

The global energy crisis triggered by Russia's invasion of Ukraine is causing profound and long-lasting changes that have the potential to hasten the transition to a more sustainable and secure energy system, according to the latest edition of the IEA's World Energy Outlook. Momentum behind gas in developing economies has slowed, notably in South and Southeast Asia, putting a dent in the credentials of gas as a transition fuel. The most notable responses include the US Inflation Reduction Act, the EU's Fit for 55 package and REPowerEU, Japan's Green Transformation (GX) programme, Korea's aim to increase the share of nuclear and renewables in its energy mix, and ambitious clean energy targets in China and India. "That is why this year's WEO provides 10 principles that can help guide policymakers through the period when declining fossil fuel and expanding clean energy systems co-exist, since both systems are required to function well during energy transitions in order to deliver the energy services needed by consumers. And as the world moves on from today's energy crisis, it needs to avoid new vulnerabilities arising from high and volatile critical mineral prices or highly concentrated clean energy supply chains" In the most affected regions, higher shares of renewables were correlated with lower electricity prices – and more efficient homes and electrified heat have provided an important buffer for some consumers, albeit far from enough. Today's growth rates for deployment of solar PV, wind, EVs and batteries, if maintained, would lead to a much faster transformation than projected in the Stated Policies Scenario, although this would require supportive policies not just in the early leading markets for these technologies but across the world. The biggest tremors have been felt in the markets for natural gas, coal and electricity – with significant turmoil in oil markets as well, necessitating two oil stock releases of unparalleled scale by IEA member countries to avoid even more severe disruptions. "The environmental case for clean energy needed no reinforcement, but the economic arguments in favour of cost-competitive and affordable clean technologies are now stronger – and so too is the energy security case. Today's alignment of economic, climate and security priorities has already started to move the dial towards a better outcome for the world's people and for the planet," Dr Birol said. Russia has been by far the world's largest exporter of fossil fuels, but its invasion of Ukraine is prompting a wholesale reorientation of global energy trade, leaving it with a much-diminished position. All Russia's trade ties with Europe based on fossil fuels had ultimately been undercut in previous WEO scenarios by Europe's net zero ambitions, but Russia's ability to deliver at relatively low cost meant that it lost ground only gradually. With unrelenting geopolitical and economic concerns, energy markets remain extremely vulnerable, and the crisis is a reminder of the fragility and unsustainability of the current global energy system, the World Energy Outlook 2022 (WEO) warns. In the WEO's Stated Policies Scenario, which is based on the latest policy settings worldwide, these new measures help propel global clean energy investment to more than USD 2 trillion a year by 2030, a rise of more than 50% from today. For the first time ever, a WEO scenario based on today's prevailing policy settings – in this case, the Stated Policies Scenario – has global demand for every fossil fuel exhibiting a peak or plateau. Supply chains for some key technologies – including batteries, solar PV and electrolyzers – are expanding at rates that support greater global ambition. Russian fossil fuel exports never return – in any of the scenarios in this year's WEO – to the levels seen in 2021, with Russia's reorientation to Asian markets particularly challenging in the case of natural gas. At the same time, international energy markets undergo a

profound reorientation in the 2020s as countries adjust to the rupture of Russia–Europe flows. "Energy markets and policies have changed as a result of Russia's invasion of Ukraine, not just for the time being, but for decades to come," said IEA Executive Director Fatih Birol. If all announced manufacturing expansion plans for solar PV see the light of day, manufacturing capacity would exceed the deployment levels in the Announced Pledges Scenario in 2030 by around 75%. The WEO's analysis finds scant evidence to support claims from some quarters that climate policies and net zero commitments contributed to the run-up in energy prices. The declines are much faster and more pronounced in the WEO's more climate-focused scenarios.