An adequate solution to Lebanon’s shortage in Electricity Supply.
Lebanon seems to regress while everyone one else is moving forward.

We have, for the past 30 years, been experiencing electricity cuts, and compelled to use noisy, costly, and extremely unhealthy generators.

While we used to a 24h access to power and export electricity to Syria, today we do NOT have proper power and import electricity from Syria..

Now this cannot be called progress!
Furthermore, in addition to importing electricity at very high prices, we are not even capable of having enough of it... and its quality is mediocre... Every household needs a “stabilizer”..

EDL is charging high prices and cannot supply enough electricity. This is costing Lebanon at least $1 Billion a year.

The sad reality is that some people are forced to burn wood in order to warm their loved ones..

Thus, it would seem that electricity has moved from being a necessity good to a Luxury..

This situation is simple UNACCEPTABLE...

A REVOLUTION is in order!!!!!!!
Where does Lebanon Stand compared to other countries in the region?

Cost of kWh in Cents

- **Syria**
- **Egypt**
- **Jordan**
- **Lebanon**
ELECTRICITY SUPPLY BREAKDOWN IN 2006

- Self Generation: 36%
- EDL: 64%
Government subsidies (covering EDL’s losses)
Let us first look at what others are doing.

Everyone in the developed and developing world is heading towards an increase in the use of renewable energies.

We will concentrate on WIND ENERGY.

Because that's what we do.

Because it is the fastest growing source of AE.

It is the cheapest.

And it is a well proven technology.
Let's see which countries are producing the most wind energy.
Why them and not us??

Common mistakes:
They have money to do that, we don’t..
That’s not true:
   Their regular electricity is much cheaper than ours, (mainly nuclear) they pay a premium to go renewable..
We are already paying that premium without enjoying renewable clean power..
Basically it is as if: Someone in Denmark pays $80k for a Porsche, while here in Lebanon he would need to pay the $80k to get a Peugeot…
Even oil rich countries are venturing in wind energy.
Finding the good in a bad situation

- We are today paying what needs to be paid to get clean, non-polluting renewable ENERGY. Without doing so...
- It is, to say the very least NOT VERY SMART
- We have to start somewhere.
- Wind Energy is a start.
- African countries are building wind farms, we are not
- Egypt, Morocco, Algeria already have wind farms
- Even oil rich countries that have lower wind averages than Lebanon are starting to use wind turbines.
- Bahrain, Dubai and Abu Dhabi are perfect examples
DUBAI’S POWER ROTATING SKYSCRAPER
The Murr Tower In Beirut: The unacheived building
Our constant reminder of progress: The Holiday Inn Building
We sure have to start somewhere, and even though we are very late: better late than never!

There is no real wind data available in Lebanon, only a dozen of weather stations are available, most of which are in the least windy areas, such as the airport.

But we do know that wind averages in Lebanon are good, they are of around 4.5 m/s. This is not excellent, but it is good. One needs average winds of about 6 m/s to have its wind turbine operate efficiently. An average of 4.5 m/s means there are some areas with 2 m/s and some others with 7 or more.

Also, as mentioned earlier, wind energy is growing very rapidly and in different directions: Size of turbines, their power outage and the wind levels they need to operate.

We do not claim or intend on installing turbines all over Lebanon right away, but can sure start in areas with higher wind levels and by the time those places are properly installed, we trust progress in technology will follow allowing others to enjoy this type of technology even with lower winds.

We also know that given the topography of our country, we are bound to find areas with sustainable wind levels (we have a long coast, mountains, and valleys)
We already know of 4 areas with very high wind levels: Marjaoun, Akkar, behind Cedars and off shore.

We at Wind Energy have installed more than 20 weather stations in areas that are of commercial interest to us:

This is what a weather station looks like.

It measures wind speed, directions, and other useful data.

Areas where we have installed stations include:

Several Locations in Beirut, including the top floor of Marina Tower.
(I take this opportunity to thank them)

And: Faqra, Faraya, Rabieh, Dbayeh, Bahsas, Akkar, Cedars, Jbeil, Naame, and Dammour.
We intend to start by tackling the private sector…
Like everything that has ever worked in this country, we feel that we have no choice but to go through the private sector..

Why??
Because the public sector has proven to be a failure.
Why?
Because it has accumulated failed projects, debts, corruption, and mismanagement.
For now, and I insist, for now, we will leave it, meaning the public sector, in the hands of our politicians of all sides..and let them do what they do best: TALK
What is a wind Turbine?

- We all know what an electric fan is?
  - We connect it to the power outlet.
  - We switch it on.
- It has a motor inside of it that feeds itself from the electricity, makes the fan blades turn, giving us air or wind.
- Well picture the exact OPPOSITE, the inverse motion, and you get a wind turbine.
- A wind turbine has blades, is installed outdoors, whereas wind turns it blades and this mechanical energy is then transformed into a more conventional one… Electricity…
First of all, wind turbines are used in 2 different configurations, application:
The off grid and the grid tie options.
Below is a sketch of the off grid option:
The grid tie scenario connects the turbine directly to the electricity meter and feeds the grid with any extra unused power. This is the ideal application and no power is lost from the turbine. It is the most commonly used application.

Well, we all were very excited by the US elections, and were all moved by the “Yes we can” slogan that president-elect Obama used, probably because it seems our country is based on the fundamentals of the contradictory “NO YOU CANT”..

Having said that, you Cannot connect your turbine today to the grid and feed the super well working grid because, well who knows??

We have decided to use the off grid application, one that is more commonly used in areas in this world where there is no power whatsoever.

Well the good news is that it permits whoever installs such a turbine to be completely independent from EDL’s power, providing of course wind turbine size and its batteries are chosen in a way to match wind levels.
We carry two types of wind turbine for individuals:
The conventional horizontal axis wind turbine:
And our vertical all new wind turbines
Differences are as follows:

A vertical turbine is double the price today, yet:
- It is smaller
- It is quieter
- It takes wind from all directions
- It can be installed on the roof of a house or building

We strongly suggest that people that live in rural areas use horizontal turbines because they have the space for it and are not affected by its additional noise since it is to be installed in the garden not very close to the house itself.
As mentioned earlier, the price of 1 kWh is $0.14 on average from the EDL source.

The price of 1 kWh generated by diesel generators is about $0.50.

As we saw before, 36% of electricity in Lebanon is generated by gen-sets and 64% by EDL.

HENCE: Average price of 1 kWh is:

\[(0.14 \times 64\%) + (0.5 \times 36\%) = $0.27\] per kWh
Price of our Horizontal 5kW wind turbine is $10000.

This turbine generates 13000 kWh per year at wind speed of 6 m/s and the life span of it is at least 20 years.

So you have 20*13000= 260000 kWh at $10000.

Hence cost of 1 kWh is $10000/260000= $0.04 per kWh.

If you add a full set of batteries every 5 years, price will go up to $0.08 per kWh.
Our vertical axis 4 kW wind turbine cost $20000 and produces as well 13000 kWh per year for 20 years.

The cost per kWh of it is thus double.

$0.08 without batteries, and $0.12 per kWh if we add a full set of batteries every 5 years.

As one can see, in Lebanon today, it is cheaper to use wind energy than our famous combination of EDL and generators.

We would like to specify also that we do offer financing which means that our customers can choose to pay easy installments instead of a lump sum of money.
We also carry several sizes of both horizontal and vertical wind turbines:

- Horizontal ones go from 5 kW to 2MW
- Vertical ones are of 4 and 10 kW and we will add the 50 kW and 100 kW during the course of year 2009.

The advantages of using such technology are numerous:

- First of all, you get your independence from Generators, their noise and pollution.
- Second of all, you virtually do not have to worry about switching off A/C’s in summer and heaters in winter.
- It’s renewable, unlimited and eco friendly.
- It is cheaper than what you pay today.
- We also intend to produce those turbines locally at the end of 2009, bringing the prices down.
Well besides a state.
We ask for:

- Incentives that help households that switch to alternative energies.
- A law to be drafted allowing all Lebanese to connect their turbines or solar panels to the grid.
- Please, please privatize this sector… We would be more than happy to help build wind farms, weather onshore or offshore, we sure prefer to see this:
An Offshore wind farm
An onshore wind farm
Than this
Or better... THIS
THANK YOU