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Prospects for Renewable Energy in GCC States: Opportunities and the Need for Reform

Executive Summary

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The countries of the Gulf Cooperation Council (GCC) are situated in one of the most energy-rich regions in the world. Home to nearly a third of world oil and more than a fifth of global gas reserves – most of which are concentrated between Saudi Arabia, the UAE, Kuwait, and Qatar – they remain one of the world's key centres of conventional oil and gas supply. However, following growing interest from among the region's policymakers, increasing attention has been paid to diversifying the region's energy. Using Kuwait as a case study, this paper explores the opportunities, and caveats, of introducing renewable energy into the GCC oil and gas producers' energy mix. The paper's key conclusions suggest:

(1) Looking for energy alternatives is in principle a rational policy response by the GCC economies to the rapid expansion in their domestic energy needs. Decades of population growth, rising living standards and a systematic industrialisation effort towards energy-intensive industries have led to a surge in GCC domestic market demand for energy, diverting increasing volumes of crude oil, petroleum products and natural gas to the domestic market, away from export markets. Alternative energy sources would generate economic value by helping GCC producers redirect more valuable hydrocarbon energy sources to domestic industries with no energy alternatives, and to the higher-value export market.

(2) Rising oil prices since the early 2000s, and a parallel fall in costs for renewable energy technologies, has meant the economics of key alternative energy technologies has fundamentally changed in the GCC. This applies most importantly to solar photovoltaic power, which benefits from the region's largely favourable climatic conditions and the contribution solar power in particular could make to the supply of peak demand along the region's daily load curve. While oil used to be seen as the lowest cost source of energy in the oil-rich GCC region, solar power could, under certain assumptions, be cost-effective in providing some of the GCC states' incremental energy needs over the coming decades.

(3) A critical prerequisite to understanding the economic cost saving potential of renewables in the GCC states is the use of an international export market netback shadow price for domestically produced oil and natural gas, i.e. the opportunity cost. This cost measure stands in contrast to the widely used marginal cost of production, which continues to lie many multiples below the price achievable for Gulf oil and natural gas on international markets. In the case of Kuwait, studies have demonstrated that solar PV technology could be cost-effective at a cost assumption of $100/bl for oil using a very conservative cost estimate for solar power.

(4) Rendering solar power cost-competitive with natural gas in the GCC is considerably more challenging. In Kuwait, the current cost of natural gas provision does not yet justify the switch from gas to solar, a pattern that is applicable to all gas-producers within the GCC that continue to supply a substantial portion of their natural gas supply from domestic production, such as Qatar, the United Arab Emirates (Abu Dhabi), and Oman. However, Middle East-focused cost studies have

demonstrated that the potential for cost savings for renewables over gas increases as the import dependence of countries on more expensive LNG rises – a scenario that should further help improve the economics of solar power in the Gulf region over the long-term as more GCC countries face limits to their own natural gas production and greater reliance on international import markets.

(5) Renewable energy in the GCC region also entails some important economic caveats. In the absence of regionally overdue domestic market price reform for energy, the GCC states' distorted domestic price environment provides little rational economic incentive for domestic utilities and households to switch towards renewable energy. The likely avenue into renewables chosen by the GCC states, through state-set policy targets and renewable energy price subsidies, dilutes critical market signals that could otherwise support alternative energies as a cost-effective, rather than politically-mandated solution for utility providers. The likely use of renewable energy as part of a 'green energy' complex aimed at providing accompanying jobs for nationals will likely prove a domestically popular, but again highly distortive, policy, that may increase, rather than reduce, unproductive economic sinks across the GCC states' domestic energy industries.

(6) Any economic benefits associated with renewable energy in the GCC are thus contingent on a comprehensive overhaul of regional energy market structures. Most importantly, these include a reform of domestic energy pricing, reflecting actual economic costs involved for all elements of the production chain; and the liberalisation of the sector away from politicised energy choices towards fuel choice based on allocative efficiency. In this way, renewable energy could feed into a systematic policy response to the GCC states' dual challenges of diversifying their energy supply, and of managing their underlying energy demand.

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