



Energy Policies with and in Partner Countries – Challenges to provide Energy Access

Digital Development Dialogue (3D)
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Reliable access to energy is a cornerstone of sustainable development. Yet, more than 600 million people, predominantly in rural areas of sub-Saharan Africa, still live without electricity. This session of the Digital Development Dialogue explored persistent barriers to achieving Sustainable Development Goal 7 (universal access to affordable, reliable, sustainable, and modern energy) and asked what it takes to make energy systems financially viable and socially inclusive. The session featured **Daniela Krahl** (Federal Ministry for Economic Cooperation and Development, BMZ), and **HyunAh Yi** (German Institute of Development and Sustainability, IDOS), who presented complementary policy and research perspectives on improving energy access in rural regions of the Global South.

Daniela Krahl opened the dialogue with a policy-focused overview of the global energy access landscape. She emphasized that electricity access remains primarily a rural issue: eight out of ten people without electricity live in low-density regions where expanding the central grid is often not economically feasible. In these contexts, decentralized renewable energy systems, such as solar home systems or mini-grids, are often the most promising solution - both financially and ecologically. Krahl explained, however, that numerous factors hinder widespread deployment of such systems: inadequate regulatory frameworks, low purchasing power among rural consumers, limited financing options for providers and households, and weak maintenance structures. She also stressed that poorly designed subsidies can distort energy prices and deter private investment. Drawing on Germany's development cooperation experience, she called for integrated, data-informed energy planning that accounts for dynamic rural development needs, promotes the productive use of energy for local economic development, and strengthens both the financial and technical capacities of local actors. To make this possible, she advocated for greater cooperation between donors, governments, and the private sector, and for increased efforts to support institutional capacity-building on the ground.

HyunAh Yi complemented this macro-level overview with evidence from two in-depth case studies conducted in Bangladesh and Cambodia. Her research focused on the long-term sustainability of aid-funded solar energy systems, especially after national grid expansion reaches previously off-grid communities. In Bangladesh, simulation models showed that integrating existing solar systems into the grid using net metering mechanisms could generate sufficient revenue to cover operational and maintenance costs, even when using a compensation rate below the official feed-in tariff. These findings suggest that aid-funded systems, which were originally not designed for profitability, can still achieve financial sustainability when connected to the grid under appropriate policy frameworks. In contrast, Yi's case study from Cambodia highlighted the limits of technical success in the absence of institutional trust and social cohesion. Here, a hybrid renewable energy system delivered the intended infrastructure, but ultimately failed due to weak community governance, social fragmentation, and the legacy of authoritarian control, which continues to hamper collective action. Yi concluded that sustainable energy transitions cannot rely solely on technological solutions and economic incentives. They must also account for local social structures, histories, and the willingness of communities to engage in system management and oversight.

In the Q&A session, participants discussed the feasibility of applying cross-subsidy schemes to off-grid systems, the potential of productive energy use, and the need for targeted financing mechanisms. Krahl pointed out that while cross-subsidies may work in centralized systems, they are often unviable for private operators in isolated regions. Instead, enabling income-generating activities from the start, such as microenterprises like juice production, can help make energy use economically viable and foster local ownership. Yi added that smart subsidies, such as those used in Bangladesh to provide small solar systems for basic electricity needs, can play an important role in expanding access. The discussion then turned to the role of falling solar panel and battery prices, which both speakers welcomed as a positive development. Yet, they emphasized that economic viability still hinges on supportive regulatory environments and transparent, accessible policy mechanisms.

The seminar concluded with a reflection on how to understand "sustainability" in the context of energy access. Krahl emphasized the need for financially self-sustaining business models, while Yi argued for a more holistic definition that includes technical durability, social acceptance, and environmental impact. Both agreed that successful energy access strategies must be adaptive, multi-dimensional, and grounded in local realities.

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