



SUPER – Sustainable Urbanisation and Land Use Practices in European Regions

Applied Research

Annex 3.4: Case study CH-CantonAargau

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**SUPER – Sustainable Urbanisation
and Land Use Practices in
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Abbreviations

AggloPol	Agglomeration policy (<i>„Agglomerationspolitik“</i>)
ARE	Federal Office for Spatial Development (<i>„Bundesamt für Raumentwicklung“</i>)
BauG	Building Law (<i>„Baugesetz“</i>)
DETEC	Federal Department of the Environment, Transport, Energy and Communications (<i>„Eidgenössisches Department für Umwelt, Verkehr, Energie und Kommunikation, UVEK“</i>)
EFTA	European Free Trade Association
FCNC	Federal Commission for the Protection of Nature and Cultural Heritage (<i>„Eidgenössische Natur- und Heimatschutzkommission, ENHK“</i>)
FFF	Crop rotation areas (<i>„Fruchtfolgeflächen“</i>)
LEK	Landscape development concepts (<i>„Landschaftsentwicklungskonzepte“</i>)
LKS	Landscape Concept (<i>„Landschaftskonzept Schweiz“</i>)
NRP	New Regional Policy (<i>„Neue Regionalpolitik“</i>)
NUTS	Nomenclature of Territorial Units for Statistics
P-LRB	Policy for rural areas and mountain regions (<i>„Politik für die ländlichen Räume und Berggebiete“</i>)
REL	Spatial development model (<i>„Räumliches Entwicklungsleitbild“</i>)
ROK	Federal Spatial Planning Conference (<i>„Raumordnungskonferenz des Bundes“</i>)
RPG	Spatial Planning Law (<i>„Raumplanungsgesetz“</i>)
RPG 1 / 2	Revision of the Spatial Planning Law
RPV	Spatial Planning Ordinance (<i>„Raumplanungsverordnung“</i>)
SME	Small and Medium Enterprises
VAT	Value Added Tax

1 General introduction

In ESPON SUPER, the case studies contribute to the objective of unravelling how different interventions in diverse social, environmental and economic settings have transformed land-use development practices. In particular, the aim is to analyse, understand and learn from the successes and failures of practitioners and decision makers over the last three decades in their search for more sustainable land use. All case studies are based on close observation and direct contact with each territory and with the people involved in the design and implementation of each intervention. To this end, each case study was assigned to the project team with the greatest local knowledge of the territory, institutions and language.

The methodological framework used for all case studies consisted of three groups or basic sources of information and knowledge.

1. **Context:** each intervention addressed or influenced a particular land-use development practice which had emerged within a specific territorial and institutional context, which is crucial for understanding and interpreting the results. It was also important to know the objectives related to the sustainability of land use that had been set for each territory, albeit on paper, at the regulatory level. These tasks were based on desk research, even though, in some cases, local stakeholder support was valuable to locate the most relevant pieces of information.
2. **Developments:** the second source of data was the quantitative land use changes in the form of maps and graphs. This allowed each case study team to consider to what extent the underlying contextual factors and the studied interventions had transformed the territory and the rates of urbanization. This information was essential for evaluating the effects that each intervention had on land-use sustainability and, more indirectly, on culture and spatial planning practices.
3. **Stakeholder interviews:** each case study held over ten in-depth interviews with stakeholders involved in one way or another with the intervention. At these meetings, they were asked about the reasons for and the perceived urgency of the intervention, how its objectives were defined and by whom, the experience of implementing each intervention, the pitfalls encountered, as well as the benefits it had brought in terms of improving the three thematic dimensions of land-use sustainability: ecological, economic and social equity. In addition, stakeholder maps were produced that present the type and intensity of the relationships that some stakeholders had with the rest in a visual way.

This report on the case study of CH-Canton Aargau presents a synthesis of all three outputs in order. It is structured as follows. This introductory section provides a summary of the main characteristics of the case study (Section 1.1), the scale of analysis (Section 1.2) and geographical scope (Section 1.3). Section 2 contextualizes how urbanization occurs in the case study area. It contains descriptions of typical urban developments, how this is regulated, who promotes it, how it is implemented and emerging challenges regarding land-use development.

Keeping with this contextual approach, Section 3 discusses how the studied intervention

addresses the challenge of sustainability in its three thematic dimensions (Section 3.1) as well as in its temporal dimension (Section 3.2).

Section 4 presents the main results of the case study research in three parts. Section 4.1 analyses how the priorities of the intervention were configured based on information collected from the interviewed stakeholders. In particular, it seeks to know how a perceived problem was identified or constructed to justify the intervention, the extent to which land use sustainability was a consideration, and whether these elements tended to unite the community in favour of a collective interest or whether, on the contrary, they were a source of tension and conflict. Section 4.2 discusses in more detail how seven organizational and institutional aspects may have influenced the relative successes and failures of the intervention. Section 4.3 combines the analysis of land use changes, the opinions of the consulted stakeholders and, where relevant, the stakeholder maps, to make an assessment of the actual results of the intervention on the planning and development culture and the different thematic dimensions of sustainability. Finally, Section 4.5 explicitly answers questions posed to the ESPON SUPER team, thus reflecting the direct contribution of each case study to the project's objectives.

While each individual case study contributes to answering the questions posed, its true value lies in the possibility of combining and contrasting the outputs of the eleven cases. This choral work is presented in Annex 3.13. The triangulation of results allows for the formulation of generalizable conclusions and recommendations that can contribute to the design of new plans and policies better aligned with the objectives of sustainability and land take abatement at the European level. In this way, the case study presented in this report also contributes to this other broader objective.

1.1 Case study CH-Canton Aargau

Urban sprawl and land-take have been considered as relevant problems in Switzerland. Since the 1960s, the living space per person has doubled to around 50 m². Before the intervention (the revision of the existing law), there were calls for a coordinated federal response to support countering these developments. With the revision of the Spatial Planning Law, the Federal Council and parliament want to put a stop to uncontrolled land consumption and urban sprawl and eliminate implementation deficits. The scope of this Case Study is the Revision of the Swiss Spatial Planning Law (RPG 1) and its implications for the Canton of Aargau. The revision took/takes place in two steps: The first step (RPG 1) addressed the cantons and focuses on urban development. The second step of the Revision is called RPG 2 and will focus on the regulations outside the building zones (agricultural areas). This second step is still under political discussion. Within 5 years after RPG 1 went into effect (2014-2019), the cantons had to revise their structural plans. After this period, the implementation does now take place at the municipal level and affects land owners.

Map 1.1: Location of case study “CH-Canton Aargau”



1.2 Scale/s of analysis

The Swiss Spatial Planning Law (RPG) and its revision, which takes place in two stages, affect the whole of Switzerland with its 26 cantons. However, this case study focuses on its effects on the Canton of Aargau (NUTS 3, main scale). Since 2014, the cantons are implementing the revised law in their Structural Plans (so-called “kantonaler Richtplan”). This plan refers to the entire canton and shows the expected land demand in the coming years. Based on this, new building land may be zoned or must be de-zoned if the existing building land exceed future requirements. (Canton Aargau, 2020a). The 212 municipalities of the Canton of Aargau are grouped in 12 regional planning associations (“Regionalplanungsverbände”). These bodies play a central role as providers of regional cooperation. They ensure the mutual coordination of communal planning in accordance with § 11 of the Building Law (BauG) and are responsible for coordination between cantonal and communal spatial planning. Moreover, the regional planning associations advise and support the municipalities, particularly in the fields of spatial development, environmental protection, nature and heritage conservation and supply and disposal. The Regional Sectoral Plan (“regionaler Sachplan”) offers municipalities the opportunity to address and coordinate supra-communal and regional issues and to define the necessary measures to make them binding for the authorities. It covers various topics, such as measures of the agglomeration programmes (e.g. low-speed traffic), economic development areas (e.g. definition of industrial and commercial priorities), transport measures, leisure facilities, local recreation areas – to name just a few. In principle, the Cantonal Structural Plan is also available as an instrument for coordinating spatially effective projects across municipalities. For communal and regional areas, however, it is too broadly defined (Canton Aargau, 2020b). The municipalities (LAU 2 / NUTS 5) must implement the decisions made on higher level and are in direct contact with affected landowners whose land will be upgraded (becoming building land) or de-zoned due to the future expected development. The following table illustrates the different levels, contents and areas of responsibility.

Table 1.1: Regional sectoral plan as a link between the structural plan of the canton and communal land use plans

	Content	Competence
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 5px;"> "Kantonaler Richtplan" (structural plan of the canton) </div> <div style="text-align: center;">↓</div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 5px;"> „Regionaler Sachplan“ (regional sectoral plan) </div> <div style="text-align: center;">↓</div> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> Projects, use plans, special use plans </div>	Cantonal subject fields (binding on the authorities)	Canton
	Regional and supra-municipal subject fields (binding on the authorities)	Several municipalities
	Municipal subject fields (binding on landowners)	Municipality

Source: Canton Aargau (2020b)

There is also an ongoing cooperation between the canton of Aargau and the federal government (NUTS 0). For example, at the beginning of its revision of the structural plan, the Canton of Aargau informed the Federal Office for Spatial Development (ARE) (as defined by Article 9(2) of the Spatial Planning Ordinance (Federal Chancellery, 2020)) of the planned activities. During the preliminary assessment from May 2014, all federal agencies represented in the Federal Spatial Planning Conference (ROK) and the Federal Commission for the Protection of Nature and Cultural Heritage (FCNC) were consulted (ARE, 2017a). Furthermore, cooperation with neighbouring cantons (NUTS 2) (under Article 11(1) RPG) and the neighbouring country Germany, as well as information and participation of the population (under Article 4 RPG) are foreseen.

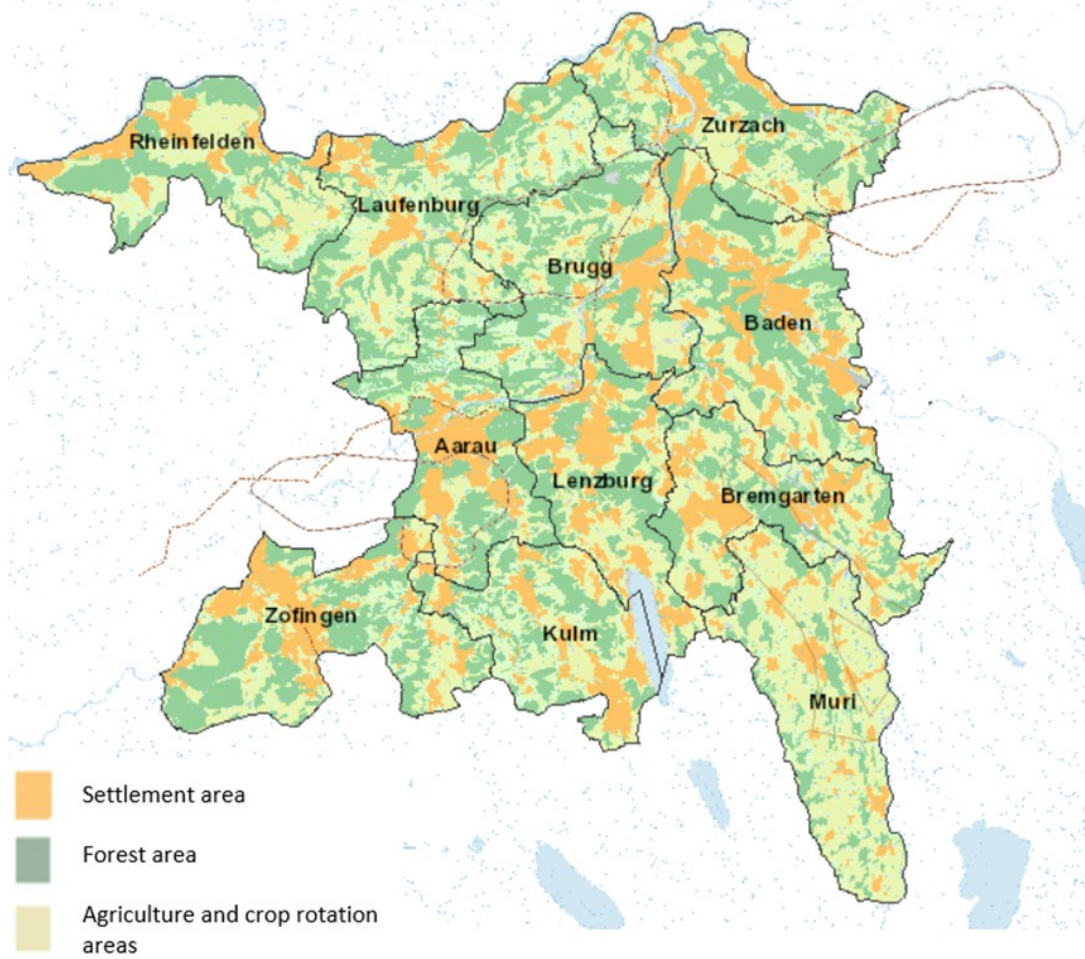
Table 1.2: CH-Canton Aargau scales.

Scales	Main scale	Other scales
Supra/Trans-national		Cooperation with Germany
NUTS 0		Revised RPG
NUTS 1		
NUTS 2		Cooperation with neighbouring cantons
NUTS 3	Canton of Aargau (CH033)	
LAU1 – NUTS 4		Regional planning associations
LAU2- NUTS 5		Municipalities, population

1.3 Geographical scope

The boundary of the case study is defined by the geographical scope of the Canton of Aargau. As a member of the EFTA, also Switzerland is included in the NUTS. Like all the other Swiss cantons also the Canton of Aargau corresponds to the NUTS3 level. It is located in the north part of Switzerland and has a common border with Germany (Baden- Wuerttemberg). It has a total area of 1,404 square kilometres and is divided into 11 districts. Within the district Aarau, also the capital city with the same name is located. The following map of the Canton of Aargau shows the location of the districts, as well as settlement and non-settlement areas.

Map 1.2: Canton of Aargau divided by districts and settlement and non-settlement areas



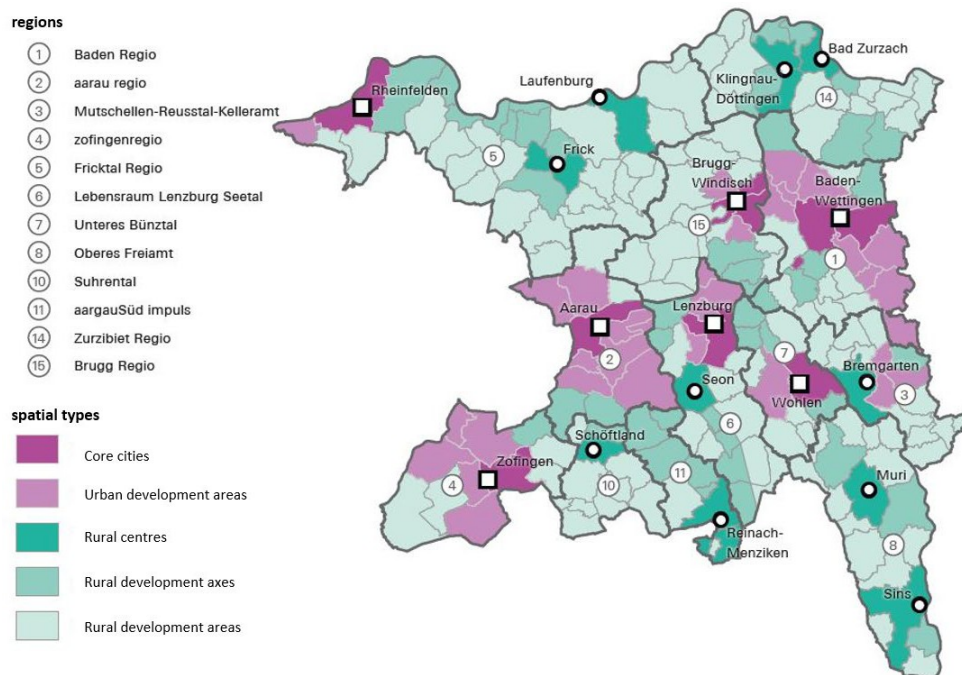
Source: Aargauisches Geographisches Informationssystem (AGIS) (2020)

2 Contextual analysis

2.1 Typical urban development

In the Structural Plan of the canton, the so-called Aargau Spatial Concept is bindingly defined. It shows the strived spatial development of the Canton of Aargau and divides the canton into five spatial types (Map 2.1).

Map 2.1: Allocation of municipalities to regions and spatial types

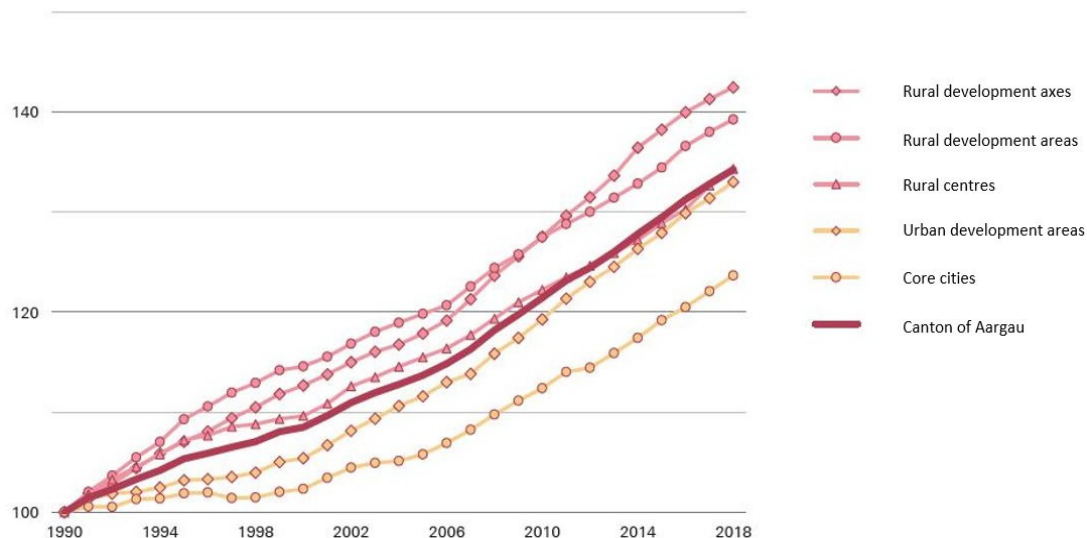


Source: Canton Aargau (2019)

The Canton of Aargau belongs with approximately 677.000 inhabitants to the most populous cantons in Switzerland (behind Zurich, Bern and Vaud). The same applies to economic indicators. With around 37.000 companies and 265.000 employees (measured in full-time equivalent), it is ranked at the top of the Swiss cantons. Since 1990, the population has grown in all 12 regions. The strongest increase was in the “Oberes Freiamt” (52% increase - region no.8, see Map 2.1), the smallest increases were in the Zurzibiet (22% increase - region no.14) and in the aargauSüd impuls (19% increase - region no.11).

Also in terms of spatial types, population growth was not evenly distributed. In the two types of rural areas (rural development areas and axes), the population increase was significantly higher (41%) than in urban areas and centres (30%) (Figure 2.1)

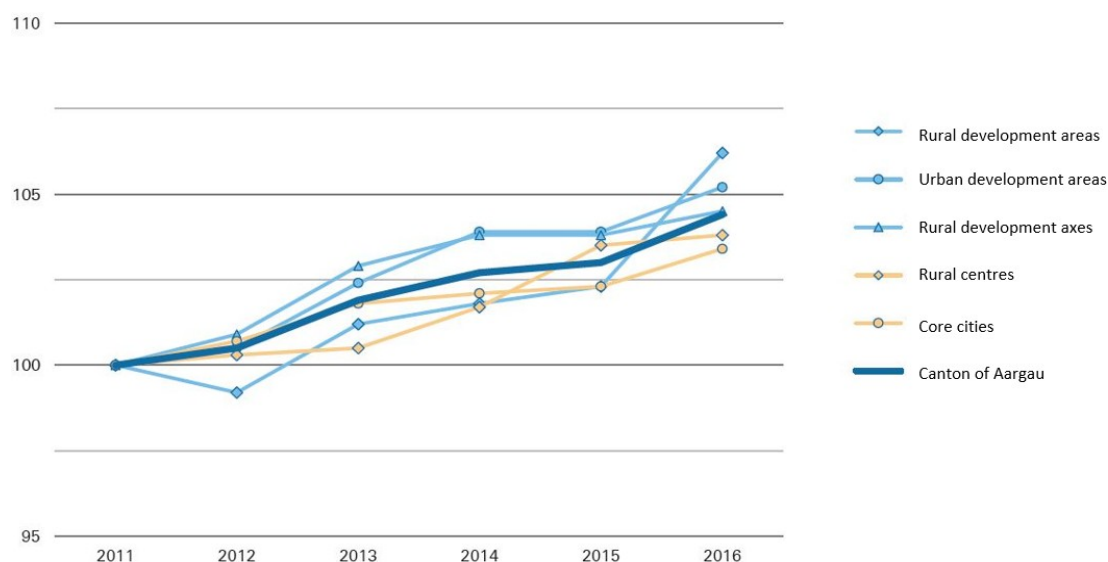
Figure 2.1: Spatial types: Population development, 1990 - 2018 (Index: Total population 1990 = 100)



Source: Canton Aargau (2019)

The number of people employed has also increased in recent years. At the end of 2016, most employees were counted in the regions of Baden (60,332), Aarau (45,029) and Fricktal (31,355). More than half of all employees in the canton worked in these three regions. Figure 2.2 shows the development of employment within the 5 spatial types. (Canton Aargau, 2019a)

Figure 2.2: Spatial types: Employment development, 2011 – 2016 (Index: Total population 1990 = 100)



Source: Canton Aargau (2019)

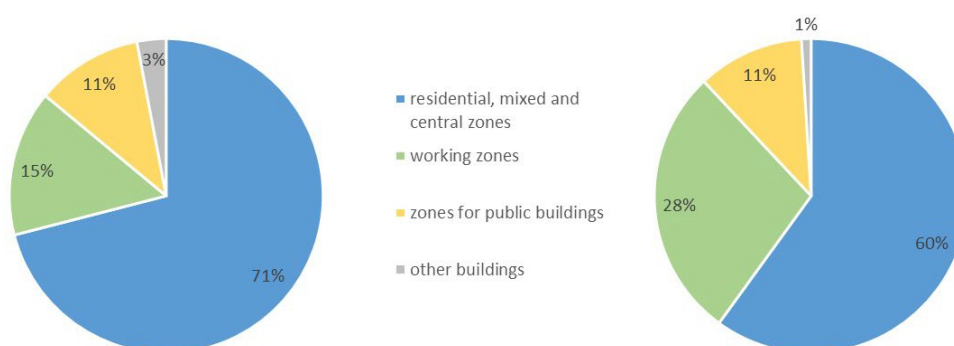
Beside the increase in population and employees, also a change in building zones could be observed during the last 30 years¹. During the first quarter of each year, the Federal

¹ Spatial data recording at cantonal level started in 1990. This year refers as reference year.

Government demands an overview of the development status from the municipalities (Art. 31 RPV). This overview shows building zones that are not used for building so far and distinguish between areas, which are already ready for construction and those that can be made ready within the next five years. In the following, the so-called “Überbauungstand”, which distinguishes between built-up (i.e. consumption of building zones) and non-built up areas (i.e. building land reserves), will be briefly discussed for the Canton of Aargau.

The total area of the Canton of Aargau is 140,377 hectares. About one-seventh of this (20.580 ha or 15%) is designated as building zones. At the end of 2018, 89% (18.294 ha) of the 20.580 ha building zone was used for building and 11% (2,286 ha) was still unused. The following pie charts show the designated use, respectively. (Canton Aargau, 2019a)

Figure 2.3: Designated use of building zones in 2018 (left side: already build-up land, right side: building zones that are still unused)

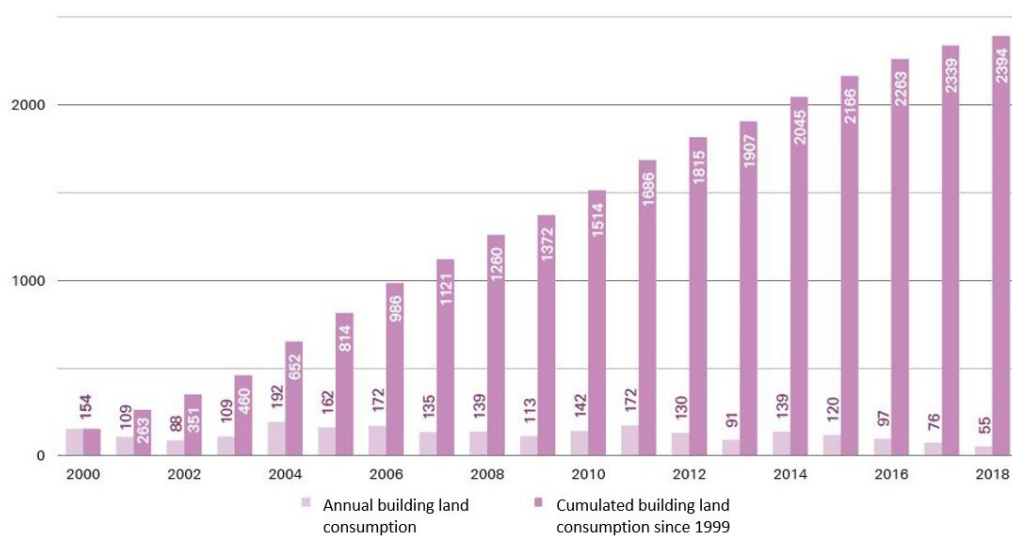


Source: Own diagrams based on Canton Aargau (2019)

As already mentioned, at the end of 2018, 2.286 ha of the building zone was still undeveloped. Thus, 11% of the total building zone area remained as building zone reserves. Here it can be seen (Figure 2.3, right side) that the largest share of this reserve is earmarked for residential use.

Since 1999, 126 ha of building zones have been built in the Canton of Aargau each year. This annual consumption corresponds to a number of about 3.500m² per day (only in the Canton of Aargau). Figure 2.4 shows the annual building zone consumption as well as the cumulated consumption since 1999 in ha.

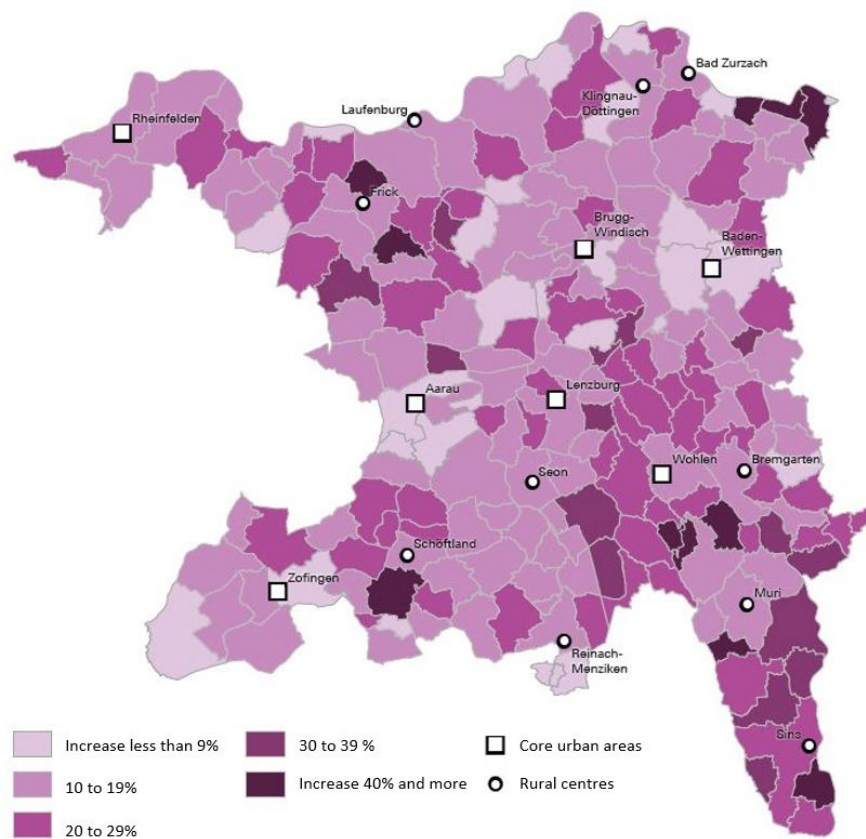
Figure 2.4: Canton of Aargau: Building land consumption, 2000 - 2018



Source: Canton Aargau (2019)

As the following map shows, the consumption of building zones varies widely within the canton. Several municipalities with high building zone consumption have been located in the eastern part of the canton. The relative increase in built-up areas was strongest in the upper Freiamt (right lower part of the canton), with a total of 26% more building activities than in 1999, whereas in the core cities of Aarau, Baden and Windisch the relative increase in built-up zones, at 5% each, was significantly lower than the cantonal average of 15% (Canton Aargau, 2019a).

Figure 2.5: Municipalities: Building zone consumption, 1999/2018. Relative change in the built zones compared to 1999 (in %)



Source: Canton Aargau (2019)

2.2 Basic institutional conditions

In Switzerland, there is no legal basis that regulates and promotes the development and design of the landscape as a whole. Rather, various laws on sectoral policies provide instruments to strengthen landscape quality. The sum of the individual activities ultimately determines the overall impact on the landscape. Spatial planning in Switzerland is strongly influenced by federalism and direct democracy. The federal government is responsible for basis legislations. One of the most important laws is the Swiss Spatial Planning Law (RPG) and its revision (RPG 1 and RPG 2) (see Section 2.3 Revision), which is a federal law of Switzerland that regulates spatial development in Switzerland. It was enacted on the basis of Art. 75 of the Federal Constitution and aims at the sustainable use of land. In particular, it aims to protect the natural foundations and to create and maintain residential settlements and the spatial conditions for the economy. This law is the core of this case study and impacts the strategies and instruments of the actual spatial planning “on the ground” done by the cantons and the municipalities.

The cantons’ most important planning instrument is the **structural plan**, while the communes’ most important instrument is the **land use plan**. Even if there is no comprehensively and binding planning instrument that applies for several sectors, still various efforts beside the RPG exist to promote a sustainable development of the Swiss landscape. One of the **overarching** ESPON / SUPER / Final report

strategies is the Swiss Spatial Concept (“Raumkonzept Schweiz”). It is an orientation framework and decision-making guide for the future spatial development of Switzerland, which was introduced in 2012. This document represents the first attempt to develop and support Swiss spatial development jointly by all levels of government (i.e. Federal, cantonal, regional and communal level) (regiosuisse, s.a.). Another overarching strategy relevant to the national territory is the Swiss Biodiversity Strategy, which was adopted by the Federal Council in 2012. The close link between landscape and biodiversity is addressed in its strategic objectives (such as the promotion of biodiversity in settlement areas) (Swiss Federal Office for the Environment, 2016).

The Swiss Landscape Concept (“Landschaftskonzept Schweiz”) (LKS) belongs to the **landscape strategies** (“Landsschaftsstrategien”). This is a concept according to Article 13 RPG and forms the binding guideline for the federal government's activities in nature and landscape conservation. Furthermore, the landscape development concepts (LEK) define objectives for the conservation and promotion of landscape quality. The use of instruments and measures of the various sectoral policies is coordinated with these objectives. Green and open space concepts are essential for the landscape quality in densely built agglomerations. These address playgrounds and green areas of residential areas, public spaces, parks, sports and recreational areas, as well as forestry and agriculture in and around the settlement areas.

Spatial planning instruments include the concepts and sectoral plans under Article 13 of the RPG. These represent the main spatial planning instruments of the federal government. The structural plan of the cantons (as mentioned above) is of decisive importance for landscape development. The structural plan defines the basic landscape conservation and development objectives and identifies areas of high landscape importance. Another instrument are the agglomeration programmes, a planning and management tool that allows the agglomerations to act in a coordinated and efficient manner. An agglomeration programme must be based on a vision of the future which also includes landscape aspects. The land use plans (“Nutzungsplanung”), defines the use of land as binding for the landowner and thus determines the overall pattern of settlement and open landscape spaces. (Swiss Federal Office for the Environment, 2016)

With the so-called “**Coherent Spatial Development**” (which is based on the principles of sustainable development) the Swiss Federal Government formulated a common understanding of actions to address spatial challenges in different regions in a “holistic, coordinated and content-related manner” (i.e. SMART comprehensive planning) within the framework of various sectoral policies. One of these policies is the “New Regional Policy (NRP)” which came into force in 2008. With the NRP mountain and border regions as well as certain rural areas are supported by the federal government and the cantons. It contributes to the evening out of regional disparities through efforts to create jobs and maintain decentralised settlement structure in Switzerland. In this regard, the cantons are essential stakeholders for the conceptualisation, funding and implementing of the NRP. They develop cantonal or supra-cantonal implementation programmes for a period of four years. In line with this, strategies,

projects, programmes and initiatives improving competitiveness and value creation can be launched by cantons, regions and/or other development agencies and apply for financial aid in line with the NRP. Further, the “agglomeration policy (AggloPol)” and the policy for rural areas and mountain regions (P-LRB) contribute to coherent spatial development. (regiosuisse, s.a.).

2.3 Revision

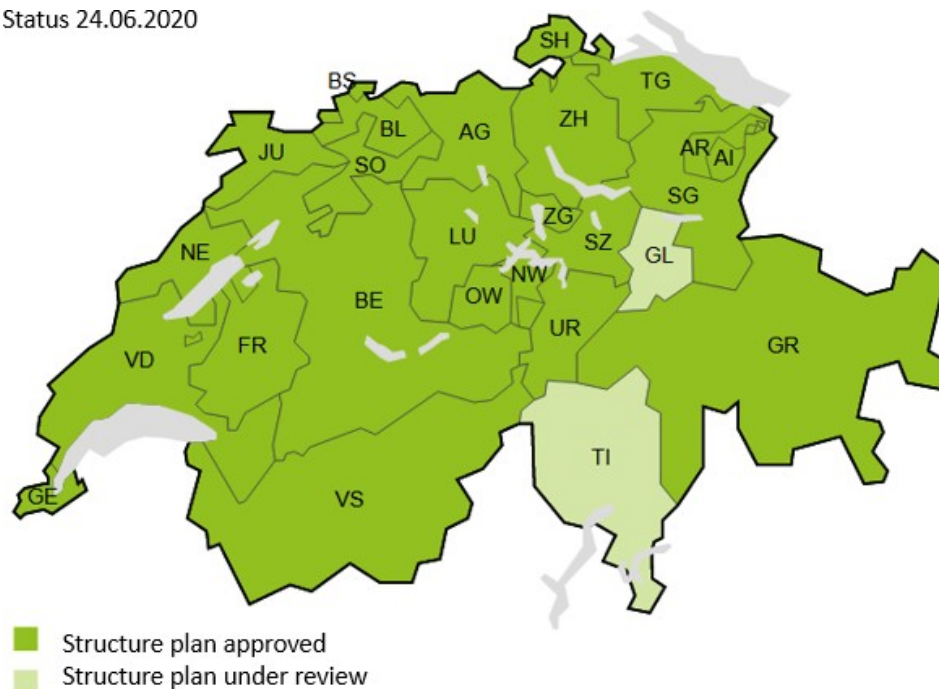
The scope of this Case Study is the Revision of the Swiss Spatial Planning Law (RPG 1) and its implications on the Canton of Aargau.

The revision of the Spatial Planning Law was a counter-proposal to the initiative "Space for Humans and Nature" (landscape initiative). The initiative demanded that the total area of building zones in Switzerland should not be increased within the next 20 years. This position was considered too rigid by the Federal Council and the Parliament. As a result, the Federal Council recommended the revision of the Spatial Planning Law in order to make its regulations more binding for the cantons, the municipalities and also for the land owners. The revised RPG specifies that building zones must be defined in such a way that they meet the expected need for the next 15 years. In a referendum on 3rd March 2013, the revision was approved with 62.9% of the votes. The aim of the revision is to slow down urban sprawl in Switzerland by promoting compact settlement development. Building zones that are too large should be reduced in size and existing reserves should be used more efficiently. The revision came into force on 1 May 2014. (DETEC, 2014)

The revision is implemented in a step-by-step manner. First, the structural plans of the cantons had to be adapted within 5 years (until 2019), second, the land use plans of the municipalities will be adapted to be in line with the structural plans (this step is still in progress [status as of July 2020]). So by now, almost all cantons have renewed structural plans (see Figure below).

Figure 2.6: Adaptation of the cantonal structure plans to the revised Spatial Planning Law (AG = Canton of Aargau)

Status 24.06.2020



Source: ARE, 2020

This will now affect municipal planning and zoning activities. Until the cantonal plan was given green light by the Federal Council, the respective municipalities could not change anything in their plans and were not allowed to conduct any zoning (so-called "Moratorium"). (Kellenberger (ARE) personal communication, 2020)

The structural plan is the central planning instrument of the canton. It shows how the activities of the Confederation, the canton and the municipalities are coordinated. The legally binding structural plan of the Canton of Aargau was adopted by the Grand Council ("Großer Rat") on 20 September 2011. The adaptation to the revised RPG 1 was implemented on 24 March 2015. (ARE, 2017b)

The Canton of Aargau has revised its structural plan and additionally adapted the "settlement" part in 2016. The Federal Council approved the overall revision of the Canton of Aargau on 23 August 2017. The structure plan thus meets the requirements of the revised Spatial Planning Law. In its overall revision, the Canton of Aargau has made particular adjustments in the areas of settlement, landscape, mobility, energy and supply and disposal. In addition, it has developed a cantonal spatial concept that defines the framework for its future development. (ARE, 2017b)

The structural plan determines the total size of the settlement area and its distribution within the canton. The settlement area in the structural plan indicates the areas in which building development may take place. The size of the settlement area is based on the assumption that approximately 816,000 inhabitants will live in the Canton of Aargau in 2040 (compared with 678,207 inhabitants in 2018). The structural plan defines 21,950 hectares as settlement

Areas (compared with 20.580 ha in 2018). Of these, 125 hectares are not shown in the map of the structural plan. These areas form the so-called "cantonal pots", a special characteristic of the Canton of Aargau. They are available for the following zoning, but will be first spatially located when they are needed:

- 70 hectares for work zones
- 44 hectares for residential priorities
- 11 hectares for public use

This "pot system" is a control instrument that allows the Canton of Aargau to react more flexibly concerning the development of jobs, housing priorities and the need for public uses. (Canton Aargau, 2019a)

2.4 Planning permission

Municipalities have various instruments and competencies that influence spatial development. They are responsible for the development of their centres and surrounding areas, the provision of sufficient open and green spaces, and for the preservation of characteristic landscape elements such as water bodies, hedges, etc.

The building permit is usually issued by the local authority. Building permits outside the building zone require the approval of the cantons and have to be in line with the national regulations that are part of the law on spatial planning (RPG). (Swiss Federal Office for the Environment, 2016)

Relevant legislations in this area are:

- Article 3 of the Spatial Planning Law (RPG)
- Cantonal building and planning laws
- Local building regulations and zoning regulations

With the revision of the Spatial Planning Law, the Federal Council and Parliament want to put a stop to unsustainable land degradation and urban sprawl. Furthermore, enforcement deficits should be reduced or even eliminated. The revision will also improve the availability of building land that has already been zoned. Instead of hoarding building land for years, it should be used appropriately. If a property is newly zoned as building land, its value increases significantly. The revision envisages that the cantons and municipalities will receive at least 20 (up to 30) percent of this added value to compensate those landowners who have to de-zone their building land due to the new regulation of the RPG. (DETEC, 2014)

2.5 Current issues

In Switzerland, a lot of soil is already sealed. These areas are lost for agricultural uses, for recreational purposes and for environmental purposes in general. Building activities are driven by population growth, the increasing demand for residential, commercial and other infrastructural uses, as well as changes in lifestyle. Since the 1960s, the (in-house) living space per person has doubled to around 50 m². In Switzerland, a total area of approximately 22.8 km² is built each year. Since soil is not available in unlimited quantities, it needs to be used cautiously.

Political involvement reflects the participation of citizens in democratic matters. In Switzerland, citizens can participate in votes and elections and influence politics through referenda and initiatives. This applies at the national as well as at the cantonal level. The recent people's initiative "Stop urban sprawl - for sustainable settlement development" ("Zersiedlungsinitiative") wanted to freeze the total area of building zones in Switzerland. According to this initiative, new building land should only be zoned if areas of the same size will be de-zoned. The Federal Council and Parliament were against this initiative. They listed the following reasons for this (The Federal Council, 2019):

- **Urban sprawl is already effectively addressed:** the Swiss population has already adopted strict measures against urban sprawl (inter alia, through the RPG revision). The cantons and municipalities are in the process of implementing them. Building zones that are too large must be already reduced in size.
- **The Initiative prevents appropriate development:** freezing the building zone area neglects the needs of the population and the economy. In addition, cantonal or regional differences are not taken into account.
- **The Initiative is described as being unfair:** due to the stop of building zones, cantons and municipalities that have been reluctant in zoning building land in the past will be disadvantaged. Furthermore, if building land becomes scarce, housing prices may rise.
- **The Initiative is counterproductive:** due to a rigid nation-wide stop of building zones, the risk increases that building activities will shift to remote locations, which in turn promote urban sprawl.
- **The Initiative is too centralistic:** the building zone ban undermines the cantons' and municipalities' scope for design. Situations vary across the cantons. The initiative makes individually tailored solutions more difficult.
- **The Initiative harms agriculture:** Buildings such as greenhouses or poultry sheds should (according to the initiative) no longer be built on agricultural land. Farmers would have to move to building zones where the soil is much more expensive.

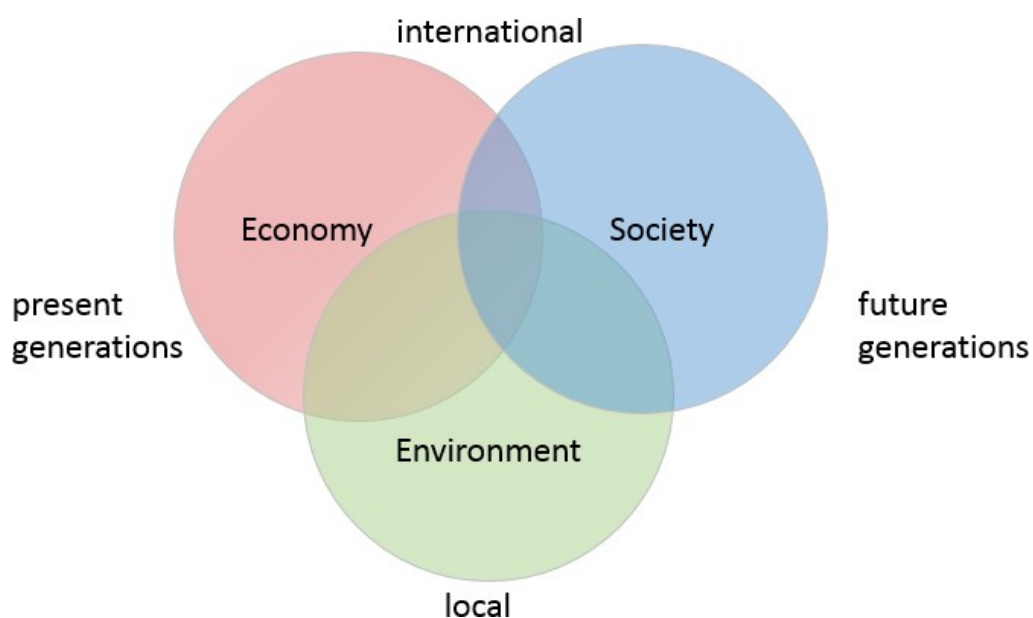
The initiative "Stop urban sprawl - for sustainable settlement development" ("Zersiedlungsinitiative") was put to a referendum on 10 February 2019. It was rejected by a majority of the Swiss population (e.g. in the Canton of Aargau 66.4% of people voted against the initiative). One of the main reasons for this is that following the revision of the Spatial Planning Law, the federal government and the cantons already follow a more sustainable approach in protecting the resource soil/land and is not as rigid as the initiative. (The Federal Council, 2019)

3 Sustainability of objectives

3.1 Thematic dimensions

All three dimensions of sustainability are subject of the Aargau's structural plan (Chapter G 3 on "sustainable development, sustainable growth") (Canton Aargau, 2019b). The chapter refers to the generally accepted definition of sustainable development of the report entitled "Our common future" (also known as "Brundtland Report" 1987), defining Sustainable Development as: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 1987). As the following Figure 3.1 shows, sustainability is considered in terms of temporal (present and future generation), spatial (local/regional and international) and thematic (economic, social and environmental) aspects.

Figure 3.1: Temporal, spatial and thematic dimensions of sustainable development



Source: Own diagram based on Canton Aargau (2019)

Sustainable development is a major principle of the Canton of Aargau. New tasks (like projects) are assessed in terms of their importance as well of their urgency, without overlooking economic, social and ecological needs. Consequently, both the cantonal spatial concept, as well as the decisions in the subject areas of the cantonal structural plan were assessed in a step-wise manner (and, if necessary, improved) in sustainability terms. As stated by the Department of Building, Transportation and Environment "the structural plan serves the sustainable development of the Aargau living space and describes the relevant requirements and framework conditions". (Canton Aargau, 2019b).

This resulted in the following decision:

“The adaptation of the structural plan will aim at promoting sustainable development. Before spatial development strategies or decisions are made, it is obligatory to conduct comprehensive impact assessments regarding the three dimensions of sustainability. If necessary, modifications must be made in order to strengthen sustainable development.” (Chapter G 3 of the structural plan, Canton Aargau, 2019b). Even if all three dimensions are taken into account, from the outset it was clear that the **ecological dimension** was (and still is – as can be deduced from the statements of the interview partners (chapter 4 Impact assessment)) the most important dimension. The sustainable use of land and the associated internal development is a central element of the revision of the Spatial Planning Law. Soil or land is described as “a scarce resource” and therefore needs to be carefully managed (DETEC, 2014). Further, *“the revision stops land degradation, ensures more compact settlement development and keeps Switzerland attractive as a place to live and work”* (DETEC, 2014). The revision also stated that *“good arable soils (crop rotation areas, FFF) may only be zoned under strict conditions - and before new agricultural land is zoned, the internal reserves must be fully utilised”* (DETEC, 2014). Also measures are used in order to reuse brownfields (such as brownfields derived from unused industrial or commercial sites) (Canton Aargau (2019b).

In addition to the already mentioned chapter G 3, the ecological dimension is generally reflected in the Aargau’s structural plan as well as in other chapters. For example, the Federal Department of the Environment, Transport, Energy and Communication (DETEC) states that within their cantonal structural plan *“the Canton of Aargau has paid particular attention to topics such as nature and landscape and shows [...] how it intends to further develop and network landscapes and habitats”* (ARE, 2017b).

Nevertheless, the **economic dimension** also plays an important role in the Canton of Aargau. In addition to the growing population, the number of employees is also expected to increase strongly. *“An increasing trend can also be observed in this area. The number of employees in the Canton of Aargau has increased by approximately 2.200 per year and has grown by a total of 4% since 2011. Aargau continues to be an important industrial canton. 87,000 employees, exactly one third of all workers, work in the 2nd sector (industry, trade and art). The proportion of employees in the 2nd sector is well above the Swiss average of 25 %.”* (Canton Aargau, 2019a, p.17). Chapter H “Main orientations and strategies” of the cantonal structural plan addresses mainly the economic (and also the social) dimension. Strategy H 3.2, for example, states: *“At suitable locations, the conditions for competitive regional service, industrial and commercial enterprises with a good workplace structure and good accessibility are created. These will be done under consideration of various mobility offers”* (Canton Aargau, 2019b, subchapter H3, p 48). The Canton of Aargau is also part of the economic area of northern Switzerland (with its metropolitan areas of Zurich and Basel). *“Due to its high international importance, the economic area of northern Switzerland is the motor of social, societal and economic development. Together with the other cantons of this economic area, Aargau represents the important spatial interests and participates actively in sustainable, intercantonal and international projects.”* (Canton Aargau, 2019b, subchapter H6, p. 51).

The **social dimension** is also addressed in chapter H, especially under subchapter H 3. "Attractive residential and business locations" and H 5 "Enhancement of living space for people and nature". Strategy H 3.2, for example, states: "A sustainable housing policy will be pursued which demonstrates future-oriented housing in an attractive environment [...]. Attractive natural areas in the vicinity of residential locations are important in this context." (Canton Aargau, 2019b, subchapter H3, p. 48). Furthermore, the project "Focus on Public Space", which was launched on behalf of the Government Council, aims to involve politics, administration and the population in the design of public spaces in the Canton of Aargau. It was recognised that "attractive public spaces contribute to a positive image and improves the quality within a community [...] people like to spend time in high-quality and easily accessible open spaces" (Canton Aargau, 2020c). Even if the issue on social housing is not directly addressed in the cantonal structural plan, one stated decision, however, defines the "promotion of high-quality, family-friendly and low-priced housing constructions" (Canton Aargau, 2019b, subchapter 1.4 "Area development").

3.2 Temporal balance

Dealing with the future growth of the population represents a particular challenge in terms of sustainability. Based on the prognoses, it can be assumed that the canton of Aargau will grow in terms of population and employees in the coming years. In order to ensure that this growth is sustainable, a cantonal strategy is needed, which takes into account various aspects (such as sustainable transportation solutions). In this context, the revised Spatial Planning Law defines that "the building zones need to be defined in such a way that they meet the demand for the next fifteen years" (ARE, 2017b).

To this end, a proposal for the development of an overall solution is included in the structural plan chapter S 1.2 "Definition of the settlement area" (Canton Aargau, 2019b). The overall solution for the settlement area must show how and where the expected population growth can be achieved in a spatially compatible and sustainable manner while maintaining high settlement and living quality (Canton Aargau, 2019b, subchapter G 3 of the structural plan).

This resulted in the following decision:

"By using a cantonal strategy it is possible to show how population growth can be reached and implemented in a sustainable way that is compatible with the regional spatial development." (Canton Aargau, 2019b, subchapter G 3 of the structural plan).

Besides the structural plan, also the Spatial development model "Räumliches Entwicklungsleitbild (REL)") supports long-term strategic planning. On the level of the municipalities, it provides a spatial-strategic picture of how the municipality should develop over the next 25 years. This model provides an overview of the entire municipal territory. It helps to sharpen the profile of the municipality by providing a spatial-strategic vision of how the municipality as a whole should develop. It shows which areas are suitable for high-quality inner development and to what extent. However, it also defines which elements and areas should remain unchanged (Canton Aargau, 2020d).

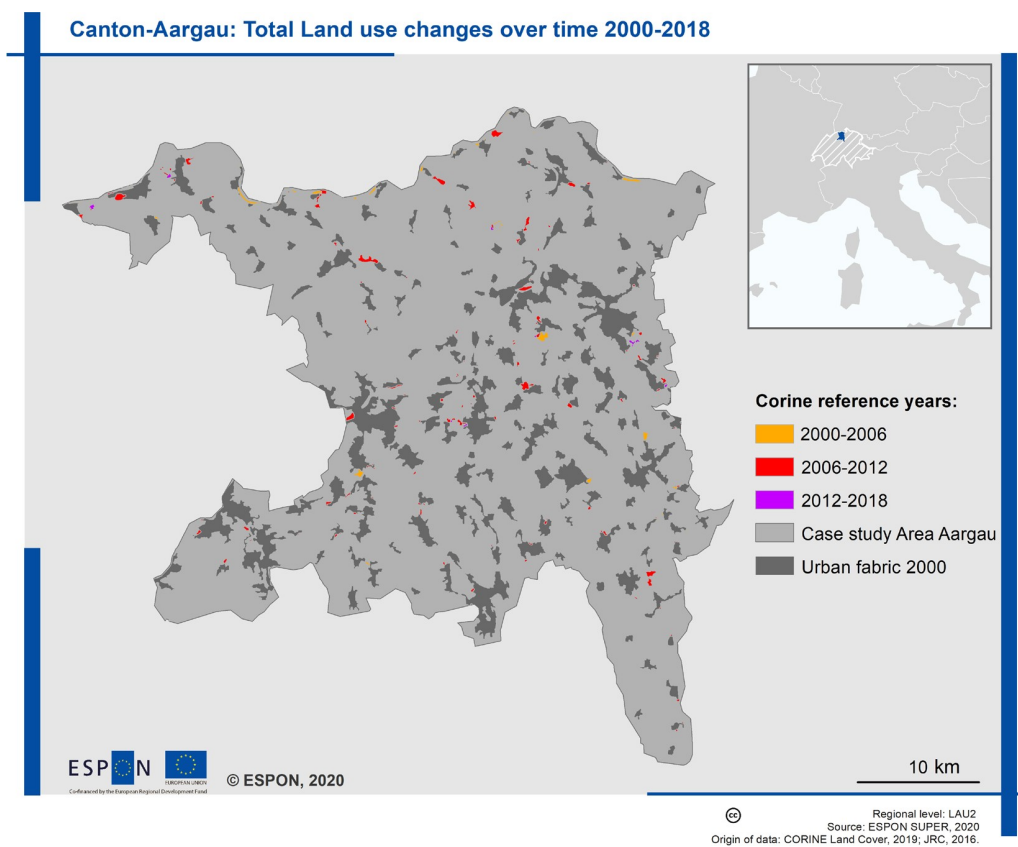
4 Impact assessment

4.1 Pre-intervention

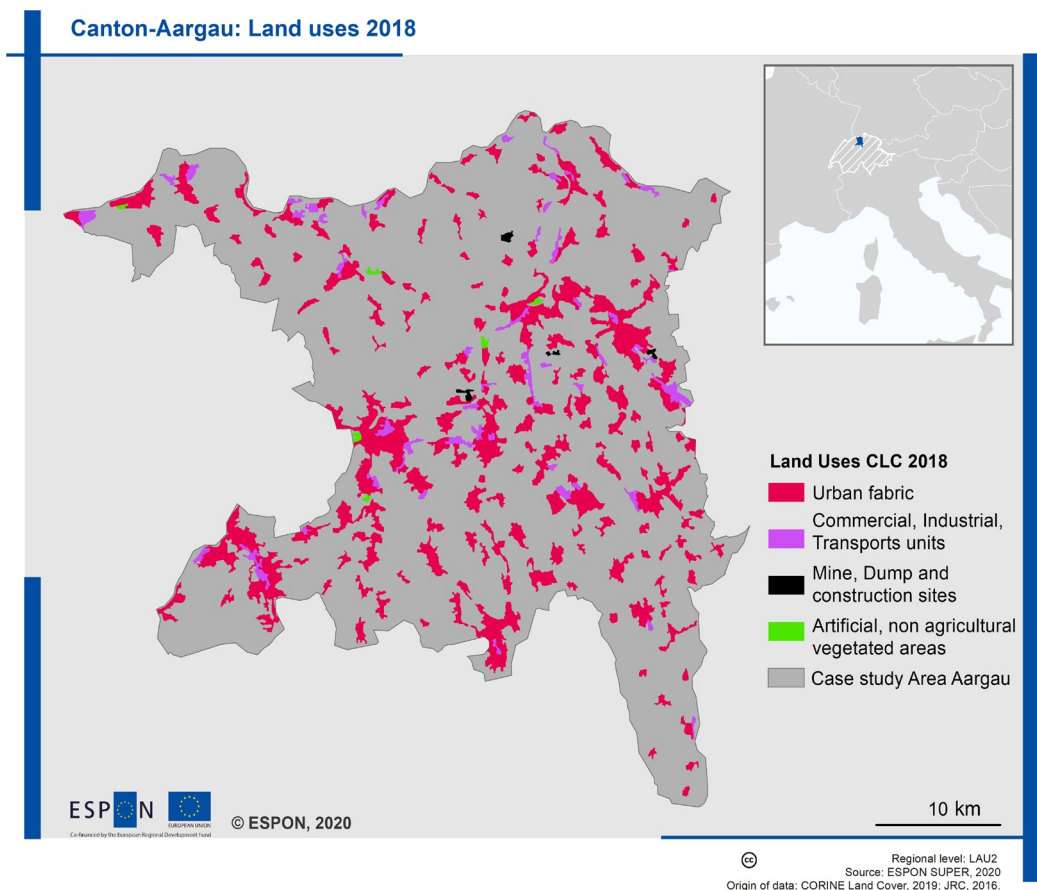
4.1.1 Identification of the problem

As mentioned previously, urban sprawl and land-take have been considered as relevant problems in Switzerland and in the Canton of Aargau. The following maps showing the total land use changes between 2000 and 2018 (Map 4.1) and the Corine land Cover in 2018 (Map 4.2). From 2000 to 2018, as we can obtain from CORINE Land Cover data, a total amount of 697 ha has been transformed to artificial land uses. It means an increase of 2,7% of the artificial surfaces in 18 years. The percentage of changes according to the specified periods are: 34.5% from 2000 to 2006; 52.9% from 2006 to 2012; 12.6% from 2012 to 2018.

Map 4.1: Land use changes over time in The Canton of Aargau (from 2000 – 2018)



Map 4.2: Corine land Cover (CLC) in 2018



As a result of calls for a coordinated federal response to support countering these developments, a national referendum on the RPG revision was conducted following an initiative to curb land take and urban sprawl. The initiative has addressed and further increased the awareness of land being a finite and non-renewable resource. The initiators were motivated to counteract developments such as plans for building pharmaceutical plants in the middle of agricultural areas. They advocated measures to stop the land take entirely. The ultimate compromise accepted by the population involved stricter spatial planning and more urban development inwards as opposed to taking up of green areas.

Counteracting urban sprawl is also defined in various sections of the Aargau's cantonal structure plan. Chapter L.1.1, for instance, defines in its decisions that plans and projects must be geared to the objectives of "preservation and enhancement of near-natural, unspoilt landscapes". Furthermore, chapter S.1.2 also addresses urban sprawl: "The greatest challenge is to maintain or increase the quality of housing by maintaining or improving the quality of settlement and open spaces [...] this includes in particular the containment of urban sprawl, the promotion of internal settlement development [...]". In addition, in Chapter H1 "Future-oriented spatial structures", the strategy H 1.3 describes that "the use of land is restricted by the use of internal settlement reserves" (Canton Aargau, 2019b).

Table 4.1: The main focal issues of the revision according to interviewed stakeholders

Focal issue	# instances
Careful use of land resources/counteracting urban sprawl	6
Inward densification in urban areas	6

The issue of the revision was of clearly environmental dimension, with social and economic consequences. The increasing environmental awareness can be back-traced to a paradigm shift in 2000s. The large-scale acceptance of the revision of the spatial planning law demonstrates that citizens and other stakeholders understand the importance of environment to life quality, and are largely not afraid to challenge economic development to comply with more sustainable land use (notably, the answers of canton representative suggested that affected economic actors were strong enough to withstand the intervention).

Nevertheless, there is a consensus among interviewees that the federal law was a needed and appropriate response to the issue. While the principles of careful and sustainable land use were mentioned in the original law, there were no coordinated and compulsory measures to enforce its resourceful use. The revision provided clearer guidelines in deciding on land take zoning.

The situation with regards to land take in cantons prior to the revision was differing, although generally a rapid and increasingly uncontrollable use of land were becoming widespread in Switzerland. All stakeholders believe that strong action was needed to control land take as some cantons did not deal with the issue sufficiently well or did not have the appropriate means to do so. Some stakeholders even suggest that cantons ignored problems. Others (e.g. representatives of regional planning office in Aargau) claim that cantons handled land-take responsibly and sustainably, to the extent possible. Even though authorities in Aargau were trying to use available tools to enable careful spatial planning, sustainable land use was still an important issue. Canton representatives believed that Aargau did fulfil its responsibilities but agreed that the revision was a needed step to facilitate more sustainable land use.

Even despite differing views on whether measures are stringent enough or whether regional authorities were successful in addressing the problem prior to the revision, it is evident that all interviewees have a clearly aligned understanding of the initiative and its goals. The common understanding of the issue is very important to a consequent and successful implementation of the law's revision. A joint understanding of the issue facilitates compliance, even when stakeholders have slightly differing interests.

4.1.2 Inception of goals/action

There is a widespread consensus among interviewees about land-take being a problem that warranted the revision. This applies also to the representatives of Aargau. Public stakeholders admitted that the original law was not faulty, it only lacked specifications on the enforcement of sustainable land use.² It seems that the solution accepted as a revision of the RPG law was largely satisfactory to all types of stakeholders. This solution was a compromise addressing the people's initiative "Space for Humans and Nature" (landscape initiative) which demanded even stricter action. One interviewee noted that it was important that the initiators were supportive of the compromise, even though their original initiative was withdrawn. There is a certain divide between stakeholders of different types, as described above. Most of those demanding (stricter) action were civil society organisations (NGOs such as landscape protection associations), citizens themselves but also certain politicians, particularly from the left-wing parties. Supportive were also many cantons.

Several groups were against the initiative as they believed that it restricted the authority of cantons and threatened economic growth. These actors were mostly on the right-wing political spectrum and included some economic actors who feared loss of profit as a result of the initiative (chamber of commerce, home and landowners and their representatives, some fears for rural SMEs). Among the cantons, only Valais was strongly opposed.

All interviewees in Aargau and at the federal level agree that the goals and actions undertaken were very relevant although some believe that they should have been undertaken earlier. More specifications on the details of enforcements of sustainable land use would have prevented excessive urban sprawl which has already taken place and consequent mistakes in spatial planning which took place in 70s/80s. In general, the interviewees seem to agree on the principle "better late than never". This widespread acceptance is certainly its important success factor.

4.1.3 Pre-intervention conclusions

The diverging positions on the revision are certainly natural as the intervention affects different actors to different extent. An important success factor in the implementation of the intervention was the acceptance of the solution as a compromise. Participation was very strong and followed the model of Swiss direct democratic decision-making. It was an intensely debated topic, also in day-to-day conversations. Not only civil society was strongly involved and considered the topic important. Also different interest groups and the initiators of the landscape initiative received due consideration. The compromise proposal came from the government and the process was considered fair and well-done.

² Also before the revision, the law was always clear, the "reserves" should be defined by the approximate need within the next 15 years. Only since the stricter law came into force in 2014, this legal order was more clearly defined. Development perspectives are now linked to the official demographic scenarios which allows a calculation of needed reserves per canton.

The public referendum rendered a support of 63% of voters for the revision. In the preparation for the referendum, information about pros and cons was distributed among the public. The process was considered a strength by all interviewees.

Nowadays, the RPG revision is widely considered to have been an important step and some interviewees claim the voices of those who have initially opposed any change to the spatial planning law have faded. This demonstrates that the society and its different actors, stakeholders and interest groups are capable of finding middle ground and understanding different perspectives. This further suggests that perhaps even those opposed could see that, after all, even if impacting their economic or other interests, the initiative benefits all: the environment and the society.

Clear communication of for- and against- arguments was necessary to help perceive the gravity of the situation and perceive the need for an intervention. An observable change in awareness about land as a finite and valuable resource is an evidence of this.

It should be noted that this may pertain to the direct democratic system in Switzerland which favours civic participation that may be more inductive to agreements and seeking common ground as well as allows debates and communication of arguments that support rational individual decision-making.

4.2 Implementation

4.2.1 Technical capability

The interviewees agree that planning experts were well-trained to propose and discuss the changes that defined the law revision and to implement the federal law at the regional level. Based on the experience of spatial planners in Aargau, difficulties encountered concerned initial implementation of the law. However, at the same time, it was noted that such difficulties are a natural element of the learning process that concerns implementation of new laws. After some time, the practice was developed and the initial uncertainties were worked out.

At the same time, it was agreed that some aspects of the revision and spatial planning were too technical to communicate to the public. Thus, in contrast, the public did not have sufficient technical capability to understand the details. This aspect was considered a weakness of the process. However, this did not constitute a major obstacle in understanding and communicating the general goal and actions foreseen in the intervention.

4.2.2 Data and information

Data, information and expertise were considered largely as sufficient to introducing the revision. Clearly, not all interviewees were aware of the same sources as some have known about ex ante evaluations, or simulations, while others did not. Planning authorities at the national level were more informed about such documents (in this aspect, as opposed to planning authorities at regional level in Aargau) and were particularly satisfied with the amount of data and information. This seems important considering that the law revision was coordinated at the ESPON / SUPER / Final report

national level. Only one interviewee perceived it as a weakness due to the lack of the basis for the dimensioning of the building zones that were inadmissible and there was no good method yet elaborated at the time of the initiative for making comparisons between cantons. However, all such shortages in methods and statistical information were later addressed.

4.2.3 Participation

Participation was very strong and followed the model of Swiss direct democratic decision-making (as already described in section 4.1.3). Civil society as well as different interest groups were strongly involved in this process. The public referendum rendered to a revision of the law (RPG1).

4.2.4 Strategic vision

There was a clear and common understanding of the goals and necessary actions, as mentioned before. No discrepancies in understanding or vision were present between the representatives of Aargau and the federal level. The clear priority was environmentally and resource friendly spatial development. There was a high awareness about the importance of environmentally sustainable spatial planning and its implications on the society and the life-quality, even at the expense of profits in certain economic sectors. The entire process has further strengthened this awareness and the law revision made its consideration a commonplace action.

The widespread acceptance of the priority of environmental dimension of the intervention can be considered as manifesting high environmental awareness and the preparedness as well as the maturity of the society to fight for environmental quality.

4.2.5 Institutional coordination

In Switzerland, proposing, debating and voting on similar initiatives is a well-regulated and an established process. In this case, the process was entirely followed and considered of good quality. There was a high participation of different interest groups and stakeholders and all opinions had a chance to be heard and discussed. This successful institutional coordination is linked with the direct democratic political system in Switzerland and is peculiar to this country.

The social network analysis based on the interviewees' opinions also confirms this. In particular, by looking at the involved scale level, the diagram below (Figure 4.1) shows that both national and cantonal stakeholders cooperated on an equal footing and were further influenced and affected by each other (Figure 4.2). Every dot refers to a stakeholder and each number identifies it (i.e. refers to a designated interview number). The position of each dot within the diagram shows how central their role is in the cooperation network. The "network of cooperation" diagram reveals that the majority of national and cantonal stakeholders are connected in the cooperation network. The three stakeholders that are located outside of the network (# 4, 5, 7), did not cooperate - according to the interviews – with stakeholders.

Figure 4.1: Network of cooperation on national and cantonal (regional) level.

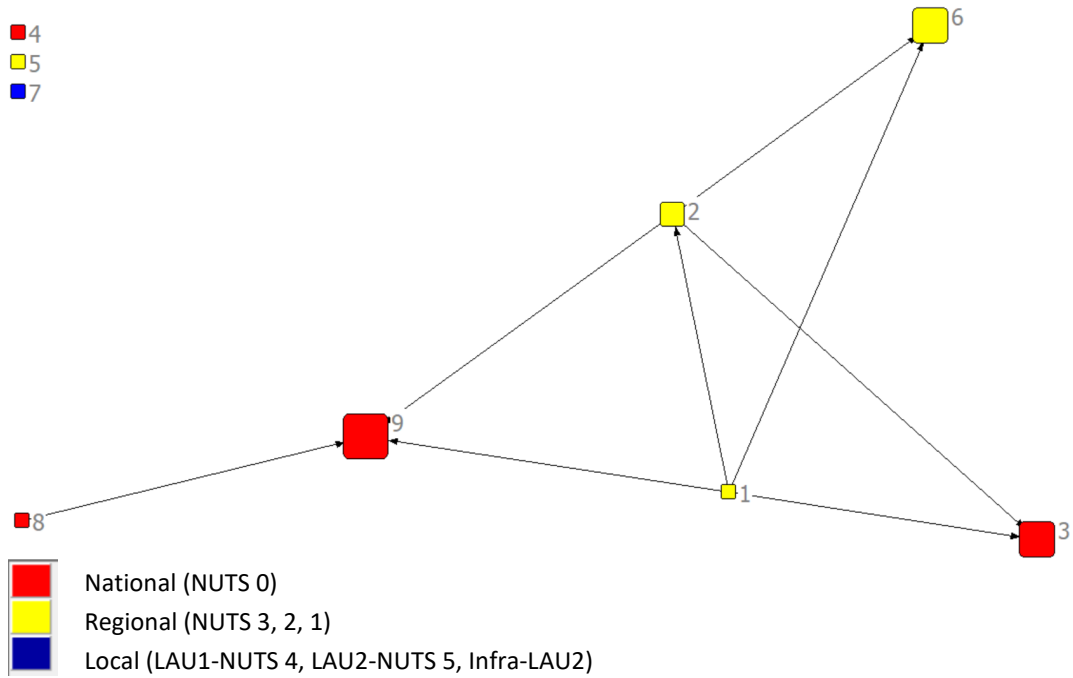
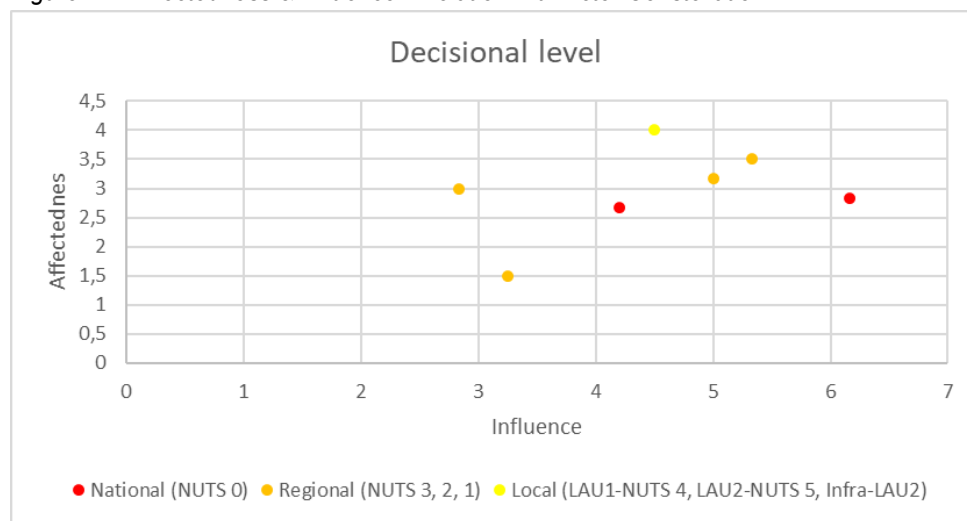
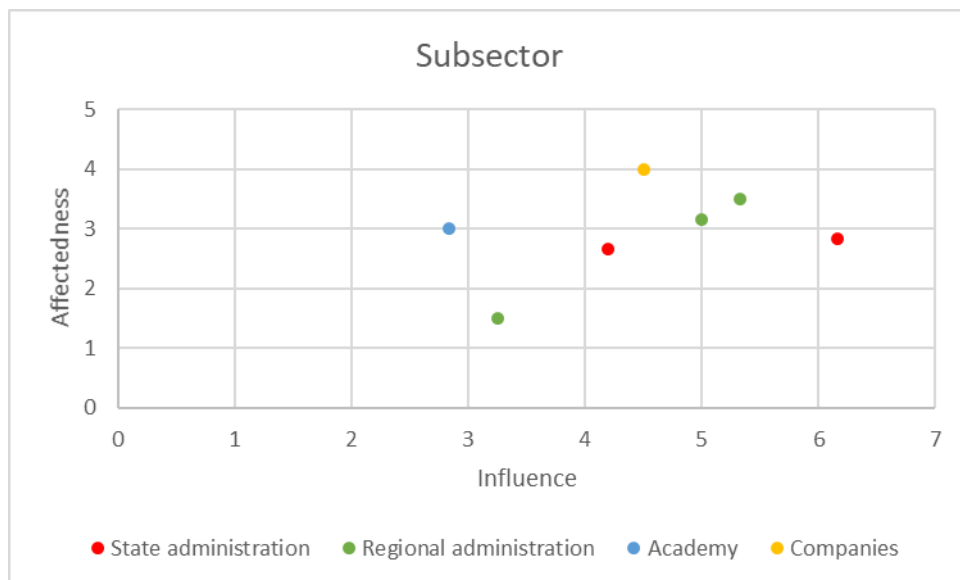


Figure 4.2: Affectedness & influence in relation with Actor Constellation



Also different stakeholders (state and regional administration, academia and companies) were affected and influenced by each other (Figure 4.3).

Figure 4.3: Affectedness & influence in relation with Actor Constellation (different stakeholders)



At the same time, other countries can learn from the smooth processes of consensus- and decision-making as well as horizontal and vertical cooperation without the need of a political/governance system overhaul.

Even if in this particular case a political right-left spectrum division and diverging opinions of actors were observable, in the end the outcome of the intervention was commonly accepted.

4.2.6 Institutional leadership

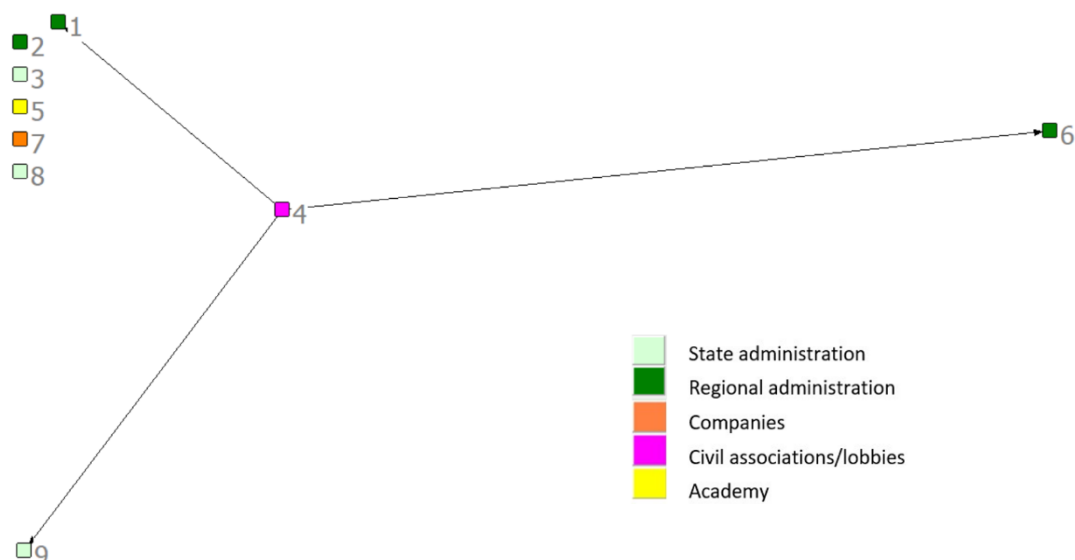
While the intervention was launched with the "Space for Humans and Nature" initiative (landscape initiative), the institutional leadership is clearly prescribed in the direct democratic processes of the Swiss decision-making model. Those in favour of the initiative were particularly active in elaborating a sound proposal. However, it was in the hands of the national government to elaborate a proposal for referendum that would meet the common ground between the different interest groups. In this way, the national government elaborated a compromise proposal (the revision, RPG 1) that was voted on. As the federal level took the leadership in elaborating the proposal to the law, stakeholder from Aargau claim that cantons were involved relatively late into the elaboration process.

4.2.7 Political will

The initiative was a clearly political process and a clear right-left spectrum was observable. Favouring green and environmentally friendly measures is frequently associated with left-wing parties. On the opposition side, the right-wing parties have represented conservative views and protected their usual electorate. This position was against introducing or strengthening environmental and resource-friendly measures as they would potentially harm economic interests of certain groups and sectors. It is largely aligned with right-wing political agenda. The entire process clearly involved lobbying activities and was politicised. Only four stakeholders are included in the negotiation network, others (# 2, 3, 5, 7 and 8) are not involved in this ESPON / SUPER / Final report

process (as can be seen in the Figure below). However, interviewees did not consider this unusual. Most interviewees also did not consider it disadvantageous or advantageous, although one considered it as a weakness.

Figure 4.4: Network of Negotiation between administration (state and regional) and civil associations/lobbies



4.2.8 Implementation conclusions

It is beyond doubt that the strong participative character and institutional cooperation as well as clearly established procedures leading to the intervention in direct democratic processes are due to Switzerland's political system. However, for various reasons, a change of political system cannot be a recommendation in itself.

Measures that ensure participation, debate and neutral and balanced information dissemination that would allow unbiased formulation of opinions are particularly valuable in this context and can be promoted regardless of a political system. Reaching the consensus in implementing the intervention was largely due to debates and discussions based on balanced weighing of opinions and presentation of pros and cons of the initiative. Through such information activities, the actors and stakeholders became aware of the gravity of the problem. This was further confirmed by the large-scale acceptance of the revision of the law. In other words, sustainable land use is a very important issue even though there are certain actors that would tend to oppose measures to protect land. However, with participation, balanced discussions and arguments, actors are capable to see past their interest and understand the necessity for action. This leads to the conclusion that awareness raising and information activities are very important in this context.

With regards to technical implementation, the importance of sufficient amount of evidence cannot be overstated. Only with help of evidence, even if very technical, clear messages and information about pros and cons can be made available to the public for purposes of more informed individual decision-making. Similarly, it is essential that authorities at different levels

have the necessary skills and capacities to process information and put forward balanced solutions. With regards to the implementation of the law revision by regional authorities in Aargau, learning is a necessary process that needs to take place and opportunities to learn how to implement the changes should be increased. In order to ensure swift adjustments of the authorities to implementing new laws, collaboration and practice exchange between regional and national authorities (vertical cooperation) as well as between different regional authorities (horizontal cooperation) are necessary.

4.3 Sustainability assessment

4.3.1 Planning and development culture

The intervention certainly had a strong positive impact in terms of sustainable land use in Aargau and in Switzerland. It provided tools to help enforce sustainable land use without which regional authorities would not have been able to implement necessary changes. For example, if the demand on housing in rural areas would increase, there would be no universally effective way to stop the spread of housing projects in the natural landscapes. The most important difference concerned a real restriction on introducing new building zones, unless they have a strong justification. The revision required cantons to revise their existing structural plans and they have done so successfully. New tools such as value-added tax in such zones/constructions were introduced. Data so far shows that the land take was curbed and the principles of densification of settlement in the centres, rather than “sprawling” outside, as well as protecting green areas were taken up. These changes are also observable by the representatives of Aargau. The interviewees also noted that more attention was committed to transport planning in alignment with an inward development in villages.

At the same time, the debate that led to the intervention and its implementation had a strong awareness-raising effect. In result, sustainable land use became a real practice and sustainability considerations a necessary part of any decision-making process among regional authorities. The increased awareness within the society has led to more debates and discussions of spatial planning topics.

This clearly confirms that the intervention introduced a real change with regards to sustainable land planning regulation and practices as well as overall awareness of authorities and citizens with regards to land use. As new requirements were introduced at the federal level, compliance at the regional level may require stronger coordination with national level on this topic. The responsibilities in this regard were clarified relative to the original version of the law. Regional planning authorities in Aargau evaluate the changes as very needed in order to enable more effective curbing of urban sprawl and resource-sensitive spatial planning. However, it remains unclear whether there was any fundamental change with regards to new forms of institutional cooperation on sustainable land use.

Without the intervention, stopping urban sprawl and protecting land would clearly be not as successful or effective. This is because the guidance on doing this would be lacking and the role distribution and responsibilities would have been less clear.

4.3.2 Economy

Those opposing the intervention argued that curbing land take could have a negative effect on certain economic sectors and actors. However, neither interviewee mentioned observation of any negative effects so far. There are likely structural effects, however, it may be too early to understand them precisely. Interviewees answered that these effects would be either neutral or even positive generally. Possibly, the arguments about negative impacts in certain sectors might have been linked to the fact that certain actors, such as those active in real estate or those who depend in their economic growth on new constructions (e.g. large retailers), would have additional obstacles given that construction cannot take place freely anymore. However, this is not necessarily resulting in negative effects for the economy, or even for these actors in the first place. In fact, representatives in Aargau claimed that there have been no negative effects on the economy. A more sustainable land use can produce sustainable economic growth as a result of structural changes that are put in place. Nevertheless, this is a hypothetical answer and analyses in the upcoming years are needed to evaluate this more precisely.

4.3.3 Ecology

The objective of this revision of the law is directly linked to environmental sustainability and it is beyond doubt that it has a strong positive, and structural, impact on the environment and ecology. It has allowed to protect green spaces and slow down urban sprawl in Aargau (and in the entire country). Such measures and principles are incorporated both into the actual spatial planning processes, as well as have increased environmental awareness. Moreover, this is a long-term structural process. In their structural plans, cantons have to foresee the next 20-25 years. These plans must also be adapted on an ongoing basis (depending on actual population development). Cantons must react and can zone or de-zone areas accordingly to the development.

Moreover, since spatial planning has an impact on **climate change** and climate change adaptation, also the initiative can be expected to have an effect. Many interviewees were of the opinion that the effect will be positive. However, some interviewees claimed that there are other more important sectors that play a role with regards to climate change, such as energy.

In general, it was noted that the more green space is left and fewer areas are sealed, the effects of climate change can be countered more effectively. This was also recognised in the RPG. Spatial planning in Switzerland is generally regarded as an important factor in the area of climate change. The preservation of landscapes, the quality of settlement in terms of internal development, the conservation of cultivated land, etc. have a positive effect in terms of climate protection and climate adaptation. More green areas in the settlements leads to cooling and

humidification of the air, rainwater retention is also improved and more attention is paid to the ventilation of the settlement body. Moreover, also a better coordination of settlement and transport is an important aspect.

Whether the positive environmental impacts will remain, will have to be evaluated in the future. So far, curbing of urban sprawl and protection of green spaces is observable.

4.3.4 Equity

Some interviewees claimed that social aspects such as inclusion or equity were not a priority in the intervention. On the one hand, it was clearly considered that the intervention would bring about an increase in life quality due to better spatial planning that would protect green spaces and landscapes.

On the other hand, there are concerns that the revised law will contribute to higher real estate prices because construction is steered inwards and land becomes more valuable as opposed to land outside of urban areas. As a result, particularly persons from less wealthy socio-economic groups may not be able to afford increasing prices. Even though this is a supposition that requires evidence in order to design potential mitigation measures, some interviewees marked the impact in this respect as negative.

4.3.5 Balance

In general, the revision is perceived very well. The initiative and the changes to the law have increased awareness of the population and of the planners/authorities with regards to protecting landscapes and quality settlements. This widespread increase in awareness is partly attributed to the national referendum on the matter.

The law has given cantons a framework to better counteract urban sprawl and support densification inwards. It gave new tools such as value added tax (VAT) to building areas and a building obligation that sets deadlines. Without the national law, cantons would not be able to introduce such effective changes.

The new tool of the value added-tax:


The collection of the value-added tax is one of the new legal obligations of the municipalities in Switzerland. At the same time, it is an opportunity for high-quality municipal development. If the value of the land increases as a result of the planning measures, landowners must pay the municipality 20 to 30% of this added value. 10 % of the added value goes to the canton, while 10 to 20 % remains with the municipality. However, the tax is only due when the added value is actually used - whether through the sale of the land or through construction measures. This is done in order to compensate landowners who's land was de-zoned due to this new regulation.

The charging of the value-added tax takes place in three phases:

In the first phase, a check is made to see which properties are affected by the value-added tax; In the second phase, this measure is made legally binding and entered in the land register; In the third phase, the added value is collected as soon as the land is sold or built on. (Canton Aargau (2020e))

The Canton of Aargau has developed a special method for the distribution of building land. The so-called "settlement area expansion" ("Siedlungsgebietserweiterung"). This method includes a map (the so called Structural Plan – General Map) that shows the possibilities for expansion and at the same time it includes a so-called "pot system" ("Topfsystem") from which you can draw. In this pot there is a certain number of hectares of land for different focal points such as work zones, residential priorities, or public use. The exact location of these areas is not always known but they must be central. So if there is a future need for, for example, areas for housing, it can be drawn from the pot.

The two parts of the “settlement area expansion”:

<p>The Structural Plan – General Map is available online</p>  <p>Source: Canton of Aargau</p>	<p>Pot-System: The structural plan defines 21,950 hectares as settlement areas. Of these, 125 hectares are not shown in the map of the structural plan. These areas form the so-called "cantonal pots", a special characteristic of the Canton of Aargau. They are available for the following zoning, but will be first spatially located when they are needed:</p> <ul style="list-style-type: none"> • 70 hectares for work zones • 44 hectares for residential priorities • 11 hectares for public use <p>This “pot system” is a control instrument that allows the Canton of Aargau to react more flexibly concerning the development of jobs, housing priorities and the need for public uses. (Canton Aargau, 2019a)</p>
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Due to the introduction of changes ongoing procedures in spatial planning had to be put on hold or revised. Whenever new laws were introduced, authorities have learnt how to implement them. Also with a RPG revision this was a necessary process.

Interviewees generally deemed the intervention to have positive outcomes for the society as well as for the environment as it provided higher quality settlements with smarter and more compact settlements and preservation of green spaces. The positive impact on the environment is said to be significant and of long-term nature. However, while compact settlements preserve land outside of these settlements, they pose a challenge for retention of green spaces within settlements. This problem did not seem to be addressed by interviewees which suggests that awareness about it is rather low. With regards to the impact on the society, opposition voices of landowners and right-wing actors became less pronounced with time suggesting that the RPG revision was widely acceptable. However, some negative effects for real “losers” of the initiative are present and interviewees suggest that they are not mitigated enough. This concerns insufficient compensations for landowners whose property lost value due to being rezoned or increasing rental prices that many residents cannot afford. Such issues, although not insignificant, seem to be understood as necessary trade-offs of the revision.

In general, the entire process is rather long and slow. The revision started in 2009; in 2014 it was approved by voters, then there was another 5 years timeframe to implement the revised legislation. In total the implementation process takes 15-20 years.

Stakeholder impact

Interviewees from Aargau stated that it was population and nature who have gained most from the initiative. Also farmers have higher certainty that agricultural area will remain agricultural production area. The biggest losers are landowners with land where properties cannot be constructed. In general, real estate business loses concern lands which were rezoned as non-construction land. In effect, such land lost value. Compensations in such situations are foreseen (from the introduced VAT on construction sites), although interviewees suggested that such payments are not equivalent to the real economic loss for these land owners.

Balance

Stakeholders are generally satisfied, however there are certain improvements that they would have suggested:

- To be more effective, there could be revisions of other regulations concerning the rights and obligations of landowners. Landowners still have many rights to protect their property and construct new buildings.
- There should have been even stronger focus made on quality of spatial planning in the revision, higher density, and settlement development inwards. However, without sufficient attention to how the process of condensation should take place, this distracts safeguarding the quality of settlements.
- More time for the implementation of cantonal structure plans.

4.3.6 Multi-stakeholder assessment conclusions

Overall, the intervention is perceived as a success because it has addressed a pressing issue of land take and provided a framework to curb it. It had a clear environmental dimension and its possible negative economic impacts should have been withstood by the affected actors. Generally, the intervention did have a positive impact on the population as it improves settlement quality, preserves the green spaces and contributes to higher life quality. However, it has also contributed to increasing real estate prices which are not affordable to many residents, potentially leading to social exclusion. Cantons and municipalities should ensure that this issue is addressed.

In general, however, the intervention has fulfilled its purpose as it has been developed and implemented in a participative manner, raising awareness of planners and population and thereby contributing to a real change in planning culture. This can be expected to be a long term effect.

44 Conclusions

The revision of the Spatial Planning Law is slowing down land degradation and combating land speculation: excessively large building zones are being reduced in size, and existing reserves are being better exploited.¹ The changes resolved with the revision guarantee a more sustainable development of Switzerland: Where it is foreseeable that the population will grow and new companies will settle, new building zones can be created. Vice-versa, in cantons, where already zoned building land exceeds the future demand, have to carry out de-zoning. Such changes in spatial planning are an element of adjusting cantonal structure plans, following the RPG revision.

In answer to the question "whether there are too many buildable areas in the case study area", it must first be clarified what "too many" means. Even before its revision, the law was clear: the "reserves" should be defined by the approximate need in the 15 years to come. Only since the stricter law went into force in 2014, this legal order was more clearly defined. Development perspectives are now linked to the official demographic scenarios which allow a calculation of needed reserves per canton. In the Canton of Aargau, the general situation is (compared to the Swiss average) rather "positive", the overall reserve is in line with development expectations.

In line with other interviewees, regional authorities in Aargau agree that the revision was a necessary step in order to ensure effective enforcement of sustainable and resource sensitive spatial planning. For cantons such as Aargau, this intervention has specified the law and provided new tools to effectively curb land-take and urban sprawl, protect green spaces and ensure quality settlement. It is beyond doubt that this intervention had a positive effect on sustainable spatial planning in Aargau and in the entire country.

The revision of RPG has certainly clarified the original law with regards to specific measures and tools to counteract urban sprawl and enforce sustainable land use at the regional level. In this specific case, it has contributed to a better regional-federal coordination with regards to spatial planning, as it has clarified procedures and requirements.

The changes initiated with the intervention are of a long-term character. It should be emphasised that they concern not only changes in the regulation, but also a change in awareness among the spatial planning community as well as citizens. Since the people's initiative "Space for Humans and Nature" (landscape initiative) and federal referendum on the RPG revision, sustainable land use and land-take have become more popular and both regional planners and citizens pay more attention to it.

The intervention had a clear environmental character as its goal was sustainable land use and curbing land take. According to Aargau representatives, this is tightly linked to higher life quality for residents due to protection of green spaces, contribution to fighting climate change and development of high-quality settlements. However, some interviewees noted that in certain

¹ This depends on future needs, which is different for each canton. Regions (cantons) that have reserves above future needs, have to de-zone building land.

places (e.g. Zurich), rental prices have increased as a result of stricter regulations regarding new constructions and focus on inward rather than outward densification of settlements. As for economic impacts, the opinions were mixed. There were no strong negative nor strong positive voices in this aspect.

4.5 Implications for sustainable urbanization and land use

This case study sought to illuminate the black box of development practices within a particular territory in Europe, focusing on a particular intervention which changed, or attempted to change, these practice to more sustainable ends. The primary source material was in-depth interviews with stakeholders directly involved in decision-making on spatial development, on crafting or applying the intervention, or both. Through their candid explanations, it was possible to provide a nuanced, and often critical, account of the origins, mechanisms and impacts of the intervention. As can be read above, the results show stakeholders in agreement on some issues and disagreeing on others.

The purpose of this final section is to give voice to the case study researchers by asking them to specifically reflect on the key questions posed to the project at its inception. The ideas and opinions expressed in this final section – printed in italics – are, therefore, solely those of the authors.

To what extent can the observed land-use changes in the case be considered sustainable?

The changes are of sustainable character, particularly for the environment as they aim to limit urban sprawl and protect green spaces. This has further positive impacts on other environmental topics such as the biodiversity as well as climate change. It also has certain positive effects for society (increasing the quality settlements and life quality).

To what extent did short-term thinking weigh up against concerns of long-term economic, ecological and social vitality?

The revision is clearly of a long-term perspective as it aims to adjust spatial planning to curb urban sprawl and protect green spaces. The voices of economic losses for certain actors (e.g. land owners) were present however were not convincing enough to stop the vision of a more sustainable land use on the long term.

To what extent were trade-offs avoided between economic, ecological and social values (e.g. urban green spaces in densifying areas)?

There are certain negative side effects of the intervention and there is no clear evidence of how they were tackled. For example, with the aim of densifying urban areas to counteract urban sprawl, real estate prices increase in urban areas and urban green spaces are endangered at the cost of protecting green spaces outside of urban areas.

The economic losses of certain affected actors (such as land owners) are considered on the other hand. The national law says that if de-zoning leads to “expropriation” a compensation is due. After the law change in 2014, it became mandatory to demand money from owners of newly designated buildable land (value added tax) – 20 percent minimum of the value added. This money has only to be paid at the moment when the owner sells or builds on the parcel of land. The law stipulated that this money should be used to compensate owners of de-zoned land property.

How much impact did various interventions have in producing sustainable urbanisation and land-use outcomes?

The cantonal structural plan has an own chapter dealing with sustainable development and sustainable growth in the Canton of Aargau (Chapter G 3). All new interventions have to undergo a step-wise assessment in terms of their impacts on the three sustainability dimensions. If deficiencies are identified in this context, they must be addressed. As the Canton of Aargau is currently implementing the national law it is too early to measure potential impacts it might have on urbanisation and land-use. However, the revision has a more stringent nature and it considers future land demand. The Swiss Confederation, the cantons and municipalities support inwards development. Measures are taken in order to reuse brownfields and to promote densification actions within settlement areas.

To what extent were place-based approaches and territorial cooperation responsible?

While the federal RPG revision provided general framework and tools for all cantons, specific adjustments and tailoring of this framework in cantons are safeguarded. Cantons have freedom in implementing this law in tailor made manner. The result of this tailor-made application of federal law is adjusted cantonal structural plan. Regarding to the RPG (Article 11(1)) also cooperation between neighbouring cantons are foreseen.

To what extent were financial, fiscal and economic mechanisms responsible?

One important element of the RPG revision was the introduction of value-added tax as already described above. This value-added tax is one of the new legal obligations of the municipalities. If the value of their land increases as a result of the measure (zoning), landowners must pay the municipality 20 to 30% of this added value. 10% falls to the cantons and 20% to the municipalities.

How sustainable are the measures themselves over time?

The intervention has a long term character, however particular changes will be observable after certain time. In order to ensure that use of land meets the expected growth (population and employees) in a sustainable manner, certain measures are needed. As defined by the revised Spatial Planning Law, building zones must need the demand of the next fifteen years. Several strategic documents (such as the cantonal structural plan or the

spatial development model (“Räumliches Entwicklungsleitbild”) try to deal with this challenge and formulate sustainable measures.

Do they produce economic benefits?

Interviewees have mentioned general economic benefits of more sustainable urban planning, however no details were discussed. Clear economic benefits, however, derive from the fact that the Canton of Aargau belongs to the “Economic Area of Northern Switzerland”. The cantons benefits, as well as commitments are formulated in the cantonal structural plan.

To what extent do they enjoy popular support or consensus among stakeholders?

The intervention was clearly welcomed by stakeholders and is positively assessed. However, some interviewees and stakeholder would favour even stricter changes. Most demanding of (stricter) action were civil society organisations (NGOs such as landscape protection associations), citizens themselves but also certain politicians, particularly from the left-wing parties. Supportive were also many cantons.

How can urban sprawl be contained and which instruments can be used to do that?

The intervention aims to do exactly this. With the revision of the Spatial Planning Law, the Federal Council and Parliament want to put a stop to uncontrolled land consumption and urban sprawl in Switzerland.

How can the impacts of land take/soil sealing be limited?

The sustainable use of land and the associated internal development is a central element of the revision of the Spatial Planning Law. It aims to stop land degradation, ensures more compact settlement development and keeps Switzerland attractive as a place to live and work. However, as the implementation on municipality level just started, the final impacts can first be assessed within a few years.

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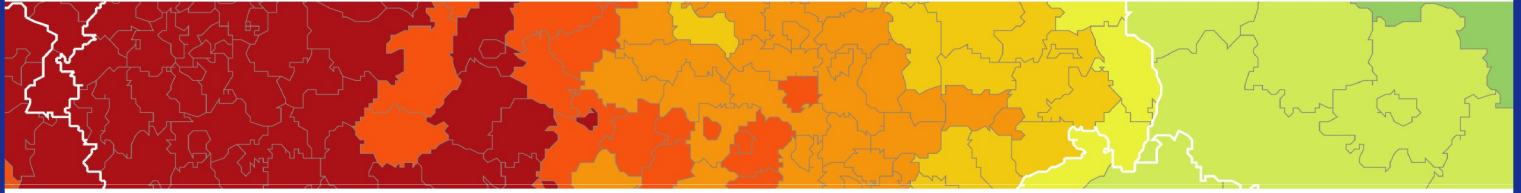
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