



Switzerland Country report Kuching, Malaysia



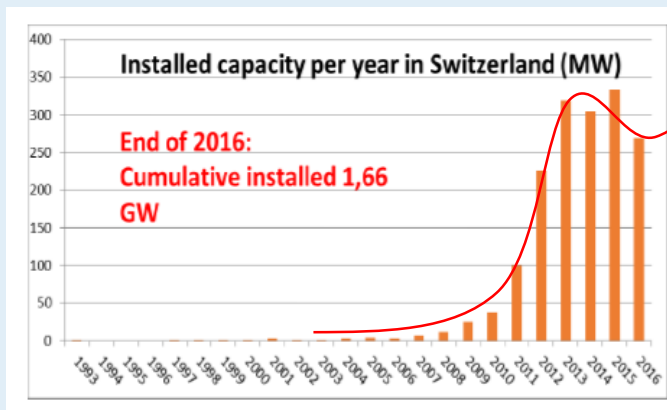
PV chocolate factory, Camille Bloch, Switzerland

PVPS

Lionel Perret, Planair SA



PV Market in Switzerland



Energy
Strategy
2050
Vote in
2017

In force
since
January
2018

PVPS

- Market in 2017 : around 260 MWp
- 3% of electricity supplied by PV by end 2017



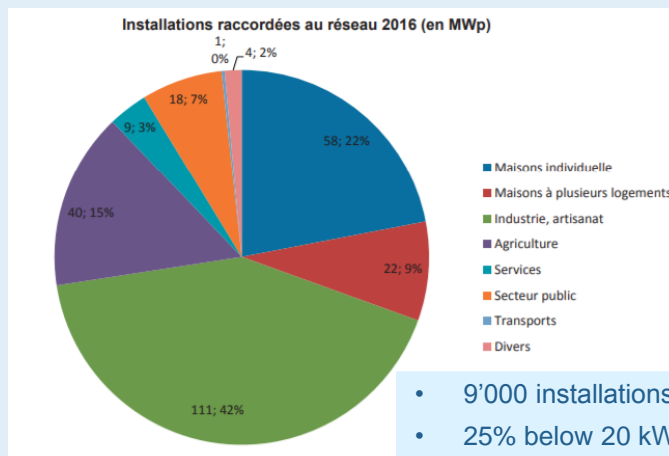
Electricity supply

- Expensive country with cheap electricity
- Traditional electricity generation 60 TWh:
 - 60% Hydro (50/50 storage / run of the river)
 - 8.5 TWh seasonal hydro storage (3 GW)
 - 35% Nuclear
 - Almost 3% of electricity is PV, annual increase of ~0.5%
- Energy Strategy 2050
 - ~20% PV (~12 GWp), ~7% Wind (~2 GW),
 - Max surcharge 2.3 cts \$/kWh (~ 8%)
 - Phase out of nuclear power plants without deadline
- Electricity monopoly for small customers (< 100 MWh/a)

PVPS



PV Market in Switzerland



- 9'000 installations
- 25% below 20 kWp
- 25% between 20 and 100 kWp
- 50 % above 100 kWp

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Storage market in Switzerland

Number of storage systems installed	Units	123	364	600
Total power installed for storage systems	kWh	2'000	3'300	5'400
Number of electric vehicles (EV) sold in your country, including PHEV (Plug-in hybrids)	Units	12375 (=3.8% of new cars) including 3062 EV	14066 (=4.43% of new cars), including 3272 EV	16803 (=5.59% of new cars), out of that 4'773 EV and 12'030 Hybrids

PVPS



- 300 CHF/kWh subsidy in 2 states
- Subsidy auction for storage in industry



New Drivers for PV in CH

- New requirement coming :
10 W / m² new living area must be installed
Solar energy needed when a gas or fuel boiler is retrofitted
- End of Feed-In-Tarifs
- Self consumption as the main driver for PV:
associated with investment subsidy from 2 kWp to 50 MWp (around 300 \$/kWp) for any PV installation
 - easier to manage annual quotes
 - «Self consumption communities»
 - Opportunity to cross roads and have large communities
 - No longer subject to monopoly (if PV is more than 10%)
-> PV power plants enable market access for conglomeration of small customer

PVPS



Demo projets

Large self-consumption community (18 buildings)

Services to micro, regional and national grid in collaboration with DSO

PVPS



- New heat pump
- PV installation
- Microgrid
- Wood district heating



Demo projets

Completely autonomous building with 20 households

Mix of PV/battery, heat and hydrogen storage/heat Pump

<http://www.umweltarena.ch/uber-uns/energieautarkes-mfh-brutten/>

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Successful Grid products

Hardware, decentralized software and web application
to monitor and control low voltage grid with high RE
shares : www.depsys.ch

GRIDEYE:

- monitors low-voltage network conditions and reports on power quality
- uses Distributed Energy Resources, loads and storage to control the network
- solves voltage and current issues
- optimizes energy flows
- supports network planning and asset management



PVPS

20 DSOs are already customers



Database for BIPV projets

<http://www.bipv.ch> (200 projets)



A22
Autobrennero
Read more...



Bénéteau
Group
Read more...



Bühler
Electricité
Read more...



CSEM Facade
Read more...



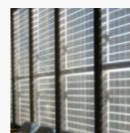
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SG Ennstal
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Swiss Floating Solar PV

- FSPV plant on a dam in the Swiss alps :
 - Monitored yield of 1'400 kWh/kWp with 40% in winter (30% more)
 - Monitored yield of 1'800 kWh/kWp with bifacial modules
 - 430 Wp in Winter with a 280 Wp panel
 - Authorized 500 kWp pilot plant



Thank you for your attention!