

Agglomeration Bonus Schemes in Switzerland: A Unique National Database

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Introduction and Motivation

Agglomeration bonus schemes (ABS) in Switzerland serve as a key strategy to mitigate the impacts of agriculture on biodiversity. ABS are implemented through so-called “network projects” (Vernetzungsprojekte) at the landscape-level, to address habitat loss and agricultural land fragmentation. Initiated under the Swiss Ordinance of Ecological Quality in 2001, network projects aim to enhance biodiversity by improving habitat connectivity through agglomeration of farm plots and structural landscape elements. Despite the potential benefits of network projects, their value and effectiveness, including their effect on biodiversity and farmers’ incomes, remain subjects to an ongoing debate. Therefore, we developed a Switzerland-wide dataset of network projects to (1) support our research efforts in evaluating the causal effect of ABS on biodiversity and farm incomes and (2) provide a robust foundation for future research on ABS to the scientific community.

Agglomeration Bonus Schemes in Switzerland

- Agglomeration Bonus Schemes Implemented
- No Agglomeration Bonus Schemes
- Summering Area
- Lake

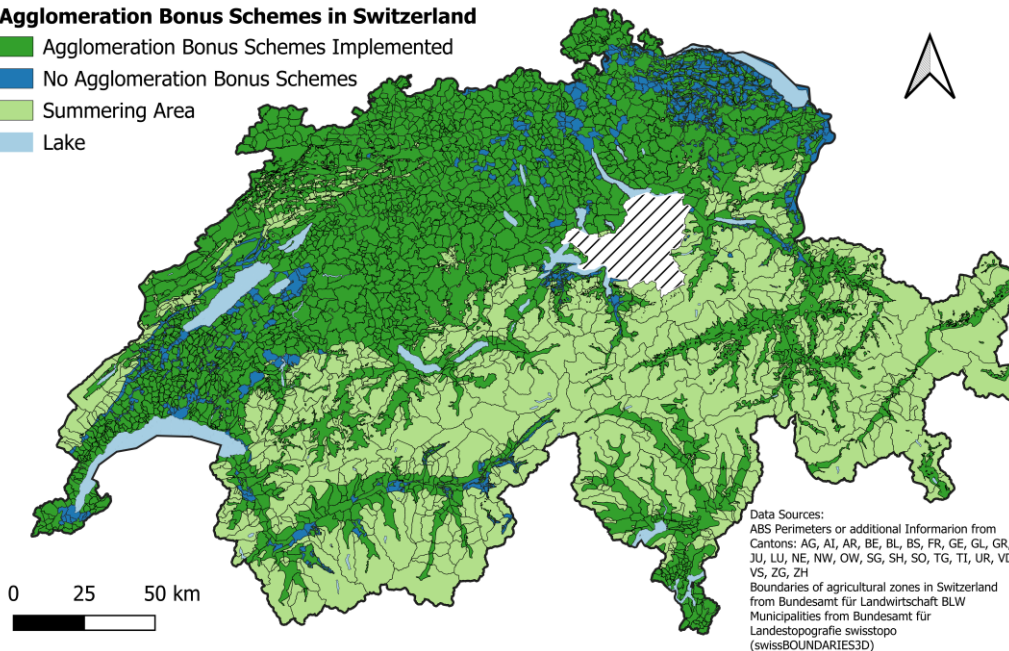


Figure 1 shows the state of implementation of ABS (ABS implemented in green; no ABS implemented in blue) as well as summering (light green) and lake areas (light blue) per municipality. Summering areas are excluded (light green areas). The hatched area represents the canton of SZ, for which ABS perimeter data is currently unavailable.

Dataset Description

We developed a spatial dataset that provides the perimeters of all Swiss network projects for each of the 2114 municipalities of Switzerland (figure 1, 768 network projects in total), except Canton Schwyz (hatched region in figure 1) for the year 2024. The dataset includes information on the network project’s name, associated municipality, start and end year, and its area (in hectares). Additionally, it provides the area (in hectares) of land categorized as ABS, non-ABS, summering areas, and lakes within each municipality, along with their share of the total municipality area. The dataset also includes stewardship details and a unique identifier.

Dataset Creation

The dataset was created using municipality boundaries from the swissBOUNDARIES3D dataset by swisstopo. Perimeter data for network projects were obtained either online or requested from cantonal authorities (e.g., agriculture, spatial development, or geospatial departments). After data collection, the processing was done in RStudio, following 4 steps.

Processing steps:

1. Correction of overlapping geometries: After data collection, overlapping geometries (e.g. network project “A” overlapping with network project “B” and vice versa) were identified, and intersecting areas were removed to ensure data accuracy.
2. Analysis of network project perimeters: Network project areas were intersected with municipal boundaries to identify ABS-implemented areas and to determine non-network project areas. These results were combined for all municipalities.
3. Refinement: The consolidated data for 25 cantons was further processed by intersecting and subtracting summering areas and lakes.
4. Finalization: Additional columns (see data description) were added to capture relevant attributes and classifications.

Dataset Access & Outlook

We are currently evaluating the most suitable platform to publish this dataset. Future research will use this database to evaluate the effects of ABS on farm income from participating in ABS. We also envision to provide collaboration opportunities with colleagues.

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Summary

We have created a spatial database of all* Swiss agglomeration bonus schemes, implemented as “network projects”, often at the municipality-level. This supports our research efforts in (1) evaluating the causal effect of ABS on biodiversity and farm incomes and (2) provides a robust foundation for future research on ABS to the scientific community.
 * except the canton of Schwyz