



## Dutch-Moroccan Solar Energy Plan

The publications of the IPCC confront humanity with a huge problem, quite possibly the biggest problem ever. The decrease in greenhouse gas emissions and the replacement of oil, coal and gas by renewable energy sources such as solar, wind, geothermal, biomass, etc, deserves the highest priority, and every single country should be working hard towards this goal.

The Dutch-Moroccan Solar Energy Plan is a bilateral agreement between the Netherlands and Morocco, with a clear goal: accelerated transition towards renewable energy production.

If we look at Morocco and the Netherlands, we see a high degree of complementarity. Due to its high population density, using its own territory, the Netherlands cannot possibly produce sufficient sustainable energy for its needs, even after drastic cuts in energy use. This also is true for the other countries in North-West Europe. For more information about this problem, the reader is encouraged to look into an informative book by David MacKay: “Sustainable Energy – without the hot air”, readily available on the internet. The deserts of Morocco can, however, due to their enormous surface area and relatively high solar irradiation, provide a large part of Europe with electricity, if covered with solar panels and solar mirrors.

The generation costs of new solar mirror power plants in Morocco are comparable to those of wind farms in the North Sea and will see further cost decreases due to the learning curve effect. Due to the storage of heat these power plants offer much more life security.

Dutch companies and organizations have ample experience with large, technical projects in foreign countries.

A large amount of manpower is needed for the production of large scale energy projects, and even more so for the production and installation of solar mirrors and solar panels. In Morocco manpower is much more abundant than in the Netherlands.

Dutch institutional investors, such as pension funds and insurance companies are constantly searching for safe, long term investments. Next to offshore windparks, solar power plants in Morocco would fulfill these investment conditions.

We propose collaboration between the Netherlands and Morocco, secured in a bilateral agreement with the name: Dutch-Moroccan Solar Energy Plan. This plan should make it possible for sustainable energy projects in Morocco, which satisfy certain terms and conditions, to be able to take advantage of Dutch subsidy schemes if necessary.

The first phase of the Plan is the realization of 100% sustainable electricity supply in Morocco in the next 15 years. All relevant technologies, large scale as well as small scale, including wind and biomass, will fall under the plan, however due to the abundance of solar energy in a country like

Morocco, the current name is in its place. At the worldwide transition from fossil fuels toward sustainable energy sources, solar energy in a sun-abundant country is low hanging fruit in which Dutch companies can only profit from if there is good collaboration with such sunny countries.

In the second phase electricity will be exported to Europe, through newly built high voltage direct current lines. Energy intensive industry can also settle in Morocco, such as aluminum factories. In our vision, the future will see the production of 'solar-oil' from solar energy and CO<sub>2</sub> that is captured from the air. This solar-oil will replace diesel and gasoline from petroleum. Morocco is extremely well suited for this new industry.

In more detail the Dutch-Moroccan Solar Energy Plan can include the following subjects:

1. Assessment of the geographical, climatological, economical, sociological and legal possibilities of solar energy in Morocco, including large scale variants.
2. Making a plan to produce Morocco's entire electricity need from renewable sources, in the next 15 years, resulting in the closing of current coal power plants.
3. Creation of one legal space for energy in the Netherlands and Morocco, more specifically: the SDE+ scheme must also be used on Moroccan territory.
4. Collaboration between Dutch and Moroccan universities in the field of solar energy, foundation of a joint solar energy laboratory in Morocco.
5. Foundation of a revolving Dutch-Moroccan solar energy investment fund for financing of solar energy projects with a Dutch-Moroccan aspect, which means enough input from people in the Netherlands, with or without a Moroccan background.
6. Stimulation of the Dutch and Moroccan solar energy industry, including the CSP industry.
7. To start with, the building and exploitation of a CSP power plant of at least 100 MW by a Dutch-Moroccan consortium, with a PPA (electricity delivery contract) that is subsidized by the Dutch SDE+ scheme.
8. Inclusion of the CSP power plant as a contribution to the obligated 14% of Dutch renewable energy production; the relevant guideline, EU-electricity guideline 2009/28/EG art.9, allows this in the context of a bilateral agreement.

The Dutch-Moroccan Solar Energy Plan needs to add to and improve existing international collaborations and initiatives such as the Mediterranean Union en EUROSUNMED.

The Dutch-Moroccan Solar Energy Plan will make Morocco an energy exporting country, to which Dutch businesses can contribute to at a large extent.

The fact that a lot of Dutch people have a Moroccan background could contribute to the success of the Dutch-Moroccan Solar Energy Plan, through political support among other reasons.

In the 19<sup>th</sup> century entrepreneurial Americans migrated to the deserts in the West and provided new psychic energy for that dynamic folk. Let the Europeans, in good collaboration with the Moroccans, Algerians, Tunisians, Libyans and Egyptians, exploit the Sahara in a good, sustainable way. This perspective can give the Europeans and Dutch, the necessary enthusiasm to solve humanities biggest problem, climate change.

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