

## Joint IEA-MEMR High-Level Statement on Net Zero Emissions

Indonesia announced its ambitious objective to reach net zero emissions by 2060 during the UN Climate Change Conference (COP 26) in 2021. Since then – at the request of the Government of Indonesia – the country’s Ministry of Energy and Mineral Resources (MEMR) and the International Energy Agency (IEA) have been working collaboratively on detailed scenario and policy analysis of what this target means for Indonesia’s energy sector. Both institutions have conducted robust and granular modelling of the pathways to net zero for Indonesia’s energy sector. The key findings of this collaborative project are summarised here.

**Indonesia’s development is an extraordinary success, though largely underpinned by conventional energy sources.** Indonesia has sustained very rapid growth over half a century, ranking as the fourth-fastest growing large economy in the world, following Korea, Singapore and China. Exports of coal and natural gas have contributed to this growth, and to Indonesia’s positive trade balance. Indonesia achieved almost full electrification of households in 2021, and the share of the population below the national poverty line has dropped from 60% in 1970 to less than 10% today. Indonesia is the world’s fourth-most populous country; seventh-largest economy; twelfth-largest energy consumer and the largest coal exporter.

**Indonesia’s net zero objective is ambitious and achievable.** Despite the more than doubling of Indonesia’s energy sector emissions over the last two decades and substantial growth in the emissions intensity of its energy mix, its per capita energy sector emissions remain half the global average. Nonetheless, both MEMR and IEA analysis find that Indonesia’s net zero target is achievable through the deployment of renewable energy resources, energy efficiency, electrification and grid interconnection.

**Energy efficiency and electrification are the immediate priorities.** Indonesia is set to add huge amounts of appliances, cars, machines and infrastructure this decade. In the scenario in which Indonesia reaches net zero by 2060, ownership rates for air conditioners and the country’s stock of cars increase significantly by 2030. Both MEMR and IEA modelling shows that enforcing energy performance standards, especially for air conditioners, and supporting electrification of transport and cooking are critical to lower energy costs and emissions at the same time.

**In the near term, a policy push is needed to drive the growth of renewables.** The MEMR and IEA roadmaps project that solar PV will provide as much as 50-60% of the installed electricity generation capacity needed to serve the much bigger demand for electricity by 2060. Important policy reforms can help to achieve this renewables expansion in a smooth and timely manner. Most importantly, policy needs to establish a stable, substantial and multi-year pipeline of auctions for renewables with competitive and transparent tariff-setting.

At the same time, action needs to be taken to address the current huge overcapacity of coal-fired power plants (CFPP). The capacity margin in Indonesia, particularly in the Java-Bali

system, is around 57% in 2022. This exceeds PLN's targeted capacity margin (30%), and is three to four times higher than international benchmarks.

**Both MEMR and IEA modelling analyses indicate no need for new coal-fired power plants (CFPP) after the current project pipeline, and project the phase out of unabated CFPP by the 2050s.** Coal power continues to provide 50% of peak capacity in 2030 in the net zero by 2060 pathway. However, contractual adjustments are needed to allow coal and gas power plants to operate more flexibly and at lower annual capacity factors, but these adjustments need to be conducted carefully to preserve investor confidence. Investors should be appropriately remunerated for coal plants' continued role in electricity security. Accelerated retirements can help to reduce overcapacity in the system, and international support, based on a detailed assessment of plant balance sheets, should be provided to help cover possible unrecovered capital.

**The pathway to net zero emissions by 2060 can increase affordability and energy security for Indonesia.** Both the MEMR and the IEA analyses show that, with the right policies in place, the total production cost for electricity would be stable in the net zero by 2060 pathway. Total household energy bills as a share of disposable income would fall by 2030 compared with current levels, thanks to the benefits of energy efficiency and electrification.

**The energy security benefits of the transition are even more attractive in the context of today's global energy crisis.** Indonesia's annual oil import bill is expected to rise above USD 35 billion in 2022 as world prices spike. And by 2030, net imports of oil are set to reach more than USD 50 billion in the business-as-usual scenario, meaning that even as a share of growing GDP Indonesia would spend more on imported fossil fuels than it does today. But in the net zero by 2060 pathway, the oil import bill is close to one-third lower in 2030 relative to the business-as-usual scenario.

**Indonesia is home to some of the most coal-dependent regions in the world, but it is also the world's largest producer of nickel and second-largest producer of tin, both of which are critical inputs for clean energy technologies.** In the net zero by 2060 pathway, the total value of Indonesia's critical minerals production reaches more than USD 30 billion annually by 2030, more than the largest ever value of coal exports. Indonesia is already taking steps to deepen domestic value added, for example through the establishment of a domestic battery manufacturing industry. Driving further development of clean energy value chains also requires a robust domestic market for clean energy technologies.

**International support and co-operation are needed.** While the near-term actions for net zero are built around current commercially available and cost-effective technologies, financial and technology co-operation are still critical. Indonesia will need about USD 8 billion in additional investment per year by 2030 in the net zero by 2060 pathway. By 2050, around one-quarter of the reductions need to be achieved through technologies that are currently not commercially available in Indonesia, including hydrogen and hydrogen-based fuels, nuclear, and carbon capture, utilisation and storage. Deployment of these options requires innovation at the global level to bring down technology costs. In Indonesia, their deployment

requires co-ordinated, cross-sectoral and long-term planning across supply, infrastructure and demand, and large investment in infrastructure and demonstration projects. International co-operation, technology transfer and financial support will be essential.

**Indonesia’s net zero ambition can drive the next stage in its economic transformation.**

Indonesia has established a goal to become an advanced economy by 2045 – marking 100 years since its declaration of independence. For an upper-middle income country today, this is an ambitious objective, requiring rapid, sustained and inclusive economic growth; diversification of its current resource-intensive development pathway; and advances in its innovative and technological capacity. The development of clean energy value chains can diversify Indonesia’s economy, and offers new opportunities to its fossil-fuel dependent regions. The drive towards net zero emissions can promote the adoption, domestic development and export of innovative clean energy technologies, such as batteries, critical minerals, and renewables equipment – all of which have large growth potential.

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