Rejuvenating Global Energy Innovation to Deliver on Glasgow

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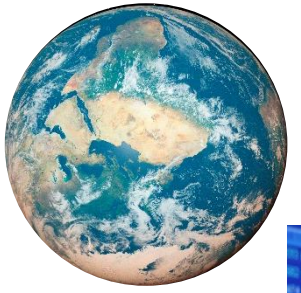
The Global Energy Innovation System

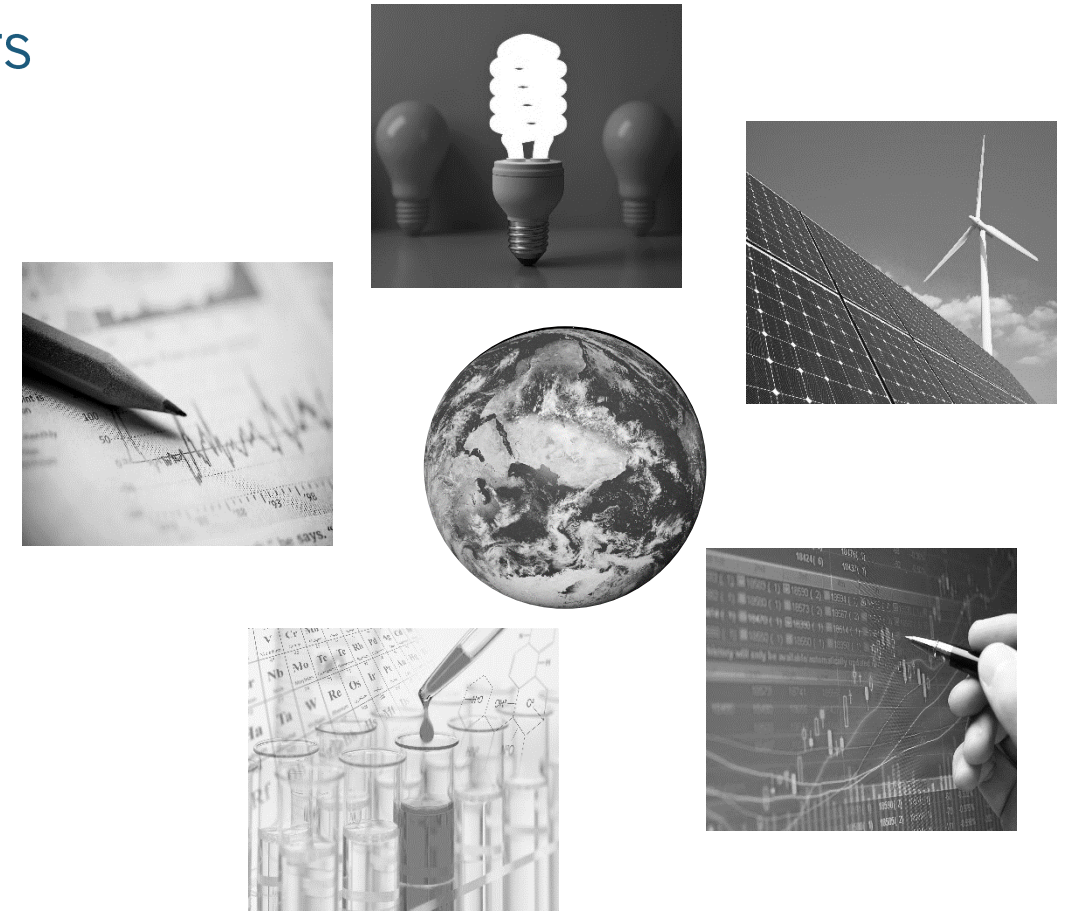
- Each component of the energy innovation system work interdependently.
  - Knowledge development & diffusion
  - Entrepreneurial ecosystem
  - Industry and international trade
  - Market readiness & technology adoption
  - Public policies



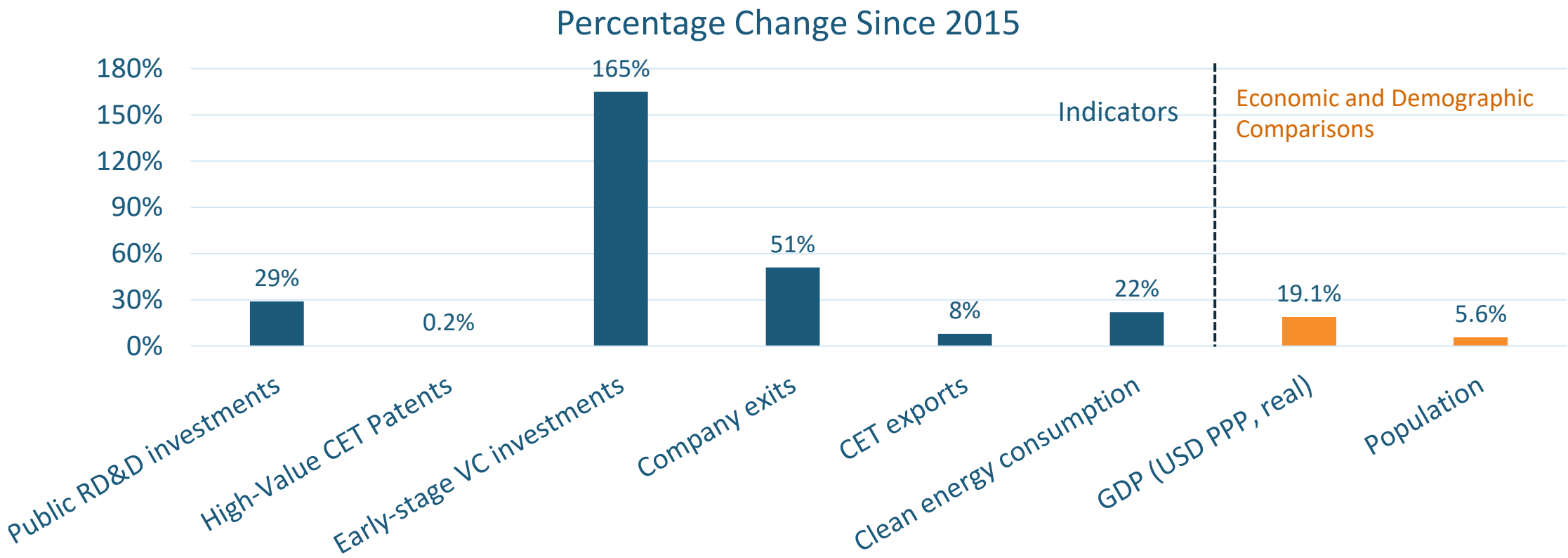



The Global Energy Innovation System… Is Not Well

- Based on the performance of indicators that represent parts of the system:
  - Public RD&D investment
  - High-value patents
  - Early-stage venture capital investments
  - Successful clean energy company exits
  - Clean energy technology exports
  - Clean energy consumption
  - Effective carbon rates

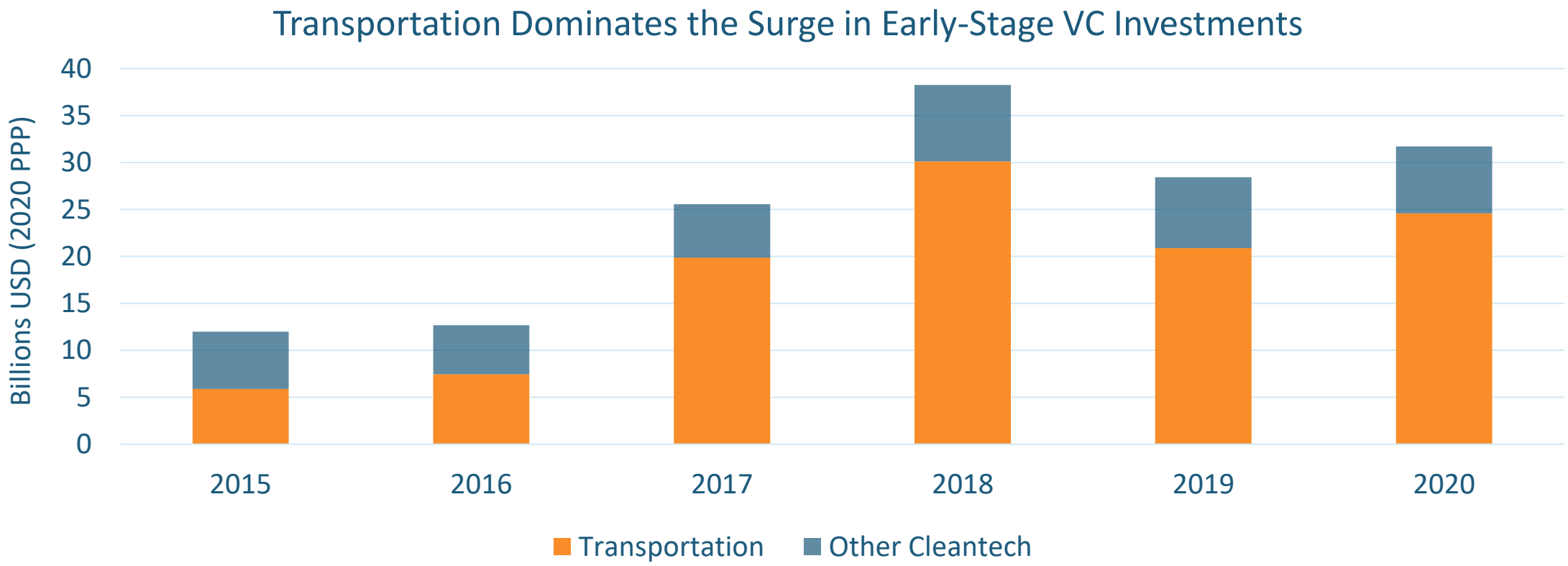


Some Progress, but Severe Gaps Remain



Source: IEA, OECD, UN Comtrade Database, World Bank, Cleantech Group, and bp

VC Investments in Cleantech – A Roaring Comeback?

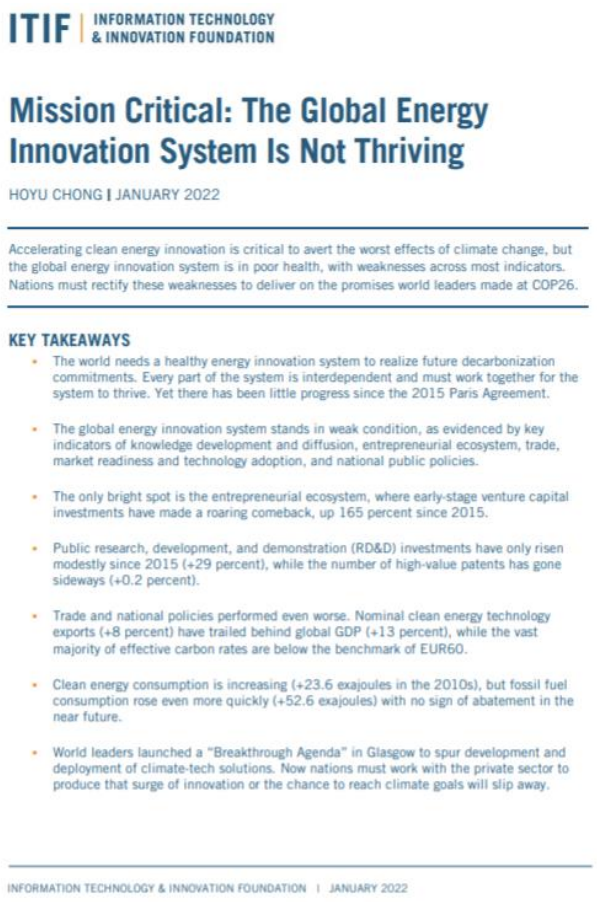


Source: Cleantech Group. Other cleantech includes advanced materials, CCS and CCUS, energy storage, energy efficiency, hydrogen and fuel cells, smart grid, geothermal, hydro and marine power, nuclear, solar, and wind.

Mission Critical: Innovation Needs to be an Integral Part

- These indicators suggest a lack of urgency.
- Some promising outcomes of the COP26:
  - The new "Breakthrough Agenda", Mission Innovation's second phase, First Movers Coalition, etc.
  - Focus on hard-to-abate sectors such as steel and hydrogen
  - Public-private partnerships
  - Accelerating innovation is key

More! Full Report and Data Visualization Site



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Mission Critical: The Global Energy Innovation System Is Not Thriving

HOYU CHONG | JANUARY 2022

Accelerating clean energy innovation is critical to avert the worst effects of climate change, but the global energy innovation system is in poor health, with weaknesses across most indicators. Nations must rectify these weaknesses to deliver on the promises world leaders made at COP26.

KEY TAKEAWAYS

- The world needs a healthy energy innovation system to realize future decarbonization commitments. Every part of the system is interdependent and must work together for the system to thrive. Yet there has been little progress since the 2015 Paris Agreement.
- The global energy innovation system stands in weak condition, as evidenced by key indicators of knowledge development and diffusion, entrepreneurial ecosystem, trade, market readiness and technology adoption, and national public policies.
- The only bright spot is the entrepreneurial ecosystem, where early-stage venture capital investments have made a roaring comeback, up 165 percent since 2015.
- Public research, development, and demonstration (RD&D) investments have only risen modestly since 2015 (+29 percent), while the number of high-value patents has gone sideways (+0.2 percent).
- Trade and national policies performed even worse. Nominal clean energy technology exports (+8 percent) have trailed behind global GDP (+13 percent), while the vast majority of effective carbon rates are below the benchmark of EUR60.
- Clean energy consumption is increasing (+23.6 exajoules in the 2010s), but fossil fuel consumption rose even more quickly (+52.6 exajoules) with no sign of abatement in the near future.
- World leaders launched a "Breakthrough Agenda" in Glasgow to spur development and deployment of climate-tech solutions. Now nations must work with the private sector to produce that surge of innovation or the chance to reach climate goals will slip away.

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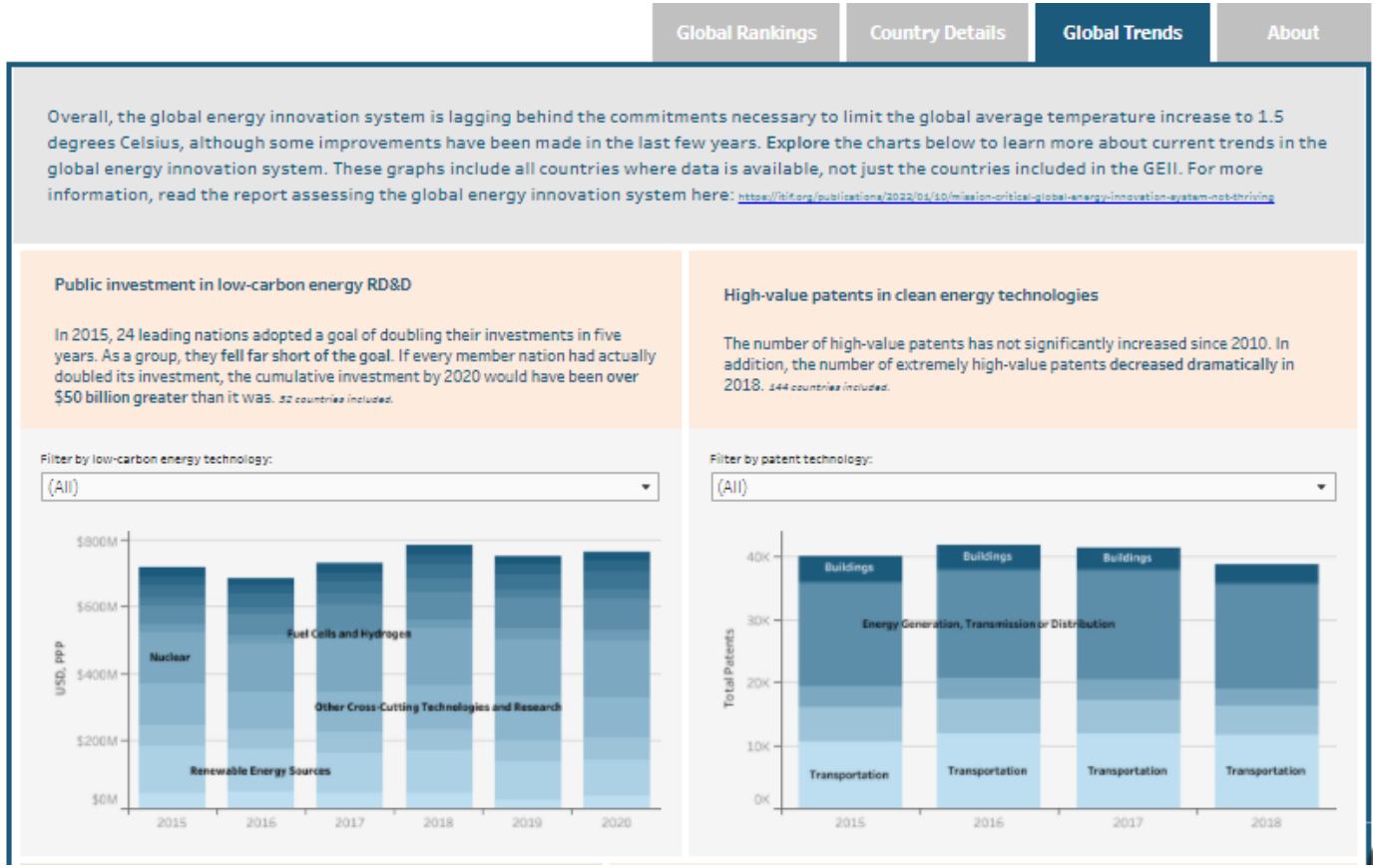

[Interactive Data Visualization](#)

Thank You!

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