Socio-economic evaluation of mitigation programs in the area of the Swiss Midland Lakes

COST Action 869, Working Group 4:
Evaluation of projects in example areas:
The Swiss Midland Lakes.
June 24 - 26, 2009, Nottwil (CH)
Districts Hochdorf and Sursee

1. Overview and Introduction
2. Participation in P-projects
3. Number of farms and farm size
4. Livestock
5. Manure transfers
6. Closing down of stables
7. Size structure of production branches
8. Conclusions

District Hochdorf and Sursee

Payments for Phosphorus-Projects 1999-2006

Payments under P-Projects (CHF/year)

Data LAWA; elaboration bemepro

P-Agreements are part of any Lake-Contract
Participants in Phosphorus-Projects 1999-2006

Number of Farms in districts Sursee&Hochdorf

<table>
<thead>
<tr>
<th>Year</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside catchment</td>
<td>1,477</td>
<td>1,457</td>
<td>1,447</td>
<td>1,423</td>
<td>1,408</td>
<td>1,379</td>
<td>1,379</td>
<td>1,349</td>
</tr>
<tr>
<td>In catchment</td>
<td>889</td>
<td>880</td>
<td>876</td>
<td>876</td>
<td>878</td>
<td>872</td>
<td>866</td>
<td>857</td>
</tr>
<tr>
<td>Total</td>
<td>2,366</td>
<td>2,337</td>
<td>2,325</td>
<td>2,299</td>
<td>2,286</td>
<td>2,251</td>
<td>2,245</td>
<td>2,206</td>
</tr>
</tbody>
</table>

With payments under P-projects
<table>
<thead>
<tr>
<th>Year</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share (100% all farms in catchment)</td>
<td>85%</td>
<td>185%</td>
<td>333%</td>
<td>478%</td>
<td>527%</td>
<td>586%</td>
<td>603%</td>
<td>615%</td>
</tr>
<tr>
<td>With payments for Lake-Contract</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share (100% all farms in catchment)</td>
<td>31%</td>
<td>95%</td>
<td>222%</td>
<td>360%</td>
<td>427%</td>
<td>496%</td>
<td>525%</td>
<td>544%</td>
</tr>
</tbody>
</table>

- Participation increased steadily over time
- Approx. 550 of 850 farms have a Lake-Contracts in 2006
Farms with/without a Lake-Contract

Livestock Units (LU) vs. Number of farms

- farms with Lake-Contract (with)
- farms without Lake-Contract (without)
- someday with Lake-Contract (someday)
- never with Lake-Contract (never)

Data LAWA; elaboration bemepr o

Overview and Introduction

Participation in P-projects

Number of farms and farm size

Livestock

Manure transfers

Closing down of stables

Size structure of production branches

Conclusions
Development of the number of farms by regions

Data LAWA; elaboration bemepro
Development of the number of farms by participation in P-projects

Data LAWA; elaboration bemepro
Structural change in terms of the decrease of the number of farms is
• Slower in the Canton of Lucerne compared to Swiss average
• Slower within the catchments of the midland lakes than outside
• Null for the number of farms that someday have a Lake-Contract

➢ There is evidence but no proof, that P-Projects slow down structural change.
Overview and Introduction

Participation in P-projects

Number of farms and farm size

Livestock

Manure transfers

Closing down of stables

Size structure of production branches

Conclusions

Development of livestock by regions I

Livestock Units in % of 1999

Data LAWA; elaboration bemepro

Livestock Units Canton Lucerne

Livestock Units districts Sursee/Hochdorf

Livestock Units districts Sursee/Hochdorf outside catchments

Livestock Units districts Sursee/Hochdorf within catchments

105.4%
Development of livestock by regions II

Livestock Units in % of 1999

- Livestock units within catchments
- Livestock units within catchments someday Lake-Contract
- Livestock units within catchments never Lake-Contract

Data LAWA; elaboration bemepro
Livestock in catchments including manure imports/exports

- Net exporters after 2002
- Net exporters from 1999

Livestock Units (LU)

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Manure imports/exports in kg Phosphorus in catchments

Data LAWA; elaboration bemepro
Manure imports/exports by participation in Lake-Contract

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Manure imports/exports by participation in Lake-Contract

- Total imports
- Total exports
- Balance imports - exports

Data LAWA; elaboration bemepro
Manure transfers

- Farms in the catchments triple their net exports of Phosphorus between 1999 and 2006.

- The increase in net exports is mainly based on recipients outside the canton of Lucerne.

- For the overall evolution of livestock, manure transfers and the regional phosphorus balance, the introduction of N/P-reduced feed plays an important role.
### Closing down of stables I

#### Data LAWA; elaboration bemepro

<table>
<thead>
<tr>
<th>Year</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>&lt; nb. of farms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>52</td>
<td>52</td>
<td>52</td>
<td>52</td>
<td>52</td>
</tr>
</tbody>
</table>

#### LU per farm; manure transfers in LU, ha UAA

- **Bovine - LU**
- **Poultry - LU**
- **Pigs - LU**
- **Livestock total - LU**
- **Utilized agric. Area (ha)**
- **Balance Manure Transfers in LU (imports - exports)**

#### Notes
- **COST Action 869, Working Group 4:** The Swiss Midland Lakes.
- June 24 - 26, 2009, Nottwil (CH)
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### Sections

1. **Overview and Introduction**
2. **Participation in P-projects**
3. **Number of farms and farm size**
4. **Livestock**
5. **Manure transfers**
6. **Closing down of stables**
7. **Size structure of production branches**
8. **Conclusions**
Closing down of stables III

- The positive effects of closed down stables are reduced by the fact that the farms concerned increase the imports of manure by 300 equivalents of livestock units (LU), compared to the 800 LU „closed down“.

- Closing down of stables is an ordinary process also observed outside the project area. The subsidies partly produce windfall gains.
Production costs and sizes of production branches: Fattening pigs

Data LAWA; elaboration bemepro
Production costs and sizes of production branches: Fattening pigs

- Distribution of fattening pigs
  - Outside catchments
  - Within catchments

Data LAWA; elaboration bemepro
Production costs and sizes of production branches

- Outside the catchments, more often holders with large production branches invest in further growth

- Within the catchments, size structures are less favorable/competitive in 1999 and more often farms with some flexibility in the nutrient balance invest in pig production. The disadvantages persist.

- P-Projects might constitute an wrong incentive from a microeconomic perspective, but proof is not possible.
Summary and conclusions

1. In the catchments of the Midland lakes, the development of farm structures (number, farm size, size structure of main production branches) is slow compared to the regions around. This increases or causes microeconomic disadvantages (production costs). Despite clear proof missing, the analysis indicates that the phosphorus-projects are a major factor.

2. The phosphorus-projects have not reduced the number of livestock kept in the region but constitute a limitation to their expansion. As a major effect, the net-exports of manure from farms in the catchments have increased by a factor 3.

3. With the observed microeconomic disadvantages and a major part of the ecological effect depending on manure exports, the success of the projects are not guaranteed in the long run.

4. 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.