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Implementation of redistributive land policy instruments in urban spaces: the case of Malley

Working paper de l'IDHEAP 7/2016
Unité Politiques publiques et durabilité

Soil as a Resource
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Project SUMSOR
Sustainable management of soil as a resource

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Foreword

The SUstainable Management of SOil as a Resource (SUMSOR) project, funded by the SNSF in the frame of the national research programme "Sustainable management of soil as a resource" (NRP68) through the grant number 406840_143057, pursues five objectives:

1. Understand processes of land driven economic and ecological added and reduced value creation and their interactions;
2. Evaluate the capacity of the current institutional regime of soil to redistribute added and reduced values in a peri-urban context and seize its problems and limits.
3. Create a typology of possible land management, economic and fiscal instruments allowing the redistribution of economic and ecological values;
4. Test and compare redistributive capacities of several instruments;
5. Make policy recommendations on the integration of new instruments and on the adaptation of the current policy design and property rights regime.

The first research objective is implemented through the realisation of a set of working papers that focus on two perimeters: the peri-urban region of Oberaargau (Viallon, 2016a) and the urban region of Lausanne. The perimeter of Lausanne consists in two case studies: the present one which deals with the urban reconversion in Malley, a second analysis the land improvement syndicate in Cheseaux (Viallon, 2016b). The case studies analyse the local implementation of federal land use planning policy objectives, in particular the influence of contextual factors (demography, transportation, location, etc.) and of public policies on the strategies pursued by actors (authorities, landowners and third parties) and on the arrangements they negotiate with each other.

The document's content has been discussed with the Ph.D. supervisors of the author, Prof. Stéphane Nahrath (University of Lausanne) and Prof. Géraldine Pflieger (University of Geneva). The proof reading has been done by Daniel Baumgartel, teaching assistant at the English Department of the University of Lausanne. I would like to thank my supervisors and proof reader for their comments on previous versions of this document. I would also like to thank the persons who granted me time for an interview.

Urban reconversion in Malley

1 Introduction

Objectives of the case study

The urban reconversion process in Malley is of central interest for the study of value redistribution, primarily because it provides an example of the creation and appropriation of rent by public authorities; in fact, this case study involves almost exclusively public actors in the planning stage. Secondly because it deals with soil pollution, transport and energy issues (the latter having become highly relevant in recent land use planning policy[1]) that all have important effects on land value.

Structure of the working paper

This working paper is structured as follows:

- section 2 presents the major land use planning and land use changes that have taken place over the last three decades in order to provide a temporal and spatial overview on the case study;
- section 3 presents the contextual factors specific to the studied perimeter that forge the project's environment;
- section 4 deals with the general constraints of federal and cantonal legislation on the local regulatory arrangement negotiated between the actors;
- section 5 shows how legal instruments have been used by the involved actors, looking at their influence on local regulatory arrangements;
- section 6 analyses the previously presented factors' impact on economic and ecological value redistribution.

Two local development plans at stake

The present analysis focusses on two of the four local development plans displayed in figure 1: the Malley-station (10,600m^2) located on the southern side of the train station along the railway tracks, and the wider Malley-gasometer (approx. 60,000m^2)[2], also in the southern part of the master plan's perimeter. Local development plans are areas where building regulations diverge from the commune's general development plan. The resulting constraints become binding for landowners.

The two local development plans on the northern side of the train tracks (the construction of a new ice rink and sports complex, and the development of further tertiary and housing activities) are of less interest to the present study, because they imply more limited land use changes and redistributive stakes – the ice rink of the first plan is transformed into a wider sports complex – and in the second plan the negotiation process is still in an early stage.

2 Land use planning and land use changes

Planning context

Table 1 shows the main steps of Malley's renewal process. To understand the case's context, one must know that during the 1980's and 1990's, a rather uncoordinated wave of development took place in the eight communes constituting the western part of the agglomeration of Lausanne (SDOL, 2003). With the federal Ordinance on air pollution control[3] coming into force in 1995, the communes adopted a set of

[1] On cantonal level, since the energy law's revision in 2014, the planning authorities are obliged to consider and coordinate energy issues during planning processes (art. 3 of the *Loi cantonale du 16 mai 1996 sur l'énergie*, RS-VD 730.01).

[2] As the development plan is not yet published, its surface has been approximated with the help of the GIS software used to make figure 1.

[3] RS 814.318.142.1

urbanisation measures that aimed to reduce the amount of pollutants in the air, which, in response to the pressure exercised by cantonal authorities, was followed by a general moratorium on construction in 2000. The aim of the moratorium was to gain some time to coordinate the area's future urbanisation prior to any further development. An intercommunal planning unit named *schéma directeur de l'Ouest lausannois (SDOL)* was commissioned to elaborate an intercommunal master plan (also named SDOL) for the eight western communes and the western parts of Lausanne's territory.

Land use context

During the transitional period of the 1990s, the slaughterhouse, public infrastructure owned by Lausanne and rented to butchers and larger meat processors, faced a decline of its activities. The cost reduction policy of the Swiss sector's dominant actors – Bell, Migros and Suter – led to an overall concentration process of the slaughter industry and to a dismissal of secondary activities (*i.e.* the processing of intestines, fat and skins) [4]. What was in the 1940s the most modern slaughterhouse of Switzerland had by the end of the 19990s to be renovated in order to comply with European standards (Commune of Lausanne, 1998), a process that the commune was ready to finance[5]. Despite cost reduction efforts, the slaughterhouse's major clients transferred their activities to their own respective houses and left the public slaughterhouse without work[6]. Despite the reduction in clients, a new animal waste processing center was necessary for the commune to fulfil its public duties, and was built on the site of Malley's future train station.

A 15 year planning process

Shortly after the closure of the slaughterhouse, the first intercommunal master plan was signed by the authorities and published. This established the first milestone of a planning process that is currently unresolved. In fact, the chronology (table 1) shows that fifteen years have passed between the first study conducted on the area and the approval of the first local development plan. In order to deepen our understanding of the planning process, it is necessary to interrogate which factors have contributed to the process' time span. The interviews conducted and the documents analysed suggest the following explanations:

1. One explanation is linked to the separation of landownership and planning authority: Lausanne's property is located outside of its political ground, on the territory of the communes of Renens and Prilly (see figure 1 below). Therefore, the area does not yield any political reward to the landowner (*i.e.* votes). This explains also that Malley is the historical location of necessary but unwanted activities. The area is considered as Lausanne's "backyard"[7] and as a "playground for the industrial works of Lausanne"[8].

2. The use conflicts that arise in the planning process provide a complementary explanation: Lausanne's industrial works enjoyed for more than a century exclusive use rights[9]. As one can imagine, the societal and political will to develop housing and tertiary activities in Malley will at some point clash with the industrial interests already present on site:
   - the industrial works of Lausanne, one of the seven departments of the city's administration, represented by two of their units:
     - the Office for electricity[10];
     - the Office for gas and district heating;
   - the Office for sanitation through the waste sorting centre;
   - the Office for purchases and acquisitions through the logistics centre.

   Referring to the chronology (table 1), we see that some part of these interests have been present on site for a long time and have managed to implement the construction of the thermal plant (located between the logistics centre and the theatre) and the waste sorting centre despite the moratoriums in force at

[4] J.-L. Grivet, former employee of the slaughterhouse, member of the executive of the Commune of Etagnières, interviewed in Etagnières 21 May 2015.

[5] However, the city's slaughterhouse Office collects a tax on each animal killed and checked for sanity and weight which, until this day, has entirely financed the slaughterhouse's maintenance and renovations

[6] J.-L. Grivet, *op. cit.*

[7] P. de Almeida, architect of the commune of Renens, interviewed in Renens 15 May 2015.

[8] A. Baillot, head of the planning office of the commune of Lausanne, interviewed in Lausanne 28 May 2015.

[9] The first gasworks were established in 1911 (Fantoli, 2006, 18).

[10] An electrical transformer is located alongside the communal logistics centre.

the time. The thermal plant will be expanded in the near future[11]. Several interviewees have pointed to a reluctance by established users to share their space and allow the industrial zone to become a residential and commercial zone[12].

3. An additional factor : it was only with the construction of the train station (whose 50% funding was approved by the Confederation in 2006 as "urgent project") that the effective planning works began. In fact, the elaboration of the first master plan started in 2007 and was followed by the first financial analysis and by an agreement between landowners on the future property structure of the area. A factor that strongly encouraged the site's development was the development of regional infrastructure by the canton (State of Vaud, 2005, 12). This point was also underlined by several interviewees[13].

4. Conflicts that the division of land service costs and remediation costs among the actors have created offer further explanations. These issues are discussed in sections 4 and 5.

The industrial vocation of Malley has not vanished, but has adapted to the agglomeration's changing needs, which in the case of the slaughterhouse and the gas works, are largely conditioned by the industry's rationalisation processes, with the substitution of polluting, dangerous and morbid industries for essentially urban activities: a bus depot, a thermal plant, a waste sorting and a logistics centre. Having examined the main land uses and land use planning changes, the next subsection will deal with contextual factors such as property structure, soil characteristics, centrality, and their impact on the policy output.

[11] A. Bartolomei, Head of the western district heating network, interviewed in Prilly 21 August 2015.

[12] C. Jemelin, head of supply development and member of the directorate of the *Transports lausannois*, interviewed 29 July 2015 in Renens; E. Krebs, head of office for housing and real estate management, interviewed 17 July 2015 in Lausanne; P. de Almeida, *op. cit.*.

[13] N. Wisnia, project manager of Malley at the SDOL, interviewed in Renens 20 May 2015; T. Maystre, communal executive of the commune of Renens, interviewed in Renens 28 July 2015.

Year	Land use planning changes	Land use changes
1977		Closure of Lausanne's gasworks (Fantoli, 2006, 18).
1979		Inauguration of the theatre *Kléber-Méleau*.
1994		Construction of the communal logistics centre.
1995	Implementation of the Ordinance of 16 December 1985 on Air Pollution Control via an agglomeration wide action plan	Construction of the *Transports lausannois (TL) bus depot of the* .
2000	Intercommunal moratorium on constructions, launch of analyses for a master plan of the west of Lausanne, planning of a new thermal plant for distance heating.	
2001		Inauguration of the commercial centre *Malley lumières*; construction of a thermal plant.
2002		Closure of the slaughterhouse; commissioning of a new animal waste processing center.
2003	Approval of the intercommunal master plan SDOL, city council of Lausanne adopts moratorium on constructions, except for the waste sorting centre, Europan 7 architecture competition on Malley.	
2004	Formal agreement between Lausanne, Renens and Prilly on the site's future development, begining of urban analyses for sector 2 of the SDOL.	
2005	Federal inquiry on urgent agglomeration projects (*i.a.* station of Malley), approval of guidelines for sector 2.	
2006	Approval of test analysis for Malley, approval of urgent agglomeration projects by the federal Parliament.	Construction of the intercommunal waste sorting centre.
2007	Elaboration of first local master plan (PDL).	
2008	First financial analysis, convention on land sell for station by Lausanne to CFF, prospective analyses on distance heating, Train accident risks analysis (OPAM)	Beginning of the construction of the train station, destruction of the animal waste processing center, end of exploitation of gas storage station.
2009	–	Excavation of polluted soils (carcasses) close to future train station.
2010	First report on soil pollution, second financial analysis.	
2011	Second report on soil pollution, creation of an intercommunal corporation for distance heating, convention on land exchange between Lausanne and CFF.	
2012	Results of architectural competition on public spaces and approval of modified master plan (SDIM).	Partial destruction of former slaughterhouse and soil decontamination, opening of the train station.
2014	Preliminary exam of the local development plan *Malley-gare*.	
2015		Destruction of the former slaughterhouse.
2016	Approval of the local development plan *Malley-gare* by the territorial communes	
To come	Approval of the local development plans gasometer and viaduct	Extension of the thermal plant.

Table 1: Main land use planning and land use changes in Malley since 1995.

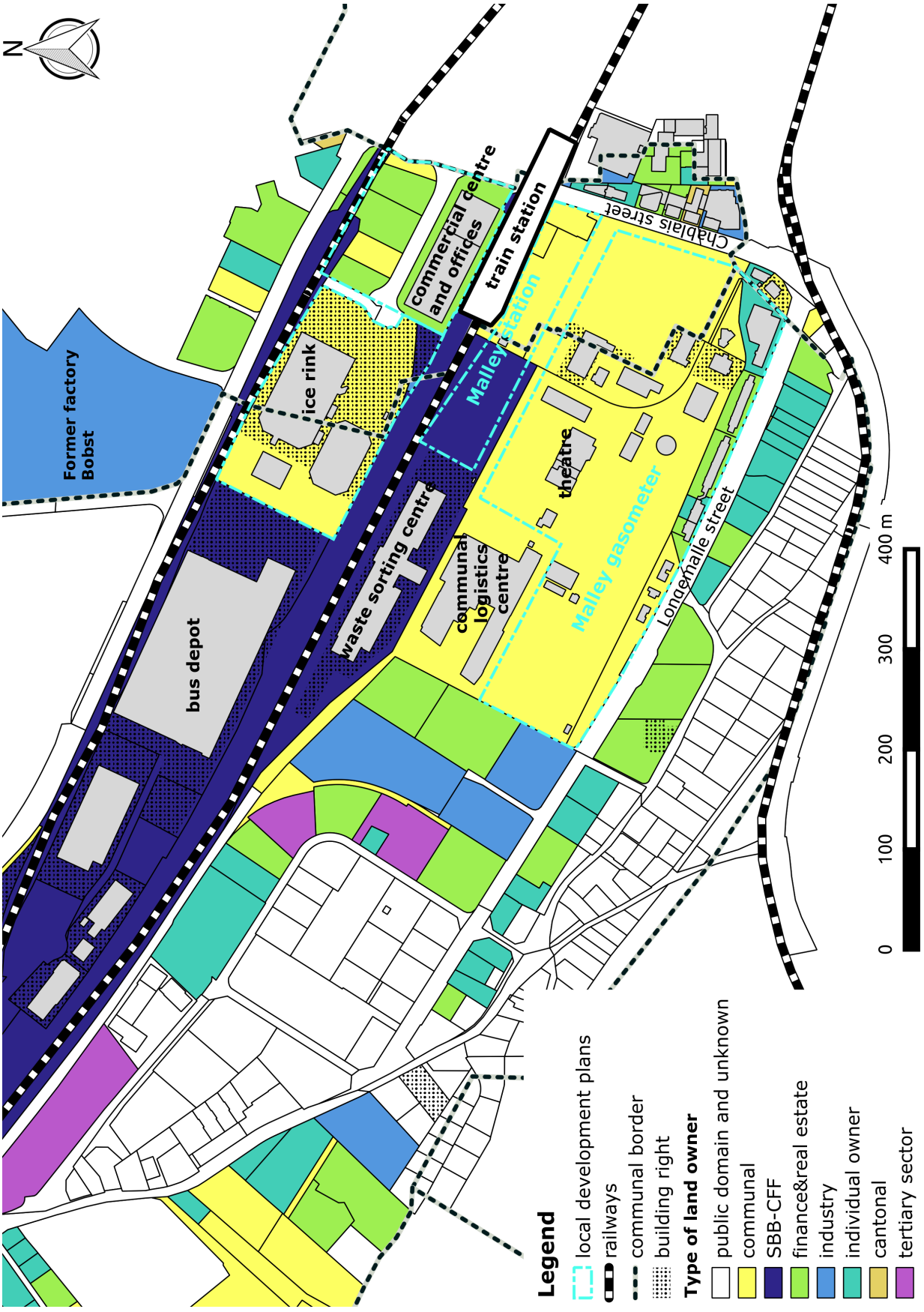

Figure 1: Property structure, main land uses and local development plans in Malley

3 Contextual factors

3.1 Property structure

Redevelopment of public land

Figure 1 shows the property structure of the area, the type of owner (and the type of land use), and the main infrastructure and buildings. The overall displayed plots correspond roughly to the perimeter of the master plans elaborated in 2007 and 2012. As one notices, the perimeter subject to urban renewal is considerably reduced relative to the scope of the master plans: whereas the latter's initial perimeter included a net surface of 390,000m^2, the four local development plans being elaborated only consider 96,000m^2 (Bauart and Raderschall, 2012, 36ff). A second salient element is that the public (commune of Lausanne) and semi-public (Swiss railway company SBB) ownership represents an important part of the neighbourhood's area, and precisely the one that is designated to be redeveloped in the following years.

Limited number of actors involved

In comparison with the more scattered ownership as is the case in the west of Malley, this specificity implies a reduction of the number of actors involved, which simplifies the negotiation around the planning and development processes as well as the land exchange procedure (described in section 3.1 hereafter). Both the SBB and the commune of Lausanne are familiar with major construction projects, possess internal expertise and share joint interests in cost reduction.

A powerful and unified ownership

Lausanne's executive has "minimal profit rates below which it does not proceed"[14]. For the SBB, such type of transactions fit entirely in the company's strategy and mandate, as the federal government obliges the SBB to generate profit from its properties[15]. The fact that the SBB's decisions, in particular those of SBB Real estate (the company's department in charge of the management of its land and real estate properties), is not bound to a council's approval eases the operation for the owner (Nahrath et al., 2009, 118).

Lausanne and the SBB position themselves as developers in the sense that they budget the entire cost linked with the plots' development, as well as propose leaseholds on their land which allow them to maximize their gains while remaining attractive for private developers (see section 5.4 for more details). Lausanne fulfils the role of the planner by proposing a detailed plan of the future neighbourhood including the precise shapes and sizes of the public spaces and buildings, the type and location of services and infrastructure, etc.

This case study shows the tight interweaving of public actors: Lausanne and the SBB combine the functions of landowner, planner and developer. These roles and relationships transform Malley's development into a public-public partnership where public landowners act and negotiate in the manner of private actors, negotiating with planning authorities who are, in fact their public counterparts.

The land deal

A new cantonal cultural centre

Over the last decade, the property structure has been subject to one major change, central to the achievement of the area's redevelopment: a land exchange worth 34 million francs between the commune of Lausanne and the SBB in the perimeter of the local development plan of *Malley-gare*. As it turns out, this exchange is conditioned by a quite external factor (Commune of Lausanne, 2011b): Lausanne's desire to provide a home to the new cantonal cultural complex (composed of the cantonal museum of fine arts, the museum of photography, the museum of applied arts and further cultural activities).

Free land as facilitating factor

The construction of this vast cultural complex is intended to enhance the national and international reputation, increase the cultural offerings, and foster economic development (Commune of Lausanne, 2011b). As the future museums' site selection process put Lausanne in competition with other locations in the canton (Canton of Vaud, 2009), it was necessary for the commune to put forward good reasons to be chosen. The provision of free land was a strong argument[16]. However, Lausanne's first proposed museum location along the lake was rejected by referendum (Conseil d'Etat

[14] E. Krebs, *op. cit.*

[15] Art. 6 al. 4 of the *Convention sur les prestations entre la Confédération suisse et la société anonyme des Chemins de fer fédéraux, pour les années 2013 à 2016.*

[16] Y. Deillon, head of the coordination and land registry office of the commune of Lausanne, interviewed 16 June 2015 in Lausanne.

du Canton de Vaud, 2010, 6), thus requiring the proposal of another outstanding site in its ownership.

A central plot with major development constraints

This is where the SBB stepped in: its locomotive depot located aside Lausanne's rail station was unsuitable for the new train maintenance process which had been relocated outside of the city[17]. This turned a 21,000m^2 of land in a most central location out of use. Still, its redevelopment for housing or commercial purposes is highly difficult:

- the hall is part of the patrimonial inventory and considered of regional importance, which requires the integration of outstanding physical elements of the hall (such as the vaults) into the future construction. If the SBB wants to redevelop new building for financial purposes, it would require the hall's removal from the patrimonial inventory, a long and complex procedure;
- the plot's location (stuck between a row of residential buildings located directly above it and the noisy train tracks immediately before Lausanne's main station) and limited access (only two small roads, also stuck between existing buildings and connecting to the station's already overcrowded roundabout) limit its future use and overall economic value[18]. Therefore, no density comparable to Malley can be reached.

A well timed land exchange

These elements are development constraints and the SBB seizes the opportunity of the future cultural complex is an ideal opportunity to get rid of this problematic plot and obtain a better suited one that allows high financial returns. However, these constraints are not problematic for the commune of Lausanne, because noise, height or access constraints have less relevance to the future museums than for housing. Further, the patrimonial obligations that were initially considered as a financial burden have become a challenge for the museums' architects. Thus, after having estimated the plots' values, the SBB and the commune of Lausanne agree to a land exchange. The transaction is effective once the local development plans that secure the building rights on the respective plots are approved. A cash transfer balances the difference of value (Commune of Lausanne, 2011b).

Resources such as the concentration of ownership (infrastructure) and expertise can provide a decisive advantage in a land use planning negotiation process. Combined with what appears to be a coincidence of the calendar, Lausanne manages to turn a defeat due to a referendum into the successful establishment of a cultural centre through fine-tuned land management. Having seen the main aspects linked to the property structure, the next section turns to the territorial dimension of Malley.

3.2 Territorial structure

A communal border that crosses the perimeter

An additional specificity of the neighbourhood is that both the local development plans of *Malley-gare* and *Malley-gasomètre* span two different communes – Renens and Prilly[19]. This complicates the negotiation process, because two communal executives are involved in the planning process and two communal legislators must vote on these plans. The double territorial affiliation of the plans brings up two matters:

- the first one concerns the localisation of the different buildings on one commune or the other's territory. In order to prevent the division of single buildings among two different communes and thus two different fiscal regimes, the communal borders that cross the two local development plans have to be adapted to the area's new urban configuration (Communes of Prilly and Renens, 2015a).
- the second matter is linked with the type of residential buildings and the localisation of public spaces. Despite contrasting political views[20], both communes

[17] M. Béguelin, former Member of Parliament and member of the Swiss delegation to the European Parliament, interviewed 17 November 2015 in Lausanne.

[18] The financial reports estimate the 25,768m^2 of the locomotive hall plot at 33.36 million francs (1,295CHF/m^2), the 10,060m^2 of the local development plan of *Malley-gare* at 34.4 million francs (3,419CHF/m^2) (Commune of Lausanne, 2011b).

[19] The ice rink development plan is of cantonal rank and therefore subject to cantonal approval only.

[20] Prilly is a proportionately more right wing and wealthier commune than Renens, a left wing bastion with a particularly high proportion of foreigners.

are interested in retrieving fiscal income from the future inhabitants and the creation of jobs. Future subsidized housing will yield less fiscal revenues than freehold apartments. This point is further discussed in section 5.3.

3.3 Soil structure and view

Limited view

Linked with the territorial aspect are the soil structure and pollution present in it. The location (as detailed on figure 1) is of unstable nature, because it consists of glaciolacustrine silts from a former lake located between two moraines (Naegeli, 2006, 12): one located along Longemalle street and the other along the main train line. These two moraines make the studied perimeter comparable to a flattened basin where the view is partly blocked on both sides. In particular, there is no view further south on Lake Geneva. The basin was flattened in the 1940s prior to the construction of the slaughterhouse (Fantoli, 2006, 21).

Major soil pollution

The location to be developed has geothermal potential (Naegeli, 2006, 35), but several areas of the soil are polluted with numerous remainders of hydrocarbons dating back to the former gas cracking plant (CSD SA, 1999)[21]. Two of the main plots are classified as requiring remediation in case of development (State of Vaud, 2015). This classification implies important additional costs in terms of soil decontamination and use restrictions that are one of the main elements of negotiation; they are discussed in section 5.2. But most importantly, the actors exclude from the beginning the development of the area where the former gas plant was located. Already in the master plan published in 2012 (Bauart and Raderschall, 2012, 86f), the park – or as one interviewee called it the "green area" – has been located precisely on the most polluted site, because of the excessive costs a remediation process would imply.

Existing heating infrastructure

An additional element related to the soil are the district heating pipes that the industrial works of Lausanne installed from the 1990s onwards to service all plots owned or used by Lausanne in Malley (Commune of Lausanne, 2011a). They furnish energy to the surrounding buildings displayed on figure 1, but also to housing units owned by Lausanne's pension fund on the southern side of Longemalle street[22]. The pipes also run through Chablais street, the south-north axis in the eastern part of the perimeter and important extension projects exist in the west and the north (Commune of Lausanne, 2011a). This energy network is of crucial importance for the future development of the area for two reasons:

1. Lausanne invested more than 12 million francs[23] in the pipes and 4 millions francs in the heating plant whose capacity will double in the near future (see section 5.1). Such investments are aligned with a long term strategy that influences most major land use planning projects of the commune and, potentially, those of the agglomeration;

2. In 2011, the communes created a common ownership company for the pipes and any future extensions of the network. The process seems to have been initiated by Prilly's original connection request to replace their old communal buildings' gasoline heating system (Commune of Lausanne, 2011a). Only when enough clients requested to be connected did the industrial works agree on the network's development.

Heating as land service

What I observe here is that the district heating system became part of the land service, but a service of particular nature, namely one conceived to generate profits. In fact, the investments made by the three communes became a commercial service sold to customers. Relying on the air pollution plan elaborated with the agglomeration plan in 2005, its extension was pushed forward by Lausanne's industrial works whose financial plan for district heating forecast a yearly consumption increase of 3.5% for the next ten years (Commune of Lausanne, 2000) and additionally promised dividends to the shareholders (Commune of Lausanne, 2011a). Through the creation of the

[21] As no access was granted to the two pollution reports, the available information is limited to earlier drilling results published in the cantonal cadastre of geology (State of Vaud, 2015).

[22] A. Bartolomei, *op. cit.*

[23] The invested amount is based on the value of the district heating society created in 2011 and have therefore been written off

common company, Prilly and Renens could push for the development of the district heating to make their investment profitable[24].

As it was briefly shown, energy infrastructure is heavily developed in Malley and the presence of industrial works makes it an important actor in the area's redevelopment. As the next section shows, existing and future transport facilities are an additional structural factor shaping Malley's future.

3.4 Accessibility

Outstanding accessibility

In regard to motorised private transport, Malley has privileged access to the motorway (1.3 km away from the closest entrance and exit) and thus can be easily accessed by car from the entire Lake Geneva region as well as more remote areas. In matters of public transport, figure 1 shows the presence of vital rail infrastructure in and around the area. In contrast with the northern tracks (mostly used for waste transport) the central tracks are part of the national east-west rail connection. Since the inauguration of the train station of Malley in 2012, they also have served as the backbone of public transport within the agglomeration of Lausanne and along Lake Geneva. A train currently stops every 25 minutes in each direction and is set to stop every 15 minutes in the near future (SBB, 2014, 6). The trains grant access to Lausanne's central station within 4 minutes and to Renens' within 3 minutes. The southern tracks (the locus of Lausanne's first metro line) grant access to Flon, Lausanne's second public transport hub, (within 6 minutes) and to the University of Lausanne campus (within 9 minutes). Three bus lines currently cross the area, but the frequency will be extended along with the area's development: a tram line will pass along the northern limits of the area, and the bus supply will be broadened[25].

Cantonal initiative

The contribution of the train station to the neighbourhood's redevelopment plays a pivotal role, but leads to the question of the initiator of the station's construction. The chronology elaborated in table 1, I note that first urban analyses on a wide perimeter (approximately 5 kilometres length and 500 metres width) along the train tracks between Lausanne and Renens that includes Malley started in 2004 (see also table 1). When the federal enquiry on urgent agglomeration projects was launched in 2005, the canton pushed forward the project of building a train station in Malley in order to obtain federal funding. This required its integration into the cantonal transport strategy and the station's mention in planning documents. The first evidence of the station is found in a preliminary version of the cantonal structure plan (State of Vaud, 2005), published shortly before the application to federal funding. It then integrated into the agglomeration's planning documents – the above mentioned urban analyses on sector 2 analyses published the following year (SDOL, 2005). As several interviewees mentioned[26], it was the canton's development strategy of the regional express network that allowed the construction of the station and its subsequent development. Neither the SBB nor Lausanne initially believed in the area's redevelopment.

Temporal shift of land uses

Despite an initial lack of general support, the waste sorting centre was still to be built (2006), thus creating a temporal shift between transport planning works on cantonal level and surrounding land uses planned on communal level that still correspond to the existing industrial zone. This shift is also made evident by the 2002 construction of the animal waste processing center (subsequently dismantled in 2008 when the train station's construction began).

Property, territorial, soil structures, as well as accessibility have demonstrated several elements that should be kept in mind for the rest of the analysis:

- concentrated public ownership is managed as private property by Lausanne and the SBB, and considered as such by the the planning authorities (Renens and Prilly);
- the site's industrial vocation has not vanished, but is becoming a mixed area where housing, secondary, and tertiary activities coexist;

[24] A. Bartolomei, *op. cit.*
[25] C. Jemelin, *op. cit.*
[26] P. Hassler, Head of the planning office of the commune of Prilly, interviewed in Prilly 19 May 2015; N. Wisnia, *op.cit.*; Y. Deillon, *op. cit.*

- the territorial split among two different authorities led to the anticipation of future revenues as well as constraining the distribution of building rights;
- the importance of the existing energy infrastructure and of the industrial works' investments and forecasts;
- the development constraints created by the pollution of soils;
- the outstanding accessibility to the entire area.

4 Constraints of superior law

This section deals with the impact of legislation on the local regulatory arrangement/policy output. It synthesises the major constraints that apply to the redevelopment project, and shows how they shape the implementation process and illustrates the final arrangement negotiated between the actors.

4.1 Cantonal approval procedure

Strong initial involvement by the canton

Several cantonal offices are involved in the elaboration of the master plan, either as members of the executive committee approving the plan, or as members of the technical committee elaborating it[27]. As there is no formal procedure for the master plans' elaboration and approval, it is difficult to trace specific elements put forward by the cantonal authorities. Nevertheless, a concomitant evaluation of the first master plan's elaboration mentions the proactive role of the canton in regard to environmental and security norms as wells as in regard to the division of land service costs between the involved public authorities, be it as planning authorities or landowner (Lawrence et al., 2009a). As the negotiations on service costs are still ongoing six years after the mentioned report, I note that the financial issue has been trickier than initially expected. And as this is a matter to be solved between landowners and planning authorities, the financial involvement of the canton withdraws in the following procedural stages[28].

Transportation and land service costs as main issues

In the preliminary exam, as well as the approval stage of the local development plan of *Malley-gare*, the administrative arrangement is slightly modified: the consulted offices change[29]. As neighbour of the plots to be developed, the SBB is involved in the consultation. The agglomeration's public transport company is also consulted in regard to the future buildings' connection to the agglomeration's transport system. Both companies' positions are fully backed by the office for mobility (SDT, 2014).

Main aspects underlined during the preliminary exam were linked to:

- the obligation to elaborate the financial plan that divides the service costs among the actors' plan before its final approval by the communes;
- the enlargement of access roads to both the waste sorting centre and the logistics centre;
- the coordination of planning with the public transport network, in particular the location of bus stops and bike parks;
- the definition of public spaces and the inscription of legal guarantees for their open access;

[27] These entities are the office for communes and housing (*service des communes et du logement*), the office for mobility (*service de la mobilité*), the land use planning office (*service du développement territorial*), the office for economy and tourism (*service de la promotion économique et du tourisme*), the office for environment and energy (*direction générale de l'environnement*), the office in charge of roads (*service des routes*) and the service in charge of architecture, patrimony and logistics (*service immeubles, patrimoine et logistique*).

[28] J-P. Dind, project manager for the cantonal land use planning office and the office for economy and tourism, interviewed 13 July 2015 in Lausanne.

[29] Neither the office for economy and tourism, nor the office for communes and housing are involved in the procedure, although they were consulted prior to the master plan's approval. The cantonal office for insurance against fire and natural hazards and the office for consumption and veterinary affairs take part in the approval procedure of the local development plan of *Malley-gare*, but do not formulate any specific comment.

– the time horizon for the construction of a tunnel crossing the railways, whose financing depends on the financial plans of the two local development plans;

– security aspects involved in both access and air vents linked to the Ordinance on protection against major accidents[30];

– the organization of a public information session[31].

The oppositions to the local development plan led to two main conflicts:

1. financial issues between landowner and planning authorities on two points of contention: the lack of a financial plan, the approximate definition of public spaces and the railway crossing;

2. use conflicts between the former industrial uses and the forthcoming residential and commercial uses: preliminary planning by the spatial planning office of the commune of Lausanne did not consider the road requirements of the waste sorting and logistics centre, even though these offices are in the same department.

Additional delay for the submission of a financial plan

By law[32], the approval of a local development plan is conditioned on the elaboration of a financial plan dividing land service costs among the landowners and planning authorities. In the case of *Malley-gare*, the cantonal authority makes an exception, citing financial aspects intrinsically linked to the second development plan of *Malley-gasomètre*, still under negotiation. They explain that the costs division has been one of the main sources of conflict since the elaboration of the first master plan (Lawrence et al., 2009a, 125). As this issue had to be solved between landowners and planning authorities, which are both public authorities, an additional term was granted (expiring prior to the plan's final adoption by the communal councils).

4.2 Air pollution ordinance

As mentioned in section 2, one of the causes leading to the elaboration of the master plans for the western part of Lausanne's agglomeration was the implementation of the Air pollution ordinance[33]. By the end of the 1990s, the threshold set by the ordinance were blatantly exceeded by far and the air quality was so poor that authorities agreed on a moratorium on construction in order to try to solve the problem. Thus, the redevelopment of Malley was partially initiated by the air pollution problem. It is designed as a remedy: its central location, its density and the high connectivity to public transport and the reduced number of parking spaces (compared to Swiss standards: see section 5.1) limit the use of individual motorized vehicles. This implies a modal shift that goes beyond Malley's redevelopment and extends to the creation of the regional train network launched in 2004. The expected effect is a reduction of local CO_2 emissions despite an expected increase of 4,100 inhabitants and jobs and a potential overall increase in the entire of Malley of 16,100 inhabitants and jobs (Bauart and Raderschall, 2012, 36).

4.3 Energy policy

Mandatory coordination of planning with energy provision

According to the cantonal legal provisions adopted in 2014[34], authorities now have the obligation to plan and coordinate energy provision and use together with land use planning procedures. Both Lausanne and Renens aim to develop new neighbourhoods that comply with the 2000 watts society (Commune of Lausanne, 2013; Commune of Renens, 2013)[35]. In the case of *Malley-gare*, a document analyses two possible scenarios of energy provision and consumption, the latter depending on the share of housing in the overall project. However, this is not a binding document. The building regulations applicable to local development are binding, and they stipulate that the communal executives, within their competencies, take all measures that encourage

[30] SR 814.012.
[31] Art. 3 LATC, SR-VD 700.11.
[32] Art. 49, 50 and 55 of the *Loi du 4 décembre 1985 sur l'aménagement du territoire et les constructions LATC*, SR-VD 700.11.
[33] RS 814.318.142.1.
[34] Art. 16a of the *Loi du 16 mai 2006 sur l'énergie LVLEne*, RS-VD 730.01.
[35] For a presentation of the concept, please refer to `http://www.2000watt.ch/`.

the development of zero energy buildings (Communes of Prilly and Renens, 2015b). This leaves the door open to a wide range of possible applications.

Mandatory connection to district heating

The cantonal energy law[36] further mentions that new buildings (and those whose boilers are slated to be renewed) are obligated to connect to the district heating network if they are located within the network's coverage area, and do not already use mainly renewable energies (this point will be discussed in section 5.1). Additionally, it grants a 5% bonus of development rights if the anticipated construction exceeds the energy standards fixed by law. As this bonus is only granted when the building permit is submitted, it is not known if this development bonus will be used or not.

4.4 Priority development areas

Financial support for planning

The fact that Malley is one of the priority development areas defined by the Canton has led, beside the central involvement in the train station's development, to the financial participation of the canton in preliminary studies and master plans. The canton's focus is on the provision of initial, mainly financial, support in order to launch a development project[37].

An instrument limited to economic activities

The law says[38] public authorities are granted an expropriation right on areas of public interest, a criterion which applies to priority development areas. As Malley's landowners are public entities, it could only be used to expropriate two leasehold lands in the local development plan of *Malley-gasomètre* (see figure 1). According to interviewees, this instrument only applies to those parts of the priority development areas where economic activities are developed[39].This is due to the fact that current cantonal legislation does not recognize housing as a matter of public interest. The surfaces of *Malley-gasomètre* where the leases are located will host housing and/or parking lots, so the expropriation right cannot be used and a compromise will be negotiated with the lease holders[40].

4.5 Remediation of contaminated sites policy

As mentioned in section 4.1, the impossibility of access to pollution reports means that I cannot see the analyses' results, nor assess the costs linked with the land's development. According to the cantonal cadastre of polluted soils (State of Vaud, 2015), the polluted plots do not require remediation, as the pollution does not spread to nearby waters. However, one plot requires surveillance. In any case, the area's redevelopment necessitates the treatment of excavated soils and possibly prohibits drilling through the polluted layer of soil to prevent exfiltrations (Viallon, 2016a, 103). The use of geothermal energy might be limited. As there is no obligation to remediate the site, the amount of soil to treat depends on the depth of future construction (soil depth is not regulated in the local development plan).

4.6 Protection against major accidents

Restrictions on use and thus value

The federal ordinance on the protection against major accidents[41] has led to several restrictions in regard to land service and the type of land use:

- creation of a safety access between buildings and railways, and construction of building exits only on the opposite side of the railways;
- prohibition of land use causing high traffic (*i.e.* commercial centres, cinemas and schools) and limited to a maximum of 13% of the overall gross floor area dedicated to sales;
- prohibition of land use dealing with vulnerable persons such as retirement homes and daycare centres, because of the additional difficulties to evacuate the occupants in case of emergency;

[36] Art. 25 LVLEne, RS-VD 730.01.
[37] J-P. Dind, *op. cit.*
[38] Art. 76a of the *Loi du 4 décembre 1985 sur l'aménagement du territoire et les constructions*, SR-VD 700.11.
[39] A. Baillot,*op. cit.*
[40] Y. Deillon, *op. cit.*
[41] SR 814.012.

– maximum of the overall gross floor area dedicated to housing – at most 40%.

Conflicting interests within the SBB

These restrictions translate into a land use conflict within the SBB: on one hand, the company's function is to transport passengers and freight (some of which consists of dangerous goods) and must fulfil a set of safety obligations in order to prevent and minimize risks. On the other hand, it should maximize the economic output of its properties[42] and thus foster their efficient development. This conflict has translated into practice as follows:

– the current publication of the report which assesses ordinance implementation has led to development restrictions on the landowners just before the first master plan was to be approved and has subsequently led to its suspension (Lawrence et al., 2009a, 132);

– the report's results have been contested by landowners, who did not want to lose part of their building rights. The SBB's representatives[43] argued that the calculation method used in the report ordered by the canton would apply stricter norms than the one used in their own report (Lawrence et al., 2009b, 88).

A stricter implementation over time

This interruption of the planning process shows that the SBB's double conflictual role has been solved internally since the ordinance's approval in 1991. The former cantonal lack of expertise left until recently a rather wide margin of manoeuvre to the railway company in the ordinance's implementation process. The inconsistency of the canton's implementation is apparent in the northern side of Malley's station: the commercial centre and cinema built in 2001 are exactly the type of uses that the environmental impact assessment (Ecoscan, 2015, 44) and the regulations of the local development plan of *Malley-gare* (Communes of Prilly and Renens, 2015b) now advise against.

4.7 Agglomeration policy

Federal subsidy for the train station

In June 2006, the federal Parliament approved the creation of a 6 billion francs fund for transportation projects in agglomerations, among which 2 billion francs were dedicated to projects listed as urgent (Federal Council, 2005). Supported by the government of the canton of Vaud, the station of Malley was among the chosen projects (see also section 3.4). It was granted a 50% subsidy (40 million francs) for the construction of the train station of Malley, which gave in turn a major push to the area's redevelopment.

Other federal subsidies linked to urbanisation measures

The remaining four billions francs were dedicated to other transportation measures within agglomerations. In order to compete for federal funding, Swiss agglomerations had to elaborated a master plan that developed the agglomerations' transportation networks (foot, bicycle, public transport, motorised vehicles) and coordinated them with urbanisation measures (constructions dedicated to housing and activities). In the case of Lausanne, the canton wrote the first draft of the agglomeration's master plan in 2005. In 2006, the communes' executives approved and signed the master plan. In 2008, the federal and cantonal transport ministers signed the agreement in order to finance the planned measures. The link between the agglomeration policy and the redevelopment of Malley is indirect, because it is the canton that signed the agreement, but the communes that have to modify their building regulations and development plans according to the master plan they signed. In the case of Malley, the agglomeration policy subsidised the railway crossing for pedestrians and bicycles and part of the land service of the two streets to be created in the neighbourhood. Confederation and canton paid 5.92 million francs out of 25 million francs (Communes of Prilly and Renens, 2016). Table 3 in section 6 sums up the different costs and benefits linked with Malley's redevelopment.

4.8 Master plans

Definition of density criteria

The master plans[44], because they analyse the locational and topographic contexts

[42] Art. 6 al. 4 of the *Convention sur les prestations entre la Confédération suisse et la société anonyme des Chemins de fer fédéraux, pour les années 2013 à 2016.*

[43] One representative of the Real estate department, one representative of the Infrastructure department (Lawrence et al., 2009b, 111).

(*i.e.* in terms of view), make suggestions in terms of future uses and point out specific locations for these uses. Additionally, they set overall density values in accordance with existing and future connections to public transport. Sector 2 studies consider densities above 400 inhabitants and jobs per hectare for the plots adjacent to the station as desirable (SDOL, 2005, 27), an objective that is very well achieved despite the legal constraints. In fact, the local development plan of *Malley-gare* reaches a density of 519 inhabitants and jobs per hectare.

Change of planning scale

These plans are theoretically not binding, because they are not formally part of the land use planning policy implementation process and are not approved by legislative bodies, unlike zoning and local development plans[45]. However, during the legal check[46] of zoning and local development plans by the cantonal supervisory authority, the latter requires the zoning or local development plans' conformity to the agglomeration's master plan (SDT, 2012). This procedural subtleness allows the communal executives (and the cantonal heads of administration) to fix a set of elements such as foreseen density and land use that communal legislatives have to adopt later on in binding local development plans. This entails a redefinition of the political administrative arrangement: the communal legislatives' margin of manoeuvre is reduced in favour of the inter-communal assembly of communal executives that predefines the density and land services in specific zones that are to be renewed. When the communal legislative modifies zoning and development plans and submits them to the canton for approval, the cantonal authority reject the local development plans that do not meet the master plans' criteria.

In order to sum up the content of the present section, one can list the following elements of cantonal and federal law that have an impact on the redevelopment project:

- the air pollution ordinance, which initiates reflection on the areas of the western part of the agglomeration that should can be redeveloped;
- the agglomeration policy, which co-financed the train station's construction and thus shaped Malley's redevelopment;
- the ordinance on polluted soils, which restricts the development of the area's underground due to the costs the soil's remediation implies;
- the ordinance on protection against major accidents, which restricts the types of possible uses for constructions close to the train tracks;
- the obligation to elaborate an energy concept, although its realization is decided only at the stage of the building permit, which leaves a wide margin of manoeuvre to the landowners and developers.

Some of these regulations have provided an incentive for the area's redevelopment, and some of them have created constraints. The next section, dedicated to the local regulatory arrangement shows how these restrictions have clearly not impeded the urban renewal process.

5 Local regulatory arrangement

5.1 Energy supply

High energy objectives set by the master plan

Energetic aspects play an important role in the transformation of Malley. One factor are the high energy standards set into the local master plan: these require a careful examination of the energy sources used for the construction and operation of the new neighbourhood. In fact, the master plan sets forth an objective of fulfilling the standards of the 2000 watts society (Bauart and Raderschall, 2012, 66). Elaborated by

[44] The master plans of the western part of the agglomeration (SDOL, 2003), the master plan on the industrial areas along the train tracks (SDOL, 2005), the agglomeration's master plan (Agglomération Lausanne-Morges, 2008; Canton de Vaud and ALM, 2012) and the master plan specific to Malley (Bauart and Raderschall, 2012).

[45] Art. 58, SR-VD 700.11.

[46] Art. 56, SR-VD 700.11.

the Federal polytechnic schools in the 1990s, this has been committed to by the communal authorities of Lausanne and Renens (Commune of Lausanne, 2013; Commune of Renens, 2013).

Lack of renewable energy source for district heating

The current input sources for district heating are: 60% burned waste, 33% gas or gasoline and 4% sewage sludge (Commune of Lausanne, 2011a). Since the energy source determines the sustainability of the district heating system, a dilemma appears between the utilised energy inputs and the further extension of the network (a network in which the current input of renewable energy sources are limited). The search for alternative sustainable energy sources has been a political issue since the 1990s. An example of proposed alternatives is the substitution of gas by wood for district heating (Commune of Lausanne, 2005b, 2014a). Wood heating has not seemed feasible until recently.

Planned extension of district network

Important investments have been made over the last decades to foster district heating (with more to come). The thermal plant of Malley itself is an important energy provider for the heating system and its capacity will be doubled in a near future[47].

Reduced energy needs of new buildings

Another issue is that with the evolution of technology and construction standards (better isolation of buildings and alternative energy sources such as geothermal energy), the heating needs of new buildings have been drastically reduced. This threatens the network profitability, because it requires the industrial work to provide heat to a higher number of clients and thus lay more pipes in the ground, which increases the network's development costs.

More transparency in energetic planning

Further, the obligation to take energetic aspects into account in the elaboration of local development plans (as in the case of Malley: see section 4.3) contribute to make decisions such as the choice of energy source more visible and further upstream in the decision process. Possible alternatives have to be considered and a public report is written. Until recently, these were mostly in the discretionary power of developers and/or the industrial works, who even benefit from a legal obligation to connect to the district heating network if no other renewable source of energy is used[48]. Today, the underlying rationale in reducing the emission of pollutants and heat losses generated by individual heating systems through a centralized source is not questioned, but the temporal shift between long term investments in district heating, the recent evolutions of technological possibilities, and the legal obligations to coordinate planning with energy provision lead to an intra-policy conflict that is hard to resolve.

Gas as a privileged source of income

Several other elements exacerbate the tensions between the provision of future buildings with a more sustainable energy source and the development of the district heating:

- Lausanne's monopoly on gas distribution along the entire coast of the Geneva lake from Nyon to Lausanne (SIL, 2012, 22);
- the important revenue gas provides to the commune: sell price to final individual consumers by the industrial works of Lausanne is at least 25% more expensive than the Swiss average (Price surpervisor, 2012).
- the absence of a boiler and other heating equipment in the connected building (only a heat exchanger is required) allows the developer or landowner to reduce installation and maintenance costs linked to heat provision;
- the supply of an all inclusive offer (installation, provision of heat, maintenance) by the industrial works of Lausanne simplifies the installation process for the developer or landowner and allows him to pass on these costs to the final captive consumer;
- with the creation of an intercommunal district heating company with Prilly, Renens called *CADOuest*, Lausanne has included two of its territorial neighbours as shareholders of the heating distribution company (in the western part of the agglomeration). These neighbours participate in the investments, and have a share of the rent that is limited to the network's profitability, *i.e.* around 3-4% over 60 years (Commune of Lausanne, 2011a, 9). In this way, the communes themselves have become captive clients.

[47] A. Bartolomei, *op. cit.*

[48] Art. 25 of the *Loi du 16 mai 2006 sur l'énergie LVLEne*, SR-VD 730.01.

Costs passed on captive end consumers

The achievement of nearly zero energy buildings is linked with the reduction of energy consumption and with the local provision of energy (from the sun, the air, the soil or nearby waters). In the local development plan of *Malley-gare*, the energetic concept written in accordance with new regulations (see section 4.3) anticipates only a limited use of geothermal power (Commune of Lausanne, 2014b). The actors' preferences are for district heating, which, combined with solar power and the buy of electricity from renewable sources and heat exchangers around the foundation works, does not incentivise the drilling for additional geothermal energy (Commune of Lausanne, 2014b, 19). Nevertheless, the sustainability of the energy concept relies on the purchasing of electricity from renewable sources, a condition that might be difficult to impose on developers (made particularly difficult because the regulations in the local development plan do not address it) and consumers. Further, it considers district heating as a partially renewable source, but its share of renewable energy is precisely going to be reduced because of the network's extension.

Inclusion of neighbour communes in the district heating coalition

The actors do not intend to make Malley an example of a sustainable neighbourhood. The SBB focus on the price of alternative energy sources as opposed to district heating and emphasizes the "illogicality" of not using available power[49]; Lausanne, in particular the industrial works, wants to ensure the profitability of the investments made in the thermal plants and heat distribution pipes. Renens and Prilly originally claimed a connection to the district heating: they anticipated economic and ecological gains compared with old, oil-fired boilers that serviced their communal buildings and would need to be replaced soon. The development of district heating and the underlying financial investments seemed, at the time, the best option. However, Lausanne initially refused to fulfil Prilly's request to extend the network further west, arguing a lack of potential clients. Only due to the interest shown subsequently by Renens and the upcoming redevelopment of Malley is the network's extension back on the negotiation table and the intercommunal district company created (Commune of Lausanne, 2011a).

Adding up of rents

Through the monopoly on heat provision and the establishment of a district heating network, the district heating company links the rent due from zoning with the rent due from energy supply, and more specifically from the provision of gas. The rent due is secured by captive customers, a phenomenon already observed in a recent study by Nicol and Knoepfel (2014). The energy rent is divided amongst the district heating company's shareholders (the three communes involved in the redevelopment of Malley) and the industrial works of Lausanne, who distribute and burn the gas, produce and sell the heat to the district heating company. From an ecological perspective, the landowners' choice to use gas as a primary energy source offers reduced ecological benefits when compared with renewable sources. Its ecological advantage was relevant mainly in comparison with heating oil (which has not been considered). However, the choice of heat source has also been determined by the heating pipes already present on site. Further, geothermal energy is associated with higher costs that developers are reluctant to carry. In the case of Malley, a geothermal energy source would have been additionally problematic because of the existent soil pollution.

Limited use of fossil energies through a reduced number of car spaces

Linked with the air pollution regulations (see section 4.2), an additional levy that the actors use to reduce energy consumption is the reduction (compared to Swiss standards) of planned parking spaces for motorized vehicles (Communes of Prilly and Renens, 2015b). Coupled with high public transport connectivity, this limitation reduces the proportion of inhabitants using or having a car and thus reduces the share of fossil energy used by future inhabitants.

The energetic dimension is characterised by a path dependent behaviour of the landowner who fulfils simultaneously the functions of energy and heat provider. The owner has managed to integrate clients as shareholders of the heating network to share the network's development costs and ensure the future extension of the service. These intertwined economic interests reinforce the existing inertia (Goldthau, 2014) and argue against the actors' will to foster the use of renewable energies and to implement the 2000 watts society (Bauart and Raderschall, 2012; Commune of Lausanne, 2012; Commune of Renens, 2013)[50].

[49] G. Dekkil, project manager at SBB Real estate, interviewed 8 June 2015 in Lausanne.

[50] As a counter example, one can refer to the future neighbourhoods of *Les plaines du loup* and *Blécherette*, which could have also been connected to the district heating network but for which a

5.2 Pollution of soils

A central cost linked to redevelopment

Soil pollution causes other restrictions in terms of development. According to the interviewed actors[51], the financial costs of excavating the polluted soil and treating it according to legal prescriptions was one of the major elements influencing the location and shape of buildings in the case of the local development plan *Malley-gasomètre*.

Transfer of development rights within the local development plan

In the case of soil excavation, polluted soil requires transport and treatment (which implies important financial costs), and generates non-negligible amounts of grey energy. The solution negotiated by the actors minimizes excavations, soil transport and treatment and thus reduces costs and energy consumption.[52]: Underground floors are minimised, surfaces that would normally be used for commercial or housing purposes are partly dedicated to car parking spaces (parking spaces will thus be on the ground floor and in a dedicated four stories building in the middle of the neighbourhood). In order to compensate the loss housing surfaces induced by the parking spaces, the amount of surface dedicated to parking is "transferred" to adjacent buildings in form of additional floors[53].

A pond as sales argument?

In regard to public spaces, the winning project in the competition on public spaces includes a park and a rainwater collecting pond serving the entire neighbourhood (Bauart and Raderschall, 2012). These two elements (the park and the pond) will be located on the site of the former gas cracking plant, gasometer and gas pressure reducing station. Various old and new gas pipes as well as district heating pipes are still present. This area is highly polluted and thus considered non constructible[54]. It seems quite astonishing that the competition's results only marginally consider this element in their planning mandate. The suggested plan is likely to be severely modified by the financial constraints (due to pollution) that neither the landowner nor the territorial commune wants to carry. The pond's future seems rather compromised.

Soil pollution determines the location of constructions

The policy of polluted soils steers the creation of economic value in the sense that decontamination costs are too high to be borne by landowners. This fact leads the actors to follow a cost minimization strategy that limits the amount of remediated soil to a strict minimum. Further, soil pollution is a determinant of the location of future construction, the park being located where the most polluted soils are. From an ecological perspective, this represents a low added value and impossibility to provide additional goods and services such as a clean park, deeper basements and in an ideal situation even a pond. However, this low ecological added value is not likely to change, because of the high distance of underground waters and the soil's composition (Naegeli, 2006) that limits the spread of pollution.

Restriction of energy sources

Another element on which soil pollution has an impact is energetic provision of the neighbourhood. If the new construction is intended to be self-sufficient, this autonomy requires a wider remediation process in order to capture geothermal energy. Without proper remediation, ecological value creation through renewable energy is impeded. But these questions have never been asked in such terms, because the district heating infrastructure is already on site.

5.3 Spatial distribution of building rights

Anticipation of future inhabitants' income

Another important element in the negotiations regarding the pollution of soils (previous section) and the territorial structure (section 3.2) is the spatial distribution of building rights. The communal borders cross-cut the planning perimeters and thus add an additional constraint on the distribution of rent. The owners, as well as the territorial communes have financial claims in regard to the future land use and users. Additionally, it is worth noting the rental differences between offices, commercial activities and housing[55], but also between the types of housing. In fact, the expected fiscal revenues or subsidies to be paid vary drastically depending on the category of housing that will be built (*i.e.* condominium apartments, apartments rented according to market prices, regulated or subsidized housing). Thus, the future location of

geothermal solution has been chosen (Commune of Lausanne, 2012).

[51] G. Dekkil, *op. cit.*

[52] E. Krebs, *op.cit.*

[53] E. Krebs, *op.cit.*

[54] P. de Almeida, *op. cit.*

[55] In 2013, average sell price for a square meter of office in the region of Lausanne is 3,080 francs and housing 2,500 francs (Wüest and Partner, VVYY).

the different uses as well as the respective proportions of different housing types were an important element in negotiations. As I had no access to the convention specifying these elements, it is not possible to provide an overview of the expected financial returns for each actor.

Land development through leasehold

However, following elements can be mentioned in regard to the contract that will bind the landowners (SBB and Lausanne) and the developers: in accordance with communal practice (Cour des comptes du Canton de Vaud, 2011; Nahrath et al., 2009) and the subjects of interviews [56], the development of Lausanne's and the SBB's land will be subcontracted to a developer in the form of leasehold land. The price of the future building rights will probably equal 4–5% per year of the land's market value, a rate applied by Lausanne and the SBB for most of their leases (Cour des comptes du Canton de Vaud, 2011, 29). The Court auditor's report further notes that rent discounts can be granted during the first years for specific reasons such as the compliance with specific environmental criteria or additional costs linked to the terrain's structure. As the contracts have not yet been established, it is not possible to quantify the effective redistribution of value, but it can be stated that Malley's development will be an important source of revenue for Lausanne (see table 3).

Limited future land rent?

In regard to the type of housing, landowners argue that the neighbourhood's partial industrial use and its overall location might be less suitable for freehold apartments and thus limit future rents. Therefore, the project's profitability might be lower than in an exclusively residential neighbourhood. Recent studies on French agglomerations (Boulay, 2011; Guérois and Le Goix, 2009) show an homogenisation of the rent between neighbourhoods of the same agglomeration: a general catch-up phenomenon is observed, with a particularly strong price increase in neighbourhoods with initially low rents. Nonetheless, a reduced price gap between the neighbourhoods remains. At this stage of the project, it is only possible to speculate on the future evolution of prices. I do not possess land or real estate prices for neighbourhoods within the agglomeration, and I do not know the developers' contractual obligations regarding the proportion of apartments that can be sold or which must be rented (nor do I know the future duration of these rental agreements). Assuming that the neighbourhood's price increase only takes place five to ten years after the development is finished (Boulay, 2011, 295ff), it might be more profitable to initially rent most of the apartments and then sell them once the rent gap is filled.

Impact of subsidised and regulated housing on rent

One has to keep in mind the contractually defined duration of the subsidised and regulated housing regimes. These contractual durations impact the future rent: for example, the leasehold might restrict the period during which subsidies are paid for subsidised housing to twenty years, or the leasehold might restrict the period during which the rents are regulated to ten years; after that, the flats are rented on the regular market. This aspect also plays an important role in the calculus of the future financial return of the buildings. Thus, the amount of expected rent is used by the communes in order to attract the most profitable uses, but also by the landowners who tend to minimize future income that they can obtain from the developers through the leasehold land. In this way, another element that plays a key role in the negotiations are the land service taxes detailed in the next section.

5.4 Land service costs

Three types of land service taxes

In the negotiation and approval process of the local development plans, the main conflict between landowners and territorial communes is over the extended land service tax (the amount of money that the landowners pay to the authority in order to finance the territorial communes' public infrastructure also beyond the neighbourhood's borders). Table 2 shows the different taxes linked to land service.

Disagreements on land service

Both the land service tax and the extended land service tax are of contractual nature and capture an additional part of the added economic value created by land service and general communal infrastructure. In the case of Malley, its application is the source of four main problems:

– it is unclear if a public owner has to pay the tax or not: the legal basis[58] specifies

[56] E. Krebs, *op. cit.*; A. Baillot, *op. cit.*

[57] Art. 50 of the *Loi du 4 décembre 1985 sur l'aménagement du territoire et les constructions LATC*, SR-VD 700.11.

[58] Art. 90 of the *Loi du 4 juillet 2000 sur les impôts directs cantonaux*, RS-VD 642.11.

Tax	Description	Costs division
Connection tax:	Costs of connection between private buildings and local infrastructure like roads, energy, water and sewage system (entirely paid by the landowner)[57]	100% of effective costs paid by the landowner
Land service tax:	Costs of construction of local infrastructure which is publicly accessible, but primarily benefits a neighbourhood (local roads, local energy and water provision and sewage system).	50% of effective costs paid by landowner, 50% by planning authority
Extended land service tax:	Insurance value of socio-cultural infrastructure (non-financial assets) that a commune requires in order to fulfil its general obligations like education, health, public transports, parks, etc. divided by the number of inhabitants divided by the average surface use of one inhabitant ($50m^2$)	Up to 50% paid by landowner

Table 2: Types of taxes linked to land service.

that public authorities and private entities working in the public interest are exempted from the tax. However, the fact that the public owner acts as a private owner on another commune's territory is subject to debate. After both the owner and the territorial commune received contradictory legal advice[59], it was agreed to negotiate the amount that would be paid instead of going to court.

– the amount of tax depends on the future use of the building: according to Renens' communal regulations (Communes of Prilly and Renens, 2016), the territorial commune is owed an amount of $140CHF/m^2$ for housing and $33CHF/m^2$ for commercial use. However, as the actors negotiate other elements with financial implications (*i.e.* public spaces, decontamination costs and other use restrictions), the effective sum due in land service tax and extended land service tax remain part of the whole deal;

– the delay of payment: most landowners want to pay once the permit has been delivered and stagger the development process in order to maintain control over the process and to temporally divide the amount of money handed out for service costs. However, the territorial communes want to get paid when the local development plans are adopted, so they have to dispense a lower amount of money to service the land;

– the spatial distribution of the tax: though the tax's aim is to finance general public infrastructure within the entire communal territory, the landowners contest the absence of a link between the amount of money levied and the public infrastructure costs induced by the neighbourhood's redevelopment.

Asymmetric information on remediation costs

As both authorities and landowners bare costs, the redistribution of economic value created by the redevelopment process is the main issue for the process' actors. However, the planning authorities do not know exactly how much profit they leave to the landowner and future developer, because they do not have the resources to calculate all costs and benefits of the negotiated solution (particularly in regard to the decontamination costs). This lack of the resource "organisation" lends to the landowners an advantage in the negotiations[60]. In order to overcome this complex situation, several solutions have been considered:

– one proposed solution was the creation of a society with territorial communes and landowners as shareholders[61]. This society holds the land of the two local development plans, borrows money from the bank, and pays for all infrastructure. This model is comparable to the land improvement syndicate presented

[59]Interestingly, one of the commune's advisors is the cantonal deputy who brought the motion to parliament which led to the introduction of the tax.
[60]E. Krebs, *op. cit.*; T. Maystre, *op. cit.*
[61]N. Wisnia, *op. cit.*

in the case study of Cheseaux (Viallon, 2016b). The complexity of the process that the creation of such society would involve (its approval by the communal legislative, the time it involves) has led to the abandonment of the solution;

- another possibility was to dispatch the different development tasks between the involved actors and their respective contractors[62]: each landowner and commune takes the responsibility for some construction (roads, parking lots, squares, park, etc.) and compensation is made for the extra amount paid by one or another actor based on the financial agreement reached;
- the solution adopted in the end is to share the payment for some elements of the land service (road works and and railway crossing) according to the cantonal legal dispositions[63] and leave other elements (squares) to the landowners. As shown in table 3, the amount paid by landowners are estimated around 12.6 millions francs for the land service tax and 700,000 francs for the extended land service tax (Communes of Prilly and Renens, 2016, 24f). The former covers the costs of the railway crossing (see section 4.1) and of the adjacent roads, the latter is the result of negotiation. Once the first building permit is delivered, a five year delay is granted for the payment of the above mentioned contributions (Communes of Prilly and Renens, 2016, 24f).

5.5 Transport

Cantonal subsidy for planning

The canton has a leading role in Malley's redevelopment, as seen through their financing of the the train station construction (see section 3.4). In the ensuing planning steps, the cantonal authority intervention is limited and decreases over time[64]: despite the creation of an office dedicated to redevelopment projects[65], cantonal actions are confined to the supervision of the plans' elaboration and to the co-financing of the project manager's salary (employed by the intercommunal coordination office SDOL). The project manager is responsible for development projects in the western part of Lausanne and the implementation of the 2012 master plan for Malley.

Conflict on the implementation of the risk ordinance

The supervision of the plan's approval led, in 2008, to a major conflict linked to the implementation of the ordinance on protection against major accidents: the commissioned report severely reduced future use rights. This led to a clash between landowners and the report's writers. The central object of contest was the method used to calculate risks. In the end, the canton, responsible for the ordinance's implementation, solved the issue by granting additional building rights that corresponded to approximately 15% of the projected building rights in *Malley-gare*[66] (see table 3 in section 6 below). Thus, the reduced value resulting from limited uses was compensated for by additional gross floor area.

Mutual benefits from public transport

All actors agree that Malley's development must ensure a high proportion of public transport users in the neighbourhood. This allows both the railway and the agglomeration's public transport companies to fulfill their financial objectives, and caps the subsidy that the communes pay to supply a public transport service. For the agglomeration's public transport company, the division of costs among the communes is calculated on the basis of:

- the number of inhabitants in the commune;
- the number of kilometres driven by the transport company's buses on the commune's territory;
- if the total sum paid by a commune exceeds 8 tax points (the case for Lausanne) the amount in excess is paid by the communes and the canton through a transport fund at agglomeration scale.

An opportunity to recover costs

The consensus on the transport matter is due to the mutual benefits that public

[62] G. Dekkil, *op. cit.*

[63] Art. 129 of the *Loi du 25 novembre 1974 sur l'expropriation*, RS-VD 710.01.; art. 4b of the *Loi du 5 décembre 1956 sur les impôts communaux*, RS-VD 650.11.

[64] J.-P. Dind, *op. cit.*

[65] The so called *groupe opérationnel des pôles* is composed of representatives from the spatial planning office and the office for economic development, see Canton de Vaud (2013) for additional information.

[66] E. Krebs, *op. cit.*

transport provides to public actors: Malley's redevelopment not only provides additional passengers for the train lines operated by the SBB and for the buses and trams run by the agglomerations' public transport company, but it provides additional freight to the SBB via the waste sorting center. The transport company plans to double the number of users using public transport in newly developed neighbourhoods compared to the average percentage of users in existing neighbourhoods [67]. Thus, Malley is the ideal location to recover some of the major investments that the communes make in transport infrastructure, but also in operating costs. The neighbourhood is designed in a way that the future inhabitants are compelled to use the public transport system. In cooperation with real estate corporations, the public transport company will set up a widget on their websites showing the travel times from the inhabitant's potential future home to their work in order to show the value of the site's ideal location[68].

Emergence of a public oligopoly

This section shows the multiplicity of factors that affect land values: zoning, plot ratios, transport infrastructure, district heating or soil pollution. Lausanne and the SBB have created a public oligopoly. Due to their additional policy resources in terms of expertise and infrastructure, this allows them to capture the added values created by other actors: the station financed by the canton and the Confederation, and the zoning operations done by Renens and Prilly. Most of the economic value lost due to contextual factors or legal constraints is compensated by additional building rights.

The conflicts analysed in the case study are observed not only between public authorities, (one of them being the owner), but also between the different organisations that compose the commune of Lausanne, owner of the plots. Figure 2 shows a visual synthesis of the various problems that emerged during the planning process, namely:

- energy supply;
- security provisions against major accidents;
- pollution of soils;
- spatial distribution of building rights;
- division of land service costs and extended land service costs;
- the end of Lausanne's industrial services former land use monopoly.

[67] C. Jemelin, *op. cit.*
[68] C. Jemelin, *op. cit.*

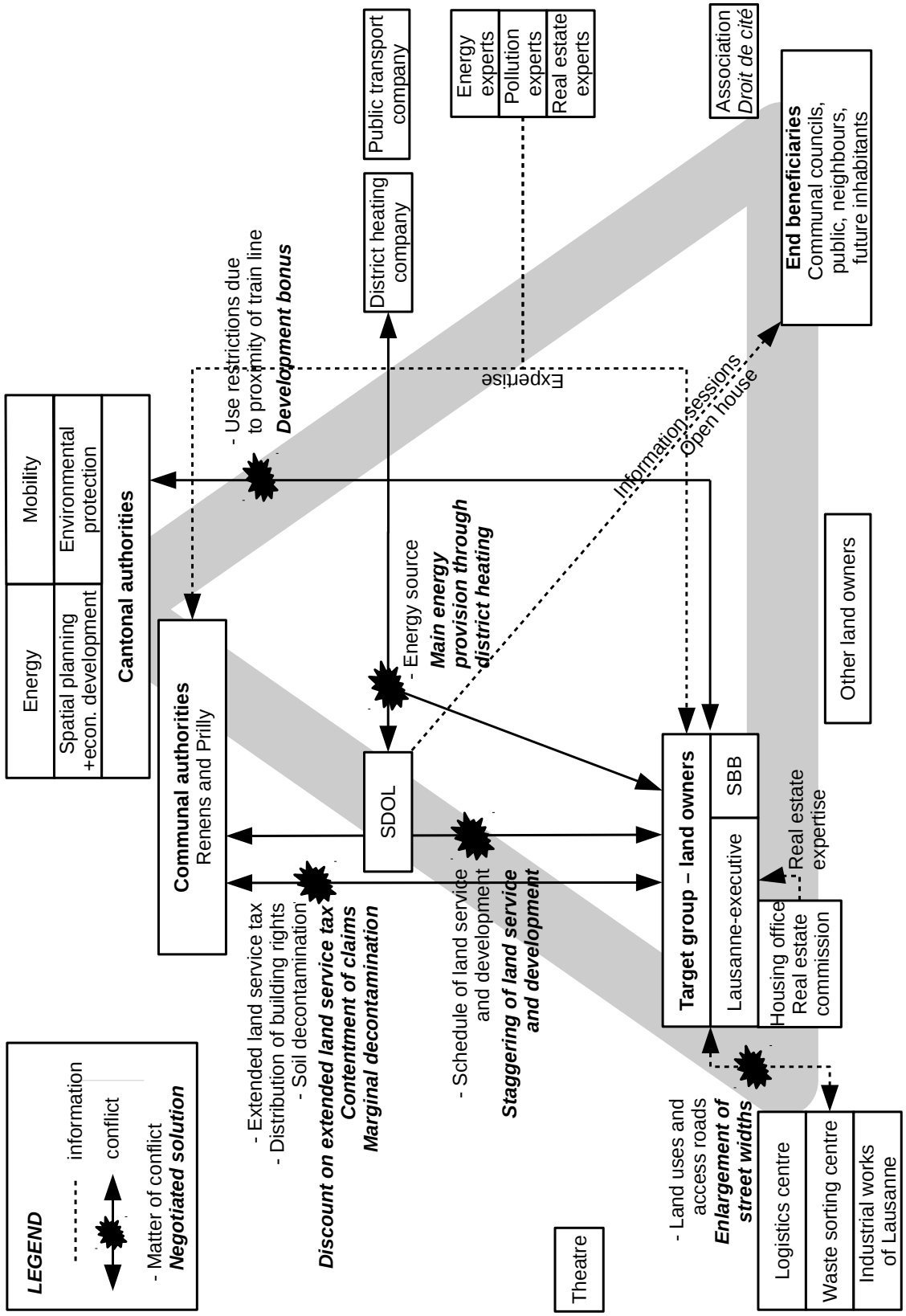

Figure 2: Information flows and conflicts between actors in the planning process of Malley.

6 Impact on value redistribution

Environmental outcomes of redevelopment counteracted by economic growth

The redistributive aspects underlying the entire redevelopment of Malley can be broadly synthesized as follows: the redevelopment of an industrial brownfield located in the centre of an urban area creates economic value, because various plots of the area had lost most of their uses and were converted to economically valuable uses. This is mostly due to the limited and economically cheap decontamination process that took place. Some industrial and secondary activities are still present and feel threatened by potential relocation due to the area's reconversion into housing and tertiary activities[69]. The ones that get evicted either disappear, or relocate elsewhere. A brief check on these relocated uses shows that they contribute to the urban expansion process: the Bobst factory up north moved to Mex (5 km away) into a new bigger building on former agricultural land; the slaughter activities moved to Cheseaux (5 km away) and Oensingen (in Oberaargau, see also Viallon (2016a)); they are now in bigger factories built on agricultural land. The public transport's network expansion requires a third depot that might be built outside of town[70]; train maintenance is now taking place in Yverdon[71]. All these moves take place on open land and contribute to urban growth and therefore reduce the ecological value of soil at regional scale.

Limited evaluation of ecological value change

In order to appraise more precisely the project's relative outcome, one could compare the sum of soil surfaces built in Malley with the sum of soil surfaces that would have been necessary for the realisation of the same uses in a peri-urban area. But because the industries located outside of town have simultaneously increased their production (Bobst) or merged their activities with other sites (the slaughterhouse) that are now closed, it becomes tricky to evaluate the overall outcome. If I add up the plot ratios of Malley before and after its redevelopment as well as the newly built areas outside town, it would be possible to set up a density index before and after the changes and thus evaluate the overall density change. Nevertheless, this would not take into account the changes in terms of uses (from industrial to housing and tertiary activities). Therefore, I limit the costs and benefits in table 3 to a tally of the surfaces, densities, costs and values of the local development plan of *Malley-gare* only (*Malley-gasomètre* is still in negotiation). As one can notice, the sum paid for the extended land service tax corresponds to approximately 19CHF/m^2, a rate that is far below the minimal rate of 33CHF/m^2 that would apply in case only commercial activities would be located in the new construction[72].

Local actors' interests awakened by cantonal and federal incentives

If I focus on the actors' intentionality, I can state that Malley's housing and tertiary development was not anticipated by the communes and the landowners. The construction of the waste sorting centre in 2006 supports this statement and shows the frictions that have stemmed from the proposed land use changes, by users within different public bodies contesting the site's new vocation. Industrial, residential and commercial uses will coexist in the same neighbourhood, a fact that corresponds to the master plan's objective of fostering mixed uses. In regard to the landowners, I conclude that their initial intentions were not proceed to an important land use change. This reversal is due to the canton's original intent to construct a train station and to the federal funds that greatly accelerated the process. The waste sorting centre was to be built on the southern side of the train station and it was only in anticipation of the future station's location that it was constructed further west on a property of the SBB (Commune of Lausanne, 2005a). The SBB had planned to establish a transfer station for freight trains, which in the end was not built. Lausanne could have developed its plots in Malley without the SBB, but it needed land for the new cantonal museum of fine arts, which led to the land exchange between Lausanne and the SBB. However, once the redevelopment of the area was considered, financial aspects became central to the entire process and landowners engaged anticipating a monetary return. In table 3, the overall initial costs borne by the landowners (planning, connection and land service taxes) are covered after roughly 6 years (construction costs are not taken into account). This corresponds to a quarter of plot's added value (24.4M francs). From this perspective, the value capture mechanism only seizes a small part of the

[69] C. Jemelin, *op. cit.*
[70] C. Jemelin, *op. cit.*
[71] M. Béguelin, *op. cit.*
[72] Art. 8 of the local development plan regulations (Communes of Prilly and Renens, 2015b) foresee a minimum surface of 5,000m^2 for housing, for which a tax rate of 144CHF/m^2 would apply.

Surfaces and densities	***Malley-gare***
Ground surface	10,600m^2
Old GFA	15,200m^2
New GFA	52,500m^2
Added GFA	37,300m^2
New plot ratio	4.95
Values and costs	
Old land value	10M
New land value	34.4M
Added value	24.4M
Planning	-0.30M
Depollution	-2.4M
Connection tax	-0.7M[a]
Land service tax	-5.6M[b]
Extended land service tax	-0.7M
Estimated annual rent[c]	4.5%*34.4M=1.55M

Table 3: Financial summary of *Malley-gare*'s planning and pre-development process from the landowner's perspective.

[a]Estimation based on Renens' connection tax of 5.8CHF/m^3 (Commune of Renens, 1995).

[b]The initial sum of 25.2M (Communes of Prilly and Renens, 2016) has to be divided proportionately to the added gross floor area of the two development plans (*Malley-gare* and *Malley-gasomètre*), because the infrastructure they finance (railway crossing and roads) apply to both. The calculus is as follows: 25.2M/2=12.6M. 45% of the added gross floor area being located on the development plan of *Malley-gare*, 45%*12.6M=5.6M.

[c]This estimation is based on the average rent adopted by the SBB for leaseholds (Cour des comptes du Canton de Vaud, 2011, 51).

added economic value.

Malley, a truely mixed neighbourhood

Malley's redevelopment is not characterised by the eviction of industrial uses. It stands rather for the initiation of a cohabitation between industrial, housing, and tertiary uses. The "playground" of the industrial works is now shared with more contemporary urban uses. It remains to be seen if and when the entire perimeter designated in Malley's master plan will be subject to further usage changes. Only about 20 out of 80 hectares have now been allocated to new uses, which leaves an important discrepancy between the original perimeter of the master plan and the much smaller area subject to current redevelopment. The rest of the plots are rather fragmented and a vast majority of them are in private hands. These plots are still predominantly used for industrial purposes and until recently, have not directly been concerned with the neighbourhood's changes. Therefore, it is probable that the planned urban renewal and accommodation of 16,000 additional jobs and inhabitants (Bauart and Raderschall, 2012, 36) will be accomplished over a long time period.

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