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SOUND-HEAT INSULATION MATERIALS
Cát Tường

Quality: Key Success Factor for Solar PV Rooftop Projects

Webinar

Friday, 16 October 2020

Within the framework of

Viet Nam Energy Partnership Group

Welcome to the Webinar – Our Speakers and Experts

Rainer Brohm, on behalf of GIZ Energy Support Programme

Ross Macleod,
Senior Associate, Asia Counsel

Tran Viet Nguyen,
Dep. Director, EVN Business Development

Mathias G. Kothe,
Managing Director, Syntegra Solar Intl. AG

GIZ Project: DeveloPPP – GIZ/Cat Tuong/Syntegra Solar

Objectives and Activities

- Development of **Investment Guidelines** for Rooftop Solar that will support and guide investors and project developers in the country.
- **Technical trainings** for installers and technical staff on high-quality solar installation.
- **Strategic cooperation** with vocational colleges in the region (Ninh Tuan and Long An) and close cooperation with GIZ TVET programme.
- **Information workshops** on Rooftop Solar project development and framework conditions (**Upcoming: mid-November 2020 in HCMC**)

Cat Tuong solar PV system (850 kWp)

Ministry of Industry and Trade

Hợp tác Đức
DEUTSCHE ZUSAMMENARBEIT

European Union

Quality as a key success factor for Solar PV Rooftop Power Projects
Learnings from a German-funded Private-Public-Partnership Project

A miracle happened in Viet Nam in the Solar Sector!

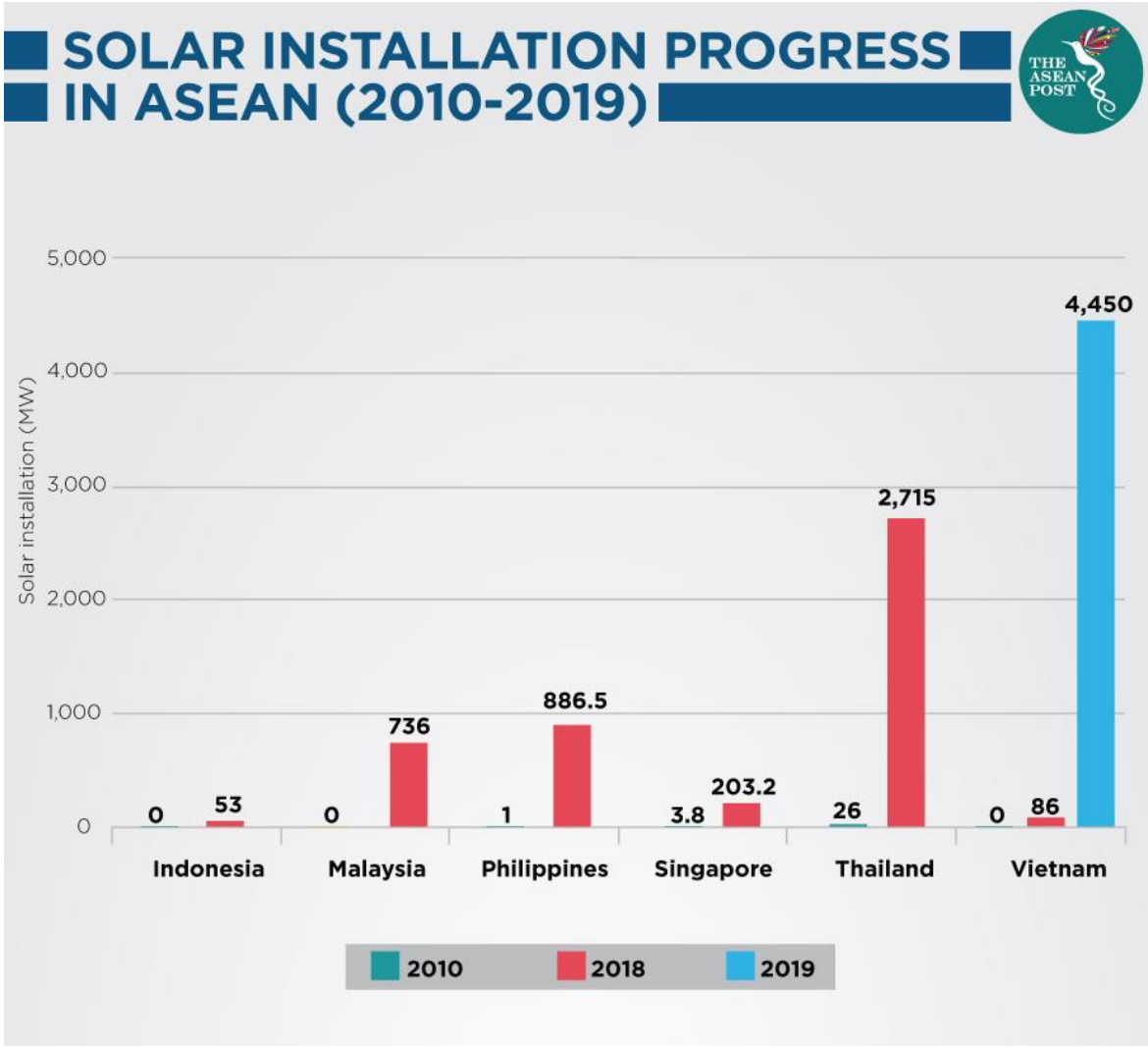
Viet Nam, the fastest growing Solar PV market worldwide

- **Dramatically fast, unparalleled ramp-up of Solar PV Installations, in combination with strong time-pressure to meet tough deadlines**
- **In the beginning, no local PV Expert engineers, technicians, workers available**
  No local expertise in the construction, installation, or operations of Solar PV Power Plants/Systems
- **No HSE-, QA/QC-, Test-procedures established for PV roof-top installations**
  No Solar PV rooftop-specific QA/QC established

⇨ **"Cutting Corners" is a logical consequence under these circumstances**

⇨ **An unparalleled success story in large scale / scope utilization of Solar power Plants / Systems results in many quality-related problems: it's a safe prediction**

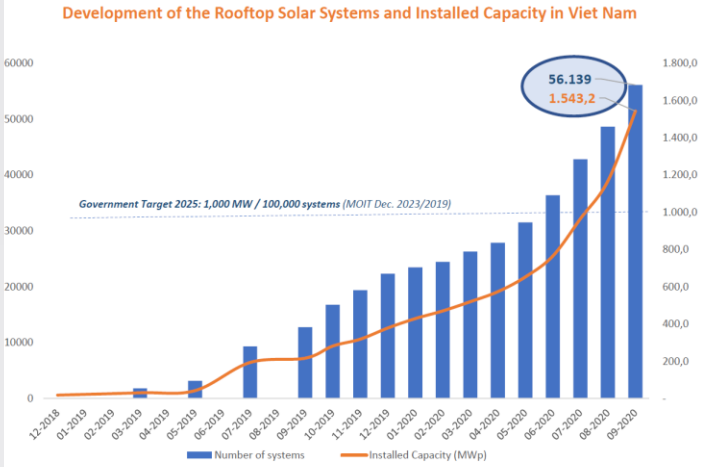
Solar Market Viet Nam – Development 2019-2020



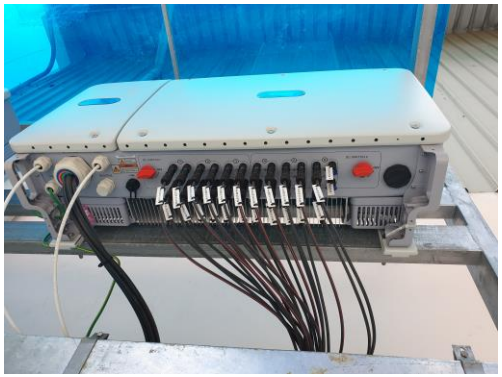
In 2017, solar energy played almost no part in Vietnam's energy strategy.

By end of 2019, Vietnam surpassed Malaysia and Thailand to reach the largest installed capacity of PV plants and PV systems in Southeast Asia.

The country found itself with more than 5 Gigawatts of PV projects, far exceeding the 1 GW by 2020 target.



Why quality is imperative in Solar!



In Solar PV Projects, cheap is VERY expensive

- **The very idea of Solar PV (Rooftop) Power Systems is reliability and high availability, in the medium- and long term**
  Financial models assume 20+ years of operations at high levels of availability (99+%)
- **With a guaranteed lifetime of 20⁺ years and a technical lifetime of 30⁺ years, focus on quality is crucial**
- **Not meeting the simulated and expected performance levels quickly results in significant losses for investor / owner**
- **Any retrofit, if needed, comes VERY expensive, compared to "design & build it right in the first place".**

⇨ **Quality in every step – from initial design to installations and to commissioning, to service and maintenance – is imperative**

⇨ **And: often it is the "little things" leading to real problems**

Lessons Learned specific to Vietnam (I): People

Trainings a Must, Safety a Concern, Quality-Mind

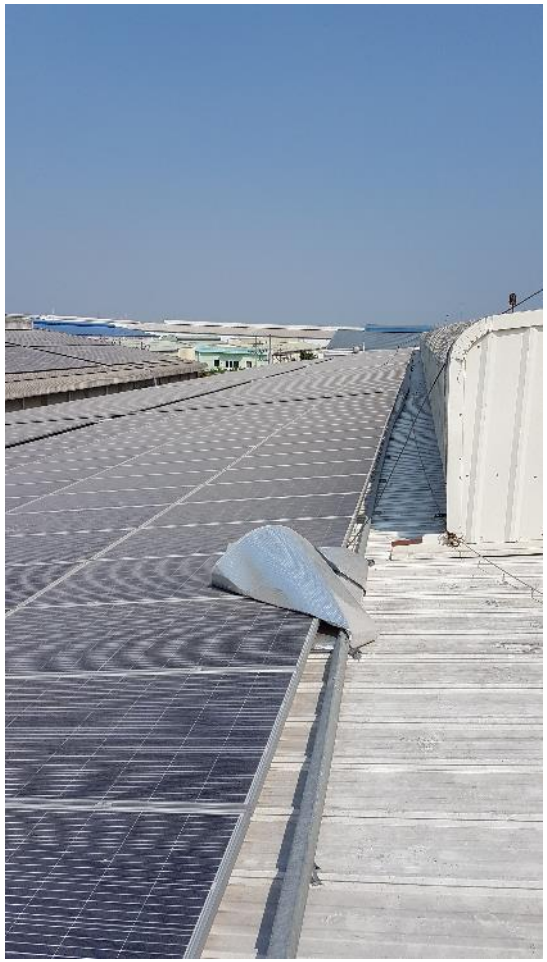
- **Training is a Must, namely in respect to H-S-E and QA/QC**
  very few trained technicians and workers – HSE and Quality-Mind is substandard
- **Safety a constant concern:**
  Awareness in respect to safety simply cannot be assumed ("it slows down"). Safety briefings each morning, safety experts on each site, incentives and/or fines implemented. Investment in safety gear and safety measures is simply required.
- **Quality a constant concern**
  QA/QC and discipline at large is considered a nuisance – "it's not in the DNA"

⇨ **A dedicated, process-driven, and strictly implemented QA/QC process, with the associated detailed procedures, is a must**

⇨ **Safety a key concern – needs to be enforced each & every day**

⇨ **This is an additional investment – almost never shows up in FM**

Lessons Learned specific to Vietnam (I): People



Lessons Learned specific to Vietnam (II): Buildings, Roofs, and Site Infrastructure

Mandatory Building / Roof / Site Evaluations

- **Extensive Roof/Building/Site evaluation is mandatory**
  - conflict of interest when shortcomings/problems are detected
- **Quality of buildings and roof often are poor**
  - Lack of documentation of building structural design or static calculations. And even then: don't trust paper alone, actual status often NOT as per documentation
  - Roof quality and roof skin status: is installation of a high-tech PV system feasible?
- **Electrical infrastructure evaluation is mandatory**
  - often cost-intensive retrofits are required
- **Evaluation of airborne pollution makes a lot of sense**

⇨ **Older buildings and/or roofs are not feasible as a rule of thumb**

⇨ **EPC must have integrity to advise against ill-suited PV project**

⇨ **Already in this early stage, it is clear that Solar Rooftop Power projects can not be done "quick and dirty – and cheap"**

Lessons Learned specific to Vietnam (II): Buildings, Roofs, and Site Infrastructure

Lessons Learned specific to Vietnam (III): Conditions specific to Vietnam

Demanding environmental conditions …

- **Extremely high levels of air pollution observed**
  - Nowhere in the world is the effect on PV Solar System performance so high
  - Apparently, no emission laws enforced: often unfiltered toxic/corrosive exhausts
- **Demanding environmental conditions need to be understood**
  High irradiation levels, hot & humid all year, heavy rain and high winds, insects
- **"Being Efficient" vs. "Quick & Cheap": walking a very fine line**
  In reality, often it is just cheap: cheap materials, cheap tools/instruments, cheap workmanship, "quick & dirty – let's get out of here quickly"
- **Checking everything is a must: constant supervision and QC**
- **Proof of approvals & permits & licenses, but also insurances**
- **Reality check in operations: performance monitoring essential**
- **Subsequent adapting and review of O&M&S schedules**

⇨ **Doing the job right in Vietnam:**
this costs the same as in other SEA countries, e.g. in Thailand

⇨ **"Cheap & Quick" just doesn't work for Solar Power Systems**

Lessons Learned specific to Vietnam (III): Conditions specific to Vietnam

Summary
Quality is imperative in Solar

- ⇨ **PV Power Systems require a Quality Regime different from many traditional industries.**
- ⇨ **Because PV is unique in it's very long life-time. Despite being simple & elegant, it's high-tech.**
- ⇨ **Obviously, this costs money to invest in quality from initial concepts to operations', incl. H-S-E.**
- ⇨ **It is our empiric, hands-on lessons learned:** ***for long-life PV Assets, cheap comes very expensive***

Thank you