

Author's note

Land parsimony practices, comparative trends and outlook

France, England, Switzerland and Japan

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Table of contents

Introduction – Zero Net Artificialization and parsimonious land use: is there a revolution underway in France’s planning regime?.....	4
I. From ownership regimes to land parsimony regimes: a turnaround in planning practices?.....	6
The historical depth of land parsimony: a slow emergence since the 19th century.....	6
Fordist development practices in a mass land ownership regime .	8
Post-Fordist development practices: artificialization and compact urban development	9
Steps towards the introduction of a regime based on parsimonious land use.....	10
II. Is the European Union a major advocate of land parsimony?.....	11
The EU’s competences put to the test to consider land use in development practices	12
From soil conservation to “no net land take”	13
From the fight against urban sprawl to land parsimony	14
III. Land parsimony in England: the historical model?.....	18
From garden cities to the compact city.....	18
Contemporary land parsimony challenges in England	21
IV. Land parsimony in Switzerland: a model to follow?.....	22
Switzerland: a land parsimony pioneer in Europe	22
The Swiss Federal Act on Spatial Planning (LAT) and its revision: ensuring land parsimony at a federal level.....	23
The shortcomings of Swiss land parsimony regulations: a second revision of the LAT.....	25
Achieving land parsimony in Switzerland by exporting land take requirements outside national borders	26
V. Land parsimony outside Europe: The Japanese planning model: a complex case	29
The Japanese land regime and the myth of insufficient space in a declining archipelago	29
Planning in Japan: “scattered density” and the complex oversight of land take	31
Japanese redensification policies and their challenges: can sought-after land parsimony be achieved?	36
Conclusion – ZNA and land parsimony: is there a shift towards a new planning regime?.....	39
Bibliography.....	40
About the authors.....	41

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Introduction – Zero Net Artificialization and parsimonious land use: is there a revolution underway in France’s planning regime?

The French legislator established the target of **Zero Net Artificialization (ZNA)** in the law 2021-1104 on combating climate change and strengthening resilience to its effects (known as the “Climate and Resilience Law”)¹ on the basis that land is first and foremost an organic part of the earth and only secondarily a resource to be used. This move institutes a national **land parsimony objective** which furthers the goal of protecting biodiversity and of conserving land by combating the **conversion of natural, agricultural and forest areas to artificial surfaces**. ZNA introduces into French law a correlation between land challenges and development practices under a wide-ranging **climate policy** which includes a systemic view of anthropogenic responsibilities in relation to climate change (Le Rouzic, 2022; Ménard et al, 2021). La Fabrique de la Cité has published many papers on this topic in recent years².

What links are there between ZNA and the much older ideal of parsimonious land use? Is ZNA a specifically French planning practice? As French regional and inter-municipal authorities are currently transposing the implementing decrees and this is causing many tensions, a look at what other countries are doing provides some perspective and places parsimonious land use within a more comprehensive consideration of the challenges as they are raised and addressed in other countries or regions of the world.

1. The law was passed on 22 August 2021. The full text of the law is available in French on the Légifrance website: <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000043956924> (last viewed in November 2023).
2. In this regard, see the note published on 3 March 2022 on the zero net artificialization objective (<https://www.lafabriquedelacite.com/publications/lobjectif-zero-artificialisation-nette-des-sols-pour-un-recentrage-au-service-de-la-strategie-nationale-bas-carbone/>, full note available in French and summary in English), and the note published on 7 April 2022 on the zero net land artificialization policy as part of the French National Low Carbon Strategy (<https://www.lafabriquedelacite.com/publications/zero-artificialisation-nette-zan-strategie-nationale-bas-carbone-snbc/>, full note in French and summary in English). More recently, La Fabrique de la Cité also published in April 2023 a summary in French of session 3 of the seminar on the art of governing transitions, entitled Land parsimony and access to housing: a new equation is necessary (<https://www.lafabriquedelacite.com/publications/sobriete-fonciere-et-acces-au-logement-une-nouvelle-equation-a-inventer/>).

In conjunction with a position paper published in September 2023 by the French Senate on policies to reduce land take in **Germany, Spain, Italy** and the **Netherlands**³, this author's note by La Fabrique de la Cité will start by providing a brief overview of long-standing debates on parsimonious land use. It will then analyze its uptake by the **European Union**, then by the **United Kingdom** and **Switzerland** (two non-EU countries) and lastly by **Japan**, which has a complex non-European land parsimony model.

3. The report is available on the French Senate's website in French: <https://www.senat.fr/notice-rapport/2022/lc325-notice.html> (last viewed in October 2023).

I. From ownership regimes to land parsimony regimes: a turnaround in planning practices?

The historical depth of land parsimony: a slow emergence since the 19th century

Parsimonious land use is not a novel idea in development practices or environmental awareness, be it in France, in Europe or worldwide. On the contrary, it is a long-standing concern. Without going back earlier than the modern period, it was discussed in the 19th century by European and North-American researchers and philosophers who debated the dilemma between **territorial development** and **environmental protection** against the backdrop of the spectacular emergence of the first damage related to **industrialization** and the **urban development** of advanced economies. There were two main conflicting schools of thought. Firstly, John Muir and the proponents of the Sierra Club formalized "**preservationism**", which advocated for a radical separation between human activity and wilderness areas, on the basis of creating sanctuaries for the latter in a number of **nature reserves** at a remove from any human intervention. This approach fostered the radical environmentalist paradigm throughout the 20th century and influenced many **environmental attitudes** with a bio-centric focus.

Secondly, intellectuals following on from Gifford Pinchot attempted to promote, under the term "**conservationism**", a fair use of natural resources according to their **capacity for regeneration** and the requirements of human societies. In short, they put forward the notion of land parsimony in different terms. These considerations laid the foundations for an anthropocentric paradigm and negotiated **environmental** approaches as found in parsimonious land use, and in any type of relationship to the environment and **resource** consumption employed in the general sustainability regime currently being implemented.

Depending on whether the approach is **bio-centric** (radical paradigm) or rather **anthropocentric** (land parsimony regime), the ways in which societies express their relationship with the land change. Preservationist advocates consider parsimonious land use on the basis of a total **stock** of land, a proportion

of which must be entirely set aside for nature⁴. Conversely, conservationist advocates replace the idea of a stock with the notion of a responsibility, making parsimonious land use qualitative and relative rather than quantitative and ubiquitous. The former activist approach argues in favor of the non-use of large areas of land, while the latter promotes a parsimonious and reasonable use of all types of land according to its capacity for regeneration. For this reason, these two approaches are the basis of the distinction between **strong sustainability** which condemns the net loss of all forms of natural capital (and even rejects the notion of capital when it is used in conjunction with the very idea of nature) and **weak sustainability**, which champions both a possible substitution between natural capital and labor, and a possible restoration of natural capital that is deteriorated or destroyed by **human capital**⁵.

The 1980s and 1990s saw a twofold turning point in work and debates on land parsimony and the relationship between nature and human societies. The influence of **life sciences** resulted in a political uptake of new concepts such as **biodiversity** put forward by Edward O. Wilson in 1986 and **biodiversity hot spots** proposed by Norman Myers in 1988. Against an already Malthusian backdrop, these works gave rise to the emergence of new perceptions of the relationship between land and human societies, such as the concept of “**environmental carrying capacity**”, which later became defined by environmental NGOs as the “**environmental footprint**”. This was often considered in light of what the media calls the **Population Bomb**⁶, namely the potentially devastating effects of demographic growth, more specifically of developing countries with population growth that remains very dynamic.

Subsequently, the influence of **complexity science**⁷, the precursor of systemics, and the development of climatology in relation to the upsurge in digital calculation and IT modeling capacities meant that the relationships between nature and societies were to be considered as part of **comprehensive climate change challenges**. Land development practices were then reconsidered as part of **anthropogenic accountability** within global climate change. From this derives the inclusion of land use, as a means of development, in the complex systemics of climate challenges. These two major scientific, epistemological and political movements resulted in the emergence of their synthesis, **sustainable development**.

4. As part of this movement, a number of NGOs were founded such as the International Union for the Protection of Nature (IUPN) in 1948 and the World Wild Fund (WWF) in 1961, which actively lobbied international bodies such as the United Nations. It was also against this backdrop that UNESCO published its “Man and Biosphere” program in the 1970s to promote the creation of strict reserves.
5. In economics, a distinction is often made between natural capital, made up of natural resources, and human, i.e. labor, and financial capital. The challenge here is to ascertain the extent to which stocks can be substituted (natural capital by human capital). Along these lines, is replacing a lake with a huge swimming pool an irrevocable loss of natural capital or simply a substitution with human capital of equivalent value?
6. See also the famous work by Paul Ehrlich, *The Population Bomb*, published in 1968.
7. Complexity science covers a wide range of theories and models to study complex systems, such as climatology and risk science

They also refocused the social and economic challenges of development on its twofold impacts on **living beings** and the **climate**⁸, both on local and global scales.

Fordist development practices in a mass land ownership regime

Inspired by Taylorism and with an added political layer, **Fordism** was not only a new industrial production method (assembly lines, division of labor, a hierarchy amongst employees, etc.). It was also a new social and economic regime which used wage increases to extend ownership of a **home** and of a **plot of land** to most North-American and subsequently West European households in addition to purchasing a car and enjoying a level of consumption of manufactured goods. These are all signifiers of access to the “middle classes”. Theorized for the first time by urban planner Robert Moses in New York in the 1940s, the **Fordist city** model and its sprawling suburbs drew inspiration from Fordist production and development regimes and became widespread in the post-war period during the thirty-year boom.

Founded upon the **suburban house** and **private car** tandem, the Fordist city was dependent on oil, in addition to the availability of plentiful and inexpensive land that was easy to convert to artificial surfaces. It had an extensive growth principle and its costs did not include those related to the destruction of the environment caused by **urban sprawl**. It also had a great need for new infrastructure and public investment: roads, bridges, water supply, wastewater systems, gas and electricity grids, public facilities in peri-urban areas (schools, hospitals, etc.). The Fordist city was based on a model set up as the antithesis of land parsimony. It was the ultimate city model requiring **extensive growth**.

In addition to creating a strong sense of social desirability that nurtured the famous American way of life, the Fordist city was the blind spot of the **political regime** that it held hostage. In order to ensure the expensive reproduction conditions of the Fordist city, the State had to guarantee a compatible **rule of law** (labor laws, planning laws, the right to own private property). It also had to use its governing powers to strike a balance through its **monetary policy** (on which household debt capacity depends), **fiscal policy** (including homeownership assistance) and even its military policy in relation to **petroleum politics**.

Beyond the framework of production systems, Fordism became a political framework which conferred upon **suburbanization a social compromise** (agreement of the Welfare State and major companies to defend the way of life of the middle classes who own their own home, plot of land and vehicle), a new **economic growth regime** (industrial capitalism and a society focused on mass consumption), a new form of labor organization (Taylorism, justified socially by higher wages) and a new geopolitical strategy (access to global oil reserves and building materials). Within this Fordist compromise, land is merely a means to

8. The recent concept of geodiversity, namely the geological diversity undermined by the use of resources to produce materials, is a third category for measuring the impact of human activity on the planet.

an end. It is a key pre-condition to the general operation of the Fordist political, social, economic and development regime and is deeply incompatible with any idea of land parsimony⁹ which became a toxic and destabilizing ideal.

Post-Fordist development practices: artificialization and compact urban development

The Fordist city model and more specifically the development of its suburbs was hit hard by the crisis in the 1970s and the two oil shocks of 1973 and 1979. Based on an almost exclusive use of motor vehicles, making the model highly dependent on oil, the Fordist practices that predominated urban planning experienced a gradual decline, firstly in Europe and then across the world, with the emergence of alternative approaches that coexisted without any clear direction. The decline in the predominance of Fordist practices heralded the so-called “post-Fordist period”.

Post-Fordism retains several of Fordism’s characteristics. In particular, it continues urban sprawl to varying degrees depending on the city and the country. In France, for example, a major city such as Toulouse, which experienced significant urban spread in the 1990s, still exhibits highly Fordist urban development, while a more compact **multi-hub** city such as Rennes follows a different system. The **compact city** model of the 1990s, recontextualized as part of **sustainable cities** in the early 2000s, contributed to a spatial turning point in Fordist practices with the promotion of **intense land use**, a stop to extensive urban sprawl, the **revegetation** of urban centers and a residential ideal of small-scale collective housing instead of individual suburban homes. Eco-districts are one example of post-Fordist development practices. These are developing across Europe and combine compactness, carbon-free **soft mobility** options, **renewable energy**, walkable distances, a mix of land uses, and of services, activities and populations (social, generational, gender and ethnic diversity). Urban experimentation and innovation have taken over from the homogenous standardization of low-rise housing developments and their replication.

Contrary to what one might think, post-Fordism is not a new regime. As suggested by the prefix “post”, it is in fact an open-ended period of transition between the Fordist system, which fell into crisis with the oil shocks, and a new development regime that brings together new economic, political, social and environmental challenges using new urban production practices. While we know when the period started, the main intellectual difficulty of post-Fordism is to estimate when it will end, once the transition to the new regime following on from Fordism is completed. This still remains highly uncertain. What will the new regime be like? What will be its spatial, social, economic, political, environmental and philosophical characteristics? Which relationships will it establish

9. An ethical stance of moderation which aims to achieve a fair use of resources in accordance with reasonable policy objectives.

with the land and with non-humans? Will a new social class emerge from it? Will there be new urban forms, as with Fordism's invention of suburbs? New modes of transportation? New geopolitics for materials and resources? As these questions continue to stimulate heated debate, weak signals of the emergence of a new general regime based on parsimony, including the ZNA principle, seem to be on the rise in France and in many other countries across the globe.

Steps towards the introduction of a regime based on parsimonious land use

The spirit of Zero Net Artificialization and of overarching land parsimony is not radically new. Its introduction in the 2021 French Climate and Resilience Law as a binding development objective is, however, unprecedented, and indicates a turning point in policy. The prescriptive institution of ZNA contributes to promoting a general principle of parsimonious use affecting not only land but also many other types of resources such as incentives for energy savings, alternative agricultural practices that use fewer inputs, materials that emit less CO₂, reasonable use of medicines (antibiotics in particular), a decline in the amount of meat we eat, etc. In the early 2000s, there was a set of simultaneous trends that promoted general parsimony and tended to put forward the idea that a general regime based on parsimony would be the new successor to Fordism, as a result of the thirty or so years of "post-Fordist" transition.

In the 1980s, 1990s and 2000s, we can see the first indicators of the slow rise of this general regime of parsimonious practices, and more specifically its repercussions on land use. As early as 1992, in parallel with the considerations of the United Nations Earth Summit in Rio, the Convention to Combat Desertification introduced the concept of "Zero Net Land Degradation" as a sustainable development objective. Two decades on, the proposal moved forward and in 2015 was included in the **United Nations'** Sustainable Development Goals under goal 15.3 "land degradation neutrality". For all countries, this formalized a common goal of parsimonious land use.

II. Is the European Union a major advocate of land parsimony?

French attentiveness to land parsimony came before the introduction of ZNA. In 2018, the government's **biodiversity plan** added in Goal 1.3 the ambition to "limiting the consumption of natural, agricultural and forest areas to meet the target of zero net land take". This was followed by many initiatives which paved the way for ZNA, such as the creation of the **Observatoire de l'artificialisation** (soil artificialization observatory), an interministerial working group founded by the Sustainable Development Commission (CGDD) and a pilot scheme for local land parsimony action entrusted to the Planning, Construction and Architecture Programme (PUCA) and the National Agency for Local and Regional Cohesion (ANCT). In its ministerial directive issued on July 29, 2019, the French State specified that it understood land parsimony as "an objective for the **convergence** and **coherence** of our public policies on energy, climate, ecology, urban development, cohesion and agriculture, and not as an additional sector-specific policy". The 2020 French **National Low Carbon Strategy** clearly states that "*soil artificialization is a high-stake issue for attaining carbon neutrality*"¹⁰. The French Citizens' Climate Convention took on the concept of limiting artificialization in its proposal SL3.1, which proposes to "*define a restrictive envelope of a maximum number of hectares that can be developed, thereby halving land artificialization and making Local and Intermunicipal Urban Development Plans (PLU and PLUI) compliant and not simply compatible with the French territorial coherence plan (SCOT)*"¹¹. The concept is also stated in the 2021 French Climate and Resilience Law, and above all in the 2022 implementing circulars which give an objective of cutting the consumption of natural, agricultural and forest areas in France by half by 2031¹².

While the Climate and Resilience Law does introduce ZNA for the first time in French legislation¹³, the aim of net artificialization is not new (Ménard et al., 2021). A report published by CEREMA provides a reminder of the European origins

10. See the French National Low Carbon Strategy, 2020, p. 72: <https://www.ecologie.gouv.fr/sites/default/files/Projet%20SNBC%20EN.pdf> (last viewed in September 2023).

11. See the Citizens' Climate Convention (in French): <https://propositions.conventioncitoyennepourleclimat.fr/> (last viewed in September 2023).

12. See article 194 of the French Climate and Resilience Law.

13. Its applicability is specified by two orders dated April 30 and August 4, 2022.

of this idea. The European Commission set out a “No Net Land Take by 2050” objective in its 2011 Roadmap to a Resource Efficient Europe¹⁴.

Lastly, the IPCC put forward in its 2019 special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems the idea that land use changes have an impact on climate change (regarding the soil’s capacity to sequester carbon), in addition to social repercussions, specifically in terms of access to land. It also states that urban sprawl is responsible for soil artificialization (CEREMA, 2019). The EU and Europeans therefore appear to be highly committed to promoting land parsimony worldwide. How did Europe become one of the world’s leading advocates of parsimony?

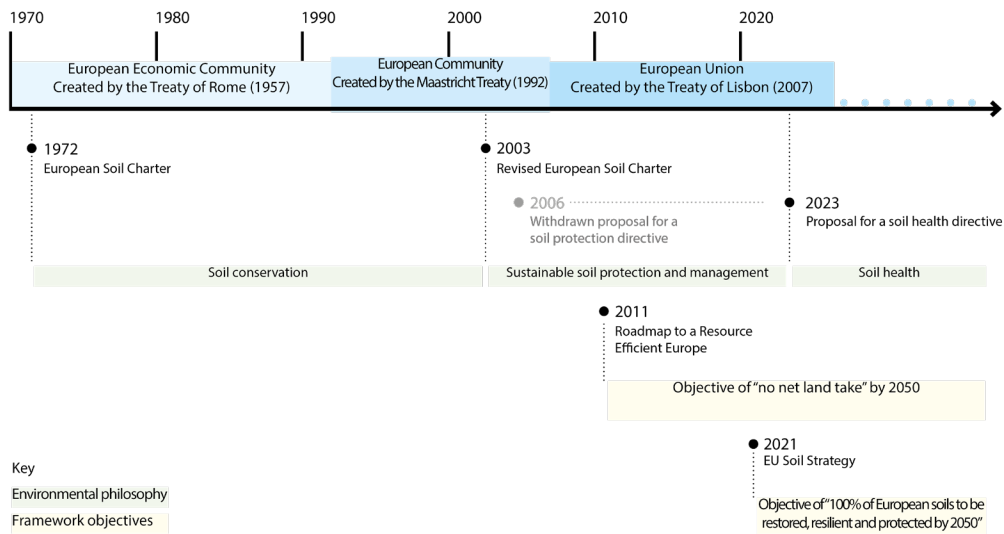
The EU’s competences put to the test to consider land use in development practices

While the European Union does have competence regarding the environment, it has no jurisdiction over land development in its broadest sense (Santamaria, 2017). Some sector-based European policies do have an impact on land use, such as the 1999 Habitats Directive which led to the creation of Natura 2000 areas. However, the issue of land and land parsimony is stuck between the drive to create a uniform environmental protection framework on a European level and national development systems which are the prerogative of Member States, each with their own history and social and political challenges.

Moreover, land protection is greater in scope than land use planning or the use of land for urban development. It also covers business sectors and policies involved in land degradation and artificialization, such as agriculture, transport and industry. By definition, the issue of land encompasses many sectors, at a crossroads between various **public policies** and levels of **governance**, and its objectives may sometimes appear contradictory. Land parsimony may be perceived as the “planning” side of soil protection, which itself comes under environmental policy. Yet through land parsimony, planners and promoters pursue specific objectives. Optimizing land use for urban development does not necessarily entail protecting the land with the best environmental qualities.

14. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52011DC0571> (last viewed in December 2022).

Is the European Union a major advocate of land parsimony?



Timeine: Naudin, 2023

From soil conservation to “no net land take”

The first step taken together was the 1972 **European Soil Charter**, revised in 2003. Its main points are still topical today: it sets out an acknowledgement that “soil is a complex and dynamic milieu”, that it “*influences vegetation and the water cycle*”, that it is subject to “*increasing biological deterioration*” and that “*ecological principles are not always taken into consideration when, in the context of regional planning, decisions on land-use are made*” (Council of Europe, 1972). European countries were then encouraged to implement **soil conservation** policies and then, when the Charter was revised in 2003, to adopt sustainable management practices of soils as a resource. These two notions come from the same anthropocentric stance of the conservationist regime of parsimony.

In 2006, a proposed directive for the protection of soil was put to Member States, but was blocked by opposition from several countries including France, the United Kingdom and Germany¹⁵. The aim of introducing a common soil protection framework was not shelved, however, and two new non-binding documents were published: the first in 2011, setting for the first time the objective of no net land take¹⁶ by 2050, and the second in 2021, announcing an objective of “*100% of European soils to be restored, resilient and protected*” by 2050.

15. European Directives are legally binding texts which must be transposed into the laws of each European Member State.

16. No net land take: no net increase in the surface area of occupied land. This principle is the template for the French Zero Net Artificialization objective.

In 2023, the European Commission proposed a new Directive on **soil health**.

Despite appearances, the no net land take concept conveys more than an arithmetic calculation of land use. It carries several decades of environmental scientific work that sheds light on the key role that soils play as an interface between human uses and natural areas. One of the developments supported in France by the 2021 Climate and Resilience Law is a change in how soils are considered, through a new definition of artificialization. From land use (in natural, agricultural or forest areas), it now expresses a deterioration of their environmental functions and as a result provides a recognition of their existence as a “complex and dynamic” milieu. This view is akin to the European environmental stance on soils, of which Germany has long been a pioneer (Bertrand, 2018). This is what enables the first European initiatives of the 2020s to use the term “soil health”, as health can only be related to a living organism. As environmental policies may be perceived as early indicators of a systemic change, this epistemological and political development must be underscored.

From the fight against urban sprawl to land parsimony

Growing concerns regarding global warming and a decline in biodiversity have bolstered positions in favor of soil protection, due to its functions of supporting **biodiversity, carbon storage** and water regulation. This can be seen in the uptake of dominant themes among development and urban planning professionals, following the emergence of the sustainable development principle and its transcription into “sustainable urban development” (Emelianoff, 2004), and of the post-Fordist “compact city” for which “qualitative density” (Halleux, 2017) was specifically a solution to the development problem of urban sprawl and the resulting dependence on cars. Climate and biodiversity protection issues were subsequently included as a more integral part of the movement.

The environmental issue and the responses of European policies standardize countries’ development systems. However, it would appear that these systems are still very diverse in the ways in which they tackle land parsimony challenges.

Several countries have started to adopt the no net land take principle in their development regulations. Back in 2002, Germany set itself the goal of limiting land take to 30 hectares per day by 2020. This was furthered in 2016 with a non-binding goal of zero net land take by 2050¹⁷.

Belgium (Flanders in 2018, Wallonia in 2019) and France (2021) have set themselves the binding goal of Zero Net Artificialization by 2050.

17. While Germany failed to meet its target of limiting its land take to 30 ha/day (2020: 54 ha/day), it has actually halved the pace of its land take compared to the early 2000s (2001: 110 ha/day).

Is the European Union a major advocate of land parsimony?

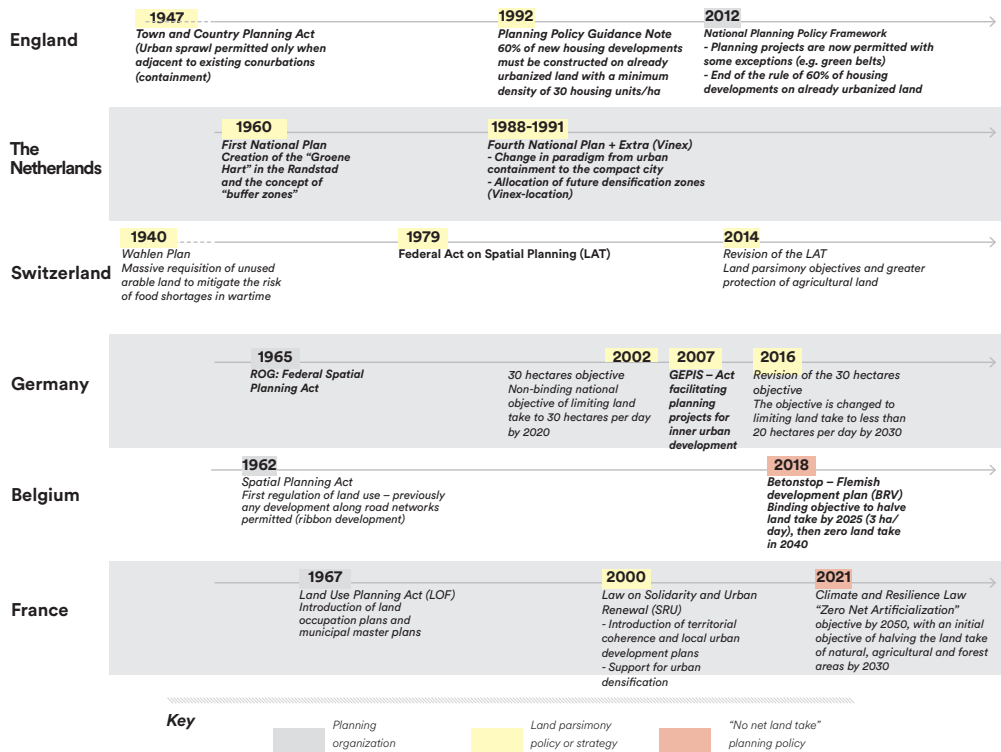


Table: Naudin, 2023

This is not the case, however, in the United Kingdom and the Netherlands, despite both countries being considered as models of urban planning. In practice, they both enjoy a long tradition of parsimonious land use. Around the time of World War II, the United Kingdom had already started setting out official rules for protecting the "green belts" around cities. These were followed by national regulations that significantly curtailed cities' horizontal expansion¹⁸. In the 1960s, the Netherlands introduced "buffer areas" between cities and natural areas and between cities, as is the case of the *Groene Hart* in the Randstad¹⁹.

These moves cemented the UK and the Netherlands' reputations as leaders in parsimonious land use, leaving countries such as France and Belgium lagging behind (Halleux et al., 2012). "Leading" countries have long-standing planning regulations and do not seem to feel compelled to adopt the no net land take principle for now.

18. Green Belts Act in 1938 and Town and Country Act in 1947

19. The Groene Hart (Green Heart) of the Randstad is a sparsely populated rural area deliberately protected from urban development to maintain a distinction between the major Dutch cities, including Rotterdam, The Hague and Amsterdam.

Conversely, the countries lagging behind support very ambitious reforms in a bid to bridge these gaps. Germany is in an intermediate position. It is striving to reduce its land take through quantifiable targets but these are decided on a federal level and are not legally binding for the *Länder* or for municipalities which are in charge of their own planning.

This distinction may be difficult to interpret in a quantitative analysis. According to the LUCAS survey conducted by Eurostat in 2018, the Netherlands and Belgium share similar characteristics, and artificial land cover of 12.1% and 11.4% of their territories respectively, with a per capita ratio of artificial land cover of 267.7 m² (Netherlands) and 309.8 m² (Belgium). These figures are better than the EU average (363 m² per capita). However, they overlook how this artificialization is shaped. Urban development has been much more anarchic in Belgium as it was traditionally authorized along road networks (known as “ribbon” development). The Netherlands developed a planning system structured around a **polycentric model** of cities intended to remain clearly separate from each other by means of more restricted artificial land take following the shape of a green belt.

A quantitative assessment of this feeling of “leaders” and “stragglers” requires analysis with its own specific research work. The variety of geographic contexts and the diversity of methodologies used must be untangled to produce statistics on soil artificialization. In France alone, several data acquisition methods, nomenclatures and measurement scales are used to generate the main databases. Once standardized international figures have been obtained, ideally for long series, painstaking work is necessary to understand the shapes that artificialization takes in different countries and regions. These shapes may be more or less spread out or piecemeal, for example.

A comparison of how national legislations on planning are developed provides an interesting insight into how the no net land take principle is a means of reinforcing the regulatory and planning apparatus of land development. American professor of political science Jefferey Sellers calls the period at the end of the 19th century a turning point in whether or not the rights to individual ownership should be limited to control land use (Sellers, 2004). The United Kingdom experienced early urban development in relation to its industrialization. It gave land planning powers to **local authorities** in the early 20th century (Housing and Town Act, 1909). Very early on, the Netherlands had to manage a high population density in addition to major national development projects aimed at containing water. One example of this is the large-scale Zuiderzee reclamation works which followed extensive flooding in 1916. Germany gave planning powers to towns and cities in 1918 (Prussian Housing Act) and founded the first regional planning body for the industrial Ruhr district in 1920. In these three countries, the power balance favored the planning system, enshrined in the regulatory apparatus, and professional practices advocating parsimonious land use, to the detriment of owners’ rights to freely make changes to land use. In Belgium and France, where a

Is the European Union a major advocate of land parsimony?

large rural population remained for longer, it took until the post-war boom period for the first public policies to regulate changes in land use²⁰.

Belgian geographer Jean-Marie Halleux built on the works of Sellers and the French economist Joseph Comby to synthesize this tension in the comparison of national land regimes and planning systems (Halleux, 2017):

*“As summed up by Joseph Comby (2010), the **land owner is not the sovereign of the area and developing shared land always requires a challenging of the rights related to private plots of land, in particular building rights and the right to privatize urban ground rent.** On this topic, [...] national traditions have differed since the decisions made during the **turning point of the industrial revolution.** In States that accepted early on to limit the rights pertaining to private plots of land, the creation of a public planning system has brought about a relatively efficient management of urban extensions. Conversely, in States that belatedly introduced a planning system that challenged ownership rights, urban compactness has been less well preserved”.*

20. The 1962 Spatial Planning Act in Belgium, the 1967 Land Use Planning Act (LOF) in France.

III. Land parsimony in England: the historical model?

Since entering the **modern era** and the first industrial revolution, England paradoxically appeared to be a pioneer of widespread land planning dynamics while being the main creator of land parsimony models. Land parsimony in England²¹ has intrinsic roots in two key elements, namely the urban repercussions of the industrial revolution and the green belt concept.

From garden cities to the compact city

The **green belt** concept was derived from several different sources and various schools of thought successively took on the idea²². London's Green Belt then those of other major English cities are a result of decades-long cultural and legislative developments that combined the prevailing views of the time such as a deep-seated anti-urban feeling related to the desire of providing city-dwellers with natural areas to be used as breathing and leisure spaces, and the belief that cities should be delimited by clear borders (Bishop et al., 2020).

The 1909 Housing and Town Planning Act gave local authorities spatial planning powers for the first time, which led to rational land organization. The notion of green belts which originated in the early 20th century officially came to fruition in the 1938 Green Belts Act. It was, however, the 1947 Town and Country Planning Act that actually created a land parsimony framework. This Act automatically prohibited any urban development that was not adjacent to an existing conurbation. This strict control of **urban sprawl** actually cemented the protection of **green belt land**, in which **planning permission** was prohibited (Touati, 2015). This **urban containment** policy achieved only limited success and did not prevent the **urban development of peripheral areas** made possible by **increased private vehicle use**. It even promoted it by making the **countryside** more attractive to those who had the means to move there.

In 1992, the Planning Policy Guidance Note heralded the new paradigm of urban compacity or **the compact city** (Bibby et al., 2018). This regulation provides

21. The major laws stated here were adopted by the UK Parliament, but given the different regimes in the UK's nations and the importance of English history in British planning practices, we have decided to focus solely on England.

22. While Howard did want to surround his garden cities with agricultural buffer zones, the previous work of Patrick Geddes saw complex forms of interdependence between cities and rural areas and conceived potential green belts, not simply as a means of separation, but also as areas of ecological interest or nature areas.

that 60% of new housing developments must now be constructed on land that is already urbanized, with minimum density of thirty housing units per hectare.

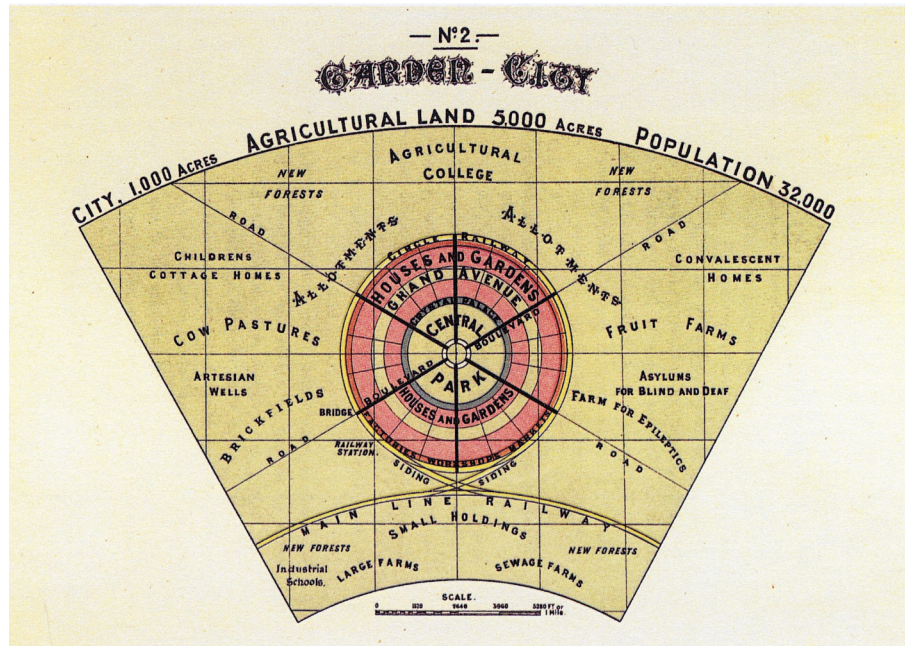


Diagram of the Garden City

Ebenzer Howard, *To-morrow: A Peaceful Path to Real Reform*, Londres : Swan Sonnenschein & Co, 1898.

Source: Wikimedia Commons

The legacy of the green belt principle was, however, increasingly challenged. According to the 2012 National Planning Policy Framework, “the Government attaches great importance to green belts”. They are viewed as a means of preventing **urban sprawl**, of demarcating the limits between neighboring towns or cities, of preserving heritage and natural identity and, simply by being there, of fostering **urban renewal**. The green belt is an instrument in the compact city toolkit. Yet due to residential pressure in cities, some people started to highlight the adverse effects of the practice, in particular people jumping over the green belt to live further afield, resulting in more daily commutes (Cheshire, 2022). This other view of green belts is rather gloomy. They are said to have lost their recreational and landscape function (by becoming predominantly areas of intensive agriculture), and perform no other role than “**discriminatory zoning**”, increasing **property prices** around them to the benefit of already established owners and to the detriment of new generations (ibid).

While previously symbolic of the modern common weal in the country of **enclosures**²³, the myth of the English green belt thrives on the humanist **utopias** that emerged in the early 20th century. As the main **land regulation** instrument against a backdrop of economic laissez-faire, its history reflects the past and present tensions of the English planning regime.

Over the last few centuries, British writers and poets strikingly captured the contrast between imaginary constructs of the unsanitary industrial city and the English countryside as the lost Eden. This can be seen in the romanticism of William Wordsworth (1770-1850) whose lyric poetry praises man's freedom amid **natural landscapes**, the works of Charles Dickens (1812-1870) which are set in Victorian London, and up to J.R.R. Tolkien (1892-1973), whose Shire, where the Hobbits live, is an idealized image of the rural England of his childhood.

The most famous English **urban utopia** is Ebenezer Howard's **garden cities**, both an expression and a product of this dichotomy. At the turn of the 20th century, he envisaged a network of garden cities where honest working people could live a healthy life based on work, family and leisure time and in which urban spread would be naturally regulated by a "cordon sanitaire" of agricultural land (Bishop et. al, 2020). Morality, social hygiene and a rational organization of space combined in an abiding planning concept that has remained a global reference, though it has been diluted in places to become "garden suburbs", suburbs and **suburban housing developments** (Paquot, 2020).



John Constable (1776-1837), *La cathédrale de Salisbury vue des prés*, 1831.
Source: Wikimedia Commons

²³. The rural exodus in England was furthered by a long-lasting move to privatize land that was formerly managed collectively which began in the 16th century

Contemporary land parsimony challenges in England

Planning in England experienced a turning point with the election of David Cameron's Conservative government in 2010. Two initiatives have been particularly significant in view of contemporary land parsimony challenges.

The first is a response to the controversy surrounding **garden grabbing**. Against a regulatory backdrop in which urban spread is strictly limited, the practice of urbanizing the gardens of houses to create new housing units was relatively widespread, prompting the emergence of the acronym BIMBY in 1991 to signify "Bungalow In My Backyard", then "Beauty In My Backyard" (Bibby et al., 2018). The demands of English city-dwellers wishing to maintain their living environment, carried by the media during the electoral campaign, resulted in a change in nomenclature in 2010. **Gardens** were no longer to be considered as land that was already urbanized. Two years later in 2012, the National Planning Policy Framework (NPPF) enacted a major change by removing the rule of 60% of housing on artificialized land.

In short, contemporary English planning and urban development are characterized by a significant alignment of public and private stakeholders in the fight against urban sprawl, with **local authorities** being heavily dependent on financial transfers from the State, which are partly subject to **urban regeneration** objectives, and flexible local planning in which planning projects must not only comply with national directives but must also be approved by Planning Committees that take into account residents' opinions (Bibby, Dunning, Halleux et al., 2018).

This convergence and particularly the "discretionary" practices of English planning has major socio-spatial repercussions. A comparative study of **suburban densification** highlights the power enjoyed by wealthy suburban populations to block projects that may have a negative impact on their living environment, resulting in densification occurring primarily in poor peripheral areas (Bibby, Dunning, Halleux et al., 2018). **Soft densification**, a key planning instrument for parsimonious land use, exacerbates the price regulation of both wealthy areas where residents can afford the price of a large house with a garden, and of poorer areas which are densified to house an increasing number of people, to the detriment of the quality of the **living environment** (reduction of **landscape-focused amenities**, pressure on **public services** with no additional investments).

IV. Land parsimony in Switzerland: a model to follow?

Switzerland, a mountainous country with a surface area of 41,285 square kilometers in the heart of the Alps, has a highly concentrated **population**. More than two thirds of its 8.7 million inhabitants live on the Swiss Plateau, flat terrain that accounts for only 30% of the country's land coverage. This **concentration** within a territory constrained by high peaks has formed an image of a country that is parsimonious with its land use. What are the main characteristics of the Swiss planning model? Does Switzerland really have a virtuous land parsimony model that Europeans tend to admire?



A compact Swiss village
Source: Pixabay

Switzerland: a land parsimony pioneer in Europe

Switzerland is often portrayed in the media, academic studies and policy reports as a **land parsimony model**. Its federal, cantonal and municipal policies to regulate land use or preserve natural and agricultural areas are regularly studied with a view to applying its legislative instruments and planning tools to other

countries. However, its specific political organization means that it is difficult to export its legislative initiatives without adapting them.

Switzerland is a confederation made up of twenty-six independent cantons which enjoy their own Constitution and legislation. The land planning system is therefore not the responsibility of the State, as is the case in a centralized country such as France, but rather conforms to three levels of authority (the Confederation and its Constitution, cantons and their own Constitutions, and municipalities). In addition, there are many other legal provisions that have an impact on the land.

On a Confederation level, planning and environmental issues are addressed by constitutional articles concerning private property (art. 26 Cst.) which has an almost sacred importance in Swiss law, sustainable development (art. 73 Cst.), environmental protection (art. 74 Cst.) and above all land use planning (art. 75 Cst.). The federal government also enacts framework laws. The **Federal Act on Spatial Planning (LAT)** was enacted in 1979 on the basis of article 75 of the Federal Constitution. Its article 1 provides that *“the Confederation, cantons and communes shall ensure that the land is used economically and that building areas are separate from the areas where building is not permitted”*. From the late 1970s, the LAT also promoted a rational vision of the territory and aimed to ensure reasonable land use²⁴, which was already provided for in article 75 of the Federal Constitution on planning: *“The Confederation shall lay down principles on spatial planning. These principles are binding on the Cantons and serve to ensure the appropriate and economic use of the land and its properly ordered settlement”*²⁵. In this way, the LAT appears to safeguard Swiss land parsimony at a federal level, in application of these constitutional principles.

The Swiss Federal Act on Spatial Planning (LAT) and its revision: ensuring land parsimony at a federal level

In its initial version of 1979 (which came into force in 1980), the LAT required that land was used appropriately and reasonably, in compliance with the strict distinction between **building zones and areas deemed non-developable** identified at a cantonal level and applied on a municipal level. This distinction is one of the key principles of land use planning in Switzerland. For example, it explains how **agricultural green belts** have been protected around the country’s major **conurbations**. The application of non-developable areas results in both control over urban and peri-urban sprawl, and over agricultural **land prices** which remain sufficiently low for **farmers** to cover their operating and production costs. This separation also plays an undeniable role in preserving **landscapes immediately around towns and cities**, and in protecting the **major Alpine landscapes** relied on for Switzerland’s tourist appeal and leisure potential.

24. No definition of what the legislator understands as “appropriate and economic use” of the land is proposed in the Act, leaving great scope for different interpretations. See: <https://www.espacesuisse.ch/fr/amenagement-du-territoire/bases-legales/revision-lat> (in French, last viewed in September 2023).

25. See the Swiss Constitution: <https://www.fedlex.admin.ch/eli/cc/1999/404/en> (last viewed in French in September 2023).

The legislative outcome of this clear distinction between building zones and non-developable areas is a strict supervision of construction and of artificialization outside building zones, regulated by articles 16-16b, 24-24d and 37a of the 1979 LAT, and articles 33-43 of the Ordinance on spatial planning of 28 June 2000 providing, for the first time since the 1980s, for the provisions of the LAT.

Due to some of its shortcomings²⁶ and the need to update the challenges for the period from 2010 and 2020, the LAT was revised in March 2013. The primary objective of this revision was to limit the extension of urbanized areas and land take which had been constantly on the rise despite the first version of the LAT in 1979. This revision gave rise to many debates and was preceded by a citizen referendum in which 63% accepted significant reforms to the framework law, thus demonstrating the Swiss population's sensitivity to land parsimony issues. The reform was brought about by environmental and landscape protection advocates wishing to adopt in the early 2010s a popular initiative calling for a moratorium on **the extension of building zones** - an equivalent of the ZNA principle, more than a decade prior to the French initiative. This project did not come to fruition, however, due to the Confederations' drive to quickly organize debate on the LAT's revision, which automatically included the issues put forward by the environmental movement.

The amended LAT (LAT 1) entered into force in 2014 and strengthened Switzerland's land parsimony paradigm, particularly through its article 1 which aims to "*Guide urban development towards the interior (...) [and] create a compact building zone*" (art. 1.2). In addition, article 3 requires that "*sufficient good **arable land** is set aside for agriculture*" (art. 3.2a). In this way, the new LAT reasserts the model of a **dense and compact city** and of an **agricultural and forest green belt**, and aims to combat **urban sprawl** and **land take** in natural, agricultural and forest areas. This point is set out in article 15, which states that "*oversized building zones must be reduced*" (art. 15.2).

The main linchpin in ensuring territorial compliance with the framework law, cantons are required to adopt so-called "building land mobilization" measures in areas that are already built-up (mobilization of **brownfield land**, renovation of **deteriorated buildings, refurbishment**, and other measures such as raising maximum height). Open building zones in poorly serviced areas must be closed or moved to preserve agricultural land and avoid the considerable costs of servicing and **public amenities** (including water supply and electricity connections).

Lastly, to offset the conversion of non-developable zones into building zones, LAT 1 requires the introduction of a special tax on **property value gains** resulting from the planning measures: a rise in **property** prices due to a change in land

26. In order to protect green belts, the Swiss authorities have applied a spatial planning strategy based on a concentration of urban development in existing villages, towns and urban centers to preserve agricultural and forest areas from sprawl and land take. However, this strategy has resulted in an increasing number of small- and medium-sized towns, which increases the country's total artificialization significantly, while paradoxically preventing peri-urban sprawl. Peri-urban sprawl is therefore not systematically an example of artificialization.

category is subject to taxation of a minimum of 20% of property value gains, as provided for in article 5 of the LAT 1. On a political level, the new LAT gives the Swiss Confederation new oversight systems for the master planning of cantons as regards land artificialization, through article 8a. A partial recentralization of planning by the central State, as observed by Éric Charmes for France's ZNA objective (Charmes, 2021), is possible, all other things remaining equal, on a federal level in Switzerland with the revised LAT.

The shortcomings of Swiss land parsimony regulations: a second revision of the LAT

The LAT already required in its initial version of 1979 that land is used appropriately. Yet as the delimitation of building zones comes under the jurisdiction of municipalities, subject to compliance with cantonal development plans, many municipalities have created oversized building zones to anticipate future needs or to bypass an excessively strict protection of natural, agricultural and forest areas. As a result, between the 1980s and the 2010s, artificialization and the number of plots of built-up land rose significantly, despite particularly strict legislation. In a bid to reverse this trend and roll out sustainable environmental, economic and social development across the country, a two-phase revision of the LAT was planned: the 2014 revision (known as LAT 1), then a second revision phase, known as LAT 2.

Debates concerning LAT 2 began in 2018, focusing mainly on new building regulations outside building zones which had been subject to various attempts to relax the rules since the 1980s. In addition to many exempting provisions, the range of uses reputed to comply with the change in allocation of **agricultural land** has grown. Since the end of the 2010s, and specifically during the **Covid-19 pandemic**, many cantonal and parliamentary initiatives and popular motions have attempted to enshrine new exemptions in the law. As a result, citizen collectives have been formed, resulting in the popular initiative on a federal level "Against concreting over our landscape" (Initiative for the landscape)" in 2018, which was filed just as LAT 2 debates began. After almost five years of negotiations, the Swiss Council of States unanimously approved the draft LAT 2 on June 16, 2022.

Presented as an indirect counter-proposal to the environmental citizens' collectives' initiative for the landscape, LAT 2 strives to strike a balance between the Swiss tradition of land parsimony and the artificialization requirements of a country experiencing robust demographic and economic growth, in addition to a structural housing crisis of unprecedented proportions in Europe²⁷.

27. For instance, the vacancy rate of residential property in Geneva was 0.37% in 2022, far lower than the so-called frictional vacancy rate of a healthy property market corresponding to the ordinary turnover of tenants and households. The rate for Zurich in the same year was 0.07%, and the average for Switzerland was 1.54% according to the Federal Statistical Office (OFS, 2021).

Achieving land parsimony in Switzerland by exporting land take requirements outside national borders - the case of Greater Geneva

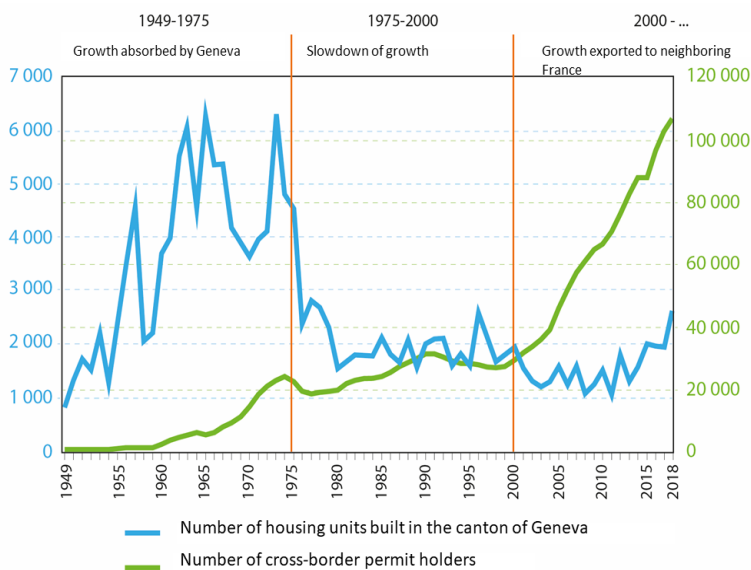
Due to its structure as a Confederation, Switzerland practices what is known as the enforcement of federal legislation (art. 46 of the Constitution). The cantonal administrations are responsible for implementing federal law. This specific feature means that it is impossible for the federal government to impose measures on cantons in a **top-down** manner: any federal policy must be supported by **bottom-up** cantonal dynamics if they are to be implemented and adapted to local constraints. Land use planning is no exception to this: beyond the general federal framework, it is the cantons who have the most power.

Geneva is, with Zurich, one of the two most urbanized cantons in Switzerland, having experienced one of the highest levels of demographic and economic growth in the country (jobs increased by 26% between 2005 and 2015). Land parsimony issues in the city are acutely related to the urgent need for **housing, infrastructure** and **retail property**. It is, however, striking to see that despite the major pressure on its land and particularly small surface area (282.5 km²), the canton has remarkably managed to conserve its agricultural belt and the landscape quality of its outskirts.

Perhaps due to its territory being small, or to the influence of **international organizations** which stepped up the circulation of international models there (such as the British green belt), Geneva introduced a **zoning** policy in 1929 with a view to preserving its agricultural lands from any form of peri-urban sprawl. During the post-war period, the paradigm was overlooked for a time, with the multiplication of **satellite housing developments** which practice land take according to a “concentrated deconcentration” approach. Following this, the authorities in Geneva reshifted the focus of their planning strategy to land parsimony in the mid-1970s. The 1975 cantonal master plan dropped urban extension projects and did not create any new building zones, thus significantly impeding the horizontal growth of urban areas.

This policy which enforced strict compliance with the land parsimony principle resulted in a blatant shortage of buildings over the cantonal territory which is still a characteristic of Geneva today. Yet while the number of **cross-border workers** remained low until the late 1990s, numbers increased in the 2000s as the Greater Geneva area’s appeal grew. In the early 2020s, out of some 370,000 people in employment in the Canton, 45% lived outside its borders. More than 80,000 inhabitants live in France, in addition to the 20,000 Swiss citizens who prefer to live in the Genevois français (an area of Greater Geneva located in France), and 24,000 employees come from the neighboring canton of Vaud. The outcome of the scissor effect between the number of jobs and the insufficient housing opportunities is a colossal shift of land take outside the canton of Geneva, and particular in neighboring areas of France: between 2009 and 2018, 1,507 hectares (the equivalent of 2,000 football pitches) were converted to artificial surfaces

in the Genevois français to meet housing demand, 77% of which just to build new housing units (Lambelet and Languillon, 2024). To this must be added all land and expenditure used for the development of the infrastructure, public services and retail property needed to satisfy such a population increase, in addition to the saturation of transport routes, **greenhouse gas** and **fine particle emissions** and the **noise pollution** caused by regularly congested traffic. Parsimonious land use in Geneva is therefore offset excessively by a development frenzy in France, in addition to all the related **negative externalities**.

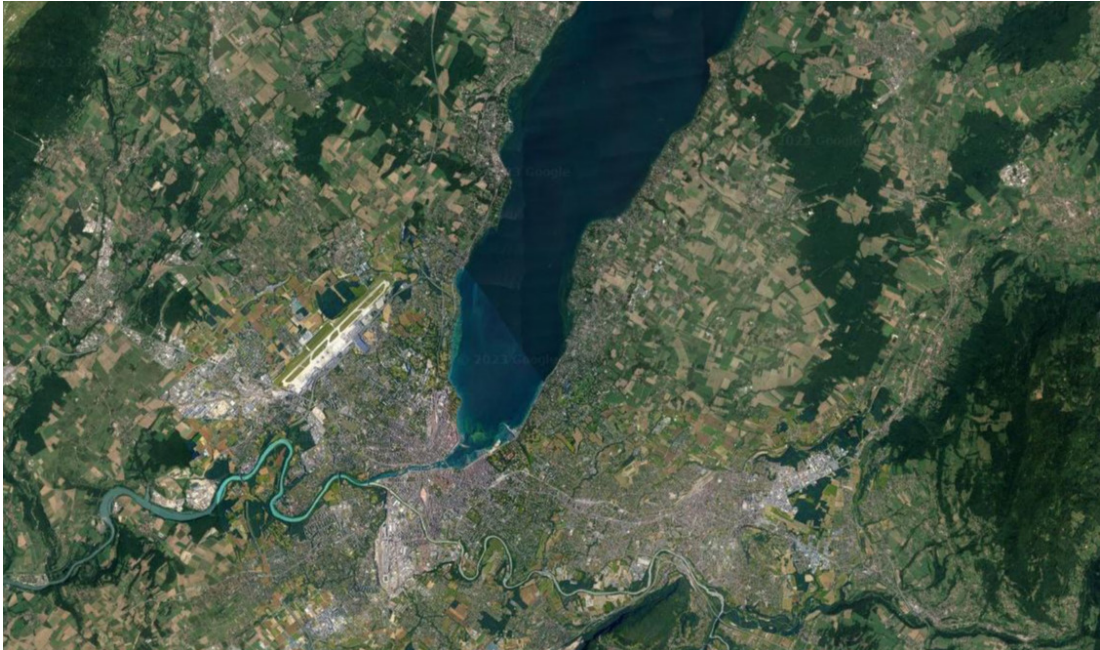


Source: OCSTAT (2018 & 2022). Graph taken from Lambelet et Languillon, 2024.

By outsourcing land take outside its borders, the canton of Geneva may come across as virtuous. In practice, it is only concealing the track record of its land take by shifting it onto neighboring territories, primarily in France. In this way, the virtuous nature of Geneva and of Switzerland in general raises many issues, starting with ethical questions²⁸. The ZNA principle's introduction into French land planning challenges significantly jeopardizes Greater Geneva's land practices. How can a land parsimony policy be furthered while maintaining the high level of growth in the cross-border conurbation once attention to land parsimony has been redressed on both sides of the border? Has Geneva the means to continue its planning strategy when it can no longer export its land requirements to France?

28. Is it ethical to promote a land parsimony policy in a territory when the territory's own land take and new-build requirements are simply shifted to neighboring territories and when, as a result, the latter cannot aspire to the same parsimonious use of land? This moral challenge is the same for the "not in my backyard" attitude to unwelcome infrastructure that benefits all, or for the relocation of polluting industries to present a better environmental performance while importing the production of said industries at low costs.

Land parsimony practices, comparative trends and outlook



Satellite view of the Greater Geneva area
Google, 2023

V. Land parsimony outside Europe: The Japanese planning model: a complex case

With a surface area of 377,975 square kilometers and a population of 124.7 million, Japan is the 11th most populated country in the world, but only ranks 62nd for the size of its territory. Furthermore, as mountains occupy around 80% of its landmass, most of its population is concentrated in a very limited number of coastal plains and mountain valleys, thus increasing the land take pressure on a rare resource.

Densely populated with its 330 inhabitants per square kilometer (triple that of the French average recorded at 105 in 2019), the country is, however, characterized by **major population disparities**: while the prefecture of Hokkaido, the large island to the north, has a population density of only 65 inhabitants per km², while the highest density is found in the prefecture of Tokyo, which exceeds 6,300 inhabitants per km², almost one hundred times greater than in Hokkaido. Against this specific geographical backdrop, how are the issues of land occupation and planning addressed? Is land parsimony a realistic challenge for Japan?

The Japanese land regime and the myth of insufficient space in a declining archipelago

Culturally speaking, Japan is the country where land has more **economic, symbolic and political value** than property, unlike France where property ownership is sacred. There are many reasons why land prevails over property in Japan. One is the instability of buildings resulting mostly from the many cycles of destruction regularly experienced in the country following **earthquakes, fires** (the preferred building material in Japan is traditionally wood) and **war** (particularly the firebombing and nuclear bombing of World War II).

There are, however, other factors which result in Japan favoring land over property. Let us consider two of these. Firstly, the importance of **rice cultivation**, including in traditional **taxation** (calculated in quantities of rice), made agricultural land a historical benchmark of wealth for the commons and of power for warlords and nobles of the imperial court. Their fiefdoms were calculated according to an index of rice production capacity. Secondly and more recently, the financialization of urban areas has increased the liquidity of property through

land titles. The overwhelming majority of **mortgages** are based on the value of these titles. This was particularly the case in the 1980s, during a notorious property bubble in which most financial assets were backed by a rise in land prices, without much consideration of the buildings occupying the land (Bourdier and Pelletier, 2000).

In the general framework of the Japanese land regime, the importance of land over property explains the strategies implemented to safeguard land value. Discussions about scarcity are naturally part of these **land capitalization strategies**, at least to guarantee value, and possibly to increase it. The myth of insufficient space therefore contributes to this strategy. It is therefore appropriate in Japan to differentiate between territories that are really under pressure with a low land take margin where land parsimony is a complicated yet necessary challenge, territories where discussions about scarcity support the financial interests of land capitalization which leverage land parsimony to their advantage, and territories which are currently experiencing no shortage of land where parsimony challenges are often interconnected with re-naturalization. There are more territories in the latter category that one would think.



Tokyo's densely urbanized center (Minato-ku).
Raphaël Languillon, August 28 2023



Brownfield land in the new city of Kashiwa no Ha, in the north-eastern outskirts of Tokyo.

Raphaël Languillon, Noember22 2022

Since 2010, Japan's population has been declining, from a historic peak of 128.06 million inhabitants. Tokyo is now an exceptional area of growth against a national backdrop of **depopulation** in which even the major city of Osaka, the second-largest urban area in the country, is losing inhabitants. A very high percentage of national territory is categorized as in **over-depopulation** (kaso), losing more than 10% of inhabitants each decade. In 2005, this phenomenon concerned 40% of municipalities and 54.1% of the national territory. It has gathered pace since and in 2020 concerned 51.5% of municipalities and 63.2% of the national territory²⁹. The issue of land parsimony is therefore not about how to avoid artificialization, but rather how to **re-naturalize declining territories**.

Planning in Japan: “scattered density” and the complex oversight of land take

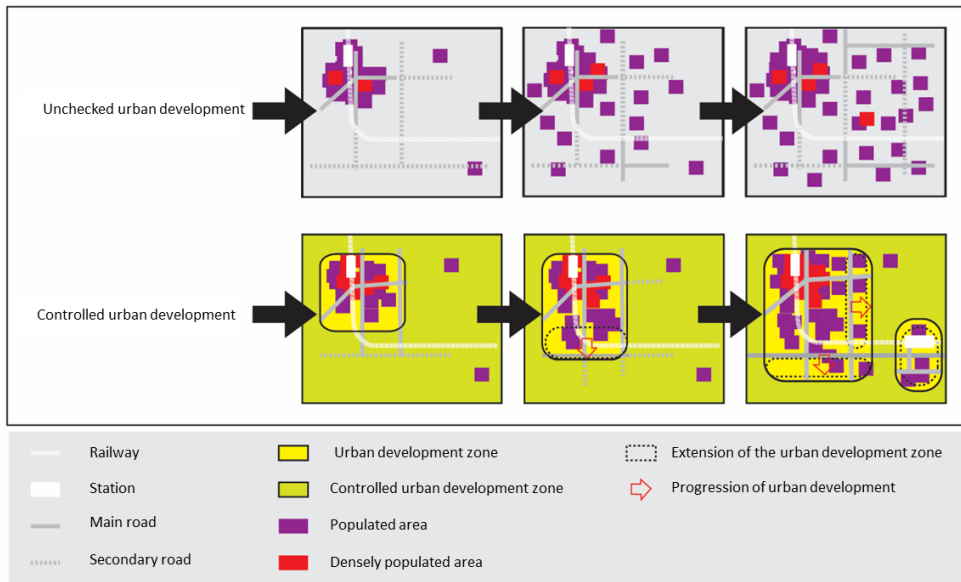
Unlike in Europe and North America, urban development in Japan is not focused on the road network but rather on trains and railways (Aveline, 2003). This is due to the fact that most peri-urban areas around major cities in the country have been developed by **private rail companies**, known as *otemintetsu*, which used peri-urban areas as key factors of their economic growth models. By subdividing plots of land along the tracks in their network, the otemintetsu have densified the

areas they service, thereby increasing passenger numbers on their lines. Through this, they were the driving forces behind a **virtuous growth cycle** on the basis of an intense urban development process combining **rail travel** and **suburban homes**. Unlike the Fordist suburbs of the USA, the density of the Japanese urban sprawl model is much higher than in OECD countries, as it is backed by the profitability of rail travel, which needs a relatively high density of inhabitants who are captive users of this public transportation service. This is the origin of the “**scattered density**” of major Japanese cities.

Furthermore, alongside the planning strategies of the otemintetsu, public authorities introduced very early on a policy to oversee land take and peri-urban sprawl, encouraging a type of **densification** and **compactification** of urban areas. Without going back to the 1930s and plans for green belts based on the British model, we can consider the New City Planning Act (*shin toshi keikaku hō*) of 1968. This Act is a revision of the 1919 City Planning Act, which was not well-suited to overseeing urban sprawl in the post-war **High-Growth** period. It introduced a new system defining the **perimeters of urban planning**, divided into two categories: **urban development zones** (*shigaika kuiki*), subdivided into twelve sub-categories, which regulate land use; and **controlled urban development zones** (*shigaika chōsei kuiki*), which aim to restrict urban development in areas on the periphery of development zones.

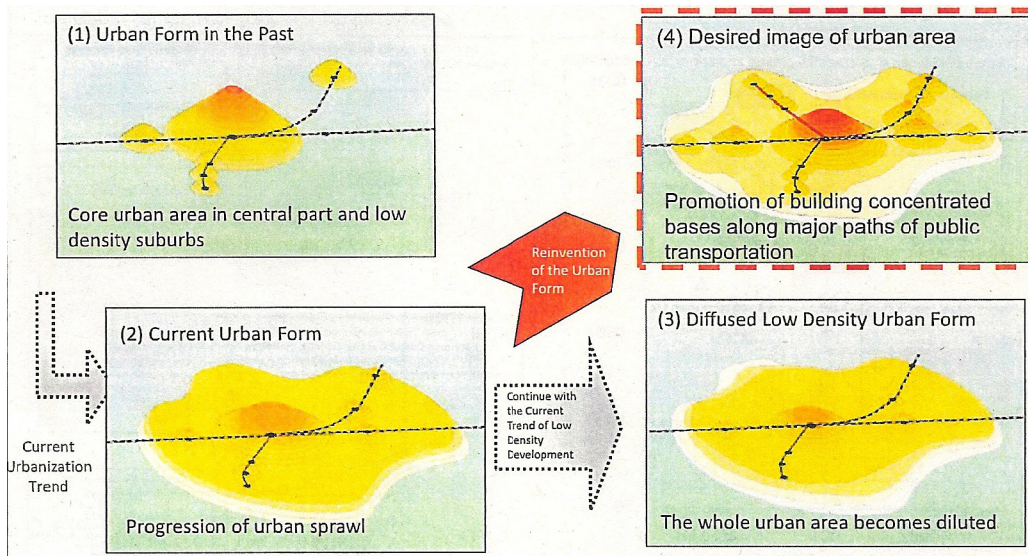
Within controlled urban development zones, three types of urban land take are authorized. The first is the extension of urban areas by the **opening up of planning permission** depending on the urban fabric’s growth requirements. Urban areas are extended through new areas coalescing with a central local hub. The second type concerns **regrouping** and **renovation** operations in the existing urban fabric to accommodate growing needs by a densification of supply (housing, offices, retail spaces). This is an incentive for **urban intensification**, as opposed to highly extensive urban development. Lastly, the third type opens an **urban development area** on the basis of the construction of a new train station and the creation of a new peri-urban center. This type explains the growth of urban areas in Japan like the spokes of a wheel around **rail links**, whereas spontaneous urban development around road networks is more discontinuous across Japan.

Land parsimony outside Europe: The Japanese planning model



Zoning for the oversight of Japanese urban development. Raphaël Languillon-Aussel.

Source: internal document of the MLIT (Ministry of Land, Infrastructure, Transport and Tourism), 2012.

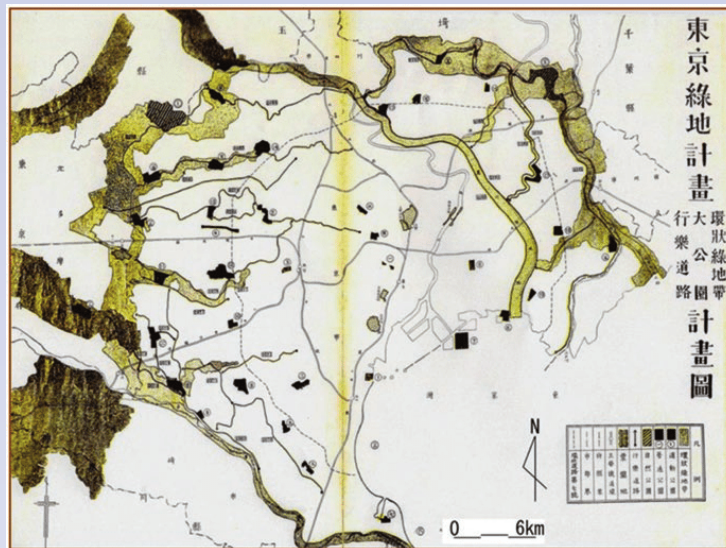


The compactification scenarios of urban areas in Japan.

Source: internal document of the MLIT, 2012.

Importing foreign planning models to Japan

The green belt: The 1930s were a period in which British planning models such as green belts were circulated across the globe on the back of a **new awareness of public health**. The world was also gearing up to World War II at this time. It is against this backdrop that Japan adopted the Tokyo Green Space Plan (*Tôkyô ryokuchi keikaku*) in 1936. Planning of the Greater London region was used as a model for the creation of a green belt around the capital, which had a military defense function in the event of bombing. The 1937 Air Defense Law (*Bôkû hô*) encouraged a deconcentration of defense activities and the strengthening of **green areas as buffers** and **evacuation areas**. This green belt disappeared in part in the High-Growth era (1950–1970) but there are still large sections in the western and north-eastern suburbs of Tokyo.



Map of Tokyo's green areas, 1937

The Garden City: The Garden City, or *den'en toshi* in Japanese, is a residential planning model that originated in the UK. Very early on, it was imported to Japan, first by the central and local governments, which encouraged the population to adopt western **lifestyles**, then by private planning companies. The model was, however, adapted in Japan and was not imported as Howard had envisaged it. Howard had indeed given his Garden City three main characteristics: an independent morphology, with residential fabric in the middle of a green belt separating it from other territories, an idea of **local self-management** supported by **diverse land and business uses**, and land owned by the public authority. Japanese Garden Cities, by contrast, looked more like "**garden-suburbs**" privatized by the middle or upper classes. Chiefly residential, they were absorbed by peri-urban development and quickly lost their green belt. An overwhelming majority of them were developed by private companies, in particular rail companies such as the *otemintetsu*.

The Construction State model (*doken kokka*) and concreting over the archipelago

It is not possible to discuss land take and parsimony practices without mentioning the **construction industry**. Japan is certainly one of the great advocates of **concrete**, as its building industry enjoys a prominent position in economic and political life. The country has 580,000 construction companies employing over six million people.

In the 2010s, the construction industry accounted for 10% of Japan's working population and 8% of its GDP (compared to 3.5% for countries such as Switzerland, consistent with the industry average in the economies of OECD members). In some remote islands, the industry can even concentrate up to 15% of jobs, such as in Aoshima, a small maritime territory with 200 inhabitants where there are only two small supermarkets but three construction companies (Augendre, 2008). This specific feature is due to the quintessentially Japanese "Construction State" (*doken kokka*) model.

Introduced by the Liberal Democratic Party (LDP), which has almost been continuously in power since 1955, the "**Construction State**" model had economic, territorial and vote-winning objectives. By using public procurement to stimulate the local economy through construction, the central government encouraged a **massive use of concrete** across the country both to ensure the territorial continuity of public planning investments in a highly fragmented archipelago (Japan has 6,852 islands) and to guarantee voter support from a significant portion of the population that lives from public procurement. The financial transfers resulting from Construction State investment also constituted an **invisible flow of wealth** from centers providing taxes (major cities) to the archipelago's territorial periphery including remote islands. The electoral benefits of the Construction State model go some way to explaining the LDP's political stability.

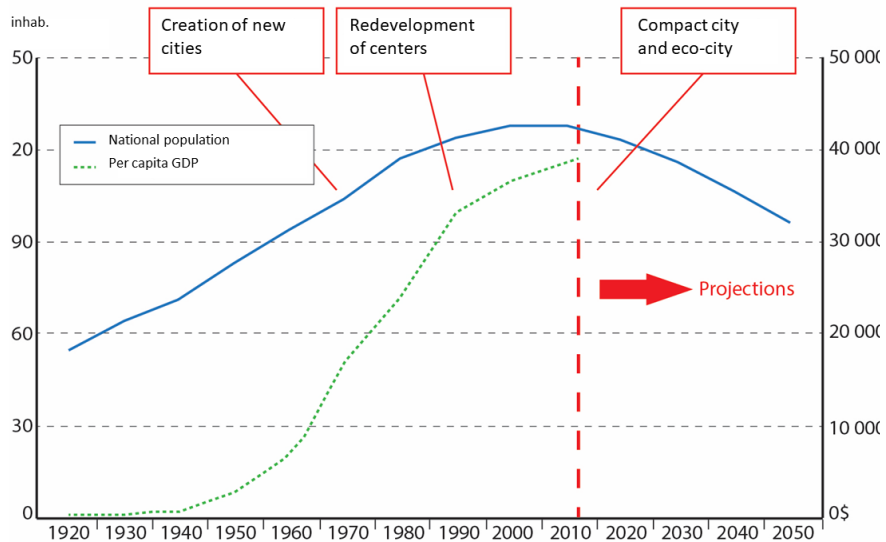


Concreting a mountainside in the Japanese Alps, by a hydroelectric dam.
Raphaël Languillon-Aussel, August 2012

Japanese redensification policies and their challenges: can sought-after land parsimony be achieved?

After a land speculation frenzy in the 1980s which resulted in extreme price surges and the subsequent unprecedented residential sprawl in major Japanese cities starting with Tokyo, the physical growth of urban areas was dramatically halted in the 1990s. Two main reasons are generally put forward to explain this. Firstly, the burst of the speculative bubble led to a sharp drop in land prices, which heralded a gradual population return to central areas in all Japanese conurbations. This trend is a form of market-led densification. Secondly, ageing and the subsequent depopulation in Japan resulted in a radical change in paradigm with the correlation of two policies: the policy to redensify affected areas in the urban periphery and the urban renewal of metropolitan centers.

There are three major phases of land planning and artificialization through urban development in Japan, together with three main urban models that the Japanese consider in accordance with two variables: national demographics and the population's average standard of living. In the demographic growth and fast-gain phase of the High-Growth period, new cities were developed in the agricultural and forest areas around the main Japanese cities. This period spans the years from 1950 to 1980, until the oil crisis and the burst of the Japanese bubble. Land take reached a peak during this period through semi-extensive urban development, otherwise known as "dense sprawl".



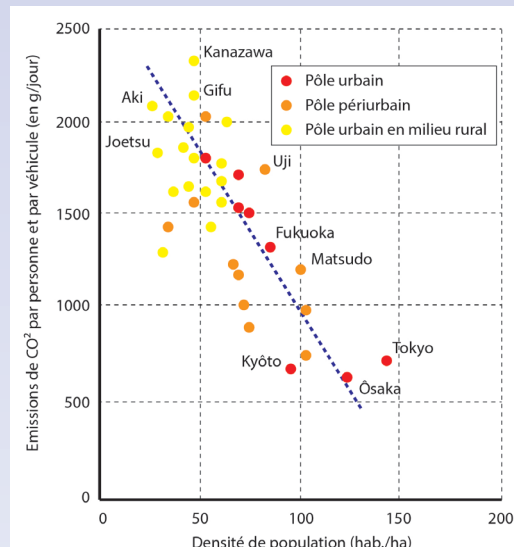
Timeline of prevailing urban models according to growth in the Japanese population and wealth. Raphaël Languillon-Aussel.

Source: internal document of the MLIT, 2012.

In the phase of stabilized population growth and household wealth, there was a redevelopment of centers and a return of the population and investments to urban centers. This period spans the years from 1990 to 2010 and saw a shift towards **more intensive urban development with more parsimonious land use**, characterized by the reconstruction of cities within their existing space. Lastly, at the turn of the 2010s, while income generally remained at a high level, the population decline made a third model possible and even necessary. The compact and eco-city, in other cases known as the “**15-minute city**” is more dense and more expensive. Rather than focusing on land parsimony, this model is more about **land maximization**.

Density, compact forms and CO2 emissions in Japan

A large body of work establishes a causal link between compact forms and pollutant emissions. In Japan, reference can be made to the work of Mamoru Taniguchi (2008) on the different levels of daily CO2 emissions per inhabitant in various Japanese cities according to their density (inhabitants per ha): the denser the city, the more it reflects the post-carbon model of low CO2 emissions. Tokyo, Osaka and Kyoto have the highest density and have fewer emissions proportional to the number of inhabitants. Conversely, low-density but highly diffuse rural villages and medium-sized towns such as Kanazawa, Gifu and Aki have densities lower than 50 inhabitants per ha, and emission rates exceeding 2,000 grams of CO2 per person and per day. In environmental terms, in addition to land parsimony challenges, compact forms aim to reduce pollutant emissions and therefore to optimize the use of **fossil fuels** and **energy resources**. For its advocates, the compact city is therefore more parsimonious in its land use, consumes less and has low emissions



Relationship between compact forms and low CO2 emissions in Japanese cities. Raphaël Languillon-Aussel. Source: Mamoru Taniguchi, 2008.

Looking past its positive effects, the movement to make major Japanese cities denser and more compact does have a dark side, namely the inequality brought about by urban involution. Japanese authorities proactively proceed with this, encouraging land densification in peripheral residential areas experiencing a population decline through a selective compactification of urban areas. This pre-supposes that some areas will be willingly abandoned to accommodate urban regeneration in others. This strategy of densification and selective abandonment of peri-urban areas maintains secondary hubs and high levels of density, thereby guaranteeing the break-even points of scarce public or private services in addition to rail servicing (even though some rail companies have begun a slow process of closing peri-urban stations).

Achieving a compact form is also related to a strategy of decline which anticipates the current and future contraction of peri-urban areas in Japan and particularly in Tokyo, while preserving the values of a number of selected central and peripheral areas. It is also based on the aim of maximizing unused or poorly used land resources in the existing fabric. However, the question of financial losses for individuals inheriting or having purchased homes in the abandoned areas is almost never addressed by the government. Where is the social justice in degrowth and re-naturalization?



Tokyo, a city with scattered density.

Raphaël Languillon, November 24, 2021.

Conclusion – ZNA and land parsimony: is there a shift towards a new planning regime?

The Zero Net Artificialization principle is both an objective and a planning instrument. While it is exclusively French in this format as provided for in the 2021 French Climate and Resilience Law, it is part of a movement of global initiatives promoting parsimonious land use. This movement can be found in many OECD countries in one form or another.

Beyond its specific cultural and political features, including its planning regime, France is not particularly a pioneer in land parsimony practices with its ZNA, despite what the scale of the debates and disruption may lead one to believe. Rather, on European and global levels, France follows public policy models driven by multilateral or supranational bodies such as the European Union or UN agencies. It is also influenced by older works that have punctuated the industrial era since the 19th century at least and which have been put forward again in the negotiations on ZNA and its implementing decrees.

When discussing the environmental and climate challenges of ZNA, land use must be addressed. Land conditions planning methods and strategies, making it a fundamentally political and cultural reality. The global overview in this paper strives to demonstrate this by considering the EU, the UK, Switzerland, and Japan. The extent of the structural disruption caused by ZNA regarding regional planning dynamics raises the question of what it conveys in terms of governance (type, form, scope of public action, distribution of accountability, relationships between citizens, public institutions and political plans, etc.). In other words, the paradigm's turning point with the implementation of the ZNA target tends to question the relationship between land and the institutions that are meant to safeguard the proper organization of public affairs and political stability. ZNA is a strong signal of which kind of new political balance?

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