



The New Energy Sector: Smart, Local & Independent

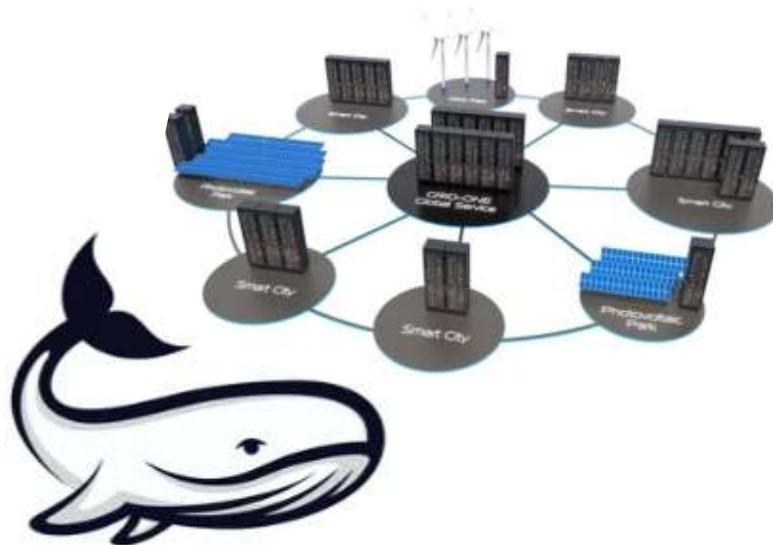
with SMART GRID technology by T&D Engineering



Green Energy Transition:
the realistic approach

4 Whales of Green Energy

- Wind
- Biomass
- Geothermal
- Environment



Mature Smart Energy Model

100%
GREEN
ENERGY



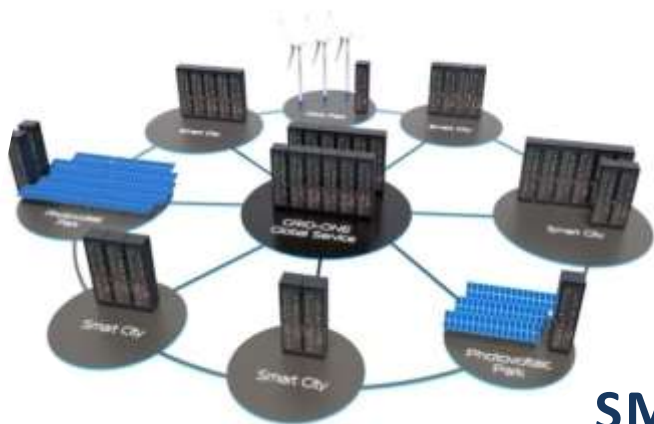
PROSUMERS



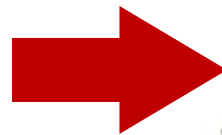
**STORAGE &
BALANCING**



**GREEN
GENERATORS**

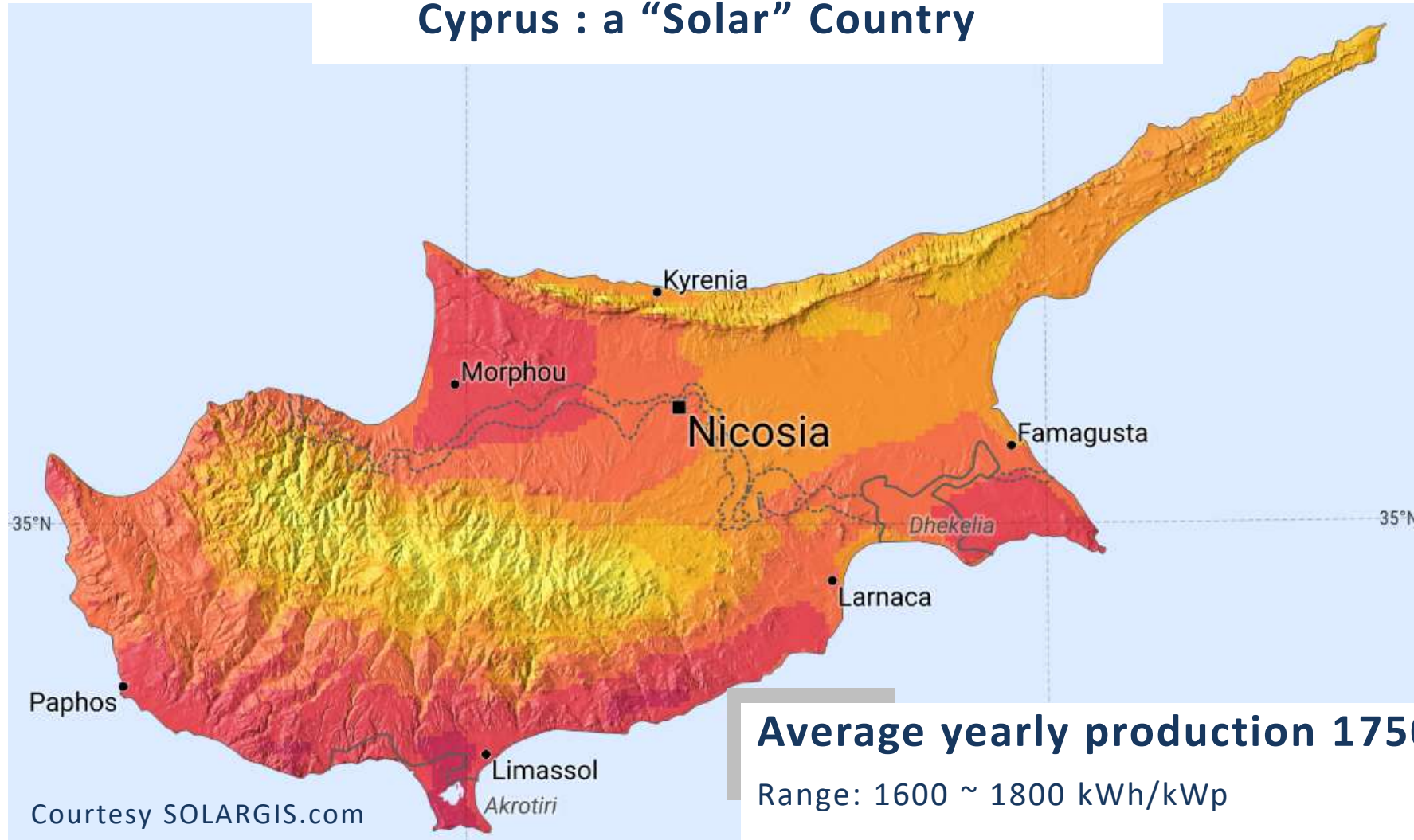


**SMART City
Management**



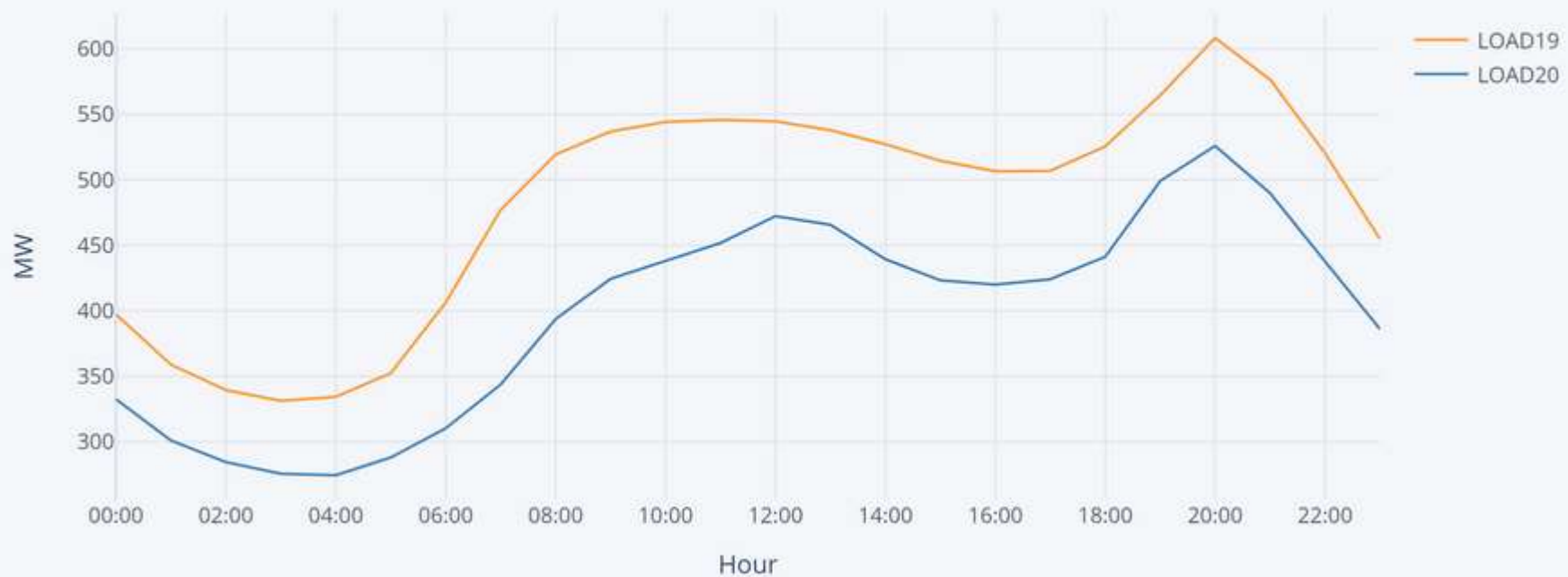
Cyprus : Best SMART Energy Balance

Cyprus : a “Solar” Country



Mean electricity Load Profile of Cyprus

Fig. 5: Load profiles during workdays and hours (16 March-26 April)



2/3 Solar Day



1/3 Night

Cyprus : Best SMART Energy Model

100%
GREEN
ENERGY



----- Today -----

Consumption 2020: 28TWh / 2.41 Mtoe

- Electricity + transport + heat

- Oil 92.9% / Solar 2.84% / Eolic 2.1%

Electr. generation: 5.04 TWh

Oil: 26 TWh

----- 2040 -----

PV + Eolic parks 5% → 25% 7TWh

Buildings ~ 700 000 roofs

Installed Capacity 17 kWp / per roof

Balancing necessity: 1/3 of daily = 26 GWh

70% electric cars ~ 500 000 EVs

EV batteries (100kw each) = 50 GWh

Cyprus : Best SMART Energy Model

100%
GREEN
ENERGY



70% electric cars
(50 GWh batteries)
@ 50% coefficient of utilisation

CAN BALANCE

28 TWh
of **GREEN ENERGY**
production

* Not taking into account other storage facilities + Green H2



What is missing?

**2022:
There is No
Electric Vehicle
Energy Production Balancing**

Transition Period & Measures

H2 + Lithium = “The Fifth Whale”

Drive “Local”



Green Hydrogen + Big Lithium Storages =
necessary temporary transition measures

Green Targets: Cyprus'2040

1. 17kWh PV per roof
2. 5 times more PV + Eolic parks
3. 500 000 EVs with 100kWh batt.
4. ALL chargers: G2V + V2G
5. EVs – max. time plugged-in.
2 types of chargers:
BIG + Fast / Small Capacity + available

Green Transition Strategy 2040:

GREEN HYDROGEN

3 Rules for Green Hydrogen:

- 1-** Do Not Transport H₂, transport electricity. Use H₂ locally!
- 2-** Burn H₂, do not make electricity from it.
- 3-** Use local H₂ cars, range <100km



What is missing - again?

1. **SMART Management of the Prosumer System**
- and -
2. There are **3 intrinsic** problems

The 3 Green Energy Bottlenecks

1



Energy Efficiency in
Buildings & SMART Houses
Better energy efficiency
not to exceed 28 TW of
consumption

2



Local Generation of Energy

The "Last Trafo Grid Jam"
catastrophe

3

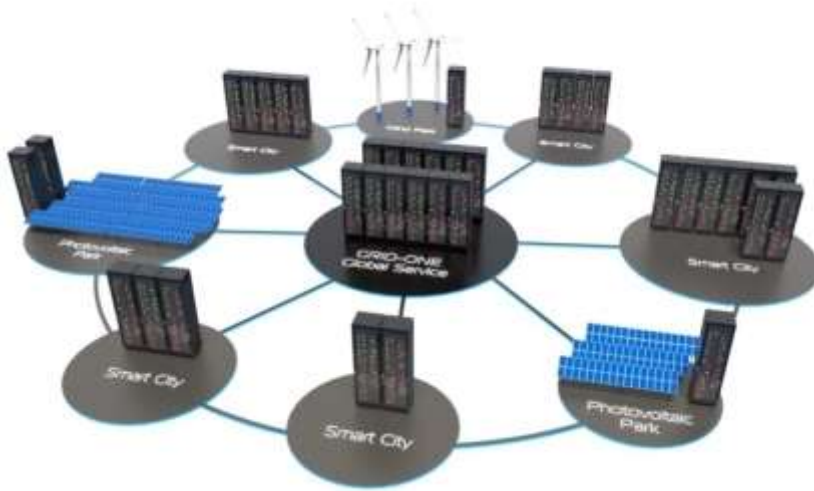


DC Fast Charging

The "Insufficient Grid
Capacity" grid catastrophe

→Solution: SMART GRIDS

GRID-ONE Global Management



- SMART Grid management
- SMART City management
- Energy System Management
- Country – City – Community - Building



SMART Communities



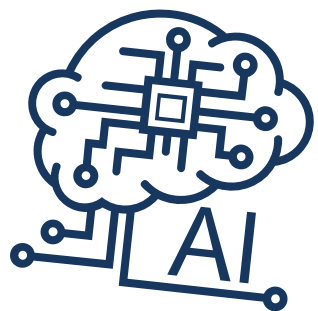
- Energy Communities
- Renewable Comm.2001/2018
- SMART Cities
- Energy-Independent Islands
- Market integration





T&D Engineering '2022

- 21 yrs. experience in the industrial automation
 - 16 yrs. experience in High-Power Grid installations
 - 16 yrs. management in the industrial dispatching systems
 - 12 yrs. experience in electricity transmission and distribution grids management
 - 11 yrs. experience in the EV charging stations
 - 8 yrs. experience in Artificial Intelligence
 - 7 yrs. experience in SMART GRIDS
 - 5 yrs experience in industrial Neuron Networks
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GRID-ONE: One Grid, to bind them all.



THANK YOU