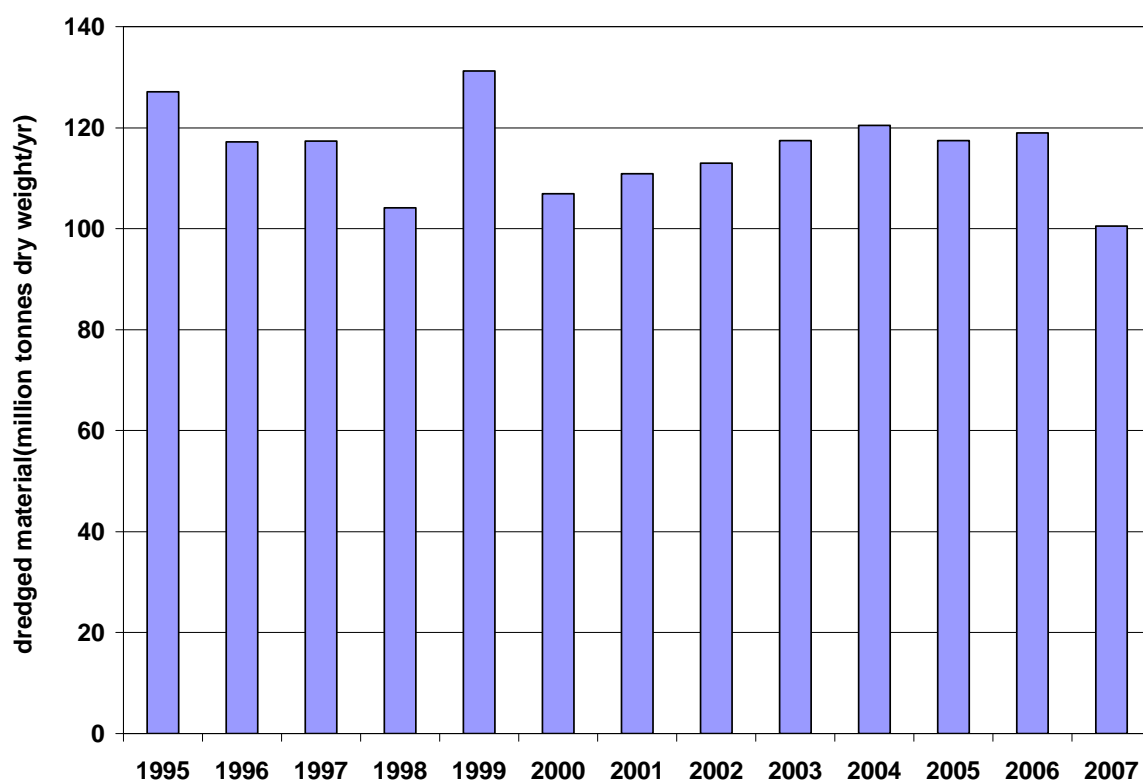


## Quantities of dredged material dumped

As disposal of dredged material may have physical impacts on the marine environment, total amounts of material disposed of are included in this assessment. The overall amounts of material disposed of at sea have varied significantly between approximately 100 – 131 million tonnes per year (dry weight).

No real trends in the overall amounts can be observed from 1995 to 2007 (Figure 4.4). About 90% of the dredged material reported to OSPAR is generally dumped by only five Contracting Parties (Belgium, France, Germany, The Netherlands, United Kingdom) (Figures 4.5a and 4.5b). Because the quantity of dredged material to be dumped is influenced by natural conditions, dumping strategies, sediment disposal criteria and episodic capital dredging activities (which occasionally contribute huge amounts to the total amount of dredged material disposed of at sea), trends in the amounts dumped are difficult to predict.

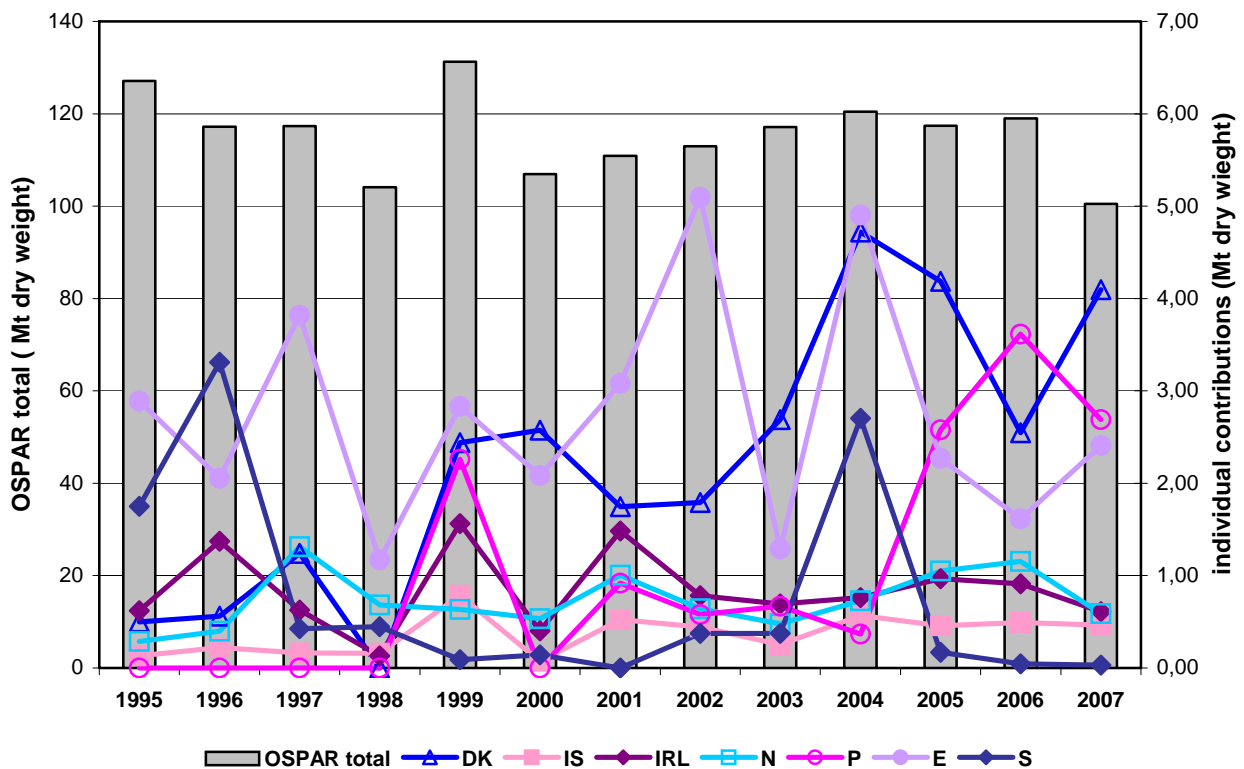


**Figure 4.4:** Amounts of dredged material disposed of from 1995 to 2007 within the OSPAR area Source: Annual OSPAR Reports on Dumping of Wastes at Sea

The quantities of sediments that are dredged and dumped by Contracting Parties can change significantly from year to year (Figures 4.5a and 4.5b).

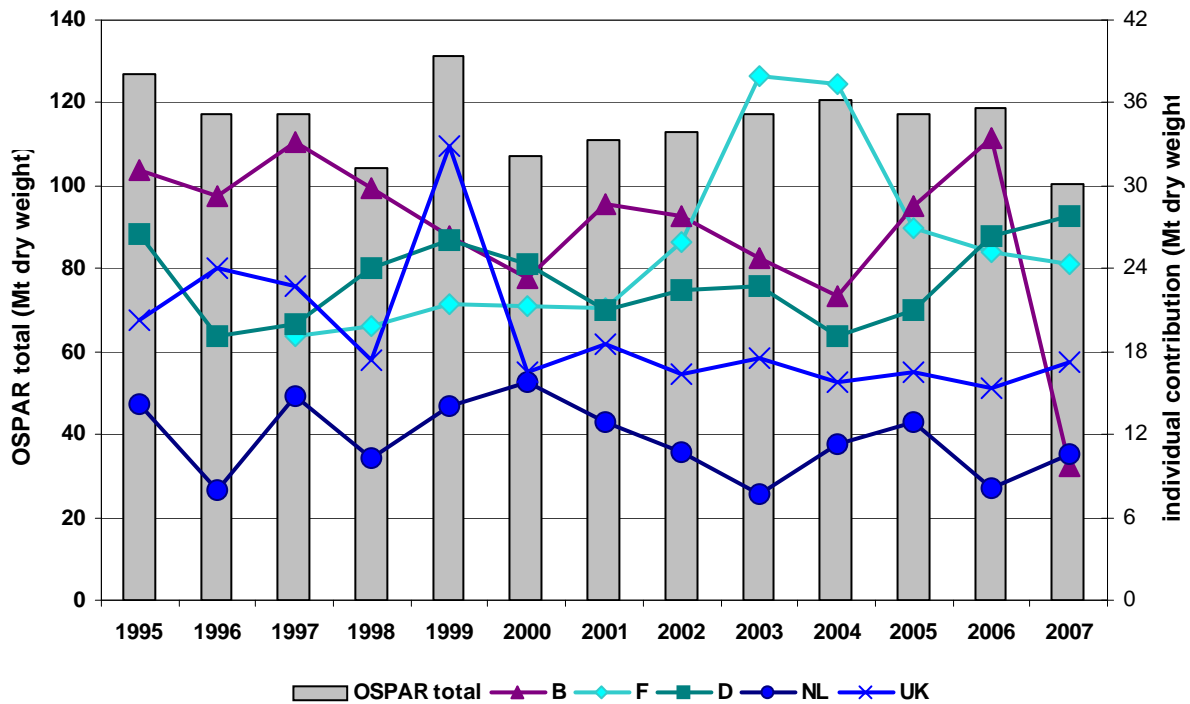
- In Denmark, dumping of dredged material increased by a factor 9 from 500 000 tonnes in 1995/1996 to 4.7 million tonnes in 2004. Following a reduction to less than 2.3 million tonnes in 2006, dumping of dredged material increased to over 4 million tonnes in 2007
- Iceland has disposed of between 100 000 and 800 000 tonnes per year, in a slightly increasing trend.
- Quantities dumped by both Ireland and Norway have fluctuated since 1995 but are generally around 1 million tonnes per year.
- Portugal has increased dumping of dredged spoils markedly from approximately 500 000 to over 25 million tonnes in 2005 and 3.6 million tonnes in 2007. No data are available from Portugal for 2007.

- The quantities dumped by Spain have fluctuated significantly between 1 million tonnes to over 5 million tonnes per annum.
- Quantities disposed of in Sweden decreased significantly from 1995/1996 to 2003 by about a factor 20 and increased again in 2004 up to 2.7 million tonnes dredged material before falling again to approximately 30 000 tonnes in 2007.
- For Belgium, amounts of dredged material fluctuate between 22 – 33 million tonnes disposed of annually between 1995 and 2006, with a sharp fall to 9.7 million tonnes in 2007.
- In France, quantities disposed of increased from approximately 19 million tonnes in 1997 to about 38 million tonnes in 2003 – 2004 and decreased to 24 million tonnes in 2007.
- Dredging activities in the Elbe, Ems and Weser estuaries in Germany generated approximately between 19 and 28 million tonnes per year between 1996 and 2007.
- In the Netherlands, variations of the amount of material dredged may be due to varying amounts of dredged material from Rotterdam Harbour. They fluctuate between 8 – 16 million tonnes dredged material.
- In the United Kingdom, quantities decreased from over 20 million tonnes between 1995 and 1998 to below 18 million tonnes between 2004 and 2007. A transient peak in 1999 of 32 million tonnes was caused by one large capital dredging operation that generated approximately 17 million tonnes dredged material.



**Figure 4.5a:** National amounts of dredged material disposed of from 1995 to 2007

Source: Annual OSPAR Reports on Dumping of Wastes at Sea

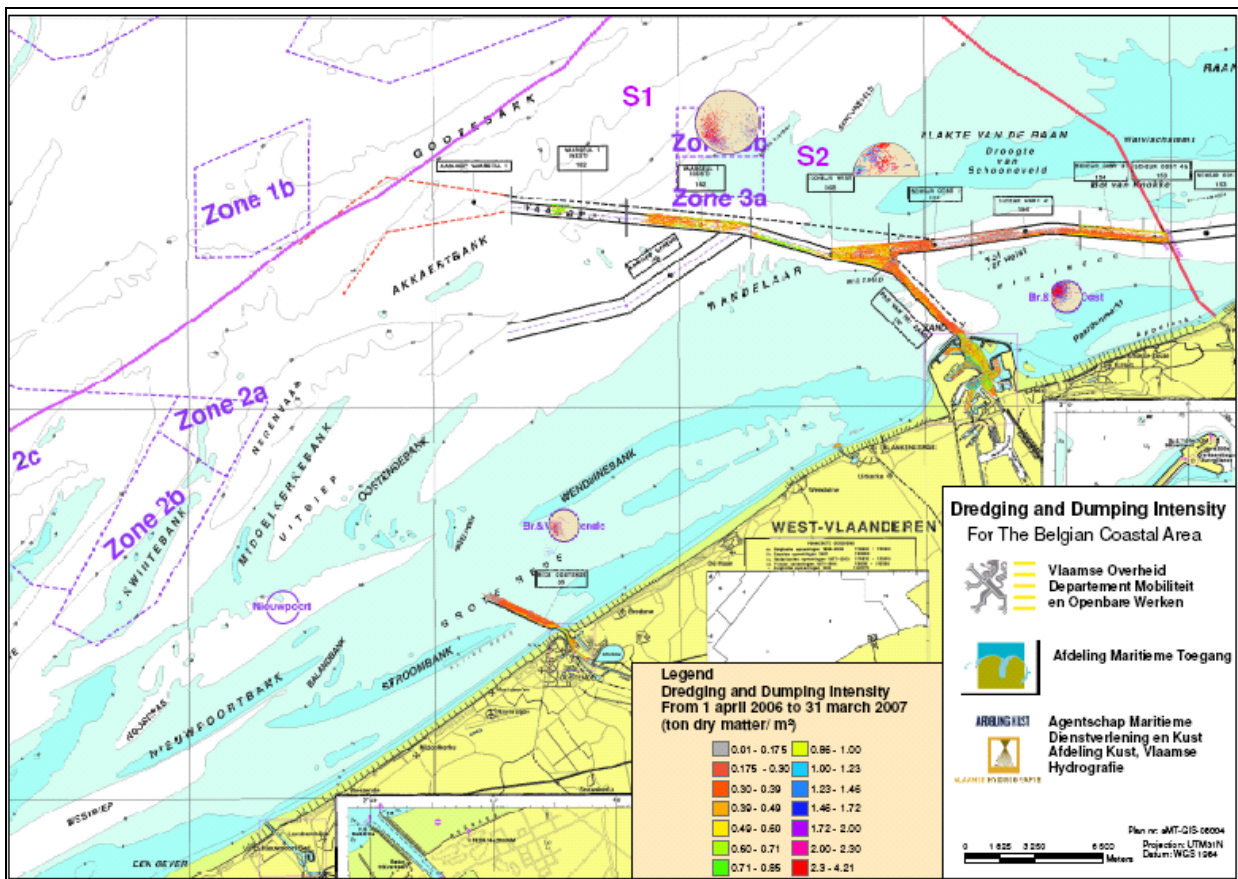


**Figure 4.5b:** National amounts of dredged material disposed of from 1995 to 2007

Source: Annual OSPAR Reports on Dumping of Wastes at Sea

As shown in Figure 2.2, the amount of dredged material received by disposal sites varies significantly between Contracting Parties. Belgium, Germany and the Netherlands disposed of large quantities of dredged material per site for example in 2004, 16, 19 and 8 dumping sites received 22 Mt, 19 Mt and 11 Mt of dredged material respectively). In comparison, in 2005, Iceland and Norway disposed of about 0.5 Mt and 1.0 Mt dredged material at 9 and 69 dumping sites respectively. This indicates that some sites receive much higher amounts of dredged material than others.

The dumping reports do not include information on the size of disposal sites that may differ significantly. Consideration should be given to evaluating how the impacts on the seabed vary depending on the intensity of dredged material disposal at a given site (for example amount per unit area). Furthermore, the licensed areas are in practice usually larger than the area actually used thus intensity data are particularly useful in assessing dumping activity. An example of spatial intensity analysis is presented below, derived from Belgian data for 1 April 2006 - 31 March 2007.



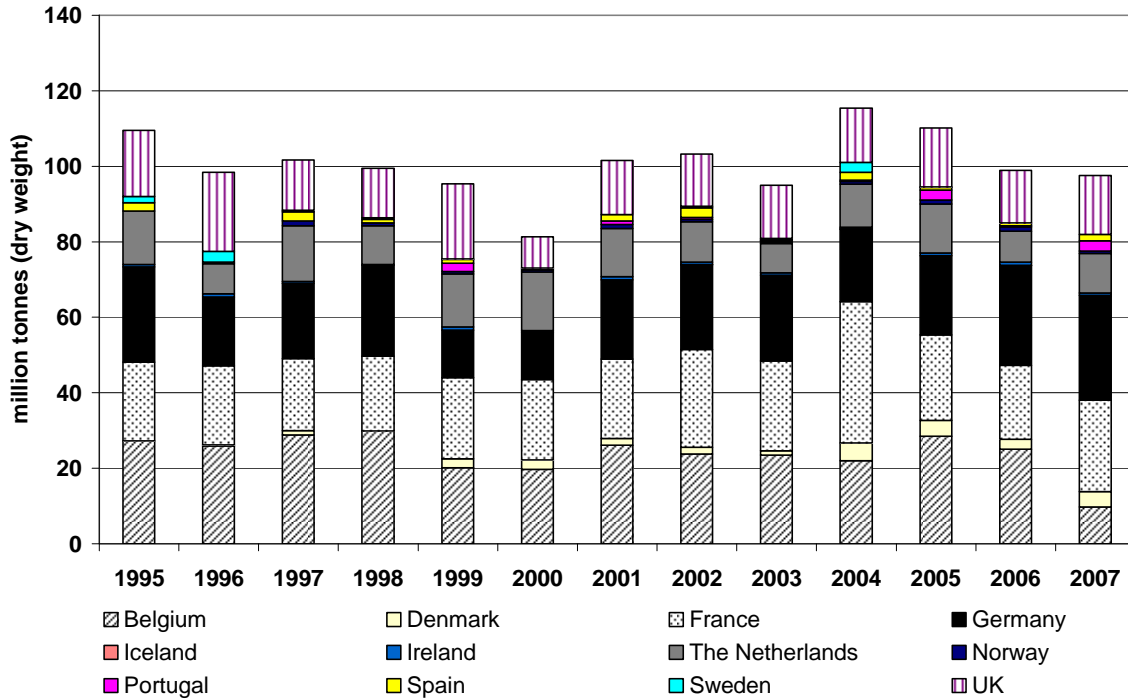
**Figure 4.6:** An example of a dredging and dumping intensity map for the Belgian Coast.

Source: Lauwaert et al. (2008).

For most Contracting Parties, the bulk of dredged material originates from maintenance dredging and amounted to 95% in the period 2001 – 2005. In Iceland, more than 80% of the material comes from capital dredging, whereas in Belgium, Germany (except 1999/2000), the Netherlands and Norway no or only very small amounts originate from capital dredging. The quantity of capital dredged material shows a peak in 1999/2000 caused by high quantity of material from Belgium, Germany, Spain and the United Kingdom (see Figure 4.7b). In 1999/2000 the proportion of capital dredged material was about 25%, whereas in the other years it amounts to about 10 – 15%.

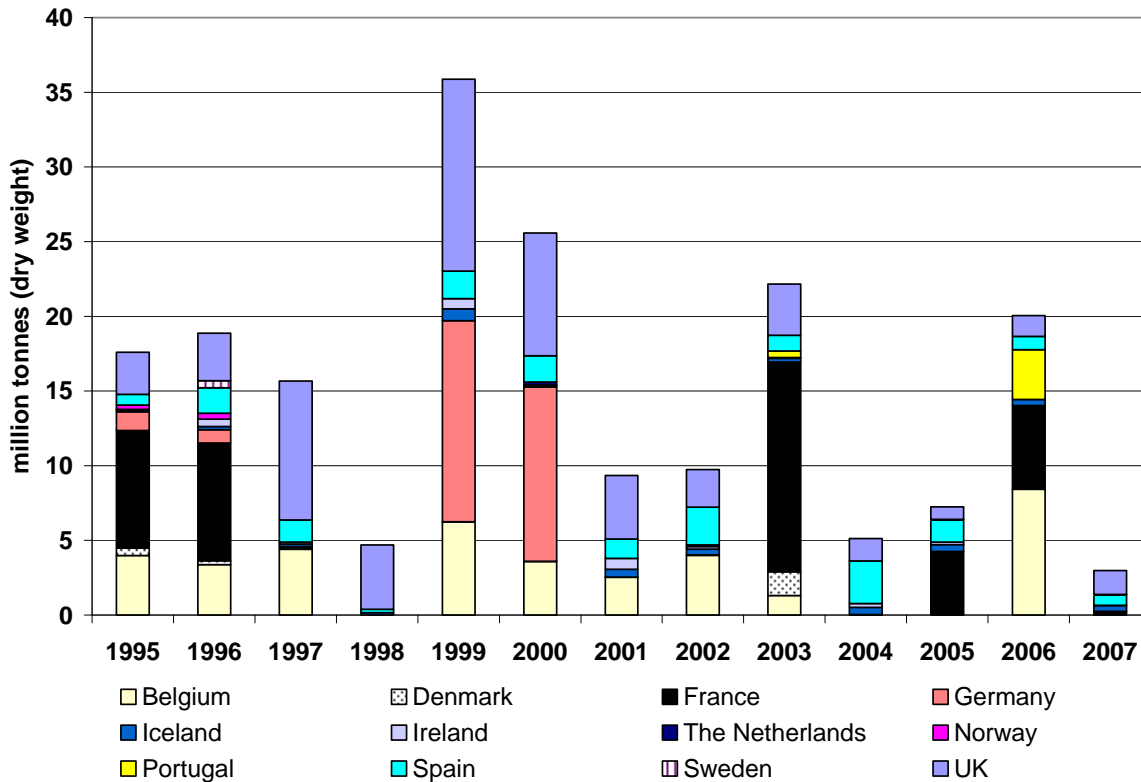
The quantities of dredged marine and estuarine material exceed those from harbours over the period 1995 – 2007 with harbour dredging forming 29 – 51% of the total dredged amount.

The distribution of dredging effort is quite different for individual Contracting Parties. The bulk of dredged material in Belgium, Denmark and Germany originates from estuaries and sea channels, whereas Iceland, The Netherlands and Norway generally report dredging only from harbours. This pattern has been relatively constant since 1996.



**Figure 4.7a:** Maintenance dredged material disposed of from 1995 to 2007

Source: Annual OSPAR Reports on Dumping of Wastes at Sea



**Figure 4.7b:** Amounts of capital dredged material disposed of from 1995 to 2007

Source: Annual OSPAR Reports on Dumping of Wastes at Sea

→ Go to full QSR assessment report on the environmental impact of dumping of wastes at sea (publication number 433/2009)