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Indonesia"s total energy supply increased nearly 60% from 2000 to 2021. As energy demand rose, coal stepped in to fill the gap. Per unit of energy consumed, its energy sector now emits one-third more CO2 than in 2000. Total energy sector emissions have grown faster than energy demand, more than doubling over the last two decades. In 2021, energy sector emissions were around 600million tonnes of carbon dioxide (Mt CO2) - making Indonesia the world"s ninth-largest emitter. Yet, per capita energy CO2 emissions are only 2tonnes, half the global average.

Achieving net zero emissions by 2060 is a long journey that requires immediate and sustained action. Energy efficiency, renewables in the electricity sector, and the electrification of transport need to be kick-started now. To 2030, these three levers provide around 80% of the emissions reductions from the energy sector needed to put Indonesia on the road to net zero emissions. The technologies for efficiency, electrification and renewables are commercially available and cost-effective, provided that the right policies are put in place.

More than 25gigawatts (GW) of solar PV and wind capacity are installed by 2030 in the APS, up from around 0.4GWtoday. Early growth of renewables is essential to lay the foundation for the industry to scale up strongly after 2030. This is a path to transform the current power mix in which coal provides 60% of generation and solar PV and wind account for less than 1%. Today"s generation mix is characterised by substantial over-capacity, which is the result of overly optimistic electricity demand projections in the past.

Solar PV and wind for power generation have a large role to play in achieving the net zero pathway, but policy reforms are essential for them to fulfil that role.Without effective reforms, solar PV and wind projects risk being economically uncompetitive relative to coal and natural gas power plants. Recent auction results in Indonesia for solar PV and wind revealed costs twice as high as those in comparable emerging market and developing economies.

The critical challenge for the transition today is to create opportunities for renewables to expand their contribution to the electricity generation mix. Four key policy reforms are needed in the near term:

Energy demand centres in Indonesia are not close to its ample renewable energy resources. Inter-regional undersea transmission capacity is needed to interconnect electricity generation in resource rich areas to Indonesia"s demand centres. By 2050 in the APS, Java is importing nearly half of its electricity from neighbouring islands.

Deploying the needed technologies requires innovation at the global level to bring down costs; co-ordinated, cross-sectoral and long-term planning across supply, infrastructure and demand in Indonesia; and large investments in infrastructure and demonstration projects. International co-operation, technology transfer and financial support will be essential.

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