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Restoration of the Baltic Proper to a system in equilibrium with the external phosphorus supply in the presence of huge sustained internal supply connected to anoxic bottoms

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The phosphorus (P) content of the water column of the Baltic Proper has increased by 20 % since the 1980s in spite of a simultaneous reduction by 50 % of the external supply from land-based human activities and runoff. A simple budget model explains that the increased P content is a result of sustained leakage of P from anoxic bottoms. At the present, the internal P supply from anoxic bottoms is about three times greater than the external supply. Restoration of the Baltic Proper to a less eutrophic state obviously requires that the internal source vanishes which requires that the deepwater is kept oxygenated during a long period. This will not likely happen by natural processes as long as the oxygen consumption in the deepwater is high due to high P content and high biological production in the water column. One might therefore consider man-made oxygenation to keep the deepwater bottoms oxygenated. In the presentation positive and negative effects of man-made oxygenation of the Baltic Proper are discussed based on recently published results from a pilot experiment in the Swedish By Fjord and from analyses of physical, ecological and biogeochemical conditions in the Baltic Proper.