

# Norwegian North Sea Action Program.

## Local Need for Pollution Abatement

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The North Sea Declaration calls for a substantial reduction (of the order of 50 per cent) in total inputs of pollutants between 1985 and 1995. On the basis of this declaration the Norwegian Ministry of Environment initiated the work of preparing an action program for the Norwegian North Sea coastline to reduce the inputs of nutrients of the order of 50%. As part of this, a study was undertaken to determine the need for actions to restore and maintain the ecological balance of Norwegian fjords and watercourses. The study determines the local need for pollution abatement in each fjord and river. Solving local pollution problems also will contribute to the solving of the pollution problem of the North Sea proper itself. The objective of the analysis was to determine the need for pollution abatement locally and then to compare this need with the objective of the North Sea Declaration. The analysis was based on a traditional approach to determine the need for water pollution abatement in receiving waters.

The main elements in the analysis were:

1. Partitioning of the coastline and watercourses in recipient areas. The coastline from the Swedish border to Lindesnes (defined as the sensitive area) was partitioned into relatively homogenous recipient areas. The partitioning was based on selected criteria.
2. Estimation of retention of phosphorous and nitrogen in watercourses.
3. Annual inputs of P and N to each recipient area were calculated by using a loading model. The model calculates the annual "normalised" inputs of P and N.
4. The Norwegian Water Quality Criteria that classifies the water quality in four classes, were used to set water quality objectives for each water body included in the analysis.
5. For each recipient area the acceptable loading of P and N to reach certain water quality objectives were calculated. The Water Quality Criteria defines allowable concentrations of P and N and by using stream flow data, hydrographic data, and allowable concentration, the acceptable loading could be calculated.
6. The need for pollution abatement was determined by considering the difference between the present loading and the acceptable loading.
7. Based on the proposed water quality objective, the need for reduction in inputs of P and N was calculated for each recipient area.
8. The final stage of the analysis was to compare the need for pollution abatement in each recipient area with the objectives of the North Sea Declaration. Is the proposed reduction of the order of 50% comparable to the local need for pollution abatement?

The study shows that achieving local water quality objectives require reduction in inputs of phosphorus by about 44 percent and nitrogen by about 60 percent. As such it can be concluded that the need for locally-based water pollution abatement is well in line with the objectives of the North Sea Declaration.