

Socio-economic evaluation of mitigation programs in the Lake Sempach area

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In order to reduce the inflow of phosphorus in the Midland lakes of Sempach, Baldegg and Hall-wil, the Canton Lucerne introduced specific P-projects, the first of them starting in 1999. These projects, financed by the Canton and the Swiss Federation, offer the farms in the catchments of these lakes several voluntary measures to reduce P-losses, the "Lake-Contract" being the most important element. Farms with a Lake-Contract agree not only to adopt different methods to reduce runoff but also to bring down their farm phosphorus balance below 100% (while the national cross-compliance scheme allows a surplus of 10%). The latter requirement can be met by reducing livestock density, using N/P-reduced feed or exporting P via manure supply agreements.

Structural change in terms of the decrease of the number of farms between 1999 and 2006 is much slower in the Canton of Lucerne (-9%) compared to the Swiss average (-14%). Within the catchment area, the decrease is even lower (4%). The design of the analysis doesn't allow to prove a causal influence of the P-projects, but such an effect seems possible. The relatively slow decrease of the number of farms corresponds with a slower than average increase in farm size. In addition, it can be shown that within the catchments, compared to neighbouring areas outside, more often farms with relatively small production branches (dairy, pigs) invest in increasing them. What the P-balance allows (including possibilities of P-exports) seems to have more influence than the disadvantages from a microeconomic point of view. These are major problems in a medium term perspective, as production costs are far from international competitiveness and economies of scale must play a key role in narrowing the gap.

Between 1999 and 2006 the total number of livestock increases in the districts of Sursee and Hochdorf by 6.3%. The increase is slightly smaller within the catchments of the lakes (5.4%) compared to the area outside (6.8%). Within the catchments the increase in farms that sooner or later sign a "Lake-Contract" is considerably higher at 8.5%. This can be explained by the lower live-stock density in these farms in 1999 and the fact, that farms willing to grow would only get a permission to construct new stables if they submit themselves to the conditions of the "Lake-Contract". To meet the requirements of these contracts, N/P-reduced feed has become a standard and exporting P via manure supply agreements is essential. An analysis of these contracts shows that farms in the catchments triple their net exports of phosphorus (P_2O_5) from 25 tonnes in 1999 to 79 tonnes in 2006.

For future policies concerning water protection it is essential to clearly distinguish permanent payments for positive external effects from measures to eliminate a pollution problem. The latter must be temporary and the direction of the structural adjustment processes must be known and considered in design. This is the only way to assure that along with ecological improvements also economically sustainable structures can evolve.