

# Power Generator Database and Market Intelligence

Ed 1 2012

## Market Intelligence

### *Overview of World Generation Capacity and Power Prediction*

This NRG Expert product provides a by country/fuel overview of global generating capacity, its evolution and power forecasts. The electrical generating sector came into being in the last two decades of the 19<sup>th</sup> century in the industrial countries, with the first small installations of public capacity in the 1890s in the USA, UK and Japan, mainly for street lighting. In those early years and in years before, manufactured town gas was a more important energy source in the cities. Electric power grew slowly during the first half of the 20<sup>th</sup> century, supplied by a myriad of small local companies mostly operating in towns. The Second World War was to change this and with the explosion of industrial activity that it unleashed, electricity became a major national priority. Many countries nationalised their electricity industries or grouped them into large consolidated utilities. Until then electricity had been generated and distributed locally but now transmission entered the picture. Transmission lines were constructed to transport bulk power at high voltages over long distances from large centralised generating facilities to industrial and population load centres where it was distributed at low voltage.

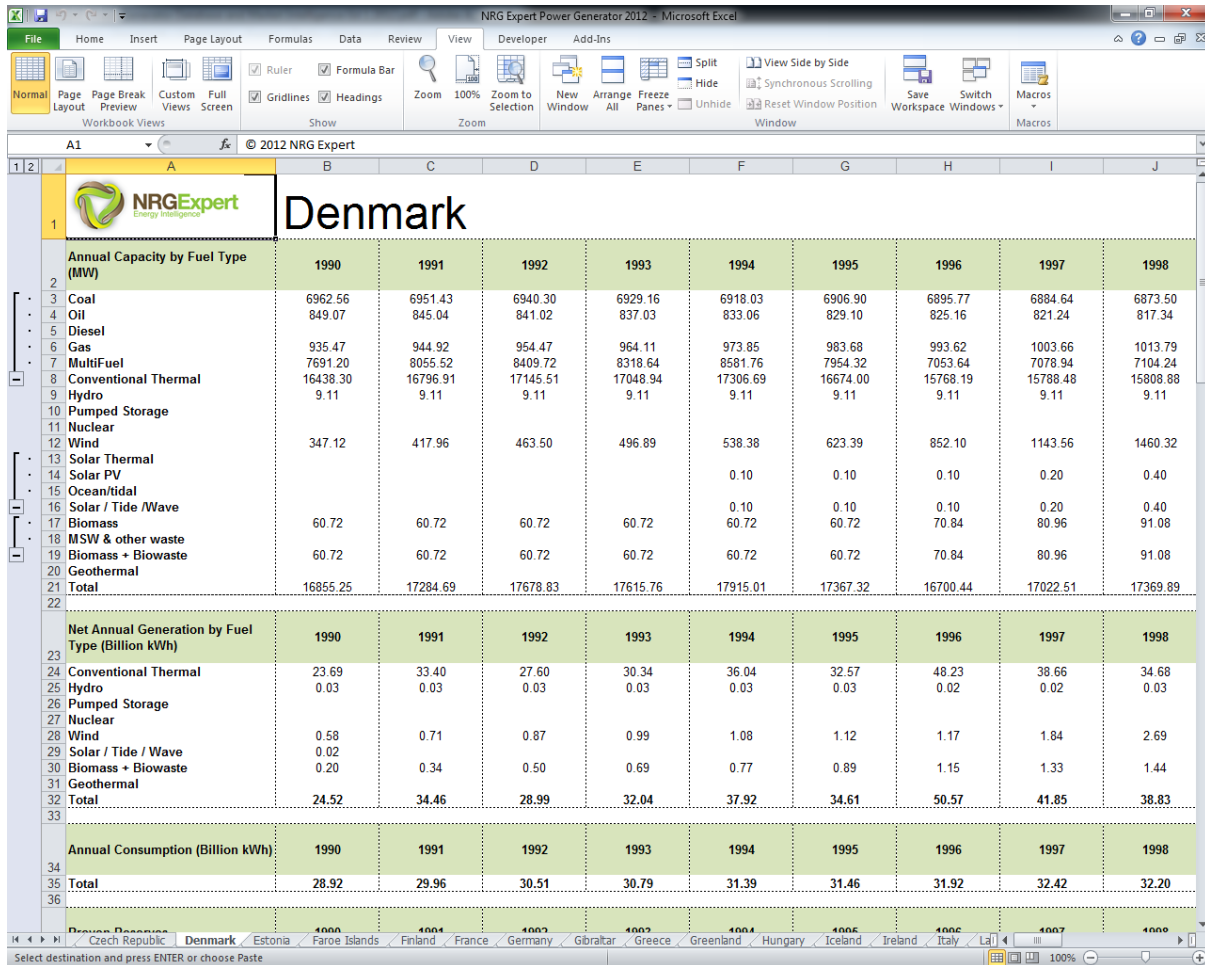
Global generating capacity rose from approximately 134 GW in 1938, to 213 GW in 1950 after the Second World War, and then to 5,082 GW in 2010. Although the figures were small compared with today, the years of WW 2 and the following period, from 1938 to 1950 were a time of enormous change in the electrical sector in which the seeds of today's industry were sown. There was heavy destruction to the industry in Europe and Japan in the first half of the 1940s, while in the USA capacity grew from 37.6 GW in 1938 to 50.1 GW in 1945. In the years after the war reconstruction commenced, with global capacity growing to 217 GW by 1950. Global capacity is forecast to reach 7,390 GW in 2020.

## How can NRG Expert Help?

NRG Expert's Power Generator Database and Market Intelligence Ed 1 2012 – contains a by country/fuel database of:

- Generation Capacity by Fuel (1990-2020)
- Net Generation by Fuel (1990-2020)
- Total Net Consumption (1990-2011)
- Proven reserves (1990-2011 where available)
- CO<sub>2</sub> Emissions from consumption of – Coal – Natural Gas (consumption + flaring) – petroleum – primary energy –
- Power plant listings

### Snapshot example of certain years for Denmark:



| Denmark  |                 |                 |                 |                 |                 |                 |                 |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Annual Capacity by Fuel Type (MW)                | 1990            | 1991            | 1992            | 1993            | 1994            | 1995            | 1996            | 1997            | 1998            |
| Coal   | 6962.56         | 6951.43         | 6940.30         | 6929.16         | 6918.03         | 6906.90         | 6895.77         | 6884.64         | 6873.50         |
| Oil  | 849.07          | 845.04          | 841.02          | 837.03          | 833.06          | 829.10          | 825.16          | 821.24          | 817.34          |
| Diesel   |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Gas  | 935.47          | 944.92          | 954.47          | 964.11          | 973.85          | 983.68          | 993.62          | 1003.66         | 1013.79         |
| MultiFuel  | 7691.20         | 8055.52         | 8409.72         | 8318.64         | 8581.76         | 7954.32         | 7053.64         | 7078.94         | 7104.24         |
| Conventional Thermal                             | 16438.30        | 16796.91        | 17145.51        | 17048.94        | 17306.69        | 16674.00        | 15768.19        | 15788.48        | 15808.88        |
| Hydro  | 9.11            | 9.11            | 9.11            | 9.11            | 9.11            | 9.11            | 9.11            | 9.11            | 9.11            |
| Pumped Storage                                   |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Nuclear  |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Wind   | 347.12          | 417.96          | 463.50          | 496.89          | 538.38          | 623.39          | 852.10          | 1143.56         | 1460.32         |
| Solar Thermal                                    |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Solar PV   |                 |                 |                 |                 | 0.10            | 0.10            | 0.10            | 0.20            | 0.40            |
| Ocean/tidal                                      |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Solar / Tide /Wave                               |                 |                 |                 |                 | 0.10            | 0.10            | 0.10            | 0.20            | 0.40            |
| Biomass  | 60.72           | 60.72           | 60.72           | 60.72           | 60.72           | 60.72           | 70.84           | 80.96           | 91.08           |
| MSW & other waste                                |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Biomass + Biowaste                               | 60.72           | 60.72           | 60.72           | 60.72           | 60.72           | 60.72           | 70.84           | 80.96           | 91.08           |
| Geothermal                                       |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| <b>Total</b>                                     | <b>16855.25</b> | <b>17284.69</b> | <b>17678.83</b> | <b>17615.76</b> | <b>17915.01</b> | <b>17367.32</b> | <b>16700.44</b> | <b>17022.51</b> | <b>17369.89</b> |
| Net Annual Generation by Fuel Type (Billion kWh) | 1990            | 1991            | 1992            | 1993            | 1994            | 1995            | 1996            | 1997            | 1998            |
| Conventional Thermal                             | 23.69           | 33.40           | 27.60           | 30.34           | 36.04           | 32.57           | 48.23           | 38.66           | 34.68           |
| Hydro  | 0.03            | 0.03            | 0.03            | 0.03            | 0.03            | 0.03            | 0.02            | 0.02            | 0.03            |
| Pumped Storage                                   |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Nuclear  |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| Wind   | 0.58            | 0.71            | 0.87            | 0.99            | 1.08            | 1.12            | 1.17            | 1.84            | 2.69            |
| Solar / Tide / Wave                              | 0.02            |                 |                 |                 |                 |                 |                 |                 |                 |
| Biomass + Biowaste                               | 0.20            | 0.34            | 0.50            | 0.69            | 0.77            | 0.89            | 1.15            | 1.33            | 1.44            |
| Geothermal                                       |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| <b>Total</b>                                     | <b>24.52</b>    | <b>34.46</b>    | <b>28.99</b>    | <b>32.04</b>    | <b>37.92</b>    | <b>34.61</b>    | <b>50.57</b>    | <b>41.85</b>    | <b>38.83</b>    |
| Annual Consumption (Billion kWh)                 | 1990            | 1991            | 1992            | 1993            | 1994            | 1995            | 1996            | 1997            | 1998            |
| <b>Total</b>                                     | <b>28.92</b>    | <b>29.96</b>    | <b>30.51</b>    | <b>30.79</b>    | <b>31.39</b>    | <b>31.46</b>    | <b>31.92</b>    | <b>32.42</b>    | <b>32.20</b>    |

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