HIGH-LEVEL POLITICAL FORUM ON SUSTAINABLE DEVELOPMENT

POLICY BRIEF #11

EDUCATION AND ENERGY

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This document is a part of a series of Policy Briefs being developed to support SDG7 review at the UN High-Level Political Forum to be held in July 2018. The objective is to inform intergovernmental discussions by providing substantive inputs on SDG7 and its interlinkages with other SDGs prepared through inclusive multi-stakeholder consultation processes. The development of these Policy Briefs is coordinated under the auspices of the Ad Hoc Informal Multi-stakeholder Technical Group of Advisors on SDG7.

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Energy in Education in the context of the Sustainable Development Goals

Access to modern, reliable and affordable energy is critical for development and just as with several other sectors, contributes directly towards achieving positive educational outcomes. Education facilities require energy for lighting, cooking, heating, cooling and communication technologies. Lack of access to sustainable energy forces not only households but even schools, dormitories, kitchens and staff facilities to rely on unsustainable sources such as biomass, charcoal or kerosene for lighting and cooking purposes. This exposes students and staff to indoor air pollution, creating health risks ranging from headaches to pneumonia, compromising their health and learning abilities.

Evidence shows that children in electrified households spend 274 more days at school than those living without electricity. Access to reliable and sustainable energy in educational facilities allows them to extend operating hours, which may increase access by allowing girls or adolescents who must work during regular hours an opportunity to study, and improve quality by providing a place for teachers to prepare lessons or receive training, contributing to teacher retention by improving their quality of life. From the child's rights perspective, electricity frees children to attend school, by boosting productivity.

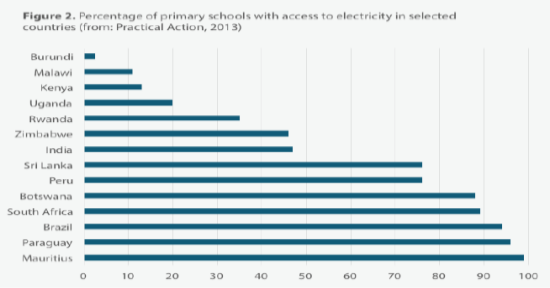
Overall, efforts towards achieving targets of SDG 7 such as ensuring universal access to reliable energy services, investing in energy efficiency and promoting renewable energy also contribute to the sustainable development goal of ensuring inclusive and quality education for all (SDG4).

Current Status

Up to date energy access data in the education sector is scarce but available research shows clear trends and correlations between electrification and education.

In terms of primary school access to electricity, sub-Saharan Africa has the lowest rate with 35%, followed by South Asia with 48%, and Latin America with 93%. Globally over 291 million children go to primary schools without access to any electricity and 188 million of these pupils live in the in the regions mentioned above. It is worth noting that not only does sub-Saharan Africa have the lowest levels of electricity, it is also the region with the lowest levels of learning.

Figure: Percentage of primary schools with access to electricity in selected countries



Source: Practical Action, 2013

A quality education is instrumental in improving people's lives. Throughout the years, there has been a tremendous progress towards increasing access to education and enrolment rates in schools. Enrolment in primary education in developing countries is at 91%, yet about 57 million children still do not go to school. And over half of those children live in sub-Saharan Africa.

Access to sustainable energy can help advance the education sector in numerous ways. Energy at schools is associated with a better experience and opportunities for children as lighting significantly allows for extended operating school hours used for studying, teacher preparations and the facilitation of training for community members. School attendance also increases with lighting, especially in regions which face poor sunlight penetration. For instance, qualitative research in Bangladesh demonstrated that teachers consider it almost impossible to teach under conditions of low light. Furthermore, facilitating the use of information and communications technology (ICT) – possible only through access to electrification - combats the widening digital divide, heightens the quality of education and builds essential skills for the modern economy. For example, in Ethiopia children in middle school using laptops scored significantly higher in finding analogies and categories than those without.

Electrification of educational facilities can furthermore bring overall benefits to the community too as schools can be used as integrated service platforms for children, where clean water, nutritious meals and primary health services can be provided in a safe environment. For instance, electricity can energize water purification systems, emergency radio or disaster warning alarms, and refrigeration of both food and vaccines.

Furthermore, sustainable energy application including energy efficiency in kindergarten, schools, dormitories, kitchen and staff quarters provide clear up-side in meeting basic energy needs and wellbeing of students and staff alike. Reliable and affordable energy is also a prerequisite to accessing clean water and sanitation. In fact, poor water quality and hygiene account for about 1.4 million child deaths yearly. Similarly, renewable energy for lighting, hot

water systems; energy efficient building designs, space heating and appliances; cleaner cooking fuels in schools, dormitories and kitchens go a long way in ensuring a hospitable, comfortable and safer environment for students and teachers to study, stay healthy and productive. What is more, evidence suggests schools can save on energy expenses by up to 25% through simple behavioural and operational measures alone. Simultaneously, sustainable energy measures also provide considerable benefits of reducing indoor air pollution and attributable health risks particularly to children. Indoor air pollution, largely caused by the use of solid fuels, contributes to over half a million child deaths under 5. Countries currently suffering from critical air pollution levels such as China, India, Mongolia and the likes are gradually making efforts towards adoption of sustainable energy solutions in public service facilities including in the education sector to reduce and mitigate children's exposure to air pollution. Incidentally, energy efficient building design interventions in kindergartens in Mongolia suggest improved indoor air quality, warmer classroom environment and better health outcomes for children and staff – with around 30% reduction in number of absenteeism due to illness. Essentially, by transitioning towards a more sustainable energy pathway, educational facilities can simultaneously harness multiple benefits including improved learning environment, health, energy savings, environmental and economic imperatives.

How are we faring – are we on track?

Under the current rate of progress, the Global Tracking Framework (2017) reports that we are not on track to achieve the SDG 7 energy targets globally. On closing the energy access gap, 1.06 billion people still live without electricity. Efforts to electrify schools have lagged behind even more, leaving millions of children without access to electricity – more prominent in disadvantaged and rural communities. In India for example, only 27% of village schools have electricity compared to 76% of schools in towns and cities. In Peru, fewer than half of rural schools are equipped with electricity, a library, or toilets for boys and girls. In Sri Lanka, roughly one in five schools lack access to electricity and in South Africa half or more public primary schools lack access to electricity. It is worthy to note that South Africa also has one of the highest r grid connection rate across the continent

Recent trends in the education sector indicate that basic literacy skills have improved tremendously over the years, but more efforts are needed to achieve universal education goals, as 103 million youth worldwide still lack basic literacy skills, of which 60% are women. In fact, youth literacy rates tend to be lower in countries with electrification rates below 80%. School performance has also been shown to increase in correlation to electrification rates with primary school completion rates enhanced with greater electrification. Advancing access to energy can therefore play a crucial role to complement other educational investments in improving schooling and educational attainment.

Key challenges and recommendations

Barriers to limited access to sustainable energy in educational facilities pertain broadly to (a) weak policy complementarities and coordination across energy and education sectors to meaningfully facilitate access; (b) affordability and high upfront capital costs; (c) reliability and quality of supply; (d) technical barriers including maintenance and after sales services; and (e) information and awareness on the multiple benefits of energy and implications on educational outcomes.

Although energy access has gradually advanced over the years, the number of students globally lacking access highlights the need for carefully targeted measures to address the challenges. First, sufficient quantitative and qualitative information is required to clearly reflect the magnitude of challenge and to drive evidence based decision making. Enabling policies that incentivises and prioritises energy access in the education sector should be in place and enforced. Limited quantitative data makes it challenging to authoritatively estimate the financing needs to electrify the education sector. The IEA estimates of $1 trillion investment needed to achieve universal access to energy by 2030 offers a broad signal of the magnitude of investment required to adequately reach out to the education sector. Leveraging private sector finance is critical. Policy environment that incentivises private sector financing is key to promote innovative business and service delivery models for provision of quality energy services – particularly in underserved areas. It is also imperative to reinforce policies that facilitate more coordinated approach among public agencies to collaborate in the provision of energy and education infrastructure and services.

In terms of ensuring reliability of energy access, technical problems of connections and equipment can be offset through the use of strong regulatory frameworks, national standards, quality assurance and certification systems. In fact, these have been shown to facilitate more reliable local manufacturing and maintenance activities, reduce costs, and improve quality of service.

Furthermore, policy advocacy, public awareness and education are vital in influencing not only decision makers but also facilitating necessary knowledge, attitude and behaviour change among children and adults on the benefits of sustainable energy. Separately, the incorporation of energy education in curricula has demonstrated to build necessary technical skill base from early on, create a youth generation that acts as change

agents while simultaneously allowing greater youth innovation to advance sustainable energy solutions.

Interlinkages with other Sustainable Development Goals

The significance of energy access, energy-efficiency and renewable energy does not only affect SDG 4; it is also instrumental to achieve numerous other SDGs, such as good health and well-being (SDG3) clean water and sanitation (SDG 6), gender equality (SDG 5) among others. Other than providing lighting, electricity in schools can energize water purification systems, circulate air to maintain comfortable climate indoors, heat space during winter and refrigerate food and medical supplies. In Kenya, before electrification, schools would not tend to clean their toilets due to lack of water, and water-borne diseases such as skin infections, typhoid, and cholera were common, leading to "rampant absenteeism of students and teachers" and electrification was used to rectify these issues.

With regards to gender empowerment, energy access has been found to directly contribute to freeing up women and girls. In turn, this contributes to women's opportunity to attend schools and educational activities. In Mali for instance, electrification has increased levels of girls' school attendance, improved performance, and drastically improved boy-to girl ratios. Similarly, a study conducted in 52 developing countries showed that numerous countries with lower electricity access have lower girl to boy rations in schools. Nepal for instance showed an increase in girl student enrolment by 23.3% across a sample of villages that had received school electrification.

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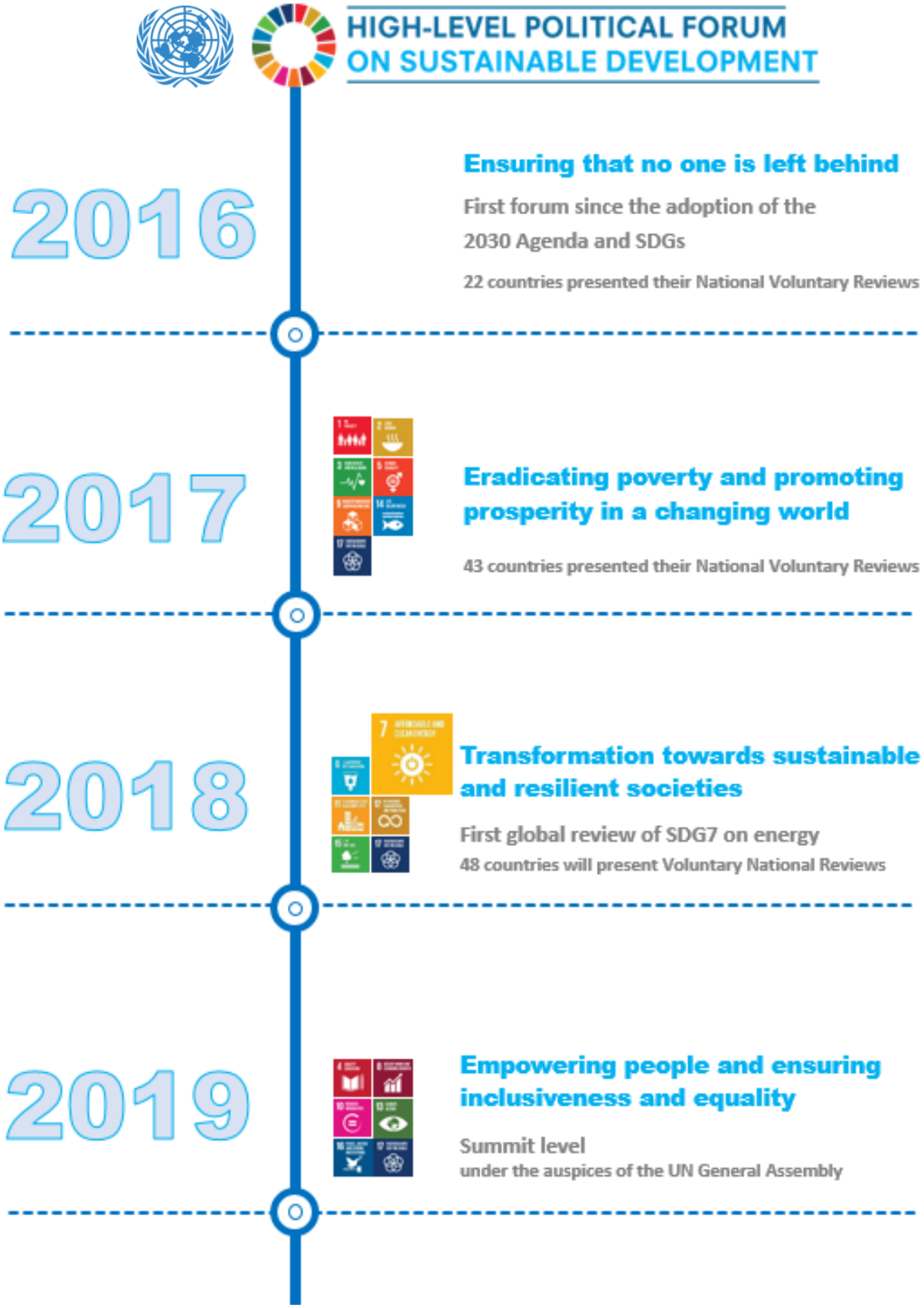

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