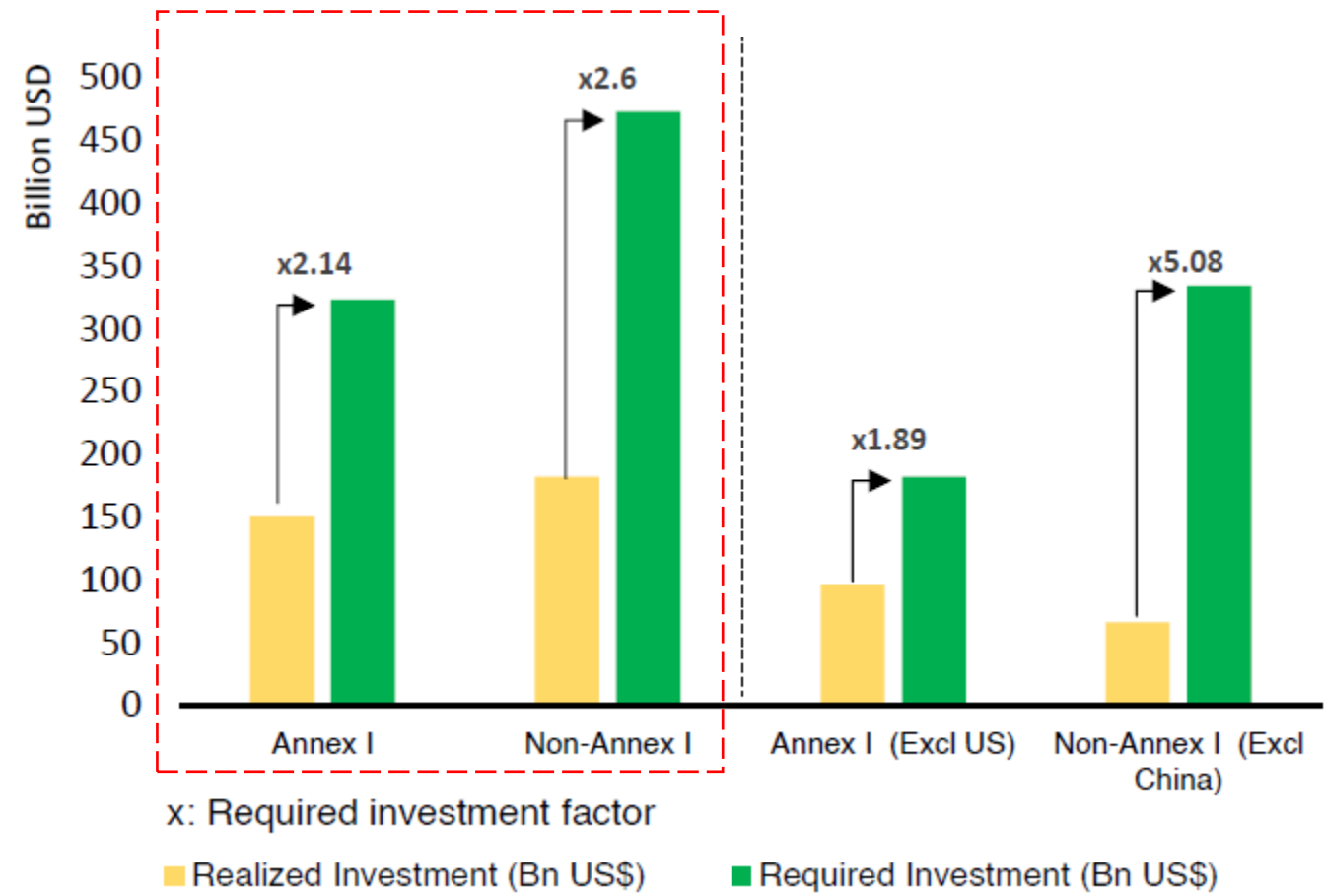
## • Actual Investments:

- Renewable energy investment data provided by Bloomberg NEF

## • Country level investment gap = Required Investments / Actual Investments

# Sustainable energy investment gaps by country groups

Figure. Sustainable energy investment gaps by country groups.

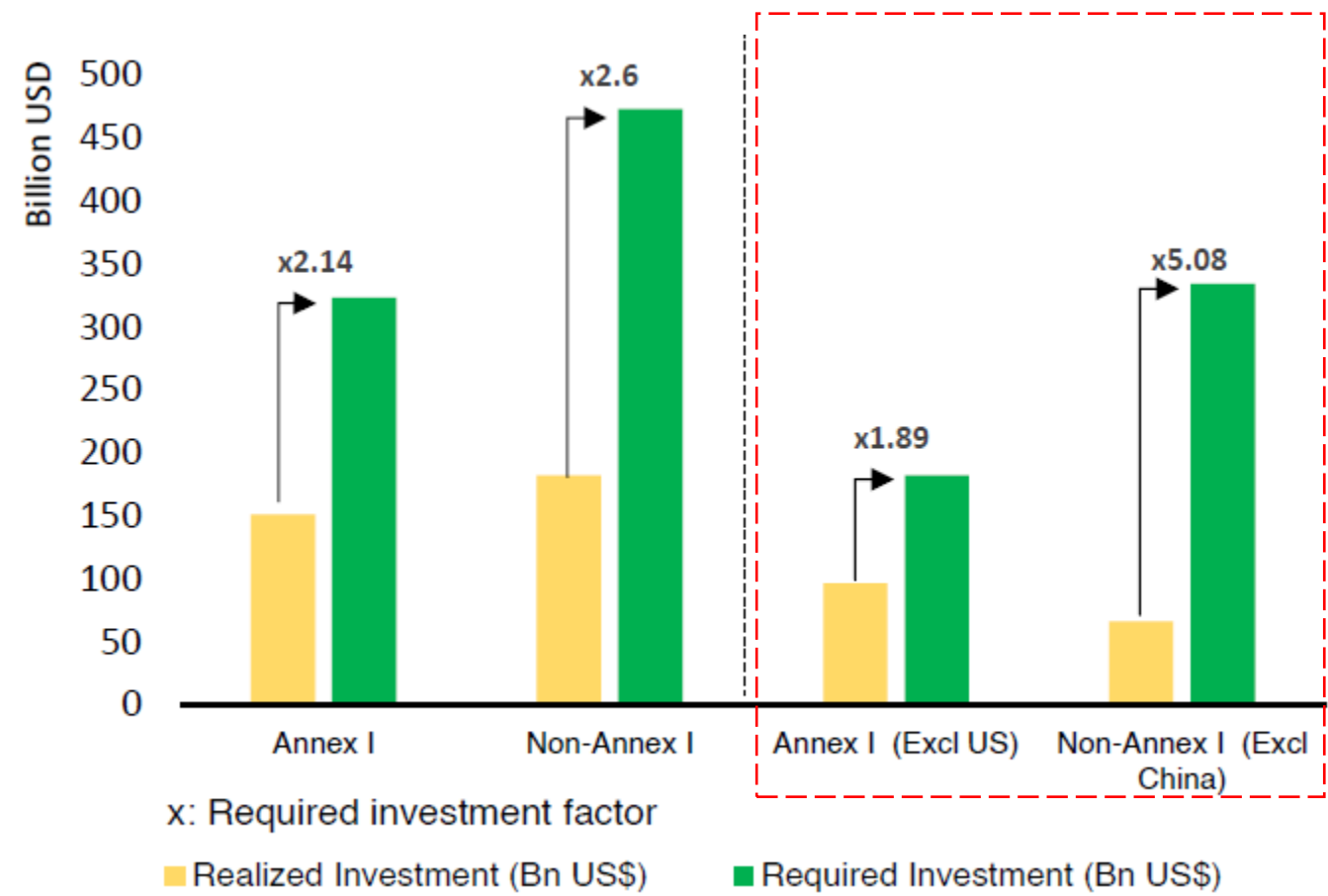


Source: Authors' calculation from Bloomberg, World Bank and Ou et al. (2021).

Note: Realized investment is the average sustainable energy transition investment flows into the power sector between 2019 and 2021, from Bloomberg. The required investment is the average investment flow needed to achieve the Paris Agreement-compatible scenario in the model. "x" is the additional investment needed to achieve the required level. Annex classification is based on the UNFCCC. Sustainable energy transition investment numbers in the figure include hydro, geothermal, bioenergy, solar, wind and nuclear investments. CCUS investments are not included due to data shortages.

# Sustainable energy investment gaps by country groups

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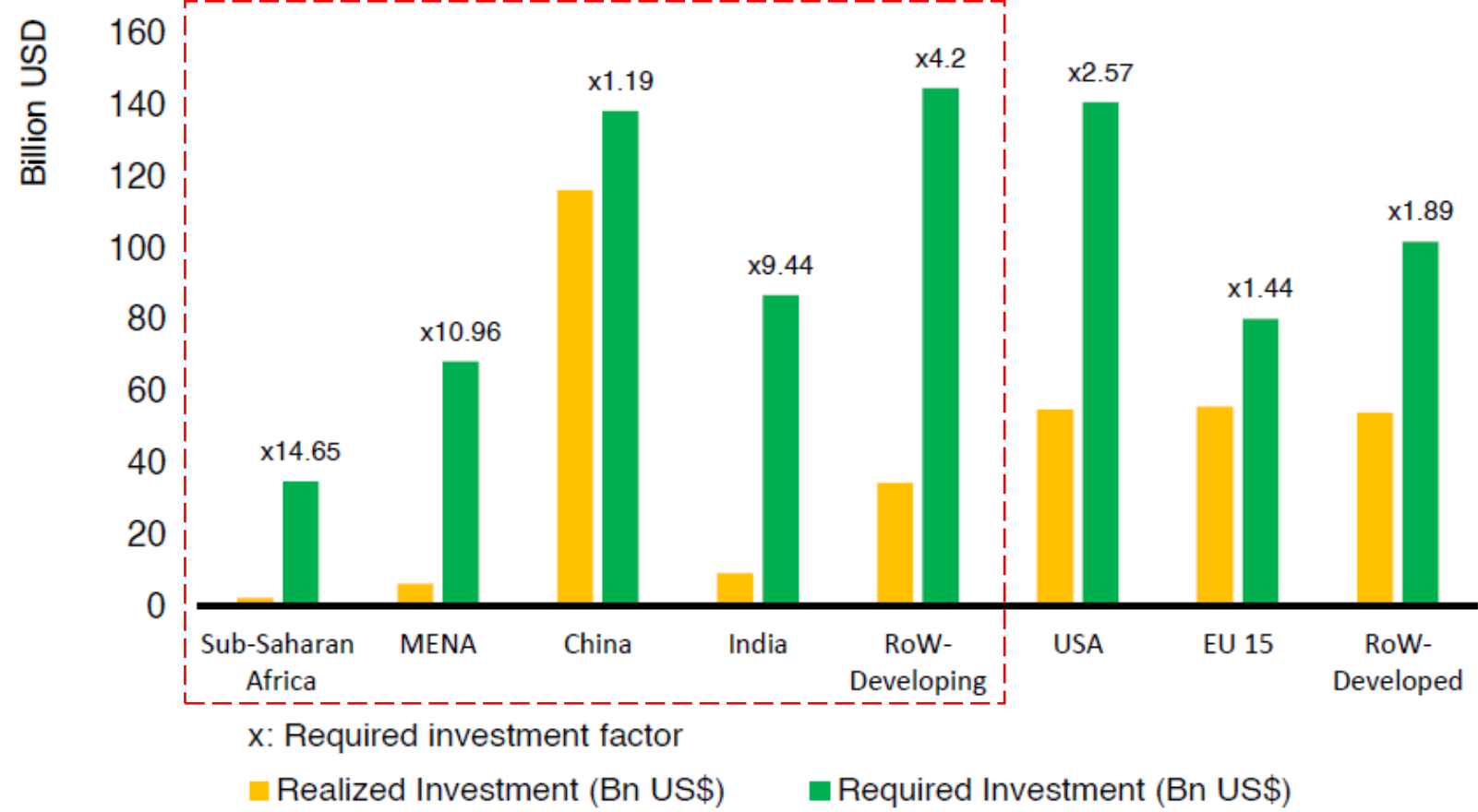


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# Sustainable energy transition gaps by region

Figure 5: Sustainable energy transition gaps by region.

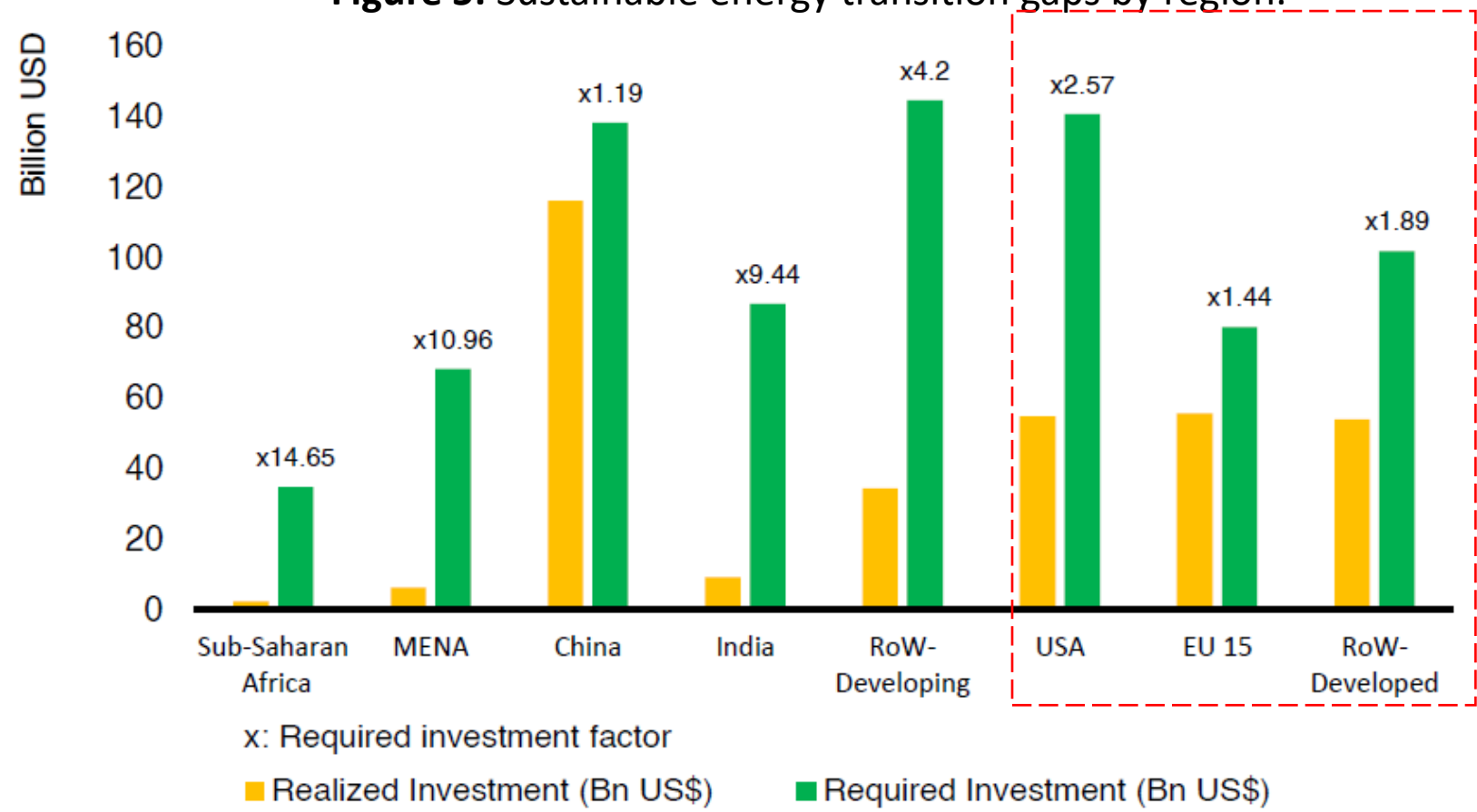


Source: Authors' calculation from the Bloomberg, World Bank and Ou et al. (2021).

Note: Realized investment is the average sustainable energy transition investment flows into the power sector between 2019 and 2021, from Bloomberg. The required investment is the average investment flow needed to achieve the Paris Agreement-compatible scenario in the model. "x" is the additional investment needed to achieve the required level. "RoW Developing" is the rest of the developing countries, and "RoW-Developed" is the remaining developed countries. "Sub-Saharan Africa" contains all of the continent except the north, which is covered in "MENA." "EU15" contains Austria, Belgium, Germany, Denmark, Spain, Finland, France, the United Kingdom, Gibraltar, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Sweden. Clean investment numbers in the figure include hydro, geothermal, bioenergy, solar, wind and nuclear investments. CCUS investments are not included due to data shortages.

# Sustainable energy transition gaps by region

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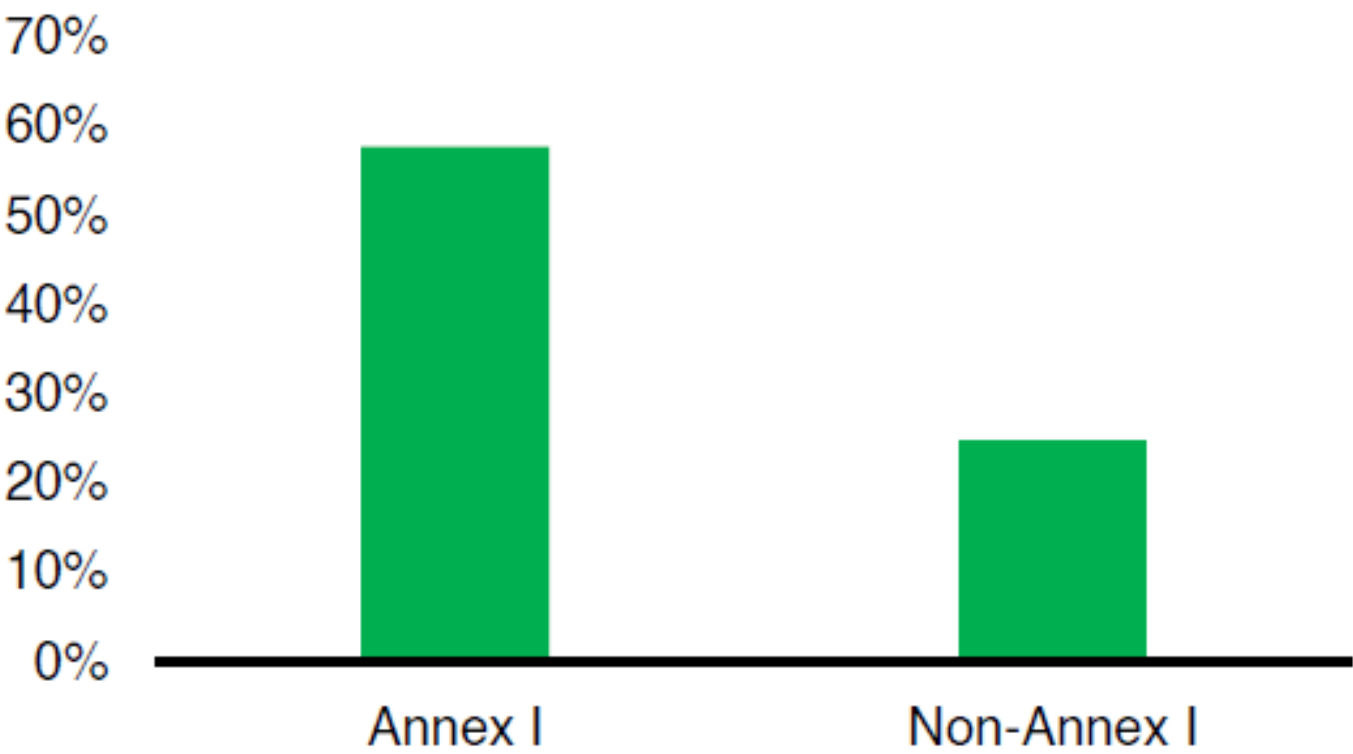


Source: Authors' calculation from the Bloomberg, World Bank and Ou et al. (2021).

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# Non-Annex I (developing) countries already experience financial difficulties

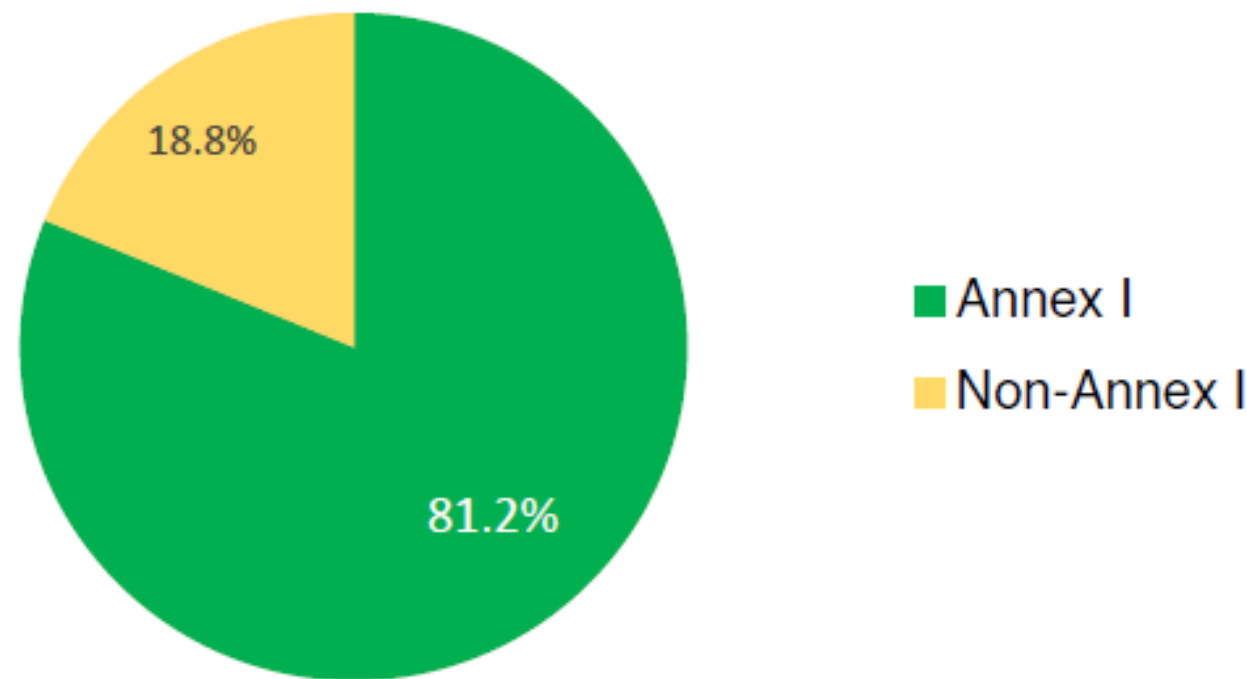
**Figure.** Average financial development by country group.



Source: Authors' calculation from IMF Financial Development Index.  
Note: The Annex classification is based on UNFCCC.

# Share of ESG funds/debt by country group

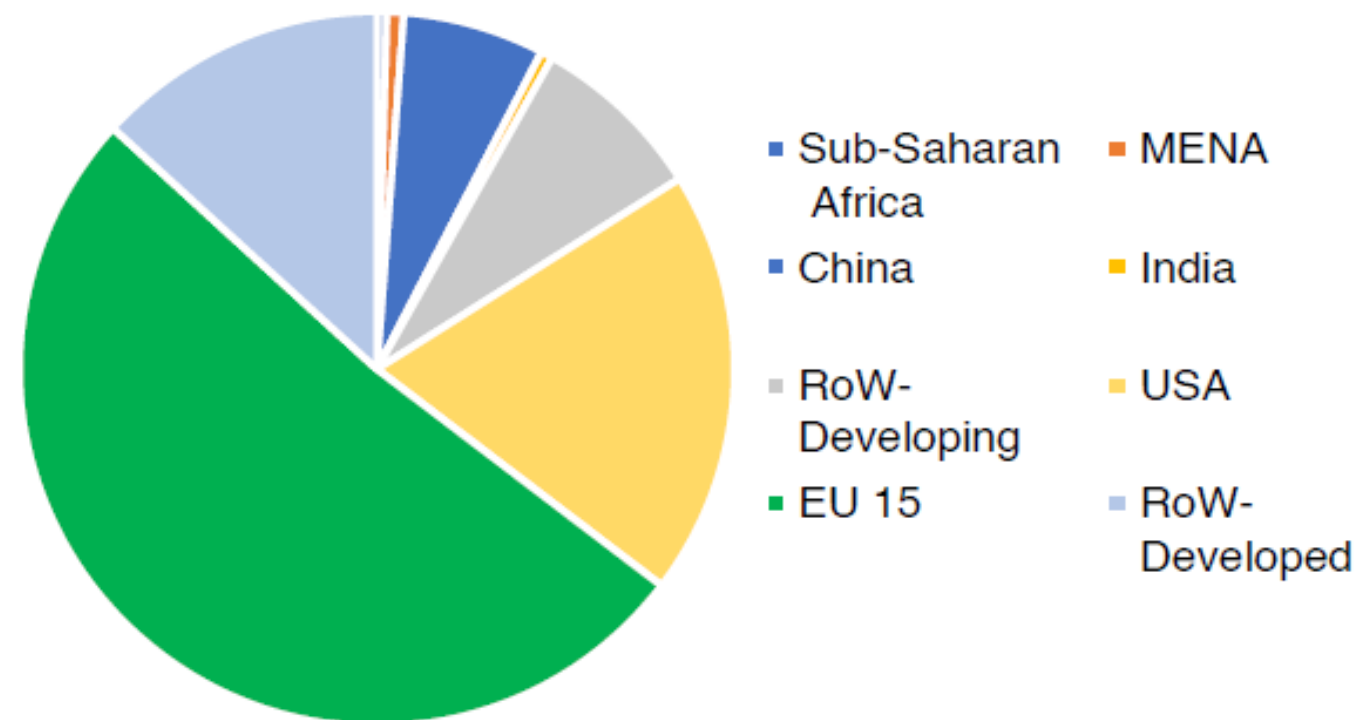
Figure. Share of ESG funds by country group.



Source: Authors' calculation from Bloomberg NEF.  
Note: Annex classification is based on the UNFCCC. The figure displays the group shares of average ESG flows in the last three available years (2019, 2020 and 2021) in the data source. The instruments included in the calculations of average ESG flows are green, social and sustainability-linked bonds and loans.

# Share of ESG funds/debt by country group

Figure. Share of ESG funds by region.



Source: Authors’ calculation from Bloomberg NEF.

Note: The figure displays the group or country shares of average ESG flows in the last three available years (2019, 2020 and 2021) in the data source. The instruments included in the calculations of average ESG flows are green, social and sustainability-linked bonds and loans “RoW Developing” is the rest of the developing countries, and “RoW-Developed” is the remaining developed countries. “Sub-Saharan Africa” contains all of the continent except the north, which is covered in “MENA.” “EU15” contains Austria, Belgium, Germany, Denmark, Spain, Finland, France, the United Kingdom, Gibraltar, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Sweden.

## Global stock take: Investment gaps and the availability of finance

- Significant gaps persist on the road to achieving the Paris Agreement goals in almost all countries
  - A more profound shift in investment scale and focus is essential, particularly for developing countries
- Among different factors (e.g., policies, technology), finance-related enablers appear to be key
  - Higher investment gaps are indicated for financially less developed countries
  - Greater costs of raising funds and access to finance are increasing the investment gap in developing countries.
- Distribution of ESG finance is extremely unequal, mostly unutilized by many developing countries
  - Considering the increasing importance of ESG finance as a source of transition investment in the coming years, many developing countries may face further difficulties in accessing the necessary finance.

## Discussion points and recommendations

- Globally harmonized ESG standards should be established and existing ambiguities in taxonomies should be clarified
  - Holistic, flexible and inclusive – e.g., hard-to-abate sectors and CCUS/ Hydrogen
- local governments, especially in developing countries, should establish or improve their ESG finance infrastructures in line with the global standards
  - Local ESG standards dealing with various instruments – e.g., debt (e.g., green or sustainability bonds and loans) and equity (e.g., green stocks) markets
- International institutions should be more active in supporting the ESG development process by capacity building and knowledge transfers
  - e.g., the World Bank and IMF
- Mobilize all the available resources, while creating new ones
  - Fulfilling the US\$100 billion per year in climate finance for developing countries and significantly increasing ambition on the new collective goal on climate finance
  - Other financing mechanisms via blended finance, carbon pricing mechanisms

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