The nitrogen cycle in the Seine en Scheldt estuaries.

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The Seine and Scheldt estuaries are both located in the same geographical area and they represent important tributaries of the North Sea. Due to their high population density and large agricultural areas, the Seine and Scheldt estuaries receive extremely high nitrogen loads, mainly originating from wastewater and land fertilisers. The way this nitrogen is transformed in the system and exported to the North Sea depends on the characteristics of each system. The Seine and Scheldt estuaries are the outlet of river systems with respectively 78600 km² and 21500 km² watershed area, 420 and 108 m³/s average discharge, 46 and 40 % of agriculture area, and 195 and 425 inh./km² population density. Major difference between the estuaries lays in their hydrological characteristics. While the Seine estuary is typically channelled over most of its length with very reduced intertidal areas and short residence times (in the order of 1 week on the average), the Scheldt estuary has a typical funnel shape with large intertidal areas and long residence times (in the order of 1 month). The influence of these characteristics on major N-transformation processes (inorganic N assimilation by plankton, organic N mineralisation, nitrification, and denitrification) is presented and discussed, and the importance of both estuaries as sources of N for the North Sea is be evaluated.