

LOOKING BACK AT FORECASTS. THE CHANGING ROLE OF RENEWABLES IN THE IEA WORLD ENERGY OUTLOOK

How IEA's World Energy Outlook has underestimated the role of renewable energy

By Georg Günsberg in collaboration with guest author Andreas Veigl.

The design of our future energy system is at the crossroads. On the one hand the oil market is in substantial turbulences after the unexpected oil price crash. In consequence the prices for natural gas and coal are falling too. On the other hand the efforts to tackle climate change and therefore massively reduce the consumption of fossil energy are not enough. The World Energy Outlook by the International Energy Agency is an annual indicator for relevant developments in global energy supply. In collaboration with energy experts Steffen Bukold (energycomment Hamburg) and Andreas Veigl we carried out an analysis on the 2014 report (presented on Nov 12 in London and Nov 13 in Vienna) for the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW). Some aspects of this analysis are covered by a German language blog post . This shorter English version presents some new charts comparing the role of renewable energy in face of scenarios of previous World Energy Outlook editions. It is obvious that renewable energy has always been underestimated by the IEA. And maybe still is.

WEO 2014 with a clear message on climate change: Last chance Paris!

Being one of the most important and prestigious annual reports on energy, the World Energy Outlook provides high-level analysis and insights which are worth reading. The release is always part of high media coverage highlighting specific elements of the WEO's "Presentation to Press". From the shale revolution two years ago to a (often misinterpreted) European deindustrialization scenario in WEO 2013 – there is no serious newspaper not reporting about WEO data.

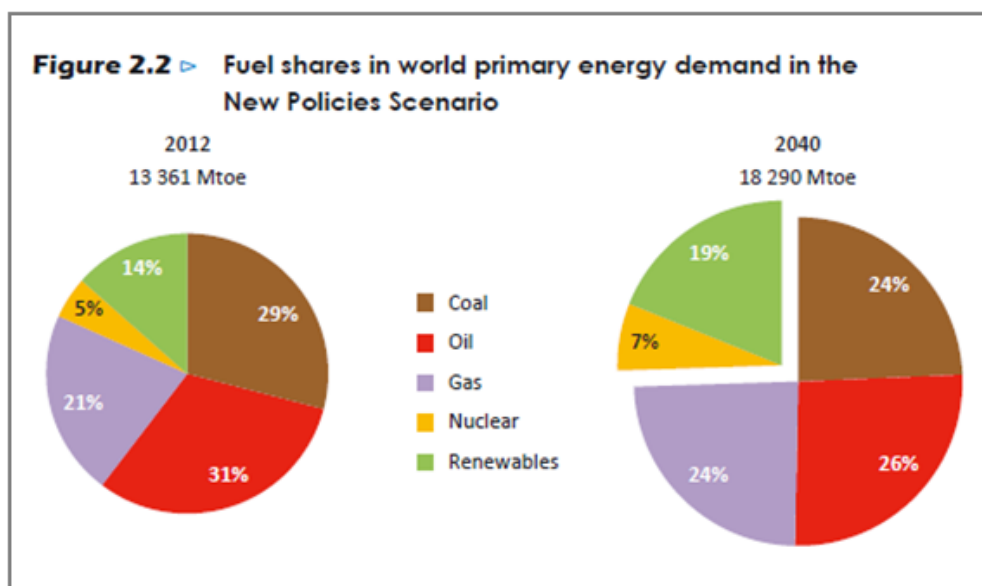
But one of this year's central messages was one on climate:

"We are on a dangerous path. We do need to get a clear direction in Paris next year... This is the last chance in Paris. If we are not able to do that, we may say goodbye to the world we are used to."

Clear words IEA's chief economist Fatih Birol found on the importance of the next COP21 in Paris.

Some energy experts have a critical view on IEA's traditional role in promoting the oil and gas industry. It ignored renewable energies for a long time and did not anticipate availability problems in oil and gas supply. But that role has changed a lot. The World Energy Outlook now underlines

structural problems in fossil energy supply and emphasizes the challenge of mitigating climate change. The WEO 2014 stresses the fact that the entire global CO2 budget to 2100 will be used up by 2040 if there is no change of course. Increasing low-carbon investments four times beyond current levels is needed according to the IEA. Nevertheless the central scenario for 2040 in the current WEO provides no reason for optimism:



Source: WEO 2014

If the central scenario will become reality, the world faces an average warming of +3.6 degrees Celsius.

World Energy Outlook & Renewables: how forecasts on renewable have changed

The current World Energy Outlook credits more importance to renewable energy in its scenarios. In the New Policy Scenario the share of renewables in the electricity sector increases from 21% to 33% in 2040. It will therefore be more important than coal. In our analysis we compared different central scenarios from past WEO editions to the current one. It is obvious that renewable energy has been underestimated for a long period of time. The projections in past scenarios for e.g. 2010 were significantly exceeded by real data.

Concerning primary supply of renewable energy it is important to keep in mind that since WEO 2004 biomass in non-OECD countries is covered systematically. This doubled the share of RES from 7 to 14%. The projections for primary energy have increased within the last ten years by 20% for the 2020 scenario and by 30% for a 2030 scenario.

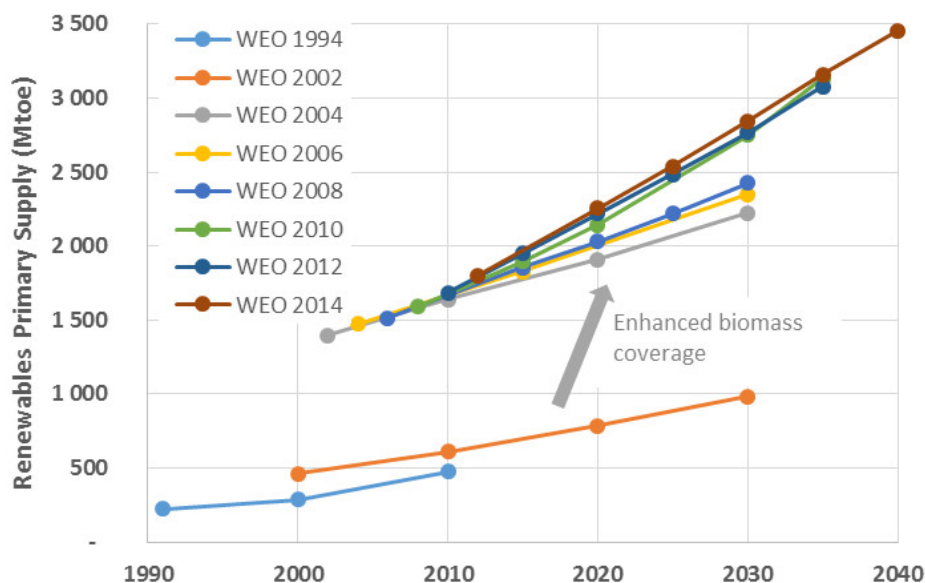


Fig. 2: Primary Supply from Renewable Energy Sources according to selected past WEO projections

In the electricity sector the difference between past scenarios is even more significant. The projection for 2020 is now 50% higher than it was in WEO 2004. The one for 2030 is now 70% higher than in WEO 2004.

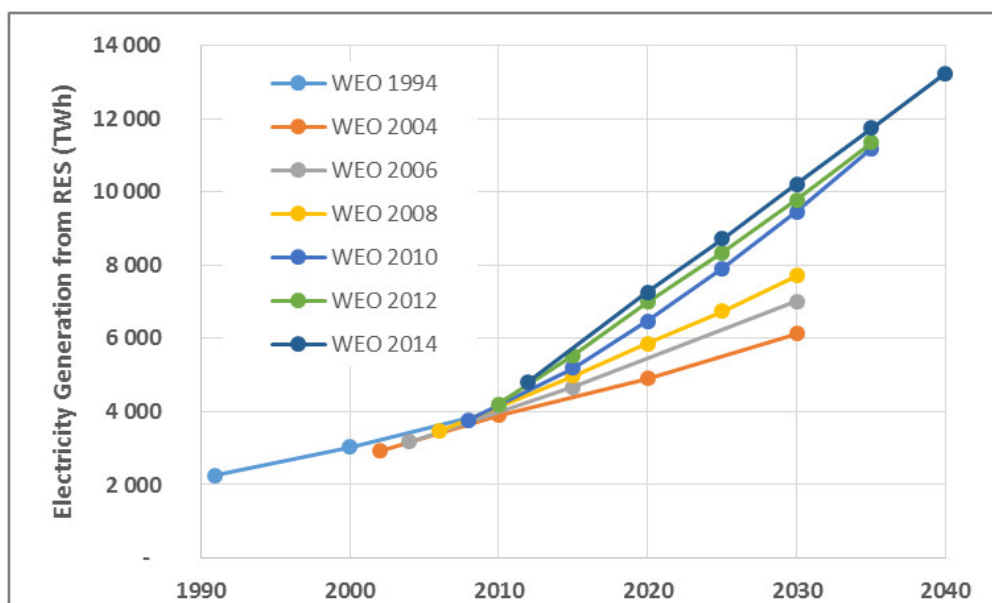


Fig. 3: Electricity Generation from RES according to selected past WEO projections

The technological development and boom of wind and solar energy was definitely not anticipated by the IEA. The projection for wind power is now higher by 140% for 2020 and by 150% for 2030 compared to WEO 2004.

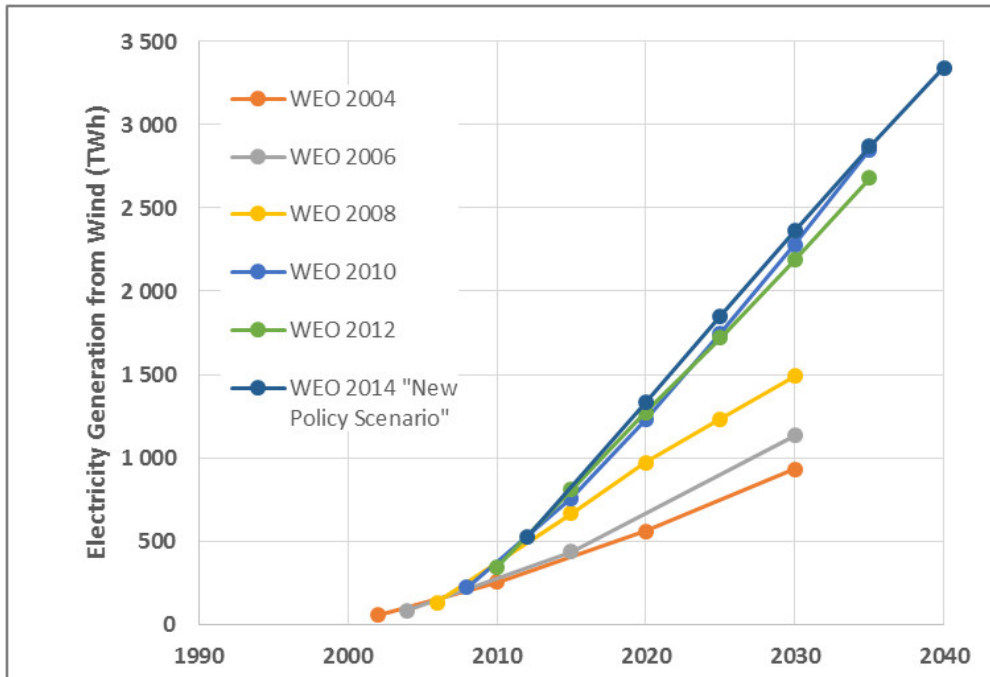


Fig. 4: Electricity Generation from Wind according to selected past WEO projections

Talking about photovoltaics, projections are now ten times higher than in the World Energy Outlook ten years ago and 7 times higher for 2030.

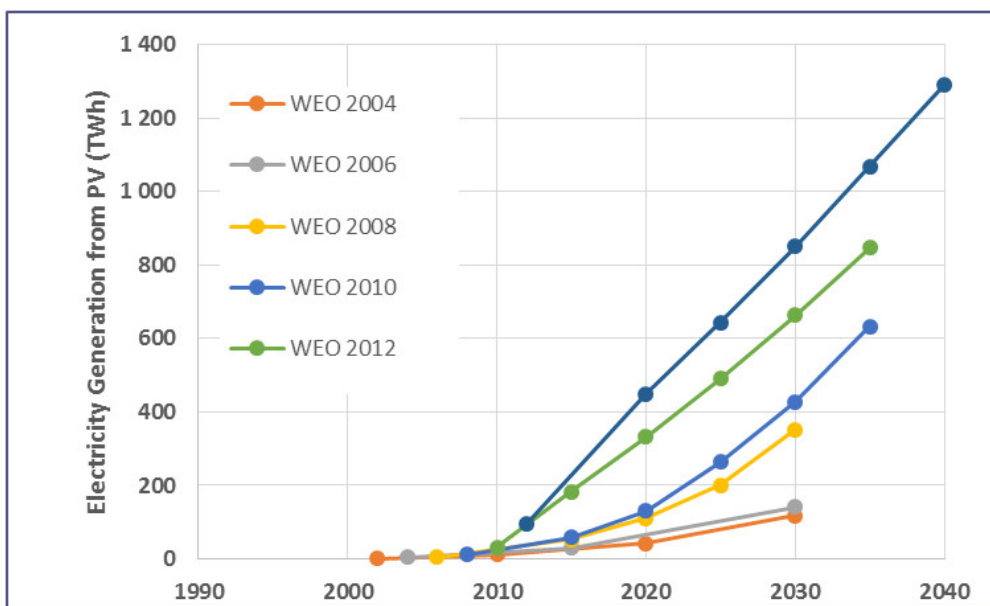


Fig. 5: Electricity Generation from Photovoltaics according to selected past WEO projections

And in future?

In contrast to the central scenario (New Policy Scenario) in WEO 2014, the so-called „450 Scenario“ provides an estimation based on the target to keep GHG concentrations in the atmosphere below 450 ppm and the global average temperature below 2°C (compared to pre-industrial levels).

So the share of renewable energy is significantly higher than in the NWS. But

if you have a look at the "2DS" scenario in IEA's "Energy Technology Perspectives 2014" it is obvious that there is still more potential identified by the IEA which is not covered by even the "450 Scenario".

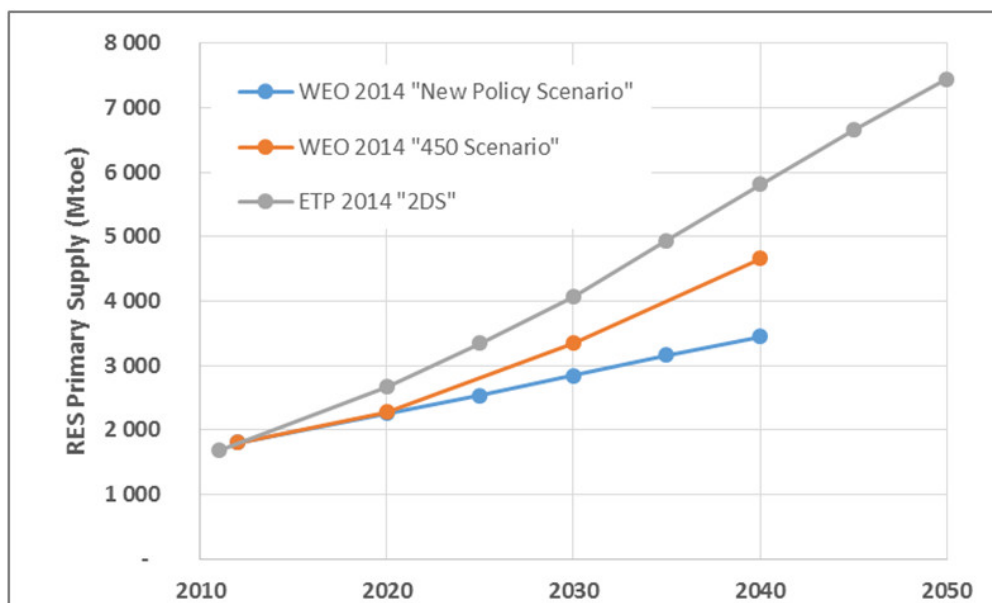


Fig. 6: Future Development of RES according to WEO-NPS, WEO 450 Scenario and ETP-2DS

The key question simply is: where to invest? Massive investments are needed for future energy supply. If the 2 degrees Celsius scenario is taken seriously there is no doubt which to go. Then even the current scenarios are not enough. Real predictions are difficult. (that's why the IEA always talks about scenarios) But the shift in earlier forecasts on renewables might be a good sign that change is underway.

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