

## Background on the Sahara Wind Project

The negative environmental impacts and risks associated to the use of fossil or nuclear fuels predisposes wind energy very favorably in a global, more sustainable energy transition. As an inexpensive source of renewable energy capable of satisfying the world's growing needs for electricity, the development of wind energy started as a European success story. Within such context, its potential may be good enough to cover most of the continent's electricity needs. Although achievable in theory, such perspective may be difficult to implement in Europe as land-based electricity production from wind is hampered by high population densities and its intensive use of land. This leads to significant reductions of areas upon which wind resources can be exploited. In Germany for instance, the land-based wind energy potentials are rather limited compared to the country's large domestic power consumption. To cover only a fraction of these would imply the use of sites where annual wind productions are low, resulting into higher electricity costs. As most of the productive sites have been already equipped, the land-based wind energy growth rates dropped significantly. This lack of perspective has hampered industrial developments of the wind energy sector in Europe, with predictable consequences on the building of a more sustainable European energy supply scheme.

While Germany and Denmark were pioneers, other European countries like Spain are currently faced with the same difficulties. Thus, and in order to sustain a promising renewable energy technology, other options are currently being considered such as to utilize offshore wind potentials. In Europe however, there are large industrial regions, if not entire countries with high energy consumptions that don't even dispose of an access to the sea.

Within such context, it is therefore conceivable for some countries to evaluate the possibilities of importing carbon-free generated electricity at lower-costs from neighboring windy regions. This would be particularly relevant in a single European or perhaps also Euro-mediterranean energy market, as envisioned by lawmakers and the authorities in charge of regulations.

There are areas with excellent wind conditions where electricity demands remains limited due to extremely low population densities (one hundredths of that of Europe). The Saharan trade wind region from Morocco to Senegal represents for that matter, one of the most extensive, windiest areas in the world. In this region, within reach of the European electricity grid, an expected yearly production of more than 4500 Full Load Hours can be derived at some sites, where wind measurements are being collected.

The size of the wind catchments area is huge as the sole coastline, just to mention, spreads for over 2000 Km (1250 miles).

As the Saharan trade windblown coastline is already accessed by the extensions of the European electricity grid, considerable amounts of excess renewable wind generated electricity could be transferred. Although grids are synchronized in the current Alternating Current network, these perspectives would require the building of optimized transmission lines. In order to avoid unacceptably high losses, High Voltage DC techniques could be engaged. For large capacities exceeding 5 GW, existing technologies can limit transfer losses for a single power single line, to less than 10% over 3000 Km (1800 miles). This distance is long enough to deliver wind generated electricity from the Saharan plateaus of Tarfaya all the way to Germany.

The existing Euro-Mediterranean economic framework is likely to enable this vast wind resource to become one of the main economic drivers for the sustainable development of the entire region. Taking advantage of the relative proximity of both continents to tap into a widely available clean, renewable power source will serve several complementary objectives. The first will be to satisfy North Africa's growing energy needs by making this renewable energy source accessible through an adequate power transfer infrastructure. Within such context, excess renewable generated electricity could be exported and cover a share of Europe's significant energy consumption. This would be achieved while strengthening North Africa's industrial, social and economic take-off through the building of a green energy industry.

Our project development activities at Sahara Wind Inc are aimed at concretizing these objectives through the Sahara Wind Project. Initiated from 1993 and presented at the European Parliament in 2002, the Sahara Wind Project has already inspired several political and industrial initiatives eager to capitalize on such a concept. As an initiative emanating from the African continent, the Sahara Wind Project has, since its inception, focused on a market based, locally integrated economic development model which can be derived from this significant wind resource.