ENERGY
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Market Guide: Education

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Market Guide: Education

Ensuring inclusive, equitable and quality education and promoting lifelong learning opportunities for all is the 4th Goal of the 17 United Nations (UN) Global Goals that make up the 2030 Agenda for Sustainable Development. The global community has made substantial progress in achieving the target of universal primary education. According to United Nations Development Programme (UNDP), the total enrolment rate in developing regions has reached 91%, and there has also been an increase in literacy rates, and more girls are enrolled in school. The number of children out of school of primary school age has dropped by nearly 35% over 20 years to 64 million in 2020, half of which are in sub-Saharan Africa, 53% of which are girls and the majority of whom are from poor and marginalised groups.[1]

Even though the education sector has made considerable progress, the number of primary school age children still out of school in sub-Saharan Africa has remained similar since 2007, while significant reductions have been made in Central and Southern Asia[2]. More than half of children and adolescents worldwide are not meeting minimum proficiency standards and the capacities of teachers and quality of education have not kept pace with technological changes. Despite the increase in global electricity access to 91% in 2021[3], efforts to electrify schools have lagged behind. In 2022, it is estimated that 32% of primary schools and 52% of secondary schools in sub-Saharan Africa had access to electricity; globally, less than half the population had access to the internet[4]. In 2021, rates of electricity access in primary schools were as low as 4% in Chad and 10% in Niger. In 2015, United Nations Department of Economic and Social Affairs (UNDESA) reported that 188 million students attend schools without any form of electricity.[5] Public schools remain ill-equipped, with poor infrastructure that delays electrification.

This market guide has been developed for new and existing renewable energy companies looking to operate in the education sector in Africa and Southern Asia. It aims to provide a broad overview of basic concepts, challenges and opportunities in the education market.The guide has been designed to address various elements that should be considered during the commercialisation process, with the aim of maximising the impact of companies participating in the education sector in the identified regions.

The key elements will focus on:

- Identified delivery models that contribute or hinder sustainability in different regions.
- The public and private sector designs for off-grid projects for schools.
- Current or past initiatives or case studies from existing key players to provide key lessons.

Given the unique features of projects and country policies, rules and regulations, this guide does not seek to prescribe solutions for success. Rather, it aims to offer basic design principles and best practices for effective decision-making.

[1] Primary education data (2022) from UNICEF.

[2] UNESCO, https://education-estimates.org/out-of-school/averages/.

[3] SDG7 Tracking report.

[4] Technology in Education, Global Monitoring Report (UNESCO 2023).

[5] Electricity and education: the benefits, barriers and recommendations for achieving the electrification of primary and secondary schools (UNDESA, 2014).

Sector background

Different countries have different education systems but generally, education levels can be categorised into three: primary, secondary and tertiary education. Primary education is the first stage of formal education where topics introduced are typically designed to provide fundamental skills in reading, writing, mathematics, and establish a solid foundation for learning. Secondary education is considered the second and final phase of basic education. Typical age at entry is between 12 and 14 years and there is a requirement for more highly qualified teachers teaching within their specialism. The third level of education includes universities as well as trade schools and colleges. It focuses on learning in highly specialised fields and generally culminates in the receipt of certificates, diplomas, or academic degrees.

In at least 35 countries, governments spend less than 4% of GDP and less than 15% of their total expenditure on education. This hinders efforts to provide necessities for schools such as electricity, learning equipment, internet and proper building infrastructures fit for learning that would guarantee access to quality education and learning opportunities.

Without lighting, students have limited hours in a day to study, so teachers are unable to provide classes during early morning and evening hours or introduce technology such as computers into classrooms to enhance learning. This leads to a drop in attendance and performance in graded tests, as well as retention rates among both students and teachers. The Covid-19 pandemic showed the limitations created by a lack of energy and internet in schools and homes, as this prevented millions of children from continuing or accessing education, adversely affecting their learning and putting them at risk of not returning.[6]

Africa has, however, made significant progress in education. The number of children enrolled in primary schools has risen due to fee abolition in public primary schools. Sub-Saharan countries currently spend about 3.4% of its GDP on education, the second highest of any region, with nearly 40% of its countries meeting the recommended financing targets set by the UN, which require countries to allocate 4% to 6% of GDP and 45% meeting the 15% to 20% target of public expenditure on education.[7]

Provision of electricity in schools in rural communities could eliminate capacity and access barriers that affect student enrolment, literacy levels, student and teacher retention rates, teaching and learning quality, access to resources and education facilities. In Mali, for example, school electrification in 2015 led to an increase in girls' school attendance, improved class performance, and improved boy-to-girl ratios. According to a survey conducted by UNDESA, electrified schools and villages in Africa have documented lower drop-out rates, higher test scores, and higher proportions of girls entering secondary education.[8]

In Southeast Asia, enrolment for all school-age children has been achieved at the primary level, though participation at the lower secondary education level is not as high. Expenditure in the education sector varies from country to country in Asia, between 6.5% and 2% of GDP. Use of technology in curriculum delivery has seen a diminishing gap in educational resources between rural and urban populations, which can be attributed to policy interventions and education awareness through mass media, as well as electrification programmes.

[6] Inclusion and education: Global Education Monitoring report (UNESCO, 2020).

[7] World Bank, 2020.

[8] Electricity and education: the benefits, barriers and recommendations for achieving the electrification of primary and secondary schools (UNDESA, 2014).

Despite provisions on free and compulsory education in the Southeast Asia region, there is still a significant number of children who are not in school or who drop out from the formal system. The education sector still faces challenges such as low demand for education fuelled by poor quality, non-use of mother tongue in teaching and misperceptions about schooling. Inadequacy of resources and facilities, disability in children and long-distance travel to school in rural areas also influence the level of participation of students in schools.

The general enrolment rate in South Asia is at 88%. However, only 69% of children have access to early childhood (pre-primary) education which affects enrolment, participation, and retention rates in the primary and secondary levels. This could be a reflection of low government expenditure on education which totals 2.9% of GDP.

The disparity in electricity access between rural and urban schools is high. In India, 27% of rural schools have electricity compared to 76% of schools in urban areas. In Sri Lanka, roughly one in five schools lacks access to electricity[9], as schools continue to experience high rates of Out-Of-School-Children (OOSC) which is a contributing factor to high incidences of child marriages and child labour. On the other hand, in Nepal, girl student enrolment increased by 23.3% across a sample of villages that had received electricity at schools; in Bhutan, rural electrification contributed to seven months of additional schooling for girls and four additional months for boys.[10]

Multiple studies have confirmed the positive link between household access to electricity and various improved educational outcomes. For example, in Zimbabwe, children in a household with access to solar energy spend more time doing homework compared to households without access. In Bangladesh, duration of school attendance by children corresponds with the duration of household access to electricity. In the Philippines, homes with access to electricity on average have children that attend school for two years longer than those from homes lacking it. In Vietnam, another report concludes that children from grid-connected households tend to have lower dropout rates than those from households without grid electricity.

In India, students whose households are electrified are more likely to have high literacy levels and complete graded examinations successfully, compared to their counterparts whose households are not electrified. Another study in India found that household electrification increased school enrolment by about 6% for boys and 7.4% for girls.[11]

In addition to a lack of electricity, many schools have kitchens with large inefficient wood-based stoves which use vast quantities of wood. These stoves are also expensive to run and time-consuming (particularly when fuel needs to be collected), have a detrimental impact on the environment and create poor indoor air quality for the cooks, negatively affecting their health. The World Food Programme (WFP) estimates that about 80% of the school meals cooked in schools supported by WFP are still prepared on inefficient three stone fires.[12] Many schools are boarding schools and even for day pupils, the school meal can be the main meal of the day for those students. Studies suggest a positive correlation between school feeding programmes and educational outcomes.[13]

As governments ramp up activities to improve access to, and quality of, education in their countries through policy interventions to improve learning, infrastructure and electrification in schools, private sector

[9] UNDESA, 2014.

[10] Policy Brief 4: Energy and SDG 4 (Quality Education) (UNICEF, 2019).

[11] UNDESA, 2014, page 17-18.

[12] Clean cooking in schools (WFP, 2021).

[13] The Impact of School Meal Programs on Educational Outcomes in African Schoolchildren: A Systematic Review (C. Wall et al, March 2022).

participation is also needed to cope with rapidly rising demand for quality education, which often remains highly compromised in public institutions.

Private sector

In the education industry, the private sector encompasses a diverse range of non-state players such as non-government organisations, religious bodies, special interest groups, foundations, businesses and individual investors, as well as civil society.

Interest in private education continues to rise significantly, expanding rapidly in several urban markets. With 85% and 65% of students in sub-Saharan Africa and Southern Asia regions enrolled in primary public schools respectively[14], governments are beginning to engage the private sector to improve learning at scale across their public education systems to compete with private institutions.

The opportunity exists for the private sector to invest beyond private education to increase educational capacity and innovation in education service provision (e.g. infrastructure including energy), delivery and promotion of innovation in teaching and learning methods (e.g. technology, software), in services (e.g. admin) and in monitoring. Examples include in the Philippines where school buildings have been built through private-public partnerships. Technology use examples include in Sierra Leone, where radio instruction was introduced during the 2014 Ebola crisis and was again used during the Covid-19 pandemic to help children to continue to learn. UNICEF provided portable solar radios to 34,280 vulnerable families. In addition, a text message (SMS) tool allows children without internet to learn new words, and check exam results and school placements, via their phones. Tablets have been provided to leaders to support tracking budgets, grades, and other administrative priorities.[15]

There are a number of different channels for education investments, such as in public-private partnerships and direct investments into companies with innovative business models, or investments through intermediaries who support education providers. In the last few years, structured financial products have also opened opportunities for participation from smaller investors.[16]

Public-Private Partnerships (PPPs) in education are increasingly perceived as an innovative approach to providing quality education for the following reasons:

- To increase the level of financial resources committed to public services such as basic education and provide better value for money.
- To allow governments to focus on functions they have comparative advantage in while the private sector is in charge of service delivery.
- To allow for greater innovation by focusing on outputs and outcomes, rather than processes.

When designing a project that aims to provide electricity to public schools, private partners should consider factors that would increase the likelihood of sustainable off-grid electrification projects. For example, projects should be consistent with a country's rural electrification plans and education infrastructure for the

[14] UIS statistics, 2021.

[15] Ministry of Basic and Secondary Education of Sierra Leone 2022.

[16] Investment theme: access to education (Bertha Centre, 2015).

regions identified. This will inform the project's long-term sustainability roadmap to ensure long-term impact.

To guide the delivery of off-grid projects, private partners should work closely with public sector representatives, particularly ministries of education and energy, during the planning and implementation phases of the project.

Maximising awareness and involvement of the beneficiary school communities early in the assessment phase is also vital. Key activities such as promotional programmes, regular meetings with community leaders and focus group meetings will play an important role in determining the success and acceptance of a project in a community.

The delivery mechanism or business model selected should ensure that service providers and government, schools, teachers and students have access to quality products and services at affordable prices, access to qualified repair services and spare parts over the long term and should aim to benefit key actors along the value chain during and after the implementation of the project.

Design and preparation of electrification projects for schools entails gauging their energy demand, assessing the type of inventory or equipment used at the school, understanding alternative energy options available on site, and selecting an energy solution influenced by the size of institution and the level(s) of education offered at the school, as well as the geographical location.

Creation of partnerships that play to the technical and administrative strengths of each partner ensures a project's tasks and roles are assigned to the most qualified partner with the capacity and expertise to implement an off-grid project.

The development of remote monitoring tools and stakeholder training curriculums and activities are components that should be included at multiple levels of the project to encourage a sense of ownership amongst stakeholders. A user manual guide should be developed, especially for institutions with a high staff turnover.

Business models that encourage productive activities resulting from school electrification projects improve lives and livelihood opportunities for those who cannot afford individual household connections or systems. Such activities increase the economic attractiveness of the project not only for the school but the community as well.

Operations and Maintenance (O&M) costs of the system could be catered for by revenue generated from Income Generating Activities (IGAs), such as photocopying and printing services or mobile phone charging for residents within the community. Training could be provided during deployment to help staff identify the most suitable IGAs which will not supersede or compete with the learning needs of its students. However, since operational costs of schools are met by the government, the institutions might not have a need for the IGAs, but they are likely to experience disbursement delays which could restrict timely preventative or curative diagnoses of the energy systems.

The project implementers should also ensure beneficiaries use energy efficient equipment and good management practices for employees, to avoid system downtime or failure.

Provision of energy services should also be extended to facilities within the school or college that cater to staff and non-staff electricity needs, such as in staff housing, kitchen and storage facilities to increase staff retention rates, and increase the use of clean cooking products.

Sector trends

The following are key trends in Southern Asia and Africa's education sector:

- Solar energy holds great promise for successfully powering schools, as seen in projects such as Floating Schools in Bangladesh, Vodafone's Instant Network Schools and OVO Foundation's Project Jua.
- International tech companies are investing in off-grid education projects through direct investment in international and local social enterprises, or funding research projects for off-grid lighting in developing countries.
- Commercial electronics companies are launching solar projects in off-grid areas and also providing technical support to implement existing projects such as solar photovoltaic (PV) installations.
- Growing adoption of technology for teaching in Africa: schools are incorporating the use of tablets and computers into the curriculum to enhance learning. However, utilisation remains low due to lack of power in off-grid schools.
- Internet expansion and provision of technology in remote areas: given the increased interest in e-learning, the demand for school electrification and internet connection is likely to increase.
- There is an increased focus on last mile solutions in curriculum delivery: the scarcity of access to connectivity and resources has spawned a great deal of innovation, such as mobile phone based digital content and reallocation of unused TV and radio devices to increase access in addition to internet and mobiles to underserved schools.
- Hybrid education systems are driven by consumer demand, market stimulating innovations in supply, and fiscal realities of governments engaging private sector capital.
- Promotion of clean cooking, awareness of diseases related to indoor pollution and the proven cost savings has seen an increased uptake of Improved Institutional Cook Stoves in schools (IICS).
- Private-public partnerships are becoming a strategy for governments in both Africa and Southern Asia to meet education development goals. However, PPPs in Africa are for the most part still limited to school infrastructure developments such as construction of classrooms, laboratories or toilet facilities. There is, however, increased international financing for off-grid projects providing electricity installations and water sanitation.

Sector challenges and opportunities

Table 1: Challenges for renewable energy systems in the education sector in Africa and Southern Asia

Challenge	Mitigation
Poor existing infrastructure can delay electrification and wiring of buildings such as classrooms, dormitories, administration blocks and other facilities in the school.	Initial assessment to determine the extent of the problem and solutions and time taken to rehabilitate the buildings.
The total load of equipment connected might exceed the capacity of the system.	Assessment should be based on current and projected energy demand at the institution for proper system sizing.

Enrolment disparities that remain between geographical areas and across the urban-rural divide	Carry out proper site and demand assessment on attendance rates for different regions.
Shortage of technically qualified teachers and instructors.	Provide rigorous user training to staff throughout the cycle of the project.
Tampering of systems by students especially in boarding schools (dormitories).	Teachers to include topics in the curriculum that create an understanding of the systems' importance to the students and the community.
Risks of designing excessively long programmes delivered in often underutilised facilities.	Seek advisory services and expertise on project design and management before implementation.
Education PPPs can exhibit considerable complexity.	Short-term projects are lower risk for the delivery of narrowly defined education services.
Corruption and bureaucracy in respective government offices might lead to delays in project implementation.	Case by case basis varying from one country to another within the African and Asian regions.
Malfunctioning of remote monitoring systems, which will limit the frequency of data transmission of energy produced and consumed.	Hardware inspection and pilot testing of the remote monitoring systems to identify problems before system installation.
Electricity usage in staff facilities might deplete the energy to be used in classrooms during lessons.	Training stakeholders on how to manage usage during different times of the day and night.
Re-training of new teachers at the schools due to mandatory staff transfers by the government.	Develop a user manual guide and allocate a budget to carry out trainings throughout the cycle of the project.
No budget allocations for Operations and Maintenance (O&M) activities of the system.	Introduce productive use activities to raise money to cater for O&M activities.
Certain parts of the system, such as invertors, are not available locally.	Minimise cases of system failure by frequently carrying out preventative maintenance of systems.

Table 2: Opportunities in the education sector in Africa and Southern Asia

Access to capital

- Direct investments into companies with innovative business models, or investments through intermediaries who support education providers.
- Create partnerships with financial institutions that provide affordable credit to schools to acquire clean energy products or learning equipment.

Partnerships

- Create partnerships with local companies with experience in the sector to offer technical expertise.
- Create partnerships with respective local government offices to support the delivery of a project.
- Create partnerships with local suppliers to provide electrification equipment for powering schools using solar PV systems or learning equipment.

Education delivery through technology

- Provide power to off-grid schools using alternative energy sources such as solar energy or biogas.
- Provide internet connectivity and electrical learning equipment such as tablets or computers. To understand schools without connection, as of 2022, Giga has mapped school locations in 136 countries.[17]
- Increasing access to technological devices presents a great opportunity for delivering curriculums to learners.
- Providing vocational training to build local capacity of qualified technical trainers and technicians to install, operate, and troubleshoot off-grid solar photovoltaic (PV) systems.

Energy for clean cooking

- Meal preparation in schools provides an opportunity to install Improved Institutional Cookstoves (IICS).

Investment opportunities

The investment opportunities in the education sector for the next five years have been identified by various research companies, which have developed knowledge products sold at a fee ranging between $2,000 and $8,000 depending on the type of user and volume of information. The estimated value of potential energy investment opportunities in the education sector has been calculated at approximately $1.2 billion. The value of investments in the education sector has been derived from the number of Out-Of-School-Children (OOSC) with a focus on primary schools, an estimated number of schools and size of PV systems likely to meet the schools' energy demands, based on estimates for basic digital transformation (see Table 3).

Reliable and up-to-date data on secondary schools for some of the countries is not available so its potential investment is not included below.

Table 3: Investment opportunties in the education sector in PV in Africa and Southern Asia

Region	No. of OOSC (primary school)	Avg. class size	No. of classes	Avg. school size	No. of schools	PV system installed (2kW)	Investment (USD)
Africa	34 M	50	8	400	80,000	$5400[18]	432 M
South Asia	13.76 M	25	5	125	110,080		594 M
S/East Asia	6 M	30	6	180	33,333		180 M
Total potential investment – Solar PVs in off-grid primary schools							**1.2 B**

[17] 55 countries were mapped directly by Giga (https://giga.global/about-us/) and 81 are mapped through OpenStreetMap.

[18] US $5400 is the figure used in the Global Education Monitoring Report, 2023 based on ITU 2020 and experts.

Table 4: Overview of the key players in the education sector in Africa and Southern Asia		
NGOs/Foundations	**Funding/Global Agencies**	**Ed-Tech**
Aid for Africa South Asia Foundation Global Partnerships for Education Bill and Melinda Gates Foundation ICEF Nuha Foundation Educate Girls Africa Educational Trust Nepal Youth Foundation Asante Africa Foundation Plan Asia Teach for the Philippines Aga Khan Foundation	African Development Bank Asian Development Bank The World Bank United Nations Educational, Scientific and Cultural Organization (UNESCO) United Nations Children's Fund (UNICEF)	iSCHOOL Zenius Education LIDO Africa Management Institute Brainshare Student Hub Ubongo Tuteria Obami Eneza Education ZeduPad Clock Education Xseed Education EasyUni SquLine Ruangguru Frontlearners HarukaEdu Cialfo VivaLing Edukasyon

Case studies

Case Study 1: Gyan Shala Programme in India[19]

The Gyan Shala Programme was established in 2006 to deliver a replicable and scalable model that can provide good quality basic school education to children from poor urban families that is on par with what is available to urban upper-income classes. Gyan Shala centres pursue their vision of low cost and high quality through a number of innovations. First, reflecting the realities of the high-density urban environment in which they operate, there are no conventional school buildings. Rather, Gyan Shala centres operate from available rented space, so the school programme operates from classrooms dispersed across the slums. Employing local staff at going market rates enables operation at a lower cost and a greater proportion of funding devoted to learning inputs. Recognising the limited formal qualifications of its teachers, Gyan Shala compensates by having a strong "back office" design, teacher development, and a management team that supports its teachers with materials and regular in situ mentoring.

There are four key features to the Gyan Shala approach to education provision that mirror the recommendations of the "poor to fair" journey of school improvement detailed within a report by McKinsey:

- **Distributed classes-model**: A distribution system whereby the design team and the field supervisors ensure that there is standardisation of the curriculum across all the centres. They also ensure minimal,

[19] *GYAN SHALA: A study into its long-term viability and expansion through private sector investment* (DFID, 2013).

uniform standards of performance in a geographically distributed class set that is located close to the homes of the students and their teachers.

- **Re-engineered teacher role:** Education delivery that is built on elements that are highly standardised, broken down into units, and divided into daily lesson plans; these are delivered within the classroom by less qualified personnel who are supported in an integrated manner by a design and management team.
- **Continuous curriculum design adaptation:** A design pedagogy in which the design team constantly creates and/or modifies a curriculum that responds to the local context in conformity with state and national curriculum norms. The team incorporates elements of curriculum design from the best-in-class global curricula. The classwork is divided into three subject streams centred on the children's first language, maths and project work or creative expression, with no module exceeding 20 minutes of class. Children are provided a considerable amount of learning material that includes learning aids for individual and group activities, and a daily worksheet for each stream.
- **Learning–development culture:** A culture that is structured to support the strategy of using relatively less educated staff to deliver quality education outcomes through an ongoing support system based on high calibre, highly qualified staff elsewhere. In the elementary programme up to grade 3, the top tier comprises the core team and senior supervisors who hold doctorate or master's degrees; the second tier comprises the supervisors-cum-senior teachers, who typically hold an undergraduate degree; and the third tier constitutes the class teachers who handle all subject streams and transact the curriculum in the classes. A majority of class teachers have studied only up to grade 12, though some could be high school graduates and some undergraduates.

There have been three different assessments of learning outcomes from which impact evidence can be drawn. In 2004, the Massachusetts Institute of Technology and Pratham assessed the achievement of the Gyan Shala Grade 3 students compared with control groups of Grade 4 Vadodara municipal school students in language and mathematics. The Gyan Shala students outperformed their counterparts across both components by more than 100%. In 2006, the Government of Gujarat asked Gyan Shala to run a pilot programme for improving the quality of learning in Grades 1 to 3 in the Ahmedabad Municipal l Government schools.

Gyan Shala does not currently retain specific details regarding the socioeconomic status of its students. Therefore, any conclusions about this can only be inferred from the location of the Gyan Shala centres in pockets of extreme poverty within urban slums. Gyan Shala has designed its programme to accommodate students from the lowest wealth quintiles with regard to the timetable location and price point in the following ways:

- A Gyan Shala school day does not exceed four hours and is delivered either in the morning or in the afternoon. This is intended to reduce potential opportunity cost while also matching the attention span of small children.
- Gyan Shala centres serve high-density slum areas. Close proximity enables young children to come to school unescorted.
- Costs are kept low primarily because classrooms are rented single rooms and there are no playgrounds or other amenities. The teachers are also hired from the informal sector at a fifth or a sixth of the salaries of tenured government teachers.

Case Study 2: Solar-powered floating schools for year-round education in Bangladesh[20]

[20] *Solar-powered floating schools* (Designboom).

During the monsoon season, severe flooding leaves many parts of Bangladesh inundated for three to four months out of the year. In addition to the destruction of crops and property, which disproportionately affects the poor, flooding also prevents many children from attending school.

Girls living in impoverished rural communities experience an additional dimension of vulnerability as a result of social and cultural norms that restrict their access to education. During their transition to adolescence, girls' dropout rates tend to rise dramatically. Reasons include restrictions on their mobility, the increased opportunity cost perceived by families of sending them to school and early marriage.

Recognising the threat to educational outcomes for all children, Shidhulai Swanirvar Sangstha, a local non-profit, decided that if they could not go to school, the schools would come to them. Mohammed Rezwan, the organisation's founder, invented solar-powered floating boat schools. Each boat has a classroom for 30 students, a laptop with an internet connection and a library.

These mobile internet education units (MIEUBs) use solar energy and generators to power laptops, projectors, and other equipment. Instructors integrate lessons on children's and women's rights and other practical training into their basic education curriculum. In addition to providing education, boat schools also provide solar-powered lamps for many students, as well as solar-charging stations, to improve the conditions in which students study at night.

Although Rezwan originally set out to ensure that all children, boys and girls, have year-round access to education, the impact on women and girls has been particularly pronounced. Since 2002, 90,000 families have benefited from this service, and women and girls make up over 70% of the beneficiaries.

Case Study 3: Developing the soft-skills necessary to meet rapidly expanding industry demands in Senegal[21]

The Centre for Technical and Vocational Training Senegal-Japan (CFPT: Centre de Formation Professionnelle et Technique Sénégal-Japon) has been playing the role of a centre of excellence among French-speaking African countries to increase human resources for industrial development.

The CFPT was established in 1984 with the support of Japan to meet the shortage of entry- and middle-level technical workers in Senegal, which was an important target in the country's sixth four-year economic development plan (81/82-84/85). The centre was designed from the outset with the idea that Senegalese human resources would be nurtured by Senegalese instructors. Since its establishment, the institute has trained about 2,300 technicians and engineers who completed its two- or three-year programmes. The courses have come to be recognised as the country's top level programmes, with their completion treated as a certified qualification for studies in France and Canada.

Over the years, the CFPT gradually developed its own knowledge and skills best suited to Senegal's needs. At first, the training content was heavily influenced by what was brought by Japanese experts. With time, however, various innovations were made to produce locally adjusted technical training systems. One small example of such adaptation is that at the CFPT, the students, who will become future leaders in the workplace, are expected to maintain the workshop (workplace) in an orderly, safe and clean fashion, according to the key lessons of the 5S doctrines: Sorting, Set in order, Systematic cleaning, Standardizing, and Sustaining. While maintaining its original message, this principle was localised and introduced into the

[21] *JICA evaluation*.

Senegalese context with due modifications to make it suit local labour customs.

While building up its own capacity, the CFPT started supporting a large number of countries—more than 20 of them—in their human resource development. In 1999, in cooperation with JICA, it started providing 16 French-speaking countries with international training programmes. Eventually, the Institute came to have about 15% of their BTI and BTS (both of these are the names of technical qualifications in Senegal) trainees coming from other countries. Cultural and socioeconomic similarities with the neighbouring French-speaking countries certainly facilitated the transfer and sharing of technologies and knowledge. This has resulted in making CFPT one of the core institutions for the development of human resources in West Africa.

One major beneficiary of such cooperation is the Democratic Republic of the Congo (DRC). Under the JICA's technical cooperation to DRC's National Institute of Professional Preparation (INPP), CFPT provided a technical training to core instructors of INPP.

Case study 4: Solar Community Hubs[22]

Solar Community Hubs / Learning Labs are providing electricity to schools specifically for access to digital technology. The labs are self-contained solar powered centres in containers, including computers and networking equipment designed to run with minimal power needs. The equipment varies per hub but generally includes networking switches, wireless router, community owned wireless internet, projectors, laptops, one or two servers and software. One such lab was installed at Diepsloot School in South Africa, offering access to over 700 students, aged 14-19. The lab is managed by a local partner, Code for Change South Africa, and they train students in computer basics as well on intermediate coding plus providing IT technician workshops.

The Solar Community Hubs project was started in partnership between Solarhub and Dell Technologies in 2011. They have installed 25 labs, of which sixteen labs are in South Africa and two in Kenya. Dell is one of the main donors and the balance of funding provided per hub by donors, often local community-based organisations or internet providers, but they also fundraise via their website.

[22] Solarhub website.

References and further reading

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Bill and Melinda Gates Foundation
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Giga Global
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Please contact your Client Relationship Manager if you want help with introductions to specific individuals in these institutions.