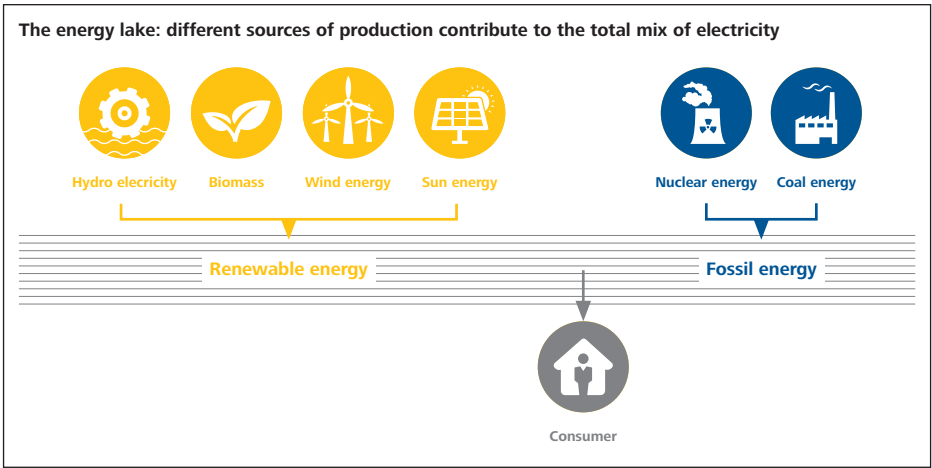


What are Green Energy Certificates and how can they contribute to a turnaround in energy policy?

As everybody knows, electricity comes from the plug. But how does electricity get into the plug in the first place? Even for experts the physical basics of electricity production and electricity transmission are oftentimes hard to understand. There is one physical fact that is of utmost importance concerning the discussion of electricity products: Anyone who buys electricity from a local solar power plant does not get the energy that stems right from this plant. This would only work if the buyer was disconnected from the energy grid and had a direct connection to the local plant. In principle, each power plant produces two separate products.

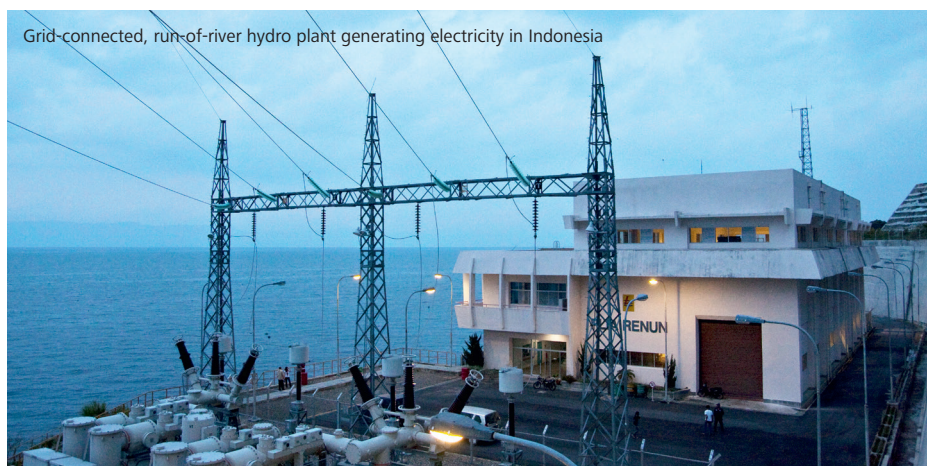
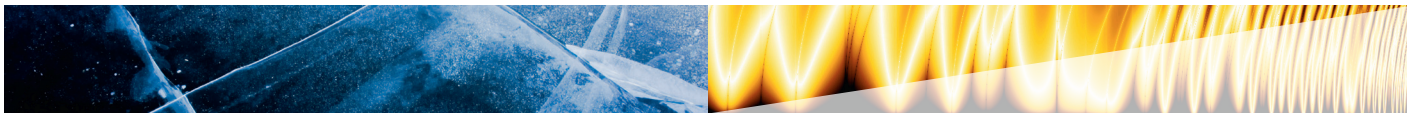
The energy lake

On the one hand, it produces electricity, which is measured in megawatt hours. This electricity is fed into the network and becomes part of the “lake of energy”. Figuratively speaking, this lake is like a reservoir for the entirety of the produced electricity. In this context, no distinction is made concerning the production of the electricity: renewable energies (e.g. wind, solar energy, water and biomass) feed the lake just like nuclear power and fossil fuels do (e.g. petrol, gas or coal).



On the other hand, the way electricity is produced can yield an “ecological added value”. This applies to electricity from renewable sources. A wind farm, for instance, emits a lot less CO₂ than a coal-fired power plant. A hydroelectric power plant with a fish passage protects the local ecosystem, compared to a hydro dam project.

Within the context of energy production, another ecological benefit has emerged in both cases. But how can a customer get hold of this added value, if he can only get his power from the large “lake of energy”? The answer lies in the concept of the proof of origin. For each megawatt hour, which a power plant feeds into the electricity network, a proof of origin is issued. There are many systems operating on a global scale, which manage the ecological benefits of green energy. In Europe, these are called „Guarantees of Origin“ (GoO) and are mostly managed by the national network companies.



Grid-connected, run-of-river hydro plant generating electricity in Indonesia

Ensuring Green Energy

The system of proof of origin assures that the amount of ecological or renewable electricity that is sold does not exceed the amount produced. When purchasing a certain amount of solar or wind produced electricity, the same amount of renewable energy is fed into the network. As a consequence, the following problem emerges: As long as the demand for renewable electricity is lower than the supply, selling a kilowatt hour of renewable energy does not lead to the additional production of a kilowatt hour being fed into the network. The only consequence of a sold kilowatt-hour is that the availability of renewable energy, including the respective proof of origin certificates, decreases on the market.

Offer in abundance



Alize Çamseki Wind Project, Turkey

This very problem exists in Switzerland: In the year 2010, a total of around 60 GWh of electricity were consumed. 21 GWh (37%) came from renewable energy sources. Out of these 21 GWh, only 7 GWh were specifically bought as renewable energies. The remaining amount of renewable energy was therefore supplied to customers that did not explicitly order it, and hence did not pay for it. Given the composition of the Swiss electricity mix, these customers only receive renewable energy by "default".

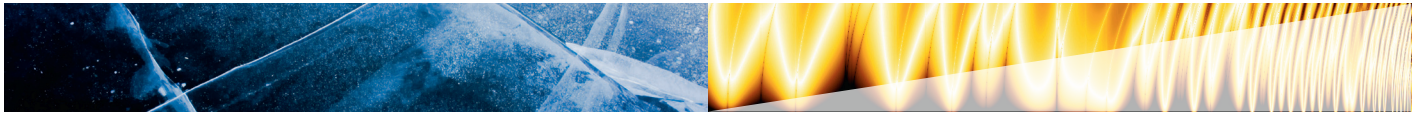
In other words: Even if the amount of renewable energy sold multiplied by a factor of three, in theory not a single new power plant would have to be built, since today's offer of renewable energy is sufficient to cover the demand. Even if the sales of renewable electricity products rose at the current rate, the oversupply would still last until the year 2032.



Prony & Kafeate Wind Farm, New Caledonia

The "default" provision and purchase of green energy by itself will therefore not automatically lead to a turnaround in energy policy. It does not directly lead to the construction of new renewable energy power plants. The successful turnaround really depends on such power plants replacing existing power plants run with fossil fuels. In this context, the concept of "additionality" is of utmost importance. This concept states that funds from renewable energy purchases lead to the generation of energy that would not otherwise have been generated. It is only then that one can talk about "new, renewable energy". On the market of green energy, so far many green energy certificates from existing or depreciated power plants, like hydropower plants, are being dealt with.

From an environmental viewpoint, this is an advantage compared to conventional power plants. Since these power plants already exist, their contribution to the energy lake is already secured. Only the construction of new power plants producing renewable energy increases the share of renewable energy considering the overall energy mix.



CO₂ compensation

The concept of proof of origin – and thus also the challenge of additionality – has lots of similarities with another well-known market of eco-certificates, i.e. carbon offsets. A customer can improve his ecological footprint by buying a climate-compensation (and therefore a carbon offset).

Similarly, he can also improve his ecological footprint, if he buys a green energy product (and therefore buying proof of origins). In both cases, the environmental benefits do not take place at the customer's location, but elsewhere: in the case of a proof of origin, a corresponding amount of renewable energy is fed into the network; in the case of CO₂-certificates, the corresponding amount of greenhouse gas emissions are reduced somewhere else on the planet by a climate protection project.

However, to have a real impact on the climate, it is necessary to invest the customer's funds into projects which practice additionality. Thus, it is essential that the purchase of green energy promotes the construction of new power plants. Another parallel exists between green energy and CO₂-certificates: They work best when the customer has already made an effort to reduce their CO₂ output. Ideally, a company first implements ecological measures to increase energy efficiency and to reduce CO₂ output, before compensating for the non-reducible emissions and buying the remaining electricity as green energy.

Transparency is essential

In the case of the CO₂ certificates, the UN Climate Convention as well as the "Gold Standard" foundation supported by the WWF, released strict regulations to insure that one metric ton of CO₂ exists for each CO₂-certificate. Two factors are at the heart of this issue: For one, a facility, which brings forth an emission reduction, must be precisely located geographically and its power must have been measured exactly. Second, the regulations demand that the revenue of the certificate sales were essential to the construction of the facility, meaning, the operation of the facility is not just "business as usual".

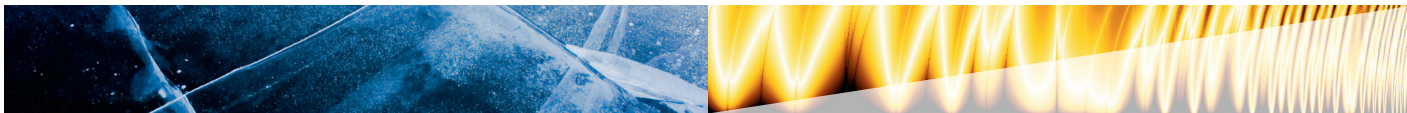
Label for Green Energy

These types of regulations are even more important in the electricity market. First, strict labels should ensure quality and transparency. In Germany, the label OK Power defines that at least one third of the green energy stems from facilities that are under six years of age. The internationally valid label GoldPower goes even one step further: 100% of the energy certified with GoldPower has to come from additionally built new facilities. This label marks the ecological added value of electricity from renewable energies around the globe.

GoldPower Logo



Through GoldPower, for example even a production plant in China can be run with renewable energy, even if there is no green energy available on the energy market in China. Thus, energy providers have the opportunity to cover an area of their choice with green energy by purchasing it on the green energy market. Second, customers should be more demanding about how exactly their green power is produced. Dutch Railways, for example, agreed to run on power from newly built Dutch wind farms. Third, wherever an oversupply of renewable energy persists, utilities should strive to sell only renewable power to their customers by default, until the supply-demand imbalance is covered. It is cheap to do so – in an oversupplied market, certificate prices are very low.



According to a survey of consumer attitudes towards energy” by Vimentis from 2011, 53% of the participants considered environmental compatibility as the most important criterion concerning energy, followed by security of supply. However, only 10% mention a “low price” as the most important criterion. According to a study regarding consumer expectations in terms of green energy and subsequent consequences for green energy labels, conducted by Forsa in Germany, also from the year 2011, 69% of those polled stated the purchase of green energy should lead to an increase in new facilities, in order to make the share of renewable energy grow. The question about the climate compensation draws a similar picture: If the customers trust that CO₂ certificates stem from innovative, additionally built projects, which benefit the local population, then they clearly favour “climate neutral” products. In short: electricity still comes from the plug – but a growing number of customers want to make sure that it has entered the plug in a climate friendly manner.



GoldPower provides reliable renewable energy at competitive prices

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