

# Capacity building in developing regions

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## Enhancing sustainable development in developing countries of this world (Abstract)

Technical empowerment is a topic at the root of sustainable and self-determined development. One way of enhancing the ability of people in developing regions to improve their living conditions is training.

Here the authors report on their experience with training courses in the area of renewable energy addressed at the international market and in particular to developing countries. Training, especially in combination with industrial partners and research institutes, offers a cutting edge view of developments and possibilities.

The inclusion of practical engineering topics is an essential part of appropriate training which aims at transferability and applications, particularly in technically less developed regions of this world. The German Solar Academy's (GSAN) intensive solar business training formats intend to contribute a big deal to improving the dissemination of PV technologies in addressed regions through educating and training people to become sales and installation partners for the international and local solar industry.

While politicians of western countries offer lip service to the use of renewable energies political action does not necessarily support such initiatives. In this report the capacity building work of GSAN and methodological issues of its activities are discussed, as well as obstacles identified.

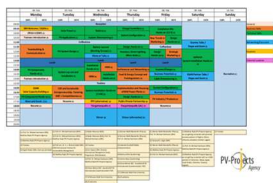
# The German Solar Academy Network (GSAN) and the SRH Solar Winter and Summer Schools

Energy is a driver for economic growth. In sub-Saharan Africa, still close to 600 million people live in low-income regions with no access to electricity (IEA Flagship Report – November 2019). Photovoltaic solar “off-grid” systems could be able to boost sustainable economic growth. Besides the efficient allocation of financial means and a supportive political framework, the availability of system components of sufficient quality and access to experts that are able to sell and install renewable energy systems are crucial for a successful market penetration. Solar companies are the most dynamic factor with regard to further PV dissemination.

However, the solar industry struggles with finding "right" reliable and skilled partners in targeted markets. In cooperation with SRH Berlin, University of Applied Sciences, the PV-Projects Agency-Berlin, has introduced a training concept called "The international Solar Entrepreneur/Employee (TiSE/E)". This training programme addresses this bottleneck.

Short to long-term courses are offered in accordance with this concept and enable transfer of important solar business skills to potential future solar industrial partners at the Berlin location in Germany. Alternatively, training may also be offered at locations of international GSAN partner institutes.

A central part of the TiSE/E philosophy is to enable trainees to gather essential practical knowledge directly from qualified industry and academia players in the field and to find relevant and reputable contacts in order to be able to immediately start or improve work activities in the sector through a smart mixture of technology, business and networking sessions (business matchmaking).



*Figures 1 to 3 (from left to right): timetable of 4<sup>th</sup> SRH Solar Winter School (first week) shows well the mixture of business and technical skills training as well as networking sessions, 4<sup>th</sup> Solar Summer Team-up! Flyer, 5<sup>th</sup> Solar Winter School marketing.*

Since its formation in 2016 (official launch at 1st SRH Solar Winter School) the German Solar Academy Network (GSAN) organizes these schools. Apart from locations in Germany, the network realizes professional education (study programmes) and vocational training programmes in the Green Technology field in targeted partner countries worldwide in order to foster and support sustainable energy use as well as waste and water management. It builds competence centers (establishes partnerships with existing vocational training institutes) and relations to central authorities in attractive markets. GSAN ensures quality management, and it introduces and maintains common standards in its educational co-operations. It provides key educational concepts (curricula, training skills and methods) and material that is of a high-level (up-to-date scripts and lecture notes). Furthermore, it serves as a certification and branding agent.

## **Achievements**

- 5 *SRH Solar Winter Schools* in Berlin (every February, since 2016) - 78 graduates
- 5 *SRH Solar Summer Team-up!* in Berlin and diverse German locations (every Summer in the context of either *Intersolar/The Smarter E* or *Off-Grid Experts Workshop*, since 2016) - 65 graduates
- 1 *SRH Intersolar2019 Business School* (SIBS2019) in Berlin and Munich (May 2019) - 3 graduates
- 1 *Short Solar Training* of Northern-Iraqi delegation in Berlin in Berlin (September 2018) - 16 graduates
- 1 *Virtual Training Course for Future Solar PV Capacity Building Partners* (Train-the-Trainer for GIZ Iraq, November 2020 - January 2021) - 21 graduates
- 1 *Accreditation Wind Energy Workshop* for new Wind Energy Trainer of the *Green Energy Academy* (GEA) in Berlin (July 2018) - 8 graduates

- 2 *GSAN International Wind Industry Training* (GSAN-iWIT2019 and 2020) in Berlin (December 2019 and November/December 2020) – 16 graduates

- Establishment of training programmes at Vocational Training Centers in Accra and Tema (Ghana) with *Builders of Tomorrow Association* (BOTA), since 2016 - 40 graduates

- Establishment of training programmes at Vocational Training Center in Yaoundé (Cameroon) with the *German Solar Academy Cameroon* (GSAC), since 2017 - exceeding 150 graduates

- Establishment of training programmes at Vocational Training Center in Freetown (Sierra Leone) with the *FLS Academy*, since 2019 - 13 graduates

- Establishment of training programmes in Egypt and Saudi Arabia through the *Green Energy Academy* ("SDSB training"), since 2018 - exceeding 220 graduates

- 10-day Private Sector Development (PSD) solar technology training in Erbil, Kurdistan region of Iraq for *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) (November 2019) - 24 graduates

- Great reception from the solar industry and training support in Berlin and at company-sites by industry partners: Phaesun, Solara, Studer, SMA, SMA Sunbelt, Fronius, Synlift Systems, Phocos, Energiekonzepte Schiffer, Schnelle Energietechnik, Raach Solar, Oneshore, SunEnergy, Hoppecke, Ecoligo, Solarworld, Schneider Electric, Steca, 4Newenergy, BAE Batterien, Little Sun, Redavia, OC3 AG, Astronergy, Infinite Fingers, Morningstar, Solar Kiosk, WestfalenWind, MCD, PP Power.com, Abhijay Energy, Synergy, Solarwaterworld, GreenRock Energy, Skytron, Asantys Systems, Solar Cooling Engineering, Sunfarming, Photovoltaikbüro Ternus&Diehl, Phoenix Contact.

- Great training and networking support by NGO's, GO's and consultants Enerpol, PV-Projects Agency, RLI Reiner Lemoine Institut, Wollny Consulting, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Deutsche Energie-Agentur (dena), Landesstelle für gewerbliche Berufsförderung in Entwicklungsländern, d-collective/d-network, Institute of Applied Resource Strategies, Green Energy Academy, Afrolynk, Dynamo,

The Smarter E, Embassy of the Republic of Sierra Leone, Messe Augsburg, INTEGRATION environment & energy.

- Great wind industry support: MHI Vestas Offshore Wind, Bundesverband Kleinwindanlagen, ProfEC Ventus, XVentum, ERNI windradkollektiv, enbreeze.

- Great support through SRH professors and lecturers (in average 7 per school)

- Acknowledgement through Renewable Energies Export Initiative Secretary at the German Ministry of Economics (BMWi)

- Outreach to new markets through SRH Solar Winter or Solar Summer School participants in countries like Sierra Leone, Cameroon, Lithuania, Mexico, Colombia, Saudi Arabia, Egypt, South Africa, France, Ghana, Tanzania, Uganda, Eritrea, Bangladesh, South Korea, Thailand, Australia, Canada, Nepal, Djibouti, Sudan, India, Somalia, Iraq, Nigeria, Brazil, Portugal, Indonesia, Tunisia and Honduras

- Establishment of (a couple of close) business partnerships between participating industry partners and trainees (to be further evaluated)

## **Challenges**

Despite great successes in conducting the schools with exciting outcomes, great satisfaction and gratifying feedback of trainees, challenges remain regarding the maintenance of successful collaborations with existing industry partners and a continuing successful acquisition of new solar companies that present state-of-the art technologies and services and that are looking forward to participating in training events.

However, due to present German government policy, allowing participants to actually travel to Germany (e.g. due to visa issues) remains by far the biggest obstacle to participation in scheduled events.

With increased training activity handling the organization and a worldwide network, including communication with GSAN partners, as well as the creation of new training formats also beyond existing markets, will only be mastered through increased manpower.

## Conclusions and Outlook

4 years after the launch of the GSAN more than 10 intensive solar business training events have been carried out in Berlin including company, project-sites and trade-show visits in Germany. Almost 200 persons have been trained; 78 candidates have been SRH-certified and now carry the title "SRH-certified Solar Employee" or "SRH-certified Solar Entrepreneur"; 5 people have become accredited GSAN training partners.

GSAN's international network has successfully grown, now including 6 new training centers in Cameroon, Ghana, Sierra Leone, Egypt and Saudi Arabia, with partners collaborating well and efficiently. An additional 400+ people have successfully completed programmes in these partner institutions and 24 in a customized training in Iraq.

The German training events work very successfully with a high standard of quality level and training programmes receive external recognition. However, further efforts will be required to ensure that a sufficient number of trainees actually attends these sessions each year. Resistance from German embassies regarding visa issues needs to be overcome. Ministries and other influencers will be contacted, and partnerships will need to be established in order to support competence dissemination in the field of renewable energies.

Future events include the third *GSAN International Wind Industry Training* (GSAN-iWIT2021) event which will be held in Berlin in December 2021.

In September/October 2021 the *6th SRH Solar Summer Team-up!* will take place in the context of the Munich Intersolar/The Smarter E.

In March 2022, the *6th Solar Winter School at SRH* will be held in Berlin.

The *GSAN PV-Business online Training (SRH-certified and on-demand)* will be developed further and introduced to the public. A 3-day preparatory solar training event at partner institutions (e.g. Ghana) will be implemented in order to circumvent visa restrictions.

Customized solar trainings (incl. Train-the-Trainer component) will be offered to international governmental and non-governmental organizations. Furthermore, a roll-out of extensive training measures is planned in Pakistan.



Figures 4 to 7 (from left to right): Prof. Dr. Michael Hartmann teaching at the 2<sup>nd</sup> SRH Solar Winter School, trainees installing a 1kWp PV system on the terrace of the SRH building, 4<sup>th</sup> Solar Summer Team-up! with Prof. Dr. Klaus-Ulrich Neumann, Mini-Grid session with Prof. Goran Rafaljovski

Further development and improvements of courses are intended, guided by extensive evaluations through surveys of trainees and industry. GSAN will also continue to develop training programmes at its new partners' locations in Colombia, Nigeria, Northern-Iraq, Zimbabwe and India.





## 6<sup>th</sup> SRH Solar Summer Team-up!

in Berlin and Bavaria

**New Date: 29<sup>th</sup> September - 17<sup>th</sup> October, 2021**

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