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From production to consumption-oriented development: New planning strategies in science parks? The case of Sophia-Antipolis

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Abstract

Recent works have highlighted the role of consumption in regional development and questioned the focus on production-oriented approaches in regional planning. To date, consumption-oriented strategies have only been studied in specific cases such as rural areas or urban regeneration projects. This article examines the impact of the growth of consumption-oriented activities on local policymaking processes. To do so, it studies the reshaping of local planning strategies in the science park of Sophia-Antipolis in the context of a growing residential economy. We show that local governments are now questioning traditional production-oriented policies as tensions appear between maintaining the area's high-tech specialization and meeting the demands of residents for services and amenities. However, production- and consumption-oriented strategies should not be seen as being incompatible. Consumption-oriented strategies aim at reducing the dependence on high-tech activities, but they also contribute to meeting some of the science park's challenges, such as housing shortages. They also help attract and retain highly skilled executives or engineers in the science park. More than a consumption turn, recent local policies in Sophia mark a shift from a technopolitan production-oriented strategy to a hybrid strategy based on tools embedded in a vast continuum from production-oriented to consumption-oriented strategies.

Keywords

Innovation, local government, residential economy, science park, Sophia-Antipolis, spatial planning

In the past years, two main sets of literature have invited a reconsideration of the role of consumption in regional development. The first group's research was carried out in the field of regional science and economic geography (Davezies, 2009; Markusen and Schrock, 2009). Whether they used an occupational approach (Markusen, 2007), revisited the economic base theory (Davezies, 2009) or monitored flows of incomes (Nelson, 2005), these authors have shown empirically the weight of consumption-based or resident-serving sectors in post-fordist economies. In doing so, they began challenging the focus on production-oriented sectors in the regional development literature, as well as the local development strategies this had inspired, such as science parks or clusters (Moulaert and Sekia, 2003; Pontus and Feldman, 2006). In a more recent step, they have tried to overcome the produce/consume dilemma,

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Table 1. Strategic planning documents.

Sophia 2030 plan	Long-term strategy for planning and economic development	Sophia's inter-municipal government
Report on the future of the science park		Expert panel mandated by the central State
SCOT 2008[1] (*schéma de cohérence territoriale*)	Inter-municipal and multi-sector strategic planning document	Sophia's inter-municipal government
PLH 2012–2017 and 2020–2025 (*programme local de l'habitat*)	Strategic plan for housing	
PDU 2008–2018 and 2020–2030 (*plan de déplacement urbain*)	Strategic plan for transportation	
PLU (*plan local d'urbanisme*)	Local zoning plan	Municipalities of Biot and Valbonne

showing that production-oriented and consumption-oriented activities are strongly mixed (Segessemann and Crevoisier, 2016). Due to a focus on regional development drivers rather than on planning policies, this reconciliation has yet not been fully extended to policymaking processes. In the field of urban studies, however, research has actually addressed the role of consumption in urban planning policies, but with different theoretical approaches. Following Harvey (1989), several scholars have shown that new consumption activities such as tourism are at the heart of entrepreneurial urbanism (Hall and Hubbard, 1996; Peck, 2014).

A point in common between these two sets of works lies in the fact that they often present consumption-oriented strategies as an alternative to production-oriented policies. Most of them have focused on areas undergoing major economic transformations, such as post-productivist rural areas or emblematic urban regeneration plans in waterfronts or deindustrialized areas. Although the recent literature on creative activities and cities has helped bridge the gap between production and consumption (Pratt, 2008), the rationales of production- and consumption-oriented policies are still often seen as mutually exclusive.

In this article, we bring together these two sets of works in order to better understand the impact of the growth of consumption-oriented activities on local policymaking, beyond the very specific case of creative strategies. To answer the related questions, we focus on the Sophia-Antipolis science park in the south-east of France, which has been an emblematic example of both national and local policies converging on high tech and production activities (Quéré, 2007). Sophia is located on the French Riviera, a region where demographic and touristic attractiveness has fuelled a strong consumption-based economy. This makes it a fruitful example for a study of the confrontation between production- and consumption-oriented strategies.

This research builds on three complementary approaches. First, we used job and fiscal data to build a classification of municipalities and identify the various forms and stages of consumption-based development in this area. The article also draws on past studies carried out in Sophia-Antipolis between 2012 and 2018. As part of research into the impact of the 2008 economic crisis, 96 local high-tech entrepreneurs were interviewed between 2012 and 2014, to understand the resilience factors of the science park and of its entrepreneurial ecosystem. As part of a survey on the Sophipolitan urbanity, 394 engineers, employees and students working in the science park were interviewed with questionnaires in 2017: the aim was to identify the amenities and disamenities in the science park and their role in its ability to retain skilled workers. Third, we conducted a broad review and analysis of planning documents produced by local governments since 1999 (Table 1), in order to identify the evolutions of planning strategies and their rationales.

This article contributes to the literature in three ways. First, by bringing together several theoretical approaches to consumption-driven economic development, it helps close the gap between studies of

regional development processes and planning policies. The empirical contribution also comes from the choice of a growing science park rather than of another urban regeneration example. Second, it provides an in-depth case study of the policymaking process in a science park and confronts the rationales of high-tech and consumption-oriented strategies. Third, it offers an alternative perspective on cluster policies through its planning approach, and answers the recent call to study the effects of socio-economic changes on cluster evolution (Fornahl et al., 2015)

Section 'Consumption and regional development: from economic theory to regional Planning' shows how the 'produce or consume' predicament is questioned in the literature and how it raises unanswered questions about planning policies. Section 'Sophia-Antipolis: a science park in a highly residentialized area' introduces our case study and puts the economic and institutional dynamics of the science park in the broader picture of the French Riviera and its strong consumption basis. Section 'The reshaping of local policies in the science park' studies recent local strategic plans and the way local governments question the high-tech specialization of past planning strategies in the science park.

Consumption and regional development: from economic theory to regional planning

Consumption and territorial development

Regional development theories have usually emphasized the key role of export-based activities, that is, the ability to export goods and services to capture income which would then induce local demand through multiplier effects. These theories have recently been challenged by major shifts in the geography and sectorial structure of economic growth and jobs (Johnston, 2011). In a post-fordist context, suburbanization as well as retirement or amenity migrations has strongly affected the spatial distribution of incomes and has encouraged local economic development based on consumption and amenities. Populations tend to be more and more mobile, and this circulation of populations comes with a growing and spatially uneven circulation of both earning and non-earning incomes. Such regional trajectories have been monitored in rural areas experiencing a post-productivist transition. This 'rural rebound' (Gosnell and Abrams, 2011) echoes the 'renaissance' that 'big cities are having [. . .] as places of consumption, not production' (Glaeser and Gottlieb, 2006: 1276).

The fact that 'incomes are therefore available to households right where traditional regional development theories do not expect them' (Segessemann and Crevoisier, 2016: 1392) shows the limitations of production-based approaches such as the export base theory (Hoyt, 1954), even though recent efforts have pointed out the potential role of non-earning income in regional growth (Nesse, 2014). Davezies has argued for the necessity to take into account the whole range of circulating incomes and their impacts on regional growth. He has shown the growing role of what he calls the residential base (commuters' wages, pensions, tourists' spending) as opposed to the production base, the public base (wages of public employees) and the welfare base (transfer incomes and social benefits). In France, the residential base accounts for 40 per cent of the total economic base and the productive base for 20 per cent. Similar results were found in Switzerland (Segessemann and Crevoisier, 2013).

In a converging study, Markusen proposed a 'consumption-based alternative theory' and posited that 'selective local-serving capacity investments can capture local consumer dollars and create jobs and multiplier effects on their own merits, without reference to the export/import divide' (Markusen, 2007: 349). She showed, for instance, that consumption sectors such as cultural and healthcare sectors 'may be more labour intensive and may create jobs filled by people whose propensity to spend locally is high' (Markusen and Schrock, 2009: 345). Studies on the demand-side explanations of gentrification or on the role of the creative class in local growth (Florida, 2003; Ley, 1986; Markusen and Schrock, 2006a) proposed similar arguments. In the United States 'in a period where overall employment grew by a third, employment in resident-related metro occupations increased by 40 per cent, while in basic sectors it grew only by 10 per cent' (Markusen and Schrock, 2006a: 1312). In even more recent

contributions, authors coined the term 'foundational economy' to describe a series of sectors providing everyday services and goods and meeting household essential needs (Bentham et al., 2013), and pinpointed their often overlooked contribution to regional growth (Froud et al., 2020).

Institutional approach versus urban planning issues

Whether it focuses on production or consumption, the literature has not addressed the place of public policies in the same way.

In the literature on production-oriented strategies, several factors have combined to focus the attention on institutional arrangements rather than on public planning policies. First, the focus of contemporary policymaking on a knowledge-based economy (Johnston, 2009) has led to new strategies. Policies designed to attract mobile investments and firms through tax and subsidiary incentives or public investments in hard infrastructures have given way to 'soft policies' aiming at triggering endogenous growth (Crescenzi and Rodríguez-Pose, 2012). 'High tech spaces' (Huang and Fernández-Maldonado, 2016) such as science parks (Massey and Wield, 2003) or clusters (Bergman and Feser, 2020) epitomize this trend: in the 1990s the interventions of local governments shifted from the built environment and infrastructures to improving the local business environment and fostering inter-firm networks and science–industry collaborations to stimulate knowledge spillovers (Malecki, 2007). Second, the debates on innovation and cluster policies (Lazzeretti et al., 2019) have framed the study of production-oriented strategies. Building on the interest for clusters' life cycle (Fornahl et al., 2015) or for regional innovation systems (Doloreux and Porto Gomez, 2017), the literature has favoured an institutional framework and moved from 'a rationale of 'cluster building' to one based on 'policy leverage'' (Ebbekink and Lagendijk, 2013: 736). Following a broad definition of a cluster's institutional settings as 'its supportive environments, regional cultures and cognitive frames' (Fornahl et al., 2015: 4), public policies are expected to address 'systemic failures' through, for instance, start-up support, network organization or innovation culture (Brenner and Schlump, 2011). Public authorities are only one of several actors within clusters, and land planning as well as social issues is often overlooked. Third, the findings on the circulation of knowledge and on the inscription of clusters within networks at different geographical levels have contributed to the adoption of a multi-scalar perspective (Trippl et al., 2015). This approach has shifted attention to the articulation between local, regional and national policies (Bellandi and Caloffi, 2016) and reinforced the institutional focus mentioned above. The fact that regional planning is understudied when it comes to clusters or science parks (Chou, 2007) is also due to the very nature of public governance in these areas. Most science parks are governed by *ad hoc* authorities endowed with broadened powers. This leads either to a bypass of local authorities or to a division of tasks that assigns planning policies to local governments, while *ad hoc* authorities focus on high-tech spaces and activities (Chou, 2007; Hommen et al., 2006; Zhu and He, 2015). In a nutshell, the literature on production activities may seem to have 'focused too much on economic-geographical aspects' (Ebbekink and Lagendijk, 2013: 736), at the expense of regional planning policies.

In contrast, the literature on consumption-oriented strategies shows a strong focus on regional and urban planning, in rural as well as in metropolitan regions. Local governments' powers regarding land use regulation and regional planning are indeed instrumental in the improvement of the living environment and of cultural or natural amenities. The rise of a 'consumer city' (Glaeser and Gottlieb, 2006) strongly relies on amenity-based policies that have invested in 'creating a high-quality urban environment rich in cultural amenities and conducive to diversity in local social life' (Scott, 2006: 11). In the context of the entrepreneurial turn (Hall and Hubbard, 1996), studies on the role of local growth machines in the design of local agendas and planning projects (Cox, 2017) have also favoured a socio-political and local prism that gives much more importance to local actors and planning policies. Unsurprisingly, most of the critical discussions on consumption-oriented strategies have come from research in the field of urban planning and urban

Table 2. Regional planning and the produce or consume predicament.

	Production-oriented strategies	Entrepreneurial urbanism Creative strategies	Consumption-oriented strategies
Attractiveness factors	Inter-firm networks, knowledge spillovers, flexible labour market	Living environment, retail, culture and leisure activities, urban centrality	Living environment, environmental amenities, leisure offer
Aims	Attract firms to create jobs	Attract creative and highly skilled workers to attract firms (artists, scholars, engineers. . .)	Attract new inhabitants and tourists to capture flows of income (retirement migration, exurbanization. . .)
Policy tools	Fiscal and land subsidies, R&D funding, networking incentives	Urban redevelopment, major cultural facilities	Community services, environmental and cultural heritage preservation
Threats/ weaknesses	International competition, relocations	Gentrification Social exclusion	Gentrification, low-wage jobs
Territorial models	Science parks High-tech clusters CBDs	Creative cities/districts	Post-productivist areas Tourist regions

studies: while some authors questioned amenities-driven strategies, arguing that the job-generating capacities of cities trump amenity-based urbanism (Storper and Scott, 2009), others criticized these policies for being 'peculiarly well suited to entrepreneurialized and neoliberalized urban landscapes' (Peck, 2005: 764).

The differences between these two lines of literature are all the more important since the rationales of production- and consumption-oriented strategies are very different and may even appear as self-exclusive.

Production and consumption: two opposing rationales?

The rationales of consumption-oriented local policies are often built as the exact opposite of production-oriented policies. Contrary to those of export-based activities, the jobs of resident-serving sectors are often said to be less exposed to relocation (Glaeser and Kahn, 2001), since they are characterized by lower labour costs and a need for proximity to consumers. The literature on the foundational economy has, for instance, underlined the 'grounded' character of cities (Engelen et al., 2017). The cost of such development strategies for local policies also seems lower than that of subsidies or tax incentives spent to attract and retain export-based activities (Markusen and Schrock, 2006b). By contrast, the drawbacks of residential strategies such as the dependency on public transfers (Nelson, 2005) or the socio-economic inequalities created by gentrification (Lees et al., 2013) are often overlooked (Travis, 2013). In France, Davezies (2009) used the term 'residential temptation' (*tentation residentielle*) to describe how the residential economy has appeared as an alternative to production-oriented strategies and as an answer for struggling or remote areas. Furthermore, the disamenities of production activities and the nimby effects they trigger have often fuelled their eviction from rural as well as from attractive suburban or coastal areas. These two strategies may even appear to be mutually exclusive, since production activities threaten the amenities and quality of life that affluent new dwellers or tourists seek (Pratt, 2008).

More recently, the growing literature on creativity, whether focused on creative sectors (Flew and Cunningham, 2010; Markusen et al., 2008), the creative class (Florida, 2014) or creative cities (Evans, 2017), has seemed to bridge this gap between production and consumption. Urban strategies inspired by the literature on creative cities present several features in common with consumption-oriented strategies, as shown in Table 2. When they target high-tech or creative activities, production- and

consumption-oriented strategies can even appear to be complementary. High-tech activities often have low impacts on the amenities and living environment that are key to creative strategies. On the contrary, urban planning policies can help attract and anchor highly qualified individuals that high-tech industries need. From an economic point of view, combining these two approaches can help diversify economic resources and avoid mono-activity. Studies on entrepreneurial urbanism (Harvey, 1989) have shown that pro-growth urban policies and local growth machines can promote consumption activities (leisure facilities, tourism . . .) as well as production activities (corporate headquarters, high-tech facilities . . .).

Despite this apparent reconciliation, creative strategies still rely on production-centred rationales. Rare voices have called for an inclusive approach of 'the whole cycle from production through to consumption' (Pratt, 2008), but most of the debates on creativity have focused on the innovative potential of creative sectors (Lee and Rodríguez-Pose, 2014) or on the compared performance of cities (Boschma and Fritsch, 2009). As Pratt (2008) points out, most of these policies 'are instrumental policies'. Not only do they 'use culture or creativity to achieve specific non-cultural ends' (Pratt, 2008: 107), but they also try to attract creative individuals in order to attract firms, following the new 'jobs follow people' principle. The creative class is wooed for its impact on consumption, but mostly for its believed ability to help create jobs and foster innovation. In short, regional policies seem to favour the supply-side characteristics of cities and, when they consider the demand-side characteristics and 'factors such as the cultural makeup of the city, the amenities within cities and lifestyles within the city' (Johnston, 2011: 2097), they often do it to support production-based sectors. From a planning perspective, this also raises new issues such as the competition for land and its adverse effects. The most dynamic high-tech clusters, gentrified residential areas or tourist areas are already facing the diseconomies of saturation, such as traffic congestion, real estate pressure and social selection.

Scholars have recently encouraged going beyond this produce or consume dilemma. Although Segessman and Crevoisier (2016) have demonstrated the 'relative interdependency between productive and residential activities, on the one hand, and income and activities, on the other' (p. 1400), we still need to address what such a claim will mean for local planning policies.

Sophia-Antipolis: a science park in a highly residentialized area

A major science park

Sophia-Antipolis is one of Europe's major science parks, with nearly 500 high-tech companies and 20,000 jobs in 2019 in three sectors: ICT, health and life sciences (Grondeau, 2018). The science park was created *ex nihilo* at the end of the 1960s in the south-east of France, a region without any industrial or academic traditions but with a sunny climate and extensive tourist infrastructures. The aim was to attract foreign investments, foster innovation and diversify the economy of this tourist area. In their attempts to reproduce the model of the Silicon Valley and attract high-tech firms, public policies mostly focused on the built environment and on infrastructures, such as high-speed telecommunication networks. The living environment received great attention as well. The science park was set up on a greenfield area on the outskirts of Nice and of the tourist coastal strip of the French Riviera. A strict rule was set to limit built areas to one-third of the park's surface. Universities and public labs came only later, as part of the academic decentralization policy led by the State, making Sophia-Antipolis a 'reverse science park' (Quéré, 2007).

The literature has shown that the amenities created by this focus on hard factors have played a major part in Sophia's resilience to economic crises in the 1990s and the early 2000s. When foreign companies implemented redundancy plans or relocated their activities, many high executives and engineers refused to leave the French Riviera's living environment and engaged in the creation of local businesses (Longhi, 2002; Parker, 2010; Ter Wal, 2013). A wave of spinoffs and start-up creations mitigated the loss of foreign firms and jobs. Despite its amenities and living environment, Sophia struggles with the typical planning challenges of science parks (Grondeau, 2018). Planning policies as well as individual residential choices have

resulted in a spatial mismatch between jobs and housing areas. Most workers live outside the science park and commuting flows create traffic congestion. This saturation, as well as the impact of the affluent workforce of the science park on the housing market, is all the more important since it combines with the touristic attractiveness of the region. A survey on the urbanity of the Science Park conducted in 2017 among 394 Sophia-Antipolis employees (executives, engineers and students, 226 online and 168 face to face) confirmed these issues; 30 per cent of the people believed that Sophia-Antipolis needed new housing (especially for the middle classes and students) to ease the tensions on the real-estate market, and more than 60 per cent pointed out transport congestion. The 96 business leaders interviewed during a study on the effects of the 2008 crisis and on the resilience of the science park highlighted the same weaknesses. These issues raise questions about the content and scope of local policies.

The evolution of the governance of the science park

The science park extends over five municipalities and its creation took place before the national decentralization policy that granted strong powers to French municipalities in 1983. As a consequence, its governance has involved a multiplicity of public and private institutional entities from the start. An *ad hoc* local joint authority (the Symisa) was created to manage the science park. It consisted of the five founding municipalities (joined by four more municipalities in 1986 and 1990), the regional chamber of commerce, the *département* (France's second tier of local government) and the central state. The Symisa was granted extensive powers regarding land management and development operations such as preemption rights. It was also in charge of the strategic planning of the science park and of its administrative and financial management. This *ad hoc* governance persisted through the 1980s and 1990s, even after French municipalities were transferred powers over land planning or economic development. Like in other international cases (Chou, 2007; Hommen et al., 2006), the creation of the science park resulted in an institutional reorganization that gave strong powers to the governing body of the science park, at the expense of municipalities.

In 1999, however, a national law created intermunicipal governments to limit fiscal competition and to encourage municipalities to share financial resources and carry out common policies. A growing number of municipalities' competences have been transferred to these intermunicipal governments in the past 30 years. In Sophia-Antipolis, the intermunicipal government (the CASA) grouped 14 municipalities and extended from the coastline to the suburban areas of the close hinterland. In 2012, 10 more municipalities joined the CASA: these municipalities cover the hilly regions of the rural hinterland up to 40 km from the coastline. This new intermunicipal government is in charge of land planning, economic development and public housing. It is also responsible for strategic planning regarding urbanization, transportation or housing.

As a consequence, the science park and its 24 km² now represent a small portion of the territory of the CASA (483 km²). The science park accounts for 40 per cent of the jobs of the CASA, but for only 5 per cent of its total population. The new intermunicipal government is in charge of a wide and diversified territory comprising three subareas: a portion of the tourist coastline of the French Riviera, the science park and its suburban outskirts and the rural foothills of the Alps. The CASA also took over most of the tasks of the Symisa, which even became a department within the CASA. Contrary to most science parks, Sophia-Antipolis is no longer managed by a dedicated authority. This spatial and political redesign of the local governance has had major implications for the science park. Local policies as well as strategic planning are now designed on the scale of a much wider territory. This differentiates Sophia from the competitive/collaborative pattern of relationships described in the literature between local governments and science parks' governance (Chou, 2007). Whereas the Symisa's only concern was the economic wealth of the science park, the CASA carries out an integrated approach to local planning. Understanding policymaking thus requires zooming out from the science park in order to consider its regional environment.

Table 3. The residential economy and municipality fiscal resources.

	Share of jobs in resident-serving sectors in 2016	Share of residential taxes in municipality fiscal revenues in 2015–2016	Growth of the share of residential taxes in municipality fiscal revenues between 2002–2003 and 2009–2010[3]	Residential tax revenues (€ per inhabitant) in 2015–2016
Science park	39.8%	50.0%	29.3%	664.9
CASA	60.2%	79.5%	6.7%	939.9
Alpes Maritimes	73.8%	81.4%	3.7%	922.1
France	65.5%	73.8%	5.6%	608.2

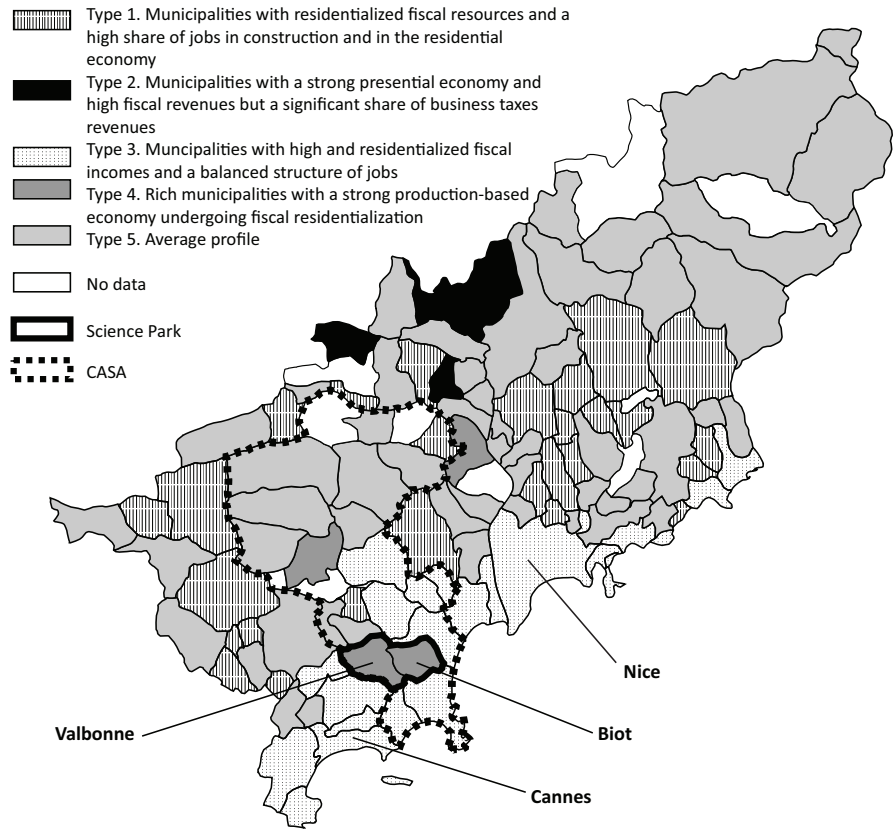
The French Riviera: a strong residential economy within the Nice metropolitan area

Another special feature of Sophia's science park is its spatial environment. The science park is in the suburbs of Nice, but also in the close hinterland of the coastal tourist areas of the French Riviera. It is surrounded by spaces with high demographic and touristic attractiveness. Nice's metropolitan peripheries not only host a strong residential economy, but also capture a wide range of both earning and non-earning income flows such as second home owners, tourists, retirees and commuters. Monitoring income flows, Davezies and Vanier have shown the wide diversity of the residential basis of the French Riviera (Vanier et al., 2011). An occupational approach shows converging results: Nice's metropolitan area has the highest share of resident-serving jobs[2] within the top 10 of France's most populated metropolitan areas (72.4% when the mean share in the top 10 is 64.8%).

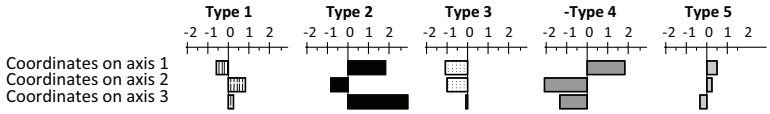
The growth of the residential economy is all the more important in a local planning perspective, since it strongly affects local government fiscal resources. The strong demographic and touristic attractiveness comes with land use changes that impact fiscal bases. The residential economy is thus associated with a 'residentialization' of municipalities' fiscal income, that is, the growth of the share of the revenues from taxes paid by households (property taxes) as opposed to business taxes. French Mediterranean coastal areas have experienced this process within the past 20 years, and it has since extended to the coastal hinterland (Grandclement and Boulay, 2015).

Table 3 shows that CASA stands out by its mixed economic structure. It also shows the limitations of an occupational approach. Due to the high concentration of knowledge-intensive jobs in the science park, the share of resident-serving sectors' jobs is lower. However, the residential economy provides local governments with high and growing fiscal incomes. The evolution of institutional perimeters has brought together municipalities with heterogeneous economic bases that were unevenly affected by fiscal evolutions.

Figure 1 provides a classification of the municipalities of the Alpes Maritimes area within 30 km inland from the shore. In order to take into account the various characteristics of the residential economy, we used occupational and fiscal data that account for both size and structure effects (for instance, the amount of fiscal incomes as well as the share of fiscal residential incomes). Figure 1 also shows the economic diversity of the municipalities composing the CASA. Coastal municipalities show high fiscal incomes, but their job structure is quite diversified, since they host both a tourist economy and production firms. Suburban and rural municipalities in the hinterland have lower incomes and fewer jobs. They have experienced a more recent growth in their residential fiscal incomes. The science park stands out clearly with high revenues as well as a strong production-oriented economy. This diversity is a major challenge for planning policies and raises questions about the former production-oriented strategies focused on the science park.



Cluster analysis (AHC) on the first three axis of a PCA [57.8% of the total inertia explained]
Euclidean distance, Ward's method



Each bar represents the distance between the group average and the general average. This distance is given as the number of std. dev. for each variable

Principal component analysis on 12 variables [59.9% of the total inertia explained by the 3 first axes]
Axis 1 is negatively correlated with:
- Share of residential fiscal revenues in municipalities' fiscal revenues in 2002-03 and in 2015-16
- Share of fiscal resources in municipalities' total budget - Income of residential taxes (€ per capita) - Share of jobs in services

Axis 1 is positively correlated with:
- Share of jobs in industrial sectors
- Evolution of the share of residential fiscal revenues in municipalities' fiscal revenues between 2009-10 and 2015-16

Axis 2 is negatively correlated with:
- Income of residential taxes (€ per capita) - Income of local taxes (€ per capita) - Jobs per inhabitant

Axis 3 is negatively correlated with:
- Share of jobs in services
- Evolution of the share of residential fiscal revenues in municipalities' fiscal revenues between 2009-10 and 2015-16

Axis 3 is positively correlated with:
- Share of jobs in construction industry - Share of jobs in the presential economy

Figure 1. The uneven weight of the residential economy: a classification of municipalities.

The reshaping of local policies in the science park

Production-oriented policies: a shift from functional specialization

In 2010, the CASA launched the 'Sophia 2030 plan', a strategic plan that defines the priorities and tools of local planning policies for the next 20 years. Its aim is threefold: keep Sophia as an international reference for innovation, preserve its attractiveness and meet new sustainability standards. The plan mainly consists of four new development projects within the science park.

Although the regulations state that two-thirds of its total area must remain unbuilt, the science park still has extensive land reserves. In 2010, only 800 ha out of the 2300 of its total usable land had been developed; 230,000 m² of gross floor area (GFA) is still available on already developed land and 100,000 more is expected from densification operations within the existing perimeters. Four new development projects will provide additional capacities for a GFA of 360,000 m². The CASA's strategic plan foresees the creation of a thousand jobs each year, at least half of which will be within the science park. Even with only half of the areas planned in the new projects and one-third of the densification operations, the land reserves would be enough for 15 to 20 years of growth at the same pace. As a consequence, the local government has decided not to use other reserves planned for the possible extension of the science park.

Since land is not an issue in Sophia, the aim of the four new development projects is more qualitative than quantitative. Beyond the attraction of new innovative firms, the first issue is to support and strengthen specific activities, for example, higher education, which is much less developed than in other international science parks. The second challenge is to address the weaknesses of the urban life in the science park that hampers social interactions and the circulation of knowledge. Due to the priority given to office buildings in the past and to their spatial dispersion, the science park lacks public infrastructures and meeting places such as restaurants, shops and leisure facilities. The four development operations of the Sophia 2030 plan aim at building four new urban centres with mixed land use. In Les Clausonnes, the project combines 50,000 m² of offices and a retail and leisure complex of 100,000 m² (called Open Sky) over a total area of 40 ha. Les Trois Moulins will become the south entrance of the science park: the project consists of offices, public services and sport infrastructures. It will also include a thousand housing units. The operation in Fugueiret is dedicated to higher education and is designed to create a new campus, called the 'City of Knowledge'. It consists of a new university library and student housing. In Saint Philippe, 20,000 m² of offices, 17,000 m² of school, and higher education facilities and a medical centre will be developed.

The Sophia 2030 initiative marks a break with the functional specialization that had prevailed since the creation of the science park. The areas dedicated to high tech and business services represent a small part of the total gross floor area when compared to consumption activities and housing. Each operation associates office buildings, retail space and housing projects. To be fully understood, this shift needs to be approached from a multi-scalar perspective.

Consumption strategies and the change of scale in strategic planning

This new planning strategy is part of a twofold logic. On a first level, these choices were made to address some of the challenges that threaten the attractiveness of the science park. On a second level, they highlight the change of scale in strategic planning in the CASA area.

As is the case in most science parks (Miao, 2017), Sophia-Antipolis' workers are facing very high and rising housing prices. In its strategic plan for housing, the CASA notes that the level of real-estate rents makes it difficult for young professionals, such as post-doctoral researchers or newly recruited young engineers, to find accommodation close to the science park. The functional specialization of the science park also generates intense commuting traffic (the modal share of individual car is 86.5%) while the science park has an under-dimensioned road network and is poorly serviced by public transportation. Retail and residential development within the park is an attempt to maintain the quality of life that has

been a major argument to attract and retain a highly qualified workforce in the past decades. A bus rapid transit project (BRT) has also been created to connect the science park to the coastal urban areas of the CASA. Besides the environmental considerations, the aim is to reduce journey times and, in doing so, to encourage modal shift.

These projects are, however, part of a much larger planning strategy. The scope of the CASA's master plan goes way beyond the science park. The 2008 master plan's main concern is the cohesion of a heterogeneous territory, of which the science park is only a small part. Whereas the suburban areas of the close hinterland have gained a lot of population in the past 30 years, the coastal areas concentrate most of the jobs, shops, leisure activities and public facilities. The CASA has, moreover, experienced a negative migration balance recently, mostly because of housing shortages.

In order to overcome these imbalances, the CASA wishes to promote 'a short distance urban planning'[4] with small urban centres throughout its territory. The aim is to provide local public services and convenience stores for every part of the territory. This strategy relies on existing urban centres but, since a significant part of the population does not live close to any of these, the CASA wishes to develop new ones in residential areas and favours mixed land use (housing, retail, offices). The CASA's housing plan provides for a diversification of housing supply to better match the needs of the population. Public housing supply has indeed proven to be insufficient and unevenly distributed. Moreover, since 2013, according to a national law, each municipality must have 25 per cent of public housing. Only one municipality of the CASA abides by this rule. The choices between production activities and resident-serving sectors are thus coupled with a multi-scalar planning strategy: the challenge for local policies is to handle the economic health of the science park and the demographic and social evolutions of the CASA simultaneously.

Emerging debates over the production-oriented strategy in the science park

Beyond these multi-scalar issues, debates have recently emerged over the economic strategy of local governments regarding the science park. The science park is now part of a territory with a diversified economy. Tourists and retired populations, for instance, account for 40 per cent of the jobs in the CASA. Even the municipalities of the science park have started to question the specialization in high-tech activities. In its land use plan, the municipality of Valbonne stresses 'the necessary development of the science park, as a key driver of the local economy', but it also wishes to 'promote the creation of a more diversified job base and to contribute to the transformation of the science park'. The science park is considered 'an asset but also a weakness because [the municipality] has to pay close attention to the risks of decrease in the population on the one hand and to the adverse effects of the rapid development of new operations on the other hand'. The jobs in the science park are particularly sensitive to the economic environment, whereas the jobs of the resident-serving sectors are seen as less exposed to relocation. The residential economy and its assets are appealing even to the municipalities of the science park that have epitomized production-oriented strategies in the past 50 years. Valbonne's land use plan states that 'beyond the 36 000 employees of the science park, most of whom work on its territory, the municipality wants to strengthen its local economy by the creation of a diversified employment base in order to answer the needs of its population'. Biot, another municipality of the science park, aims at a similar 'diversification of the economy and of the employment base'. In order to do so, it plans to support services and small industry, and to develop new operations outside the science park. In order to fix the spatial mismatch between its job market and the skills of its population, the CASA wants 'resident-serving activities to be the third pillar of its local economy along with high tech and tourism'.[5]

This growing share for the residential economy is debated. A recent report on the future of the science park, ordered by the central state to an expert panel, supports another strategy. It strongly advocates the preservation of the science park specialization in high tech and innovative activities. It acknowledges the need for public transportation and for new local infrastructures, but only as a means to maintain the attractiveness of the science park without 'undermining its specialization'. It especially worries that the municipalities might be tempted to use the land

Table 4. Production- and consumption-oriented strategies.

	High tech and innovation in the science park	New urban centralities with mixed land use in the science park	New urban centralities in the CASA
Examples of tools and actions	New office buildings for high-tech firms Higher education facilities Incubator for start-up companies Old office building renovation Built environment and green areas	Retail and leisure complex ('Open Sky') Restaurants and shops Sport infrastructures Housing programme Bus rapid transit Break with functional specialization	Convenience stores Local public services Housing programme (including social housing) Business land for small industrial and tertiary activities
Aims	Attract high-tech firms Support the creation of high-tech jobs and firms Foster innovation and industry-research collaborations	Address saturation issues (traffic and housing) and preserve the living environment to maintain the attractiveness of the science park for firms and high-level employees	Meet the demands of the population for services and public infrastructure Reverse the negative migration balance Diversify the economic bases and reduce the dependence on the science park
Production/ consumption-oriented	Production-oriented	Mixed	Consumption oriented

reserve in the science park for other purposes. The report, for instance, rejects the creation of industrial activities or services with no R&D content, and advises that new public housing projects should be located outside the science park. These debates over the future of the territory are also illustrated by recent conflicts about development operations. The Open Sky project, for instance, has been highly contested by resident associations for its environmental impact and its cost. In June 2020, Valbonne elected as mayor a member of the Green Party, who campaigned for the suspension of this project. These conflicts illustrate the socio-demographic changes in this area and the way they raise questions about the former planning models.

To sum up, several factors have combined to raise doubts about past development strategies: the institutional reorganization of the science park, the challenges they face and the demands of populations. The highly debated Sophia 2030 plan marks the shift from a technopolitan production-oriented strategy to a patchwork of policies with various and sometimes competing goals. Yet, consumption-oriented and production-oriented policies should not be opposed. On the contrary, Table 4 shows that these policies are intertwined, even within the science park.

Conclusion

This article wished to question the produce or consume issue from a planning perspective and to understand the impact of the growth of consumption-oriented activities on local policymaking.

The example of Sophia-Antipolis, one of the largest science parks in Europe, demonstrates the reconsideration of the predominance of production-oriented policies in the specific context of the French Riviera. The growth of the residential economy within the CASA has raised questions about the high-tech specialization in the municipalities of the science park themselves. After 40 years of innovation-oriented policies, local governments are paying particular attention to the path towards diversification offered by consumption-oriented activities. The sensitivity of high-tech activities to the international economic environment and the threat of relocation add to the

requests of local population for local public services and amenities.

However, consumption-oriented and production-oriented strategies should not be considered as mutually exclusive or even less as competing. The case of Sophia-Antipolis shows that local policies draw on tools embedded in a vast continuum from production-oriented to consumption-oriented strategies. Far from being exclusive, these strategies are often combined within local policies. In Sophia-Antipolis, for instance, residential strategies partly aim at addressing some of the challenges of the science park such as traffic congestion and housing issues. More than to a residential turn in planning policies, this leads to a hybrid strategy. This article has also shown the need to give attention to local institutional settings and to their impact on the formulation of policy rationales that 'are neither static nor undisputed' (Ebbekink and Lagendijk, 2013: 737). This case study calls for further empirical and theoretical investigations. First, we need studies of the impacts of the residential economy growth for local planning policies in other regional and political contexts. Because of its remarkable concentration and diversity of population and economic activities, the regional environment of the French Riviera acts like a magnifying lens to study the impact of the residential economy on planning policies. This context of sustained demographic attractiveness and its impacts on land competition and real-estate prices could be found in many metropolitan areas, but the institutional setting may differ. The role of local growth machines, for instance, needs to be investigated. The growth of the residential economy can give birth to new growth machines, and to new alliances, or to competitions with the traditional coalitions of actors within the science parks. The development of residential activities in formerly production-oriented areas may also induce the formation of home voter coalitions (Fischel, 2009).

Second and more broadly, the production/consumption divide still presents theoretical challenges. Scholars have recently questioned 'the conventional ways of theorizing and measuring the economy' (Heslop et al., 2019: 6). They have coined the term foundational economy to designate the part of the economy that provides essential goods and services that are the infrastructure of civilized life (Bentham et al., 2013; Froud et al., 2020). In doing so, they have highlighted the focus of local policymakers on the competitive and tradeable zone of the economy. The case of Sophia shows that, in the context of the entrepreneurial turn, local policy rationales are strongly marked by attractiveness and external sources of growth (Gordon, 2010), whether these are mobile capital in production-oriented strategies or affluent dwellers, retirees or tourists in consumption-oriented strategies. Recent works on the contribution of the foundational economy to regional growth (Froud et al., 2020) suggest that beyond the consumption/production divide, place-based development policies are faced with the wider issue of the balance between social value and economic performance (Coenen and Morgan, 2020).

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Notes

1. The CASA was in the process of writing the new version of this masterplan but a new national law has recently redefined the content and objectives of *SCOTs*. As a consequence, the writing process has been delayed and the strategic master plan that will build on the Sophia 2030 Plan is not expected before 2022.
2. The INSEE (the French Institute for Statistics and Economic Studies) identifies what it calls 'presential economy' (*sphère présentielle*), that is, the economic sectors which produce goods and services to satisfy local consumption (either by inhabitants or tourists).
3. In 2010, a national reform of local business taxes has increased the weight of residential taxes but with spatially uneven impacts depending on municipality characteristics. This makes it difficult to discriminate

between the impacts of fiscal legislation and of local economic evolutions after 2010.
4. CASA's Housing Strategic Plan 2020–2025.
5. CASA's master plan (2008).

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