



NATO Foundation
Defense College



Background Policy Paper

Massimo Nicolazzi

President, Centrex Italia SpA, Milan

You say renewables in North Africa and you get in reflection an image of sun and desert. Then you spell “market” and the power market of the EU suddenly materialises. Reality may however be harder than mirage; and to turn the mirage into reality a few issues have to be dealt with.

Resource sharing, to start with. North Africa needs energy for its own development and then (one would add only then) comes export. Conversely, without export there may be no resources for internal development. Wisdom (diplomacy would say “cooperation”) will be needed to balance.

This takes us to defining a target **project size**. Mainly, whether the investment and production plan should be national or regional. Business as usual would dictate individual State jurisdiction. Some rethinking could however be proper. Regionality would require a lot of good interstate politics; but as a matter of potential production, volumes may contribute significantly to optimize the domestic/export balance; and ensure a better ground distribution of the facilities. The desert is vast but not infinite; and due to low power, intensity solar requires plenty of space.

The **investors**, then. An issue almost symmetrical with the issue of size. Individual company vs. EU or at least Southern European consortium. Beyond size, the magnitude of the infrastructural investment required and the necessity to guarantee a soft landing on the European shore for significant volumes of VRE (Variable Renewable Energy) generates the need for joining forces. How to achieve it implies the opening of an importers’ forum capable of conjugating business and political progresses.

Choice of **technology** may then be guided by a number of factors. Solar thermal vs. PV (Photo-Voltaic) cells? Or the two will coexist? Or some new combination will in time take over? One issue relevant for decision on location-by-location basis may be the need for storage. Solar thermal is showing signs of improvements; while PV may just resort to convert in green hydrogen to be reconverted in power. The latter process (“power to power”) may run into some efficiency issues but evolving technology may provide for some of it.

The **product**. What is going to be produced/delivered? Just power or via electrolyzers green hydrogen to be exported as such? Part of the answer will be the resilience of the grid to the intermittency of solar/PV generation. The production in excess of what the grid is able to bear converting in green hydrogen may become a viable option. Exporting hydrogen would bring back more value than just reconverting it to power. Infrastructure cost and infrastructure security will contribute to the choice. Power would need a power line crossing the Mediterranean; green hydrogen, upon liquefaction, may just travel by ship. Yet, green hydrogen needs water to be produced (today's technology uses nine liters of water for producing 1 kg of hydrogen) and the water logistically available may be scarce.

Finally, the **importing infrastructure**. Sun radiation is by definition intermittent (even in deserts) and a grid hosting intermittent generation needs to adapt to secure balancing. This requires investments and further developments of the ability to store and of the cost of storage. The intermittency costs may influence the power/hydrogen balance, but also become an issue between producers and importers as to their distribution.

How do we approach **energy security** in the context of renewables in (and from) North Africa? Once upon a time the mantra was security of supply, i.e. of producers' supply. Let us call it the 1973 paradigm. However, it faded long time ago. The dependency on petroleum rents imposed on the producers the need to constantly sell. Supply became reliable by necessity. Power is for development, not for rent. The more the importers will help, also financially, North Africa to retain a substantial amount of the power produced, the quicker the issue of reliability of supply will just vanish.

After a period of violent regimes changes (as in the case of Libya), security of supply as a rule leaves the stage and security of infrastructure makes its entrance. The main issue is no more security from traditional attacks - terrorists may cause a temporary outage and yet permanent disruption is out of question -, but the technological security of a more and more complex power chain, and adequate

protection of the system from cyber-attacks. The safety of the grid and its interconnections will be evermore essential for electricity in the word to come.

This is today a topic of discussion on power generation and consumption in Europe and the Mediterranean. How much of the discussion will then be political and how much of it will be usual private company/public administration dialectics is too early to call. It is important to remind that without public support VRE generation would not have even started, and that without public support market alone may bring decarbonisation nowhere.

Massimo Nicolazzi

President, Centrex Italia SpA, Milan

With almost 35 years of experience in the hydrocarbon sector, Massimo Nicolazzi worked for Eni and Lukoil before being appointed CEO of Centrex Europe. Today he is President of Centrex Italia SpA and Senior Advisor of ISPI's Energy Security Program. He has written several publications and he is member of the Italian Geopolitical Magazine "Limes".



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