

## Case Study

### A birds-eye view of a successful transition: Ørsted A/S

#### A low-carbon transformation

Ørsted, a \$48 billion renewable energy firm, has made a spectacular business transformation over the last decade, which is why we consider them a role model within the Energy sector. Up until 2017, the company was known as DONG (Danish Oil and Natural Gas). It later underwent a name change to reflect its transition from black to green energy generation<sup>1</sup>.

DONG was formed in 2006 through the merger of six Danish energy companies, and in 2007 accounted for one-third of Danish CO<sub>2</sub> emissions<sup>2,3</sup>. Their generation system was known as one of the dirtiest in the world, with carbon-intensive coal being the predominant resource for electricity generation. Additionally, they operated an Oil & Gas exploration business which accounted for 15% of total revenue as of 2010<sup>4</sup>.

In 2009, the company initiated a campaign to be a top-to-bottom renewable energy company, formulating the 85:15 vision which aimed to reach an 85:15 ratio of green to black energy generation<sup>2</sup>. This accompanied their target of becoming carbon neutral.

#### From Intention to Action

Once these goals were formulated, they had to be put into action. To raise capital, DONG sold eight of its businesses, including all gas firms, hydro and waste-fired power plants, as well as issuing debt<sup>2,4</sup>. With the capital available, it acquired the wind turbine installation company A2SEA, and entered into the world's largest offshore wind turbine agreement with Siemens, consisting of 500 turbines manufactured in an assembly line concept and installed across Northern Europe.

By 2014, DONG had made significant progress towards its low carbon transition and became the largest offshore wind farm operator in the world, claiming around 30% of the global market for offshore wind power. In 2017 they changed their name to Ørsted – after the Danish Physicist Hans Christian Ørsted.

Looking at their energy mix since the start of the transition in 2009 (Figure 1), this green transformation is clearly evidenced. The share of wind power sales has soared into the 40% mark, while thermal energy production has declined significantly. Most of the remaining sales come from their customer solutions and bioenergy businesses (Figure 1).

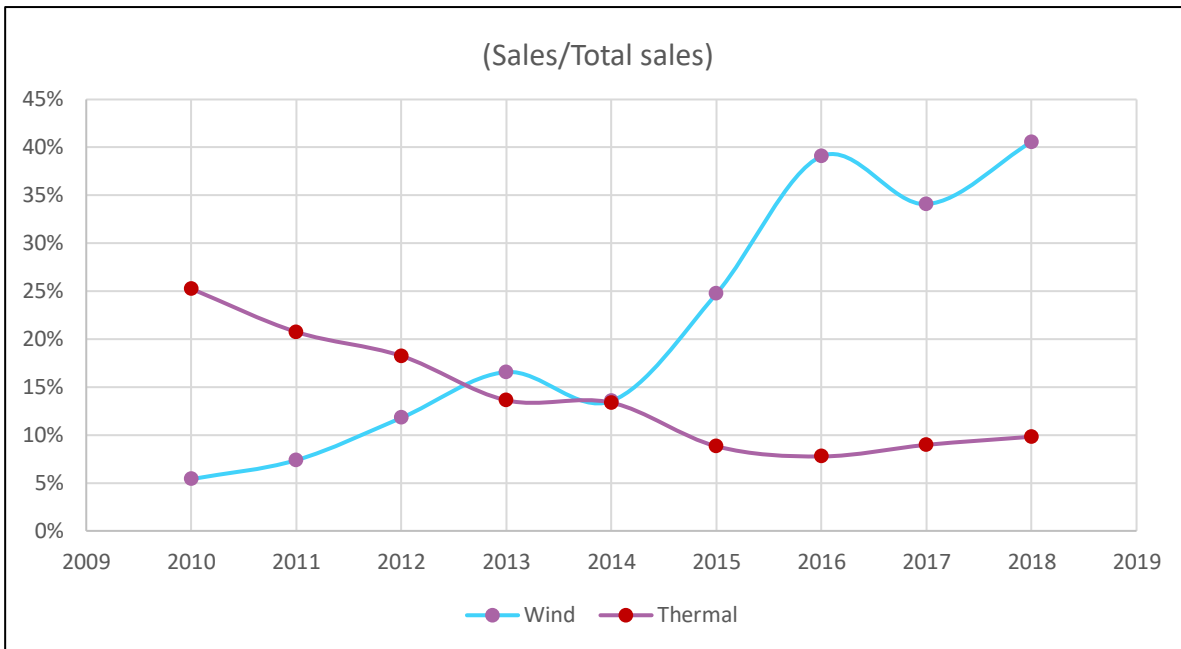


Figure 1: Source: Bloomberg

### The low-carbon transition through the eyes of the Model of Resource Efficiency (MoRE)

Osmosis' proprietary model of resource efficiency is based on a data collection process capturing and validating corporate environmental data and standardising it within our sectoral frameworks. By creating environmental balance sheets and linking them to the financial statements, the model identifies the most efficient companies and is able to objectively assess corporate low-carbon transition claims.

Since the start of Ørsted's transition, our models have accurately tracked the decrease in carbon intensity of their operations. Indeed, Ørsted's transformation is clearly visible, with carbon intensity dropping from over 1,200 tCO<sub>2</sub>e/\$million revenue to under 200tCO<sub>2</sub>e/\$million revenue (Figure 2). This solidly places them third out of the thirty-three Electricity companies in our model for carbon efficiency (Figure 2).

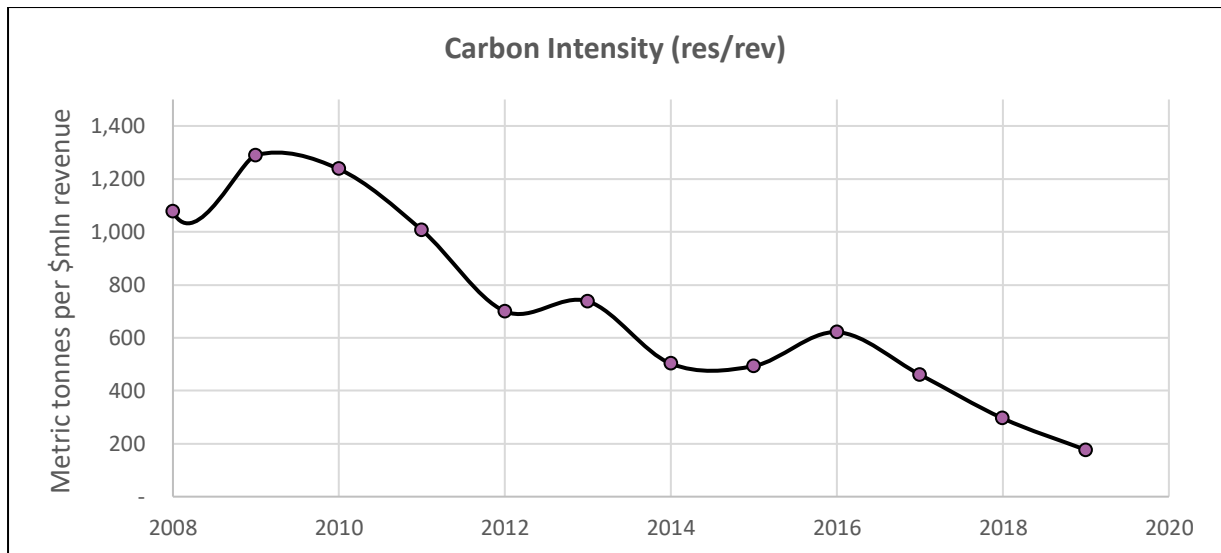


Figure 1: Source: Osmosis

While carbon reduction is clearly an important factor in the shift to a greener business model, it is not, and should not be, the only consideration. In order to take a broader view on environmental impacts our models go beyond carbon and look at water usage and waste generation too.

Despite the significant transformation in the company’s carbon emissions, there has been no consistent decline in their water usage (Figure 3). What’s more, almost a third of water consumed comes from municipal water supplies, a water source which is often very costly and relies on third party vendors. Additionally, while surface water isn’t a metric Osmosis looks at within the sectoral framework, Ørsted state they don’t measure and track the consumption of this water source, contrary to most of their peers.

After directly engaging with the company’s management team, it was confirmed that while coal has been replaced by biomass for thermal electricity generation – a decisive step in the low-carbon transformation – the energy source hardly makes a difference from a water requirement perspective. Electricity generated by biomass is roughly as water intensive as electricity generated by coal. What’s more, our conversations with Orsted revealed that water use isn’t considered a priority, as the water used for low-carbon energy generation isn’t seen as a problem internally. While a carbon focus is understandable in such an energy intensive sector, the Osmosis three-tiered approach has demonstrated, that each individual factor is important in its own right.

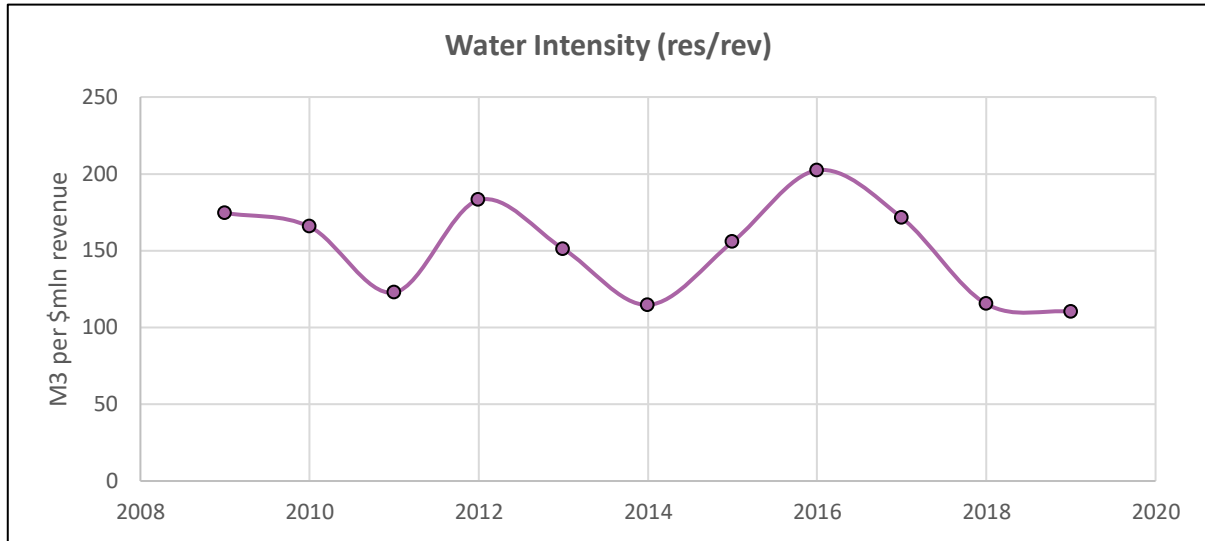


Figure 3. Source: Osmosis

### Waste Generation

Orsted's waste data paints a rather unusual picture. Waste generated remains relatively stable before a significant jump from 2016 to 2017. (Figure 4)

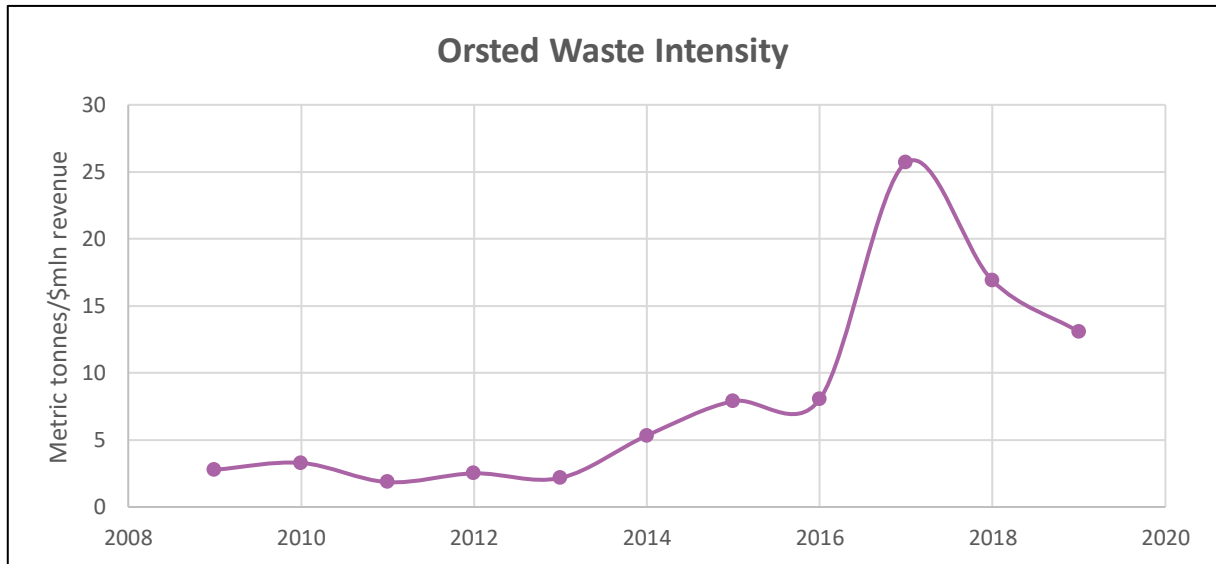


Figure 4. Source: Osmosis

This sudden spike in waste is due to a hangover from their Oil & Gas exploration business. Prior to 2017, the company was allowed to send a portion of their oily wastewater – a by-product of fracking for oil extraction – to a treatment facility which cut down the volume held at their crude oil terminal. In 2017 this privilege was removed, leaving the large burden of holding this effluent discharge<sup>5</sup>. Unable to treat the wastewater, Ørsted prudently included this in their waste figure. Looking at 2018 and 2019 figures, however, we see this is gradually

dropping off, as they continued to divest from Oil & Gas exploration<sup>9,10</sup>. Consequently, Osmosis' Research Team expects waste levels to return to normal in the coming years.

## Conclusion

Combining the three metrics into our proprietary RE score, Ørsted's transformation is rewarded within our model with a positive score and placed third in the resource efficiency distribution. However, as little progress has been made in managing their water use, and due to their waste complications, they don't quite take the gold medal yet, with Red Electrica Corporacion SA currently in the lead (Figure 5).

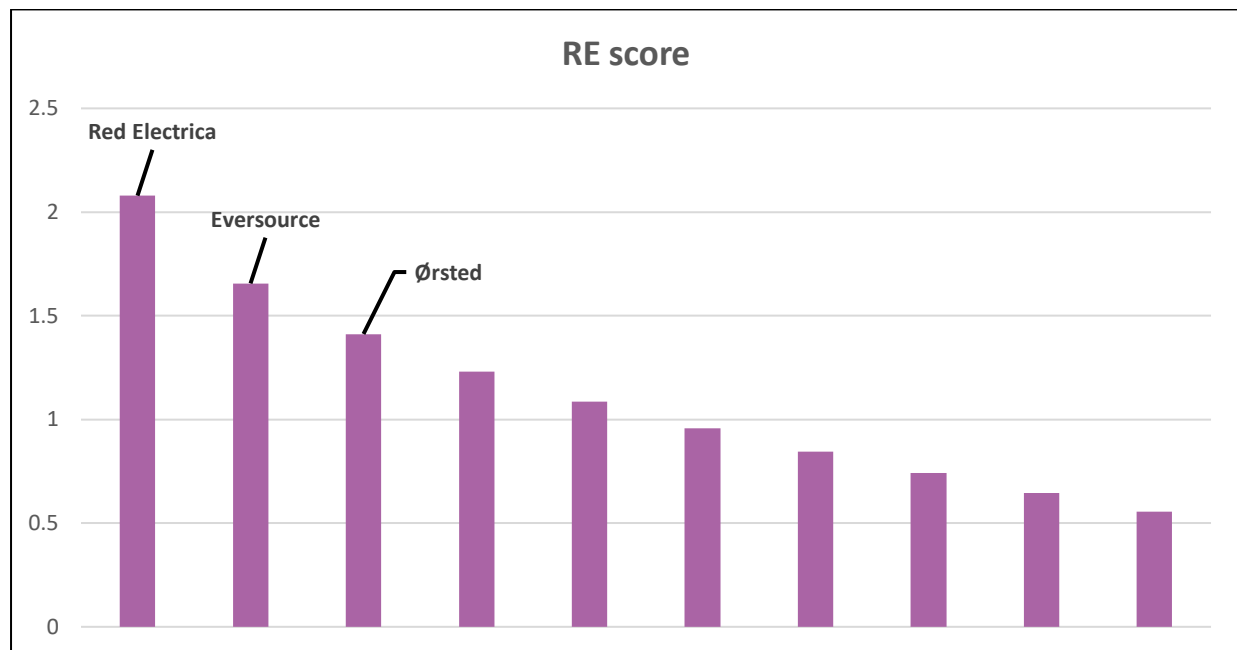


Figure 5. Source: Osmosis

Looking forward, they maintain several targets set for 2025, including<sup>7</sup>:

- To reduce carbon emissions by 98% from 2006 levels, having already reached a drop of almost three quarters
- To treble total output of own-built offshore wind farms
- For coal to be non-existent in their generation mix

We look forward to tracking the physical progress made against these targets within our models. Ørsted is a good example of a transformation much needed within the sector and a clear manifestation that environmental and economic success need not be mutually exclusive.

We hope to see the company making more of a concentrated effort on reducing water consumption, whether that be innovating their process to make it less water intensive, or even divesting away from thermal power production altogether. Eversource Energy, who place 1<sup>st</sup> in terms of water, found that most of their water risk was associated with generation and as a

result have now divested from their water-cooled fossil-fired generation<sup>11</sup>. The Danish giant may want to take a leaf out of their book.

1. <https://www.cnbc.com/2017/10/02/dong-energy-changes-name-to-orsted-goes-big-on-renewables.html#:~:text=Danish%20energy%20powerhouse%20Dong%20Energy,said%20in%20a%20statement%20Monday>.
2. <https://www.corporateknights.com/channels/climate-and-carbon/black-green-energy-15554049/>
3. Investor relations emails with Orsted (see Joshua Higgins' engagement inbox)
4. Orsted 2010 Annual Report
5. Orsted 2016-2019 ESG Reports
6. Orsted 2018 Annual Report
7. <https://orsted.com/en/media/newsroom/news/2020/01/373943464489368>
8. <https://orsted.com/en/company-announcement-list/2009/03/843852>
9. [Orsted 2018 & 2019 ESG Reports](#)
10. [Call with Orsted Investor Relations](#)
11. [Eversource Energy 2018 Sustainability Report](#)

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