



Commissariat général au développement durable (CGDD)

French General Commission for Sustainable Development

Achieving “zero net land take”

Diagnostic criteria

OCTOBER 2018

Over the past 30 years, the land take rate (growth of artificial areas) has continued apace. Given the scale of this phenomenon and its negative effects on the environment, the Biodiversity Plan presented by the Government on 4 July this year sets an objective to achieve “zero net land take”. With this objective in mind, the CGDD identifies a typology of local districts where land take has occurred over the past decade, and mentions examples of potential ways to reduce land take, particularly in areas where the housing market is slack.

SOIL SEALING CONTINUES STEADILY

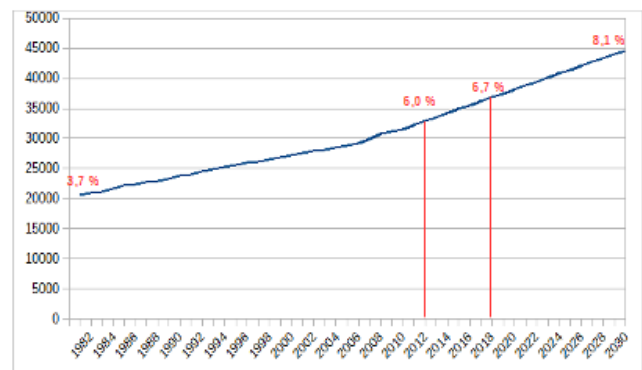
Soil sealing is one way of measuring land take. Here, the term refers to newly built-over or covered surfaces, according to the nomenclature used by Teruti-Lucas (cf. box 1). As such, its scope of reference is more restrictive than land take measured using an indicator that also includes permeable surfaces such as green spaces, gardens, and even quarries.

Since the beginning of the 1980s, the pace of soil sealing (in terms of newly-sealed surface area per year) has held steady or increased over the last decade for which data was recorded (cf. figure 1). Compared to demographics, which is a decisive factor in land take, built-on and covered surfaces increased at a rate 3 times that of population growth (1.5% per year between 1981 and 2012 vs. 0.5%). If we project this trend into 2030, the proportion of mainland France covered by these types of artificial surfaces will rise from 6% to 8%, i.e. an increase of a third over the current total sealed surface area.

INDIVIDUAL RESIDENCES CONSUME 15 TIMES MORE SPACE THAN COLLECTIVE HOUSING

Although the construction of collective residences has increased significantly, and since 2010 has outstripped that of individual residences [1], 46% of land take occurring over the 2006-2014 period was for individual housing (over half of which was for lawns and gardens), compared to 3% for collective residences [2]. This is largely explained by the fact that new individual residences are often located outside urban areas, whereas the construction of collective residences is more likely to occur in towns and cities, on surfaces that are already artificial.

Figure 1 - Sealed surface area in mainland France, 1981-2030 (km² built on or covered, % of mainland surface area)



Source: CGDD calculations according to Teruti-Lucas 1981-2012 (linked time series), 2012-2030 forecast based on demographic and economic trends.

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PROFILE OF LOCAL DISTRICTS WHERE LAND TAKE HAS OCCURRED

It is difficult to identify major trends but, although they may not have a significant impact, certain characteristics nonetheless emerge from the econometric analysis carried out over the 2006-2016 period.

As such, for the last 10 years, the pace of land take has been faster in districts with larger areas of non-urbanized spaces available (measured by the proportion of natural, agricultural and forest areas in the district, as well as the lack of a Natural Risk Prevention Plan, since these plans are among the documents which restrict construction opportunities).

To a lesser degree, the pace of land take is also higher in districts where factors encouraging construction are higher (measured by demographic changes and the number of second homes), where town centres are being abandoned (measured by the rise in vacant properties), and where households are more likely to own motorized transport vehicles.

The current state of district finances (property tax and residency tax) does not seem to have any significant or deep-rooted impact on the pace of land take. Finally, it remains difficult to interpret the impact of having a local urbanization plan (PLU) on the consumption of space, and this will require a more specific assessment.

70% of land take occurs in areas where the housing market is slack

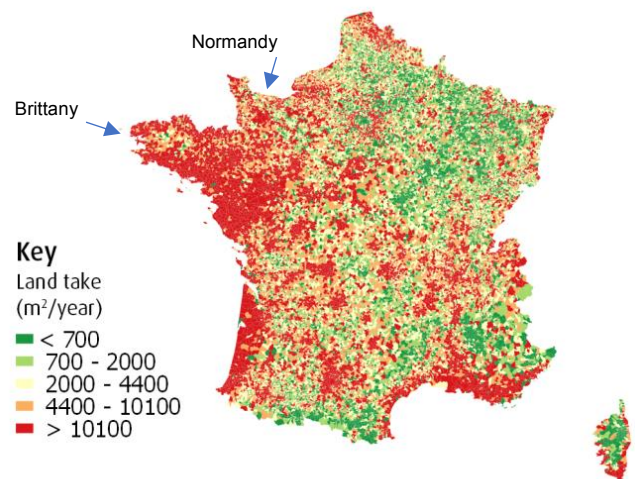
Over the same 2006-2016 period, 73% of land taken was located within districts where the housing market was not tense, i.e. where there is no imbalance between housing supply and demand (under the Robien zoning system, these are referred to as “zone C” districts). However, these districts represented only 49% of the overall population increase. In 2015, they were home to 42% of the population of mainland France and occupied 87% of its surface.

40% of land take occurred in areas where vacant housing increased significantly

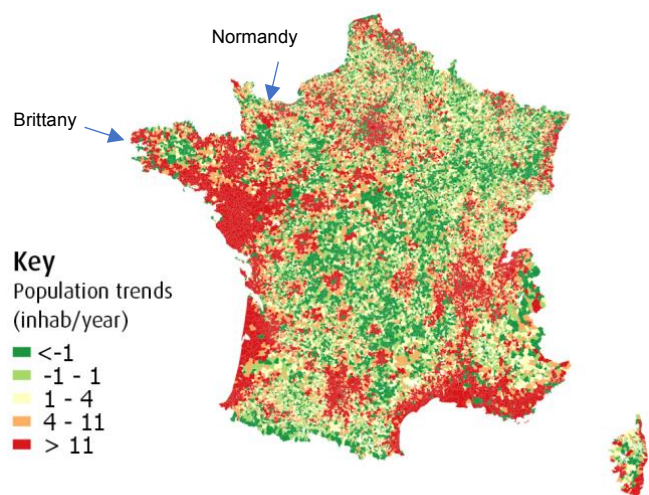
The number of vacant residences increased from 1.9 to 2.7 million over the 2006-2015 period, an increase of 25%, rising from 6.2% - 7.9% of the nation's housing stock (CGDD calculations based on population census data from INSEE). 37% of newly-artificialised surface area was located in districts where the vacancy rate increase more than 50%, of which 87% were in slack market zones. As such, over the last decade, the number of vacant residences increased by around 80,000 per year, which is equivalent to 20% of new builds. Using this order of magnitude, if we were able to re-occupy 80% of vacant housing stock (or 2.15 million vacant properties), it would allow avoiding 5 years of land take caused by residential construction (on the basis of at least one home needing to be built for every one vacant home), or 2.5 years land take with all uses included. While the issues of qualitative

balance between supply and demand mean that such a saving of land take is not achievable in these proportions, the potential gains remain significant.

Map 1 - Land take per district per year, 2006 - 2016



Map 2 - Population trends per district per year, 2006 - 2015



Sources:

Map 1: CGDD, based on Cérema data
Map 2: CGDD, based on INSEE data

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20% of land take occurred in districts where the population was decreasing

Since 2006, population growth has ceased to be the main driver behind land take observed on a district-wide scale, even though the link between urban sprawl and population growth is centrale to the theories of the urban economics [3 & 4] which are based on a long-term perspective. The contrast between weak demographic growth and high land take is particularly noticeable in central regions, as well as in areas within Normandy and Brittany (maps 1 & 2).

In particular, 21% of surfaces that were artificially covered between 2006 and 2016 were located in districts where the population was decreasing - this amounted to 11,000 districts in total, almost all of which were located in areas where the housing market was slack. These districts represented 30% of the population of mainland France, and cover a third of its surface area. Their combined populations fell by almost 800,000 inhabitants, while the overall population of mainland France grew by almost 3 million between 2006 and 2015. In 2006, when compared to districts in which the population was rising, these districts showed higher average rates of agricultural employment (+50%), vacant housing units (+25%), senior citizens (+20%), single-occupant households (+15%), and second homes (+15%).

POTENTIAL WAYS TO MITIGATE LAND TAKE IN ZONES WITH SLACK HOUSING MARKETS

Based on this study, two types of methods for mitigating land take may be distinguished. First, mitigation methods which are not tethered to the size or shape of the town/city; these can be achieved, for example, by stabilizing the number of vacant residences, or by halting the consumption of space in districts where the population is decreasing. These methods could reduce the pace of land take observed over the last decade (roughly 26,000ha on average per year according to Cérema data) by up to 20% each, or 40% in total.

To go even further and achieve the objective of “zero net land take”, other mitigation methods might also be possible, by taking action based on the layout and zoning of each given town/city. This would involve, for example, recycling urban wastelands and infilling vacant spaces, or by densifying existing buildings and redrawing the zoning for plots of land.

To these ends, as part of the Biodiversity Plan, a partnership-based working group will propose a series of measures to promote urban recycling. Similarly, by the end of 2018 the Committee for the Green Economy will publish its recommendations for measures aiming to limit the consumption of space.

Box 1 - Debates regarding the precise definition and accurate measurement of land take

A number points of debate exist surrounding the definition of this phenomenon, both in its static form (what exactly constitutes “artificialised” land?) and in its dynamic sense (what is land take?), as well as available measurement methods. At least five different methods exist, each producing contrasting results. These range from a rate of 150km² of land take per year (according to Corine Land Cover) to over four times this rate (according to Teruti-Lucas). The latter figure has been retained for the purposes of the French government’s Sustainable Development Goals and its wealth indicators. The government has adopted a wide definition of land take, which includes gardens and green spaces in addition to “soil-sealed” areas (i.e. surfaces which have been built on or artificially covered, according to Teruti-Lucas nomenclature).

These points were raised in the Collective Scientific Expertise report (ESCo), compiled in 2017 by the IFSTTAR and the INRA [5], which nevertheless concludes that *“the available data [...] enables us to flag the major trends of this phenomenon, but there is no quantitative measurement that serves as a reliable reference basis for all stakeholders involved”*: whatever the measurement method used, the advancing rate of land take remains significant.

This study uses various sources depending on the phenomena being observed: Teruti Lucas for land take measurements and projections, Sit@del for new constructions, Cérema data based on real estate reports from the DGFIP (Public Finances General Directorate) for econometric analyses at district level.

Box 2 - Combating land take

Public authorities are waking up to the issue of land use, due to the increasingly tangible and well-documented nature of its negative effects [6, 7 & 8]. In environmental terms these include the loss of biodiversity, longer commuting distances leading to increased emissions of CO₂, other atmospheric pollutants and noise pollution, as well as contributing to phenomena such as flooding and urban heat islands. From an economic point of view, urban sprawl results in the loss of agricultural land, and leads, for each given population, to increased spending on facilities and public services.

In the context of the European Commission's objective to "reach the state of no net land take by 2050 [9]," efforts to combat land use in France combine several approaches. These include laws on urbanization (SRU Laws (2000), Grenelle II (2010) and ALUR (2014)), which aim to limit peri-urban development through urbanization documentation; the agriculture & fisheries modernization law (2010), which sets an objective to reduce the pace of land take of agricultural land by 50% by 2020; and the strategic orientations of the climate policy (the national low-carbon strategy (2015) aims to eventually end the consumption of natural and agricultural land, with a major reduction to be achieved by 2035). The biodiversity plan published in July 2018 serves to confirm and reinforce this aim.

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Commissariat général au développement durable

Service de l'économie, de l'évaluation et de l'intégration du développement durable

(Department of Economics, Evaluation and Integration of Sustainable Development)

Sous-direction de la Mobilité et de l'Aménagement (MA)

(Sub-directorate for Mobility and Development)

Tour Séquoia

92055 La Défense cedex - France

Email: ma.seei.cgdd@ecologique-solidaire.gouv.fr

