

Author(s)	Antonis Kolokasis
Affiliation(s)	SVMENERGY
Presenting Author	Antonis Kolokasis
Title of Presentation	Integration of Viable and Sustainable RES in the Cypriot Energy Market
Oral or Poster Presentation?	Oral

Summary:

In an effort to harmonise the electricity market of Cyprus with EU Directives (EU) 2019/944 and (EU) 2018/2001, the energy industry of the island has experienced a dramatic shift within the last decade. With the transitional energy market in effect, the denationalisation of energy production services is as close to a reality as ever. For the first time, Cypriot private businesses and stakeholders play a significant role in the procurement of carbon-neutral, green energy. Certainly, the geographical and morphological characteristics of Cyprus have allowed sustainable solar and wind RES technologies to flourish through competitive investments and encouraging subsidy schemes. However, the challenges of Cypriot energy market participants are only increasing both in number and complexity. Businesses operating in the energy sector require robust and tailored solutions now more than ever, so as to outpace the rapidly evolving needs of the industry.

First, the intermittent nature of solar and wind RES reveals the need for an accurate and reliable short-term energy forecasting tool. While energy forecasting has been globally adopted in industry, the resolution and accuracy required through participation in the energy market sets a new standard for RES producers in Cyprus. To achieve this, tailored tools are required, combining multiple weather prediction models, and employing statistical techniques (ML and AI) as well as numerical weather prediction (NWP), and statistical post-processing. In addition, the effective range of certain NWP allow for the development of long-term prediction models, crucial for economic analysis of potential RES projects and the strategic planning of production and supply.

Secondly, the energy suppliers of Cyprus are faced with the difficult task of mitigating imbalances of their net traded energy. Achieving this, plays an integral role in their efficient, economic, and optimised operation. To this end, multivariable optimisation models are utilised, making use of data ranging from historical market clearing prices to ancillary service provisions and detailed demand profiles. These strategic planning tools enable the competitive distribution of energy products to the electricity market thus increasing the profitability and overall welfare of the industry.

Thirdly, considering the specific characteristics of the Cypriot power system, the so-called islanded operation promotes further stability and system inertia related challenges which call for a solution through energy storage systems(ESS). Storage-centric solutions play a pivotal role in providing ancillary services to the system operator as conventional generation is reduced to a minimum. In addition, ESS can alleviate curtailments of green energy and promote further integration of RES by reducing the stochastic elements of solar and wind-based units.

Finally, the energy transition is expanding beyond the electricity power system. The need for decarbonisation of the transportation sector has urged the industry to adopt Electric Vehicles(EVs) and their required infrastructure. Energy suppliers are incentivised to develop comprehensive EV charging point networks(CPN) to facilitate the transition. Nonetheless, holistic solutions featuring tailored CPN management platforms and industry standardised protocols have yet to appear in the Cypriot scene. Furthermore, novel technologies such as V2G, V2X, and virtual power plants hold much promise for further exploitation of EVs in the area of demand side response, an untapped market for the current energy suppliers of Cyprus.

The imminent liberalization of the electricity market reveals new business opportunities for all involved actors. Grasping this untapped potential requires identifying all the relevant factors of a competitive environment and delivering innovation through expertise and collaboration. Under the umbrella of a modular solution, SVM presents a holistic platform solution, that integrates all the aforementioned opportunities in a harmonising environment, maximising the market participant's revenues and safeguarding their investments.