

NGI101x - -U Energy policy

The common European Energy policy of course is not only related to wind energy, it's a much broader issue. There are next to wind energy also solar power. There is this issue of Russian import of gas. Whether we should rely on that anymore in the long future or not. So it's a much broader discussion than only wind. But if you look to energy policy yes to a certain degree it's already done by the EU and by a lot of regulatory bodies of the European Union. But on the other hand there are still a lot of national interests involved in the regulation of energy. And if we look to the case of natural gas in the Netherlands, I think the Netherlands are very proud on their natural gas reserves and I think there might be quite so resistance to give Brussels or the European Commission the authority to tell what the Netherlands should do with the Dutch gas.

So and France has another approach, Germany has a very strong national approach to energy so yes I think there is a need towards a European Energy Policy. But how to cope with all these different national interests in Europe. I think that's a very huge challenge.

Wind energy is really indispensable if we look at sustainable energy systems. We need wind, we need significant input of wind if we really want to move towards sustainable energy systems. On land, wind is already competitive with conventional fossil fuel power plants. So that's something which is technologically also quite well developed. But on land there are limited space to build all these wind turbines and there's also a lot of public resistance against building wind turbines. So there's a strong movement to go off shore. And off shore really means far off shore. More than 50-60-70 or even perhaps 100 kilometers off shore so you will not see these wind mills even. And there is much more constant flow of wind which is also a big advantage for this means of sustainable power production.

So there is quite some movement at this moment to develop off shore wind energy. But it's much more expensive. It's not really competitive to fossil fuel power plants at this moment. So it needs to be subsidized and stimulated in one way or another. So there is an issue if we want this or not. There's also an issue who's to develop this network there off shore. And off shore is also not empty water, there are a lot of rights for fish and recreation, for military or naval transport. So this is far from free North Sea. There are all trajectories for different uses. And wind has to be placed within that. And that's not a trivial issue so we also have to consider all these different interests and other groups that do want to use the North Sea. And then we want to place wind power there in between somewhere.

The environment is very harsh of course. You can imagine all these storms and salty water. So you can not just take on shore wind turbines and put them off shore. That will not work. So you need really different constructions. You need to drill it in the ground. The North Sea is not so deal but still it's quite expensive to make these foundations. And you also need to develop the network there off shore. On shore we have a network. And you can quite easily connect to the network without huge expenses. But imagine you build a wind park 100 kilometers out of the shore. So you need to develop all these cable connections over there.

And if you imagine there's not a discussion to have a plug outside on the waters. So all these wind parks can connect to the plug. One plug on such a platform is huge. And it costs about a billion euros. So this is really big money.

One of the big discussions we have in the Netherlands at this moment is whether TenneT, the system operator for on shore cables, should also be the system operator for off shore. And there's a huge discussion on that. And that's close related to the issue if we should socialize the costs for building all these cable connections or not. Or should it be covered by the operators who build the wind parks there off shore. And there are pro's and cons for both. But if you consider that off shore wind is a long term option for several decades then it might make sense to have the national system operator being there and provide these cables and networks.

But another issue is then, if you develop this network you also would like to connect it internationally. It's not only a Dutch issue. But its Germany, its Denmark, UK etc. But then you get very interesting questions. Because Germany has other energy policies than the Netherlands. And it might be very tempting or attractive to export wind power from the Netherlands to Germany because of the subsidies are bigger in Germany. So you would draw subsidies from Germany to the Netherlands. And the Germans would not be very happy about that. And we have a lot of these kind of disputes.

And another additional issue with off shore wind is also that if we build these far and large off shore wind turbines outside the 12 mile zone, its not anymore the law as we know it in the Netherlands. It's international law. So how you regulate in these international waters. The production of energy between countries. So its extremely challenging. Load balancing is a very important issue if you look to sustainable energy production. Because the availability of wind is not always in line with the need for power. And the availability for solar PV is not always in line with the need for electric power. So there's a huge discussion going on on the storage of electricity and perhaps even other means of energy. So these power to gas discussion: could we use a surplus of wind power energy in the North Sea to change electric energy into hydrogen? So you would need water and then you could produce hydrogen. And you could store hydrogen. And you could use it then in times when you would have the need for power.

That of course costs a lot of money. And there's a discussion going on whether its worth while to do that or not, because you also lose energy. And on the other hand you might also consider its not only to take, to use the power as demand asks for it. You might also try to influence the demand for electric power. So under which circumstances would industry be willing to shut down some production plants if there is shortage of energy? How and to what degree would household be willing to reduce their energy use if there is a shortage of provision of energy. And these are all very interesting challenges and you can do a lot with regulation. Giving price signals for instance. Introducing these smart metering. So there are technical solutions for that storage but there are also institutional/regulatory solutions for that and the trick will be to find the right combination between both of them.

At the moment I'm doing research on social responsible innovation. So it's not only an issue on whether you get the right technology or the right regulation. But it's also an issue of what kind of moral values does society associate with certain technologies. So what kind of moral values are embedded in wind systems. Or what moral values are incorporated in certain kind of regulations. For instance if you think that TenneT, the system operator, should build the off shore network there. With this kind of regulation, we would admit that this is a social responsibility to build off shore wind energy there. Which is also related to the issue that society thinks that off shore wind is important. So it's an ethical statement. And if you build wind turbines far off shore so you will not see them. Then this visibility is also some kind of ethical value which is then dealt by a more complex and costly solution to build these wind turbines far off shore so you will not see them.

So inside the technological choices and the regulatory choices there's certain values, ethical values, social values, embedded. And if we develop these off shore wind turbines or wind parks. And if we develop solar power PV systems or other energy systems we need to be very much aware of these kinds of values which are sometimes embedded in technical or institutional choices. And I think this social acceptability and social acceptance of future energy systems is very decisive for the success of it.