COMBATING INTERNAL LEAKAGE AND RECYCLING OF PHOSPHORUS

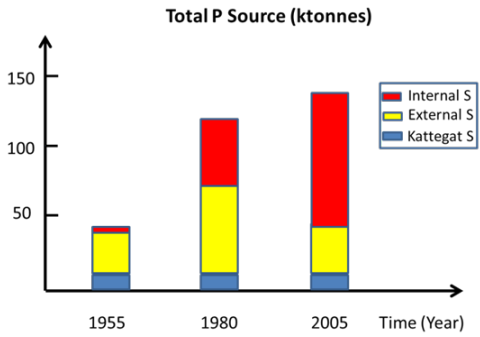
Bengt Simonsson
TechMarket,
Sweden

Abstract

Internal leakage

The internal leakage of phosphorus is three times larger than the societal leakage into the Baltic Sea. According to HELCOM (the Baltic Marine Environment Protection Commission), it will take another 100 years to restore the Baltic Sea to a level of eutrophication corresponding to the levels of year 1970, provided that the HELCOM reduction targets are fully reached. Thus, further reduction of societal leakage alone will not be sufficient to curb eutrophication within the timespan of one generation.

In the Swedish Budget Bill presented in September 2016, the Swedish government describes for the first time the challenges of internal leakage in the Baltic Sea. As to internal leakage, the new challenges need to be addressed by a wide spectrum of societal fields, such as innovation, policy, economy and regulations.



The external input of phosphorus (yellow) has decreased since the 1980s. However, internal leakage (red) has increased and now account for more than two thirds of the phosphorus supplied to the water volume, according to calculations by Professor Stigebrandt.

The solution

The solution includes a method of retrieving organic sediments and incorporates other measures, like oxygenation, in order to increase oxygen levels and decrease internal leakage in deep basins. The solution will also address the need for a sustainable financing scheme, in connection to involved measures.

The method mitigates eutrophication by removing organic material, which is oxygen demanding and contains phosphorus, from dead areas of the Baltic Sea. This prevents further oxygen depletion in these areas. The method is also designed to oxygenate the bottom water, mitigating the internal flux of phosphorus by binding it to the remaining, underlying, sediment layers. The solution includes treatment processes that will turn the sediment into fertilizer and energy.