

## Distributed energy systems south ossetia

As a leading international research organization, ERIA is actively conducting quality research on numerous issues. With its partnership network of organizations and strong relations with governments in the region, ERIA is well positioned to support regional initiatives for sustainable growth and quality of life for the people in ASEAN and East Asia

ERIA is an international organisation established in Jakarta, Indonesia, in 2008 through a formal agreement amongst the leaders of 16 East Asian countries. Its mission is to conduct research and provide policy recommendations to advance economic integration across the region.

Many of today's grids were designed for the 20th-century, when the share of DERs was small. Now that a growing portion of electricity is produced by variable renewables, greater system flexibility is needed to consistently balance supply and demand, whether over short timescales or seasons.

Electrification, for instance, replacing gas boilers with heat pumps, can cause higher evening peak loads. Potential issues are not limited to changes in timing of demand; energy exported from distributed PV can increase local voltage levels, posing new challenges for grid stability. Although reinforcing the power grid can remedy these problems, it can be more cost-effective to incentivise consumers to preheat buildings when solar generation is abundant to shift heat pump loads away from evening peak hours.

The majority of behind-the-meter DERs belong to consumers, and they decide whether and where to install them, and how to operate them for their own benefit. The frequent misalignment of DER owners' and system operators' interests due to the inappropriate consumer incentives may restrict the potential benefit of DERs to the grid.

To avoid such outcomes, regulators and system operators can create a level playing field where the grid contributions of DERs are appropriately valued, owners are fairly compensated, and system operators can more fully integrate DER services into the grid. Such better co-ordination would deploy financial capital and physical assets more efficiently.

DERs stand to transform the way we produce, trade, deliver and consume electricity. To unlock the full potential of these resources, many aspects of electricity market design and regulation should be re-examined and, if needed, adjusted. The following insights set out the key areas in which action would accelerate DER deployment and integration.

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