

1 **Economic crisis and social learning for the provision of public services in two Spanish**
2 **municipalities**

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Economic crisis and social learning for the provision of public services in two Spanish municipalities

Abstract

Economic crises pose challenges for the provision of public services but may also open up opportunities for social learning about how to achieve a sustainable society. The main research question addressed in this paper is: can economic crises catalyse social learning for a sustainable society? The hypothesis of the paper is that social learning emerges in association with the reduction of consumption levels that follows degrowth or with the reconfiguration of infrastructure management practices and sustainable innovation that could lead to a transition to sustainability. Following this, we empirically examine whether the crisis has led to social learning about the sustainable provision of public services in two similar municipalities in the north of Spain after the economic crisis of 2008. We develop an interpretative analysis of individual experiences of learning from the crisis using a set of qualitative interviews with individuals who were involved in key decisions about public service delivery during or immediately after the crisis. The analysis suggests that there has been a broader cultural change, which is challenging institutional models of regional development, that there has been a drive towards greater resource efficiency and that some opportunities have opened for entrepreneurs to develop sustainable innovations. The findings support the view that the crisis may have fostered learning responses that could lead to either degrowth or a sustainable transition.

Keywords

Social learning, economic crisis, degrowth, transitions to sustainability, sustainable innovation, Spain

1. Introduction

Can learning from shocks foster a transition to a sustainable society? Agrawal (2011; p. 291) has argued that “disasters are a natural ‘reset button’—what happens in their wake is shaped by historical forces, to be sure, but they also enable greater leveraging power to new resources, fresh endeavours and innovative institutions because older structures and processes lose at least part of their historical force”. He highlights the example of poor communities in Honduras that initiated institutional change after Hurricane Mitch. This change led to more equitable land distribution and a reduction in the rate of forest conversion (McSweeney and Coomes, 2011). Do similar processes of social learning follow an economic crisis?

An economic crisis is often understood in terms of falling GDP, lack of capital liquidity and high inflation or deflation. However, crises are also multi-dimensional processes that, in turn, lead to difficult decisions regarding the use of limited resources, which affect people’s quality of life and livelihoods. Barbier (2011; p. 65) argues that the combination of a fuel and commodity crisis since 2007 and the financial crisis in 2008 have created the right conjuncture for strategies to overcome ecological scarcity in the world economy. This requires social learning—that is, collective forms of learning that lead to broader changes in the organisation of societies and their relationship with ecosystems and technologies.

Social learning occurs when social actors reflect on their values, assumptions and policies, and through such reflection they are able to activate a process of collective change (Reed et al., 2010; Castan Broto et al., 2013). It emerges in relation to joint knowledge production (Hegger et al., 2012). It is also a process that leads to collective decisions, where consequences are shared so that knowledge accumulates as part of the collective memory (Plummer and FitzGibbon, 2004). For learning to foster change, it should lead to a form of knowledge that enables the re-examination of ongoing collective actions, their consequences and their potential for change. Thus, social learning is often thought of in terms of learning loops: single loop refers to learning that corrects errors from routines; double loop refers to learning that re-examines values and policies; and triple loop refers to learning that develops new institutions (Keen, 2005). Triple loop learning requires moving from thinking about whether we are doing the right things to redefining what is ‘right’ to achieve structural change (Flood and Romm, 1997). This last aspect is central to determining the potential for radical change because it requires both successful innovations and a reconfiguration of structural barriers along with the generation of new institutions for new ways of thinking and acting collectively (Pahl-Wostl 2009).

Thus, if an economic crisis makes visible the resource foundations of the economy, can a crisis also facilitate a process of social learning for a transition to sustainability? In this paper, we investigate this question in relation to infrastructure for public service delivery. Infrastructure is the socio-technical system that mediates the provision of public services supporting society and the economy. We look at infrastructure in relation to debates on the reduction of resource consumption through degrowth, on the one hand, and on the role of environmental innovation in transitions to sustainability, on the other. In this paper, we find that economic crisis may provide an opportunity for learning in relation to cultural change, new practices in the use of resources and the emergence of sustainable innovations. The extent to which this contributes to a fundamental change or transformation, however, is not clear. Our findings are supported by empirical evidence from an interpretative study of learning experiences from crisis in two towns in the north of Spain.

2. Infrastructure reconfigurations and social learning

Social learning questions the hegemonic norms, values and conventions that mediate human interactions and exchanges. As economic growth is the dominant economic imperative—shaping both society’s perceptions of human welfare and the attempts to attain it—an institutional change of the kind we advocate would entail situating infrastructure within the context of an alternative paradigm, for example, degrowth and economic contraction (Schneider et al., 2010). In terms of reconfiguration of material and technological systems, social learning refers to the establishment of new relationships with infrastructure, thereby gaining the capacity to alter their material disposition and uses through the introduction of sustainable innovations (Boons et al., 2013). These are two interrelated ways of thinking about sustainable transitions in infrastructure to which we turn in the next two sections.

2.1 Social learning as cultural change: enabling degrowth

Degrowth proponents are concerned with the material limits to the economy and our ecology, and thus, they argue for the contraction of economic processes to protect future resource scarcity. Degrowth is defined as “an equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions at the local and global level, in the short and long term” (Schneider et al., 2010; p 511). Sustainable degrowth, however, is not associated with a total contraction, but rather with the preservation of social services and quality of life through cultural change that aims to maximise happiness beyond societies’ current associations with material consumption.

Degrowth debates are linked to debates on sustainable consumption (Lorek and Fuchs, 2013). Matthey (2010), for example, has focused on the issue of whether, as a collective society, we can change our aspirations to consume less. Social learning is regarded here as a matter of influencing multiple individual choices, which collectively may lead to a reduction of consumption levels. Similarly, Hamilton (2010; p. 571) argues for a process of cultural change towards ecological consciousness and that such process “will depend either on severe environmental shocks or, one can only hope, a widespread change in the process of self-creation induced by a collapse of public confidence in the consumer life”. To an extent, this envisages crises as events that allow individuals to reassess their aspirations and personal identities. Economic crises do indeed lead to a reduction of consumer confidence and overall rates of consumption, but maintaining lower levels of consumption would also require changing consumer aspirations.

However, the type of cultural change required for degrowth requires a reconfiguration of the nature and context of consumption. Degrowth entails a simultaneous cultural and material rearrangement that would ensure its long-term viability. This means a cultural change that questions the type of society where we want to live. This cultural change goes hand in hand with re-envisaging the economy away from the marketisation of commodities, looking instead into the possibilities of non-profit and cooperative forms of social economy (Johanisova et al., 2013). While such reconfiguration is predicated on the need to question neoliberal approaches to understanding and managing the economy, it is most often located not on centres of decision-making, but within citizens who actively respond to the demands of a sustainable future. Social learning is key to building citizens’ trust in new governance systems for degrowth (Domènech et al., 2013).

What role could a crisis play in a cultural change towards degrowth? On the one hand, the crisis can be a means to expose citizens to degrowth. Experiences of crises in Cuba, for example, have led to a situation in which people are fed with fewer fossil resources, while providing labour-intensive employment, with a range of social benefits, including social

1 inclusion and health benefits, but at the expense of people's sense of hope and trust in the
2 system (Borowy, 2013). Gaining trust also requires meeting people's collective aspirations of
3 a good society. However, aspirations can change. They are a specific cultural-historical
4 construct (Schneider et al., 2010), structured by institutions—and material objects—that
5 shape attitudes and orientations towards life (Hamilton, 2010). The crisis can expose those
6 collective aspirations, and change them. In this way, the 2008 crisis raised critiques not only
7 about the sustainability of the current economic system but also about the suitability of
8 associated political and social systems (Juknys et al., 2014). The question is whether citizens
9 can move from a critique of the status quo to social learning for change. Whitehead (2013),
10 for example, emphasises degrowth as a strategy to realise 'radical communitarian
11 approaches' to urban living. These imply strategies regarding local economic welfare that
12 focus more "on quality of life, the provision of good, wholesome food and time for family
13 and friends, rather than on economic growth *per se*" (North and Longhurst, 2013). Urban
14 approaches to radical sustainability such as these focus on grassroots mobilisation as a way to
15 change perspectives and cultural practices but also to influence the generation of new
16 institutions and policies. A crisis will lead to social learning for degrowth if it can create a
17 broad cultural change, most likely through grassroots movements, and generate new
18 institutions to regulate more sustainable socio-ecological interactions.

22 ***2.2 Social learning as socio-technical reconfiguration: infrastructure transitions***

24 From a socio-technical perspective, the quest for sustainability does not reside in the
25 development and implementation of a silver-bullet technology or even a range of
26 technologies. Rather, the technological change required to achieve more sustainable
27 economies and societies requires a reorganisation of social practices and the technologies
28 associated with these.

31 The concept of regime is at the centre of ideas of socio-technical change. Regimes are
32 relatively stable arrangements of social norms, institutions, artefacts and the expert and
33 mundane practices associated with them, which are generally understood to be resistant to
34 change (see, for instance: Geels, 2002; Kemp et al., 1998). Sustainable technologies represent
35 purposive attempts to mediate a transition towards systems that either consume less or
36 promote forms of consumption that can be maintained over time with the existing resources
37 available. This calls for the type of socio-technical reorganisation that is implied in a
38 transition (see Elzen et al., 2003). A key aspect to achieve sustainability is to precipitate
39 major transitions in existing socio-technical regimes by aligning localised innovations with
40 windows of opportunity such as those that open up, for example, because of a crisis.

43 Sustainable innovations are simply innovations that reduce environmental impacts and the
44 use of resources (Carrillo-Hermosilla et al., 2010). Sustainable innovation in particular is
45 connected not just to the development of new environmental technologies but also to social
46 innovations, such as new business models or new institutions that embed such technologies in
47 society (Boons and Lüdeke-Freund, 2013; Boons et al., 2013). Sustainable innovations are
48 characterised by both 'radicalness', the extent to which they challenge established methods of
49 operating, and 'systemness', the extent to which they can transform the larger social systems
50 in which they are embedded (Boons et al., 2013). Previous research has examined the role of
51 entrepreneurs in forging new institutional structures that enable a systemic impact (Block and
52 Paredis, 2013; Thompson et al., 2015). Thus, we ask whether crises foster actions with the
53 potential to develop sustainable innovations.

57 Perez (2013), for example, argues that the current crisis opens up the opportunity for entering
58 a 'green golden age'. She finds evidence in past crises, such as the Railway Mania that in the
59 mid-1850s that led the way for the "Victorian boom" or the heavy engineering boom at the
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1 end of the nineteenth century that led the way for the “Belle Époque” in Europe. Although in
2 each case, the particular technological configurations were different, in every case the crisis
3 led to major opportunities. Given the constraints of resources, the training of green
4 professionals and other cultural and social factors, a period of green prosperity may follow
5 appropriate regulations of current financial institutions, without necessarily challenging
6 mainstream ideas of economic growth and development.

7
8 Loorbach and Lijnis Huffenreuter (2013) take a similar position but with greater emphasis on
9 how to observe the potential transition as it happens in localised spaces. They describe the
10 economic crisis as both a symptom of the unsustainability of current socio-technical systems
11 and as an accelerator of a process of systemic change. First, the crisis is associated with
12 limitations in the way land and resources are approached and appropriated within current
13 socio-technical systems in which “dominant responses seek to restabilise historical patterns
14 of consumption and production” (p. 36). Thus, the crisis opens up “a window of opportunity”
15 for “structurally different and more sustainable states” that can “reinforce lock-in of
16 incumbent regime structures” (Loorbach and Lijnis Huffenreuter, 2013; p. 37). The results
17 will depend on the extent to which actors making decisions within the crisis react to
18 alternatives and generate true reconfigurations of infrastructure beyond a Schumpeterian
19 analysis of sustainable technologies. In this way, crisis fosters sustainable innovations that
20 directly challenge dominant socio-technical regimes, with examples including “food and
21 energy cooperatives, mobility sharing, cooperative social services, public-private
22 cooperatives and financial organisms” that share characteristics such as “a focus on broader
23 value definitions, self-organisational structures, explicit links to local communities,
24 sustainable technologies and low-impact but high quality lifestyles” (Loorbach and Lijnis
25 Huffenreuter, 2013; p. 41). Social learning from a socio-technical perspective will be related
26 with the extent to which these interventions fostered by the economic crisis have enabled
27 “opportunities and levers to promote the shifts in ways of doing, thinking and organizing”
28 (Bos et al., 2013).

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32 [Insert Figure 1]

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35 This paper investigates whether social learning can emerge from an economic crisis. Both
36 degrowth and analyses of socio-technical transitions help to link the forms of learning that
37 emerge from crisis with the wider possibilities for transformation but are not explicit about
38 how social learning could look like. Figure 1 represents different ways in which social
39 learning may happen beyond individual learning, in relation to a re-evaluation of values or a
40 fundamental change in systems of provision. The three boxes represent the moments in which
41 change starts through 1) lifestyle and cultural changes; 2) new institutions to manage
42 infrastructure and resources; and 3) sustainable innovation. These three mechanisms of
43 change provide an analytical framework for the identification of potential instances of social
44 learning, as explained below.

45 46 47 48 **3. Methods**

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50 To evaluate the paper’s hypothesis, we conducted an interpretative analysis of individual
51 accounts of learning during the crisis, focusing on public service delivery as a key area for
52 sustainability improvements. The 2008 crisis in Spain, which had a direct impact on the
53 management of infrastructure at the local level, provided a key setting in which the
54 hypothesis could be studied. In Spain, local governments are in charge of public services,
55 including street lighting, waste collection, water provision, road access, street and sewer
56 cleaning, parks, libraries, markets, social services, sports facilities and slaughterhouses
57 (Cuadrado-Ballesteros et al., 2012).

1 Our research strategy was to build two comparable case studies. This strategy is especially
2 suited to study contemporary phenomena with particular emphasis in understanding not just
3 what happens but also how and why it happens (Yin, 2013). The strategy focused on
4 selecting two critical cases that enabled understanding the extent to which learning could
5 happen or not (Flyvbjerg, 2006), although with the aim to generate modest and context-based
6 generalisations (Payne and Williams, 2005). With this aim, we selected two case studies of
7 medium-sized towns, where you would not expect great movement of capital but which
8 nevertheless were strongly affected by the economic crisis. Jaca and Sabiñánigo are two
9 similarly sized towns, north of the Spanish region of Aragón, less than 20 km apart. Jaca is a
10 historic city, the residence of the first Aragonese king, Ramiro I, in the ninth century. Since
11 the 1960s and 1970s, the city has promoted itself as a tourist centre for winter sports. In
12 contrast, Sabiñánigo was a small village in the 1900s but saw rapid growth during the
13 twentieth century, following the establishment of the railway and chemical and aluminium
14 industries. Towards the end of the twentieth century, both towns had a similar population of
15 approximately 10,000, but had very different economies. Jaca had large service and
16 residential sectors and high proportion of floating population that attracted franchises and
17 commercial businesses. Sabiñánigo had a predominantly working-class population that was
18 dependent on the big industries, which were hit by an industrial crisis in the 1990s. As
19 industries closed, both towns competed to become the tourist gateway to the Pyrenees.

23 In each case, we made a list of known infrastructure projects that, according to the local
24 press, had been hit during the economic crisis in 2008 or were blamed for it. We conducted
25 19 interviews in July 2013 with 25 individuals who had played a role in any of those projects.
26 Most of our interviewees, all but six, were male. We found interviewees using both project
27 documentation and recommendations from other interviewees. The sample includes public
28 and private actors because in Spain, municipal services are delivered under a range of modes
29 of service provision that include public and private actors, and some private-led projects also
30 entail the provision of public infrastructure (either in partnership with or contracted by
31 municipal governments).

35 Each interview, lasting from half an hour to two hours, explored different topics in relation to
36 the individual's position and participation in different infrastructure projects. The interviews
37 captured interviewees' subjective experiences of learning at the specific moment of the
38 interview. They followed a five-point interview guide on 1) the context of the work of the
39 interviewee; 2) how the crisis had affected the interviewee; 3) what difficult decisions the
40 interviewee had made during the crisis; 4) what lessons had been learned and who had
41 learned them (also probing whether learning was perceived as individual or collective); 5)
42 what proposals the interviewee had for the future in terms of service delivery, training and
43 social change.

46 The interviews were transcribed and coded. Adopting an interpretative approach, a single
47 coding category was used in an exploratory round of coding to identify instances of self-
48 reported learning. Learning experiences were further analysed in a second round of coding
49 looking at the attribution of learning. We thus classified instances of individual learning, in
50 which learning was explained as a personal experience, and instances of shared or collective
51 learning, in which learning was attributed to social and/or professional communities. A
52 further round of coding was used to link instances of individual and collective learning with
53 the two hypotheses proposed in the theoretical review (de-growth and systems innovation).
54 The last step of analysis linked the findings with theoretical and empirical debates. First, the
55 findings were situated in relation to a background review of the impacts of the crisis in Spain,
56 documented with local and national statistics in section 4. Second, the findings were read in
57 relation to the literature review, which led to the clarification of the hypotheses and the

1 refinement of the framework presented in Figure 1. Following this framework, findings are
2 presented in three subsections of section 4 attending at lifestyle and cultural changes;
3 institutional changes in the use of resources; and sustainable innovations.

4 **4. The economic crisis in Spain as an infrastructure shock**

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6 The economic crisis that hit Spain in the late 2000s had devastating social and economic
7 consequences. It followed an economic boom that relied on the construction industry as the
8 main engine for economic growth and employment. When the construction industry faltered,
9 so did the banks that had invested on it. In the third quarter of 2008, the economy started to
10 contract (Figure 2). While the news reported the failings of giant businesses, such as
11 construction companies (Mulligan, 2008), in the streets people sharply felt the growth of
12 unemployment rates (Figure 3). A wide process of social mobilisation followed the crisis
13 (Anduiza et al., 2014).
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17 [Insert Figures 2,3]

18 The economic crisis has left an imprint in the infrastructure landscape. The construction
19 boom fostered the development of grandiose projects, and second-residence villages
20 mushroomed beyond the usual touristic spots. Moreover, early responses to the crisis, which
21 assumed confidence and growth would soon be restored, promoted investment in
22 infrastructure as a means to generate economic growth. When financial means faulted,
23 ongoing works were paralysed or delayed. Finished works were not given use and
24 maintenance was stopped. The scars of the crisis are visible in the Spanish landscape, as are
25 the infrastructure and the social and economic fabric it sustains.
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28 To what extent did the crisis foster social learning? The crisis is now the primary topic of
29 conversation both in the media and on the street. Consumption in households decreased 7.8%
30 from 2007 to 2011, and the progressive reduction of the indicator of consumer confidence
31 suggests that previous levels of consumption will not be attained any time soon (according to
32 data from the National Institute of Statistics (INE) and the Centre for Sociological
33 Investigation (CIS)). Degrowth is indeed happening, but it is still received with dismay by
34 political and economic commentators. Broader socio-technical changes are less visible at the
35 national scale, although some scattered initiatives are highlighted from time to time, such as
36 the platform INCREASIS (IDIY, 2015), for example, which seeks to re-envision unused
37 urban spaces for their transformation into productive infrastructure. There is, however, a
38 question about whether such initiatives are confined to niches, or whether broader processes
39 of social learning are extending through the Spanish society.
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44 [Insert Figures 4,5]

45 Given their different economic structure, Jaca and Sabiñánigo went through different
46 economic cycles prior to the crisis. Figure 4 shows the different rhythms in the output of the
47 construction sector, which peaked in Jaca in 2003 and in Sabiñánigo, where land prices
48 remained considerable lower, in 2006. However, in 2008, both towns were directly hit by the
49 crisis, as is visible in the unemployment figures (Figure 5). The crisis left behind a landscape
50 of empty houses and infrastructure whose purpose is not clear. Serviced areas now stand
51 empty as spaces for future housing that is still to come. Big iconic projects, initially intended
52 to foster a distinct identity for each of the towns, are now subject to a torrent of criticism. The
53 future of suburban developments around newly built golf courses is yet undecided, as neither
54 town has achieved the status of luxury resort they aspired to. Big transport infrastructure that
55 politicians and businessmen considered crucial for the future economic development of the
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towns—both to attract tourists and to facilitate the transport of industrial products—stand half built, adding to the already complicated economic position of both towns.

4.1 Lifestyle and cultural changes

The crisis has changed perceptions of what is acceptable, in terms of lifestyles and public interventions. All interviewees, without exception, expressed outrage at what could collectively described as mindless spending in the period prior to the crisis, and they extracted lessons for the post-crisis context. Slow growth and unemployment (Figures 2, 3 and 5) are linked to personal experiences of lowered salaries, unemployment and hopelessness, and hence, many of the lessons learned are directly linked to personal experiences and practices. A business owner, for example, emphasised that “the first lesson is that people value money better, more than before. ‘Tips’ are scarce” (Interviewee 22, BM, Jaca¹). The word ‘tip’ in this sentence represents a metaphor, not just that people give fewer tips in a service context, but rather, that people have less money to spare for lifestyle-related activities, such as those that sustain tourism in both Jaca and Sabiñánigo. Overall, this perception translated into material changes in relation to infrastructure needs. For example, an engineer in charge of waste collection services explained that for him, the diminishing rates of waste was a clear indicator of “what is happening with the economy”, in particular, a reduction in levels of consumption (Interviewee 4, CS, Jaca).

All interviewees stated in different ways that there had been a redefinition of personal needs as a form of individual learning. Some established a direct connection between the experience of the crisis and the realisation of the importance of saving: “What I have learned, although in the end you never do it, is that you must keep something, you must save instead of, when you earn any money, run to invest it in anything...” (Interviewee 25, P, Sabiñánigo). This ‘rush to invest’ is linked to a sense of collective responsibility for the extravagances that took place prior to the crisis: “We all lived beyond our means... Now we have a bit more control.” (Interviewee 17, IMU, Jaca). For some, the bubble followed the wishes of a generation that “spent everything they earned, and we created our needs in relation to our income, without thinking about the future”. They refer to it as transitory collective madness: “We were crazy. We were rich. This was the land of milk and honey. Who had the largest car? I remember conversing with friends: ‘I have been in a new bar and I have paid €10 per drink’. We were showing off!” (Interviewee 15, IMU, Sabiñánigo).

All civil servants explained that a key challenge of the crisis was to manage a heightened ‘public demand’ for an ever-increasing level of services that sustained pre-crisis levels of consumption. Some emphasise how public spending was perceived as acceptable: “this is an economic crisis, but it is also as social crisis, an ideological crisis, a political crisis. It does not only belong to politicians: it belongs to the media, to everyone. Everyone was buying houses, and when they were selling an old one they were already speculating to buy a new one” (Interviewee 6, CS, Huesca). The crisis thus demonstrated that the large public and private investments that took place during the period leading up to 2008 were “impossible to maintain, and furthermore, they generated a fictitious society and a complicated future. [We] generated an expectation about having the services of a mega-city such as Madrid in any small town. Buildings that are not used, employees whose job cannot be kept if there is not enough demand, and not having revenues to consolidate the investment...” (Interviewee 19, P, Jaca). This perception emerges not just in relation to the construction of large iconic projects or large infrastructure but also at a more mundane level, in relation to the

¹ According to ethics conventions, interviews are anonymised, but information is provided about the category of interviewee (Politician (P), Business manager (BM), Civil servant (CS), Infrastructure manager or user (IMU)) and the location of the interview.

1 expectations of daily services such as waste collection, street lighting or sport facilities: “If
2 everybody is accustomed to a lighting level, when you reduce it [during crisis], people
3 protest, but maybe the problem is that you were providing an excessive service... We
4 habituated people to abnormal levels.... It is not just the crisis that justifies returning to lower
5 levels. Simply put, it is rational” (Interviewee 7, CS, Sabiñánigo).

6 For many, the crisis has shifted the boundaries of acceptability, making visible the mistakes
7 of the past: “In terms of infrastructure, it is only now that you see some projects and you ask
8 yourself ‘how could they spend any money on that?’. And then it does not even meet the
9 purpose for which it was made. However, I do not think we can move onto the next step, that
10 is, block the progress of some infrastructure...” (Interviewee 2, CS, Jaca). This has generated
11 interest not just in the projects themselves, but in the governance mechanisms that enabled
12 such projects to proceed. The crisis has not only brought together people to question or even
13 stop a given project, but moreover, to evaluate and look into budgetary spending: “We have
14 learned to not keep quiet. Before, people turned a blind eye to what happened. However, now
15 we pay attention to what politicians do or not do” (Interviewee 17, IMU, Jaca). For those in
16 the administration, the crisis has revealed that infrastructure with a strong visual impact (e.g.,
17 those dedicated towards recreation or tourism, such as sports grounds, theatres or museums)
18 was prioritised over more immediate needs to renovate the basic infrastructure: in the context
19 of crisis, there is a regret that certain works of infrastructure modernisation were not
20 undertaken when there were funds available to do so: “We have gone from everything to
21 nothing in less than five minutes. From those grandiose, mammoth structures, with doubtful
22 economic or social benefits, to not having enough funds to maintain existing infrastructure....
23 the tendency has been towards building a concert hall, a library, which is good, but the
24 emphasis on visible infrastructure has been detrimental to the maintenance of the most basic
25 ones, such as lighting and water... because citizens do not seem not care about renewing the
26 pipes as long as water continues coming from their taps.” (Interviewee 13, CS, Sabiñánigo).
27 Lack of resources means that some of that infrastructure cannot be put to use because of the
28 lack of human resources: “The infrastructure alone is not enough, it needs a purpose....
29 Before people would say ‘c’mon, let’s construct a building, it will fill by itself’, but now, this
30 needs human resources to put it into practice” (Interview 1, CS, Jaca).

31 Interviewees reflected on prodigality as a disease affecting Spanish society. Sabiñánigo
32 interviewees, particularly, regret the project of a luxurious spa in the Pyrenees, the most
33 salient example of a large, lavishly funded project. A company worker explains that
34 “Everything was done as big as possible, without care for expenses... these were also people
35 who were seen as god-like in their capacity for investment... I am the King Midas and
36 everything I touch becomes gold. In the end it was the opposite” (...) “The Company worked
37 in a fictitious manner... because before the crisis, it had open access to credit. It only needed
38 to ask... many companies, especially developers, operated in that way” (Interviewee 10, BM,
39 Sabiñánigo). Such emphasis on prodigality not only fostered mammoth projects with the
40 enthusiastic support of participating municipalities but also promoted disregard for the
41 adequate management of projects. A manual worker whose contract was terminated during
42 the crisis expressed his puzzlement when the true state of the accounts of his company, which
43 was building access roads, was revealed: “It is an issue of control, of people, of everything.
44 You may assume that when you do great work, there is going to be a splurge, and if you
45 make an initial budget, you may go over it a little... but what is not normal... is that spending
46 multiplies... it is one thing to spend a bit more than planned and another is to not to have a
47 budget at all...” (Interviewee 20, IMU, Sabiñánigo).

48 These examples reflect how the crisis has led to individual learning about what is acceptable
49 consumption, both in terms of examining individual’s lifestyles and in terms of the vision of
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1 the city that is put forward. While this was reported as individual learning, it was very
2 common in all interviews both in Sabiñánigo and Jaca, suggesting perhaps a form of cultural
3 change that goes beyond these specific localities. This cultural change partly explains the
4 acceptance of a reduction in the rates of municipal expenditure (Figure 6) and the emergence
5 of a new set of demands for public services which includes an evaluation of what is actually
6 needed.

7 ***4.2 Institutional changes and the management of scarce resources***

9 Lack of capital during and after the crisis has affected all economic sectors, from the limited
10 resources in governmental institutions to a reduction of consumption and lack of available
11 capital. The crisis has led to an immediate reduction of services, which is reflected in
12 municipal budgets (Figure 6). In both municipalities, expenditures depend on and mirror
13 income. Apart from the relative size of the budget (in 2012, Jaca spent €1565 per capita,
14 while Sabiñánigo spent about half of that, €822 per capita), Jaca's expenditures show a
15 greater variation during the crisis period, with an increase in the budget of 160% between
16 2000 and 2006, and a rapid decrease of 40% over the next six years. In Sabiñánigo,
17 expenditures increased 90% up to 2006, and have been decreasing faster, at 45%, since then.
18 In both cases, budgets have maintained a higher level of expenditure than prior to the bubble.
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22 [Insert Figure 6]

23
24 Given the reduction in expenditures, two types of investment have been prioritised: efficiency
25 improvements and revalorisation of underused resources. Some interviewees lamented that
26 the crisis had not just stopped 'pharaonic projects' but also "that we have stopped everything,
27 that which is necessary and that which is not" (Interview 13, CS, Sabiñánigo). For many,
28 services thought of as essential have been reduced or completely stopped. Municipal officials
29 explain this by saying that the crisis has led to prioritisation exercises to assess both the need
30 for infrastructure and how it affects the population concerned: "We have reduced our
31 budget... Now we can only do smaller works, and we need to prioritise. There has also been a
32 reduction in external funds, and now we focus on smaller works that benefit more people."
33 (Interviewee 1, CS, Jaca). In most cases, this has also meant an emphasis on efficiency: "The
34 option of developing new infrastructure has disappeared. [For] the infrastructure we have,
35 they must be as cheap as possible, and in some cases, we are even thinking of eliminating
36 them. However, this is a drastic decision that no politician wants to make... they don't want
37 to close the ice rink, or the swimming pools, or any other infrastructure. Even if they are not
38 fundamental or essential, nobody will make such a decision. So, what is the solution? That
39 such infrastructure consumes as little as possible, and with as few Euros as possible."
40 (Interviewee 7, CS, Sabiñánigo). This also explains the maintenance of relatively high levels
41 of expenditure after the crisis, despite the cuts.
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46 Improving efficiency has become a priority for investment, both in the public and the private
47 sector: "The little funds we could invest we have invested in making efficiency gains. We
48 have renewed the street lighting infrastructure to reduce consumption. We have changed
49 heating installations to reduce the consumption of electricity and increase the consumption of
50 biomass" (Interviewee 8, P, Jaca). This search for efficiency has affected every organisation.
51 Private businesses have equally moved to "keeping the muscle and removing the fat"
52 (Interviewee 14, BM, Sabiñánigo), both through more efficient use of infrastructure and
53 resources and through the management of human resources. This positive outlook, however,
54 contrasts with the contraction of the construction sector in both towns (Figure 4).
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58 Efficiency demands have led to important institutional changes in the chain of infrastructure
59 management. Achieving greater operational efficiency in public and private organisations had
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1 translated to expanding in-house service delivery. Local governments, for example, have
2 focused on developing in-house “tasks that until now were externalised” (Interviewee 5, CS,
3 Sabiñánigo). In the private sector, “before the crisis, for any minor issue, you could outsource
4 the repair of any breakdown”, but things have changed radically, as “now we tend to do
5 everything in-house” (Interviewee 9, IMU, Sabiñánigo). Resource efficiency is at the centre
6 of infrastructure management practices.

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8 There is a dual process of adjustment and restructuring that depends on the extent to which
9 the demand has actually been reduced and on the possibilities to redefine different
10 components of the service. One interviewee, for example, explained how those readjustments
11 depended on them “working with older materials... for which we do not have replacements”
12 (Interviewee 4, CS, Jaca). Materials are reused, even “things that have some wear, and before
13 the crisis you would have changed them without a thought, but now you think that they can
14 still work” (Interviewee 9, IMU, Sabiñánigo). Nine interviewees highlighted that the
15 maintenance of infrastructure was a key concern for them, which related not just to the
16 limited resources that were available for maintenance—and that had a direct impact on
17 whether infrastructure is maintained—but also to the fact that some of the largest structure,
18 such as Jaca’s ice rink, had excessive maintenance costs, and not covering them would mean,
19 in the long term, the degradation of infrastructure because “if you leave them without
20 maintenance, in a few days you may as well throw it away” (Interviewee 13, CS,
21 Sabiñánigo).

22
23 Maintenance is related to use. That is why, together with an emphasis on achieving greater
24 efficiency, the crisis has also been related to an interest to re-value underused resources,
25 including infrastructure and land, as well as the potential for local work, local knowledge and
26 local models of development that were overlooked during the construction boom. For
27 example, any remaining subsidies have been directed towards interventions that “add value to
28 resources that are currently underutilised, focus on rehabilitation instead of new
29 developments, or help to re-value resources that are already within the territory” (Interviewee
30 1, CS, Jaca). For local municipalities, this is a question of using infrastructure and empty
31 buildings “to avoid letting them die” (Interviewee 10, BM, Sabiñánigo), while also reusing
32 “land and other private spaces in a precarious way until the public equipment can be
33 deployed” (Interview 5, CS, Sabiñánigo).

34
35 This learning within a network of managers, employers and customers, seems to generate
36 institutional change to provide a similar level of public services with reduced resources,
37 leading to a collective rethinking of the standards for service and maintenance.

38 **4.3 Sustainable innovations**

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40 Economically, the crisis in these towns has led not only to a diminished interest in
41 construction and tourism and the associated negative effects on the economy (Figures 4-6)
42 but also to a focus on potential alternatives in primary production and trade that can sustain
43 livelihoods, as reflected in the rising number of self-employed citizens. These cultural
44 changes create spaces for sustainable innovation, particularly in relation to the development
45 of social economic networks and the promotion of new collective solutions for sustainable
46 local economies.

47
48 Municipal officials have noticed an increase in applications for business licenses: “Lately, we
49 have many applications for opening businesses. People who want to be self-employed.
50 Unemployed people becoming freelancers who open their own businesses... so, surprisingly,
51 many small businesses are starting activity... self-employment is generated by people of
52 approximately 40-45 years who tell themselves, ‘I better build up my job or I will not have
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1 one' ... and they do anything: clothing stores, sports, spinning, pilates, yoga, cleaning
2 services, any kind of professional activities, lawyers... such is the business landscape"
3 (Interviewee 5, CS, Sabiñánigo). Here, self-employment is linked to the lack of more
4 traditional employment opportunities: "people, when they are unemployed, they look for self-
5 employment opportunities. Here in Jaca, recently, there has been a considerable increase in
6 self-employment, looking for any alternative to generate an income and subsist..."
7 (Interviewee 17, IMU, Jaca). This is consistent with the municipal statistics for employment,
8 which reflect a drastic reduction of people who are self-employed in the construction and
9 industrial sectors, but it is also reflected in the modest increases of people registered in
10 agriculture and services, approximately 7% (these sectors only employ 7% of the population
11 in Jaca and 5% in Sabiñánigo).
12

13 Some interviewees noticed another type of self-employment linked to micro-businesses with
14 very little capital, based on the "model of entrepreneur who is very young, with little
15 experience, very brave, who relies on resources from his parents and has no family
16 responsibilities...." (Interviewee 3, CS, Jaca). These accounts are accompanied by a set of
17 caveats about how many of those new enterprises subsist and the extent to which their
18 sustainability depends on their ability to establish linkages and demand for new services and
19 draw future capital from other locales. However, the multiple examples emerging in these
20 anecdotal accounts suggest an aggregate effort at finding alternatives to reshape the economic
21 situation in the region. This is a landscape of innovation, linked to self-employment, which
22 focuses on alternatives for livelihood that do not depend on mainstream regimes of
23 construction and a model of tourism based on winter sports.
24

25 In particular, there is a clear interest in forms of new localism that emphasise the use of
26 personal skills within a particular setting and in relation to the available resources within a
27 given locale, in terms of linking opportunities for self-employment with responsible
28 consumption. Self-employment emerges from a commitment to the values and resources
29 within a given region. Some entrepreneurs have found inspiration in traditional crafts, and
30 "public institutions and private organisations are making efforts to recognise shepherds as
31 professionals, or cheesemakers, or even the blacksmith who is making sheep bells"
32 (Interviewee 3, CS, Jaca). Other innovations have focused on creating markets for wool, or
33 demonstrating the viability of biomass boilers in an area with access to forest resources. The
34 biomass plant in Ansó, a village near Jaca, involves a public-private partnership, but its
35 development is fostered by individuals who seek self-employment: "this is an example of
36 entrepreneurship. It started during the crisis, and they faced many problems, especially with
37 regards to the environmental legislation... but they have been able to take it forward"
38 (Interviewee 4, CS, Jaca). This project will create employment based upon a local resource,
39 wood, and a concern with creating sustainable alternatives for energy provision.
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41 Another example of local innovation aimed at developing opportunities for sustainable
42 livelihoods is the public-led institution Adecuara (Association for the integral development of
43 the Cradle of Aragón), which has received funding from EU structural funds (2007-2013).
44 After the crisis, Adecuara saw an opportunity for 'integral development' to promote small
45 food industries as a novel alternative to the main pillars of the economy around tourism,
46 heavy industry and construction. The crisis left a legacy of unused infrastructure, such as
47 warehouses and associated equipment. Through discussions, Adecuara utilised this
48 infrastructure as space for two business incubators, one in Jaca and one near Sabiñánigo, for
49 small food industries to develop and market their products without needing a large amount of
50 start-up capital. Such incubators will provide would-be entrepreneurs with collective facilities
51 including packaging and labelling infrastructure, health and safety equipment, offices and
52 storage. Moreover, the incubators will enable businesses to operate seasonally, based on the
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1 availability of local resources, for example, through the timing of jam production, depending
2 on the fruits available, or the collection of honey from the end of the summer to mid-autumn.
3 For those involved in it, the incubator could only happen in this post-crisis context because
4 the crisis helped to reveal the potential for the agrifood sector, highlighting the lack of capital
5 in the sector (Interview 1, CS, Jaca). In this example, the innovation of supporting
6 agribusiness through the redevelopment of infrastructure is tightly linked with other forms of
7 social innovation, and in particular, the promotion of cooperativism as a way to address the
8 costs of innovation.
9

10 In this way, for many—especially in government—collaboration, rather than individual
11 entrepreneurship, emerges as a means to build sustainable business models. Alongside calls
12 for collaboration and cooperativism, there is a greater emphasis on local and artisanal
13 products and the possibility of accessing new markets at a modest scale while generating
14 sustainable employment opportunities through the creation of “networks of social economy,
15 or solidarity, which are independent for legal definitions and formulas” (Interview 2, CS,
16 Jaca). Other examples include neighbourhood associations that take responsibility for
17 unmanaged infrastructure, collectives that support micro-development through sharing or
18 crowd-funding, or local governments that reimagine public uses for empty buildings. In 2013,
19 these emerged as experimental strategies, yet they demonstrate that in the post-crisis context,
20 there is an interest in the generation of social and institutional innovation that responds to
21 demands for public services and employment.
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25 In Jaca, the business incubator has received a negative response from some business leaders
26 in the area who do not see the potential for the development of the agrifood industry. These
27 business leaders argue that such a model does not match ‘the vocation of the land’: tourism.
28 They understand artisanal production only as it is linked to food tourism (Interviewee 21,
29 BM, Jaca). Here, we see the strength of long-established models of development, in which
30 the agrifood industry is not an employment-generating activity in its own right, but rather,
31 something that should support the main tourism industry. The artisanal producer is thought of
32 as something else to ‘visit’, a complement to winter sports, resorts and hotels. The economic
33 crisis disrupted discourses of construction and industrial development, but not necessarily
34 those that emphasised the tourism-based model of development that Jaca relied upon. Thus,
35 while in Sabiñánigo there is clear support from government and business leaders for
36 cooperative models of development, in Jaca there are vocal critiques that resist abandoning a
37 strongly entrenched model of development. Active opposition to these government-led
38 innovation projects in Jaca is likely to halt alternatives to the tourism and construction model
39 of development that led to the crisis in the first place.
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44 **5. Discussion**

45 Can we see a radical change emerging from any of the three forms of social learning
46 investigated here? The first section shows that the crisis changed perceptions of what is
47 acceptable both in terms of lifestyle and public expenditures. In Sabiñánigo, particularly,
48 there are renewed arguments seeking to redefine which levels of public service provision are
49 acceptable, a key aspect to support governance initiatives towards degrowth (Domènech et
50 al., 2013). Moreover, the crisis has made visible the unsustainability of some infrastructure.
51 Crises are key moments in which the political economy of infrastructure provision becomes
52 visible (Graham, 2010). Interviewees question not just the levels of provision but also the
53 purpose of projects that look unacceptable in the post-crisis period. These instances of
54 learning are mostly discussed as a form of individual learning, as a change in personal views
55 about the town and its development, both in Jaca and Sabiñánigo. However, it is difficult to
56 determine the extent to which these changes in views are leading to broader social or cultural
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1 change. All over the country, there have been post-crisis political mobilisations to protest
2 against the political class, and especially, how public spending cuts and mortgage
3 repossessions have affected the most vulnerable (e.g., Anduiza et al., 2014), but the emphasis
4 is on blaming the political class for the process that led to the crisis, rather than pointing
5 towards any form of social learning.

6 In terms of institutional change, there is a drive towards increasing efficiency in all aspects of
7 service delivery, as in business operations. Local government and businesses are pushed
8 towards greater infrastructure efficiency, both in terms of resource use and streamlining
9 management processes. Practices that seemed reasonable before the crisis—e.g., the disuse of
10 new materials because they did not conform to aesthetic specifications—now seem
11 unimaginable. Moreover, there is greater emphasis on the reuse of land and materials.
12 Planning is now directed towards recuperating empty spaces within the city. This resonates
13 with recent contributions to the degrowth debate, which have emphasised the processes
14 whereby degrowth can be achieved and the extent to which a reduction of resource use
15 follows economic degrowth (Infante Amate and González de Molina, 2013). However, there
16 is a question about whether this is a response to the lack of resources, rather than true
17 institutional change. Restraint in municipal expenditures is not taking place at the same speed
18 as increases in expenditure took place during the bubble. The level of services needs to be
19 maintained, regardless of consumption levels or public demands, for example, in providing
20 waste collection services to small localities that depend on the town's municipality or in
21 providing adequate maintenance of roads during the winter. While some of this evidence no
22 doubt can be interpreted as contributing to the critique of degrowth (van den Bergh, 2011),
23 we believe that it also points towards the specific challenges of looking at degrowth in
24 practice (Sekulova et al., 2013) and that degrowth policies, within or without a crisis, will
25 need to be carefully consider in relation to the context of implementation and the specific
26 demands of those who are deemed to be affected by them. This broader cultural change is
27 visible in both towns.

28 There is also ample evidence in these two towns that the crisis has led to opportunities for
29 sustainable innovation related to an increase in self-employment and an emphasis on local
30 produce as an opportunity for economically sustainable livelihoods. The crisis may have
31 created an environment conducive to sustainability entrepreneurs, but there is less evidence
32 that such entrepreneurs are actually able to influence their institutional environment, as
33 shown by Thomson et al. (2015). There is some incipient evidence of new business models,
34 such as micro businesses, the use of local resources and cooperative management, but the
35 evidence is anecdotal. One innovative initiative has been the incubator for local businesses,
36 which combined both a cooperative model of infrastructure management with the support of
37 the government via the use of European Union structural funds. Following the definition of
38 sustainable innovation above, the incubator is remarkable both because of its newness and
39 because, if successful, it will challenge the whole economic system (cf. Boons et al.,
40 2013). We remain optimistic about this project because it resonates with previous experiences
41 in transitions management showing that government initiatives can support individual
42 businesses in developing sustainable innovation in the transition to sustainability (Loorbach
43 and Wijsman, 2013). However, the cases demonstrate how the context of innovation can
44 shape opportunities for broader transitions. In Jaca, the economic crisis did not pose a direct
45 challenge to the dominant tourism-based discourse of economic development, and thus,
46 innovative projects have encountered vocal resistance. In Sabiñánigo, however, there has
47 been a complete dismissal of the construction industry without a revival of tourism, which
48 has led to greater enthusiasm for alternative, industry-based models of development. What
49 the case studies show is not just the risk of absorption within the market-based system
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1 (Johanisova et al., 2013), but also, that actors successful in advancing the dominant model of
2 economic development may actively hinder learning from the economic crisis. In this respect,
3 each town's opportunities for change are related to their cultural identity and how this
4 identity shapes local economic discourses and management practices.

5 Overall, the results show that the crisis has fostered cultural changes in terms of reframing
6 what is acceptable in service provision, forced organisations to streamline resource use, and
7 created spaces for entrepreneurs willing to develop social innovations. The extent to which
8 this constitutes a transformation will require further investigation, but in this study, we can
9 conclude that the crisis has opened up spaces for learning. Nevertheless, learning emerges in
10 relation to what has been questioned. Unlike a natural catastrophe, where there is a challenge
11 to every actor in society, a man-made crisis emerges together with discourses of
12 responsibility allocation, which directs learning possibilities to certain people and certain
13 sectors and limits its potential impact in certain contexts.

16 **6. Conclusion**

18 Crises bring a strong wave of destabilisation that challenges modes of operation and creates
19 new spaces for innovation. Insofar as the crisis has changed what is acceptable in society,
20 there has been a process of social learning associated with it. However, the economic crisis
21 did not challenge the economic system as a whole, but rather, a model of development linked
22 to construction and credit. The long-standing model of tourism development in Jaca, for
23 example, stands as a model to be defended despite the crisis and the initiatives that have
24 emerged after the crisis.

27 The cases suggest that we should not rush to draw positive conclusions about the possibilities
28 of economic crises. In Spain, the crisis has not brought new actors—banks still control
29 investment capital, and while they may not have the resources they once had, they still have
30 the same rhetoric about profit making, and that drives outcomes. The result is that the state of
31 play remains the same, both in terms of discourse and action. This thus points towards the
32 political economy of sustainability and the extent to which local actors can truly challenge it.
33 The focus of the analysis on two specific case studies enables a context-specific analysis of
34 learning experiences but drives attention away from the broader political economy factors
35 within which actors operate. In particular, the analysis shows that despite the changes in
36 discourses and the drive towards greater efficiency, expenditure levels have not been
37 radically cut. Moreover, while sustainable innovations are being nurtured in Sabiñánigo, they
38 are being actively contested in Jaca because the economic crisis did not question the
39 dominant model of tourism-based development. A discourse of the crisis linked only to the
40 construction sector and led by politicians may be hindering opportunities for social learning
41 about sustainability in cases such as Jaca.

46 Moreover, there are limits to the study of self-reported accounts of learning as far as being
47 able to infer that actual social learning has occurred. In particular, we are concerned that too
48 little time has passed to establish social learning in the sense that social learning should
49 transcend the moment of learning because it refers to institutional change over time. We have
50 now an opportunity to initiate longitudinal analyses of case studies such as these which will
51 explain to future generations the social learning that emerged from the economic crisis in
52 2008 and what was its impact. Also, historical analyses of cultural changes in relation to
53 transformations of material and energy flows constitute a grounded way of understanding
54 social learning as it relates to structural changes in society. However, in the quest for
55 sustainability and the need for a societal transition, not all of the lessons can be learned
56 through historical or longitudinal analysis. Thus, sociological, interpretative analysis of the
57 type presented here provides a window for the understanding of how people explain their
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own actions and operate in the world as they interpret it. Further interpretative research in diverse contexts of crisis and prosperity is urgently needed to understand both how to change broader cultures of consumption and resource use and how to create opportunities for sustainable innovation.

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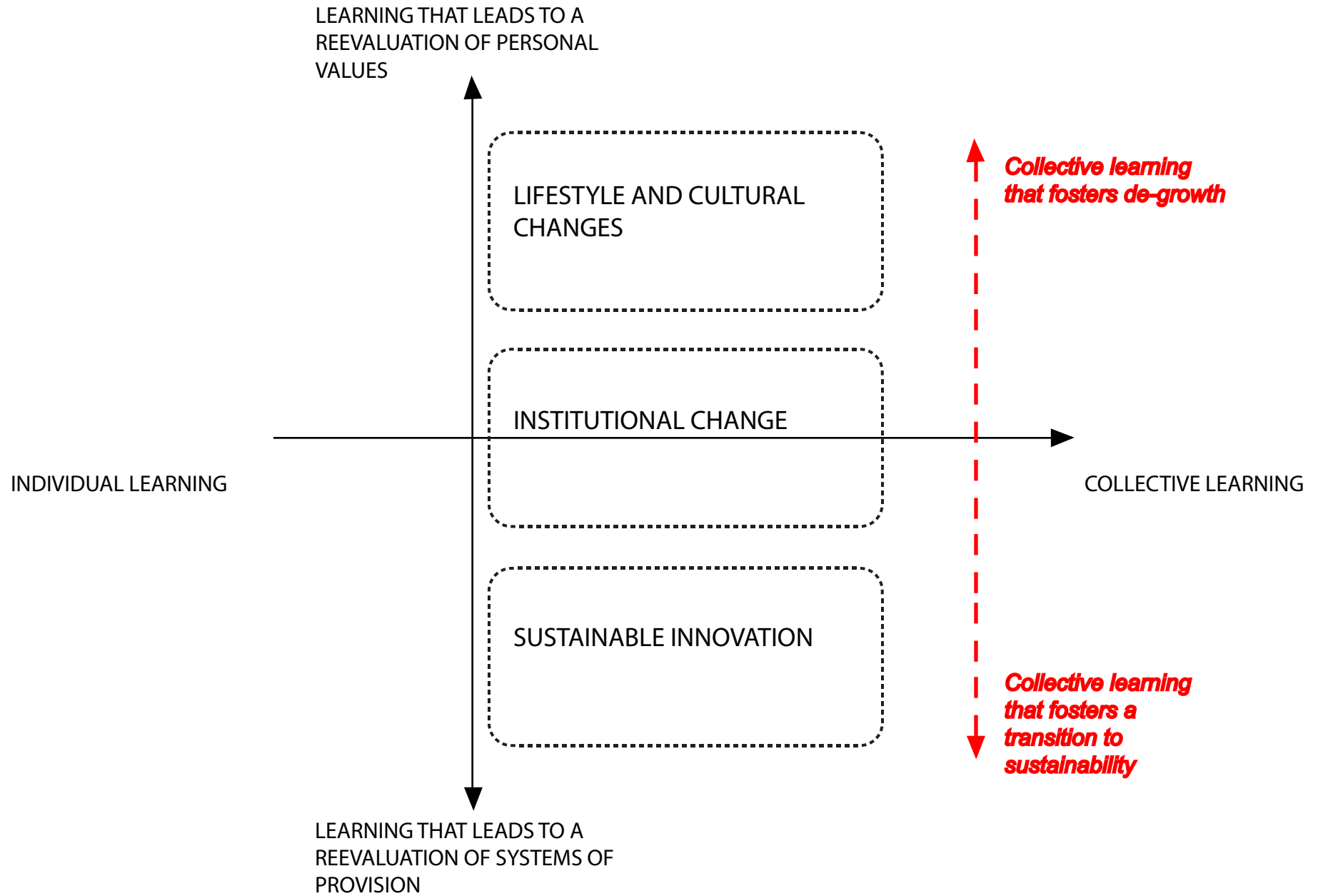
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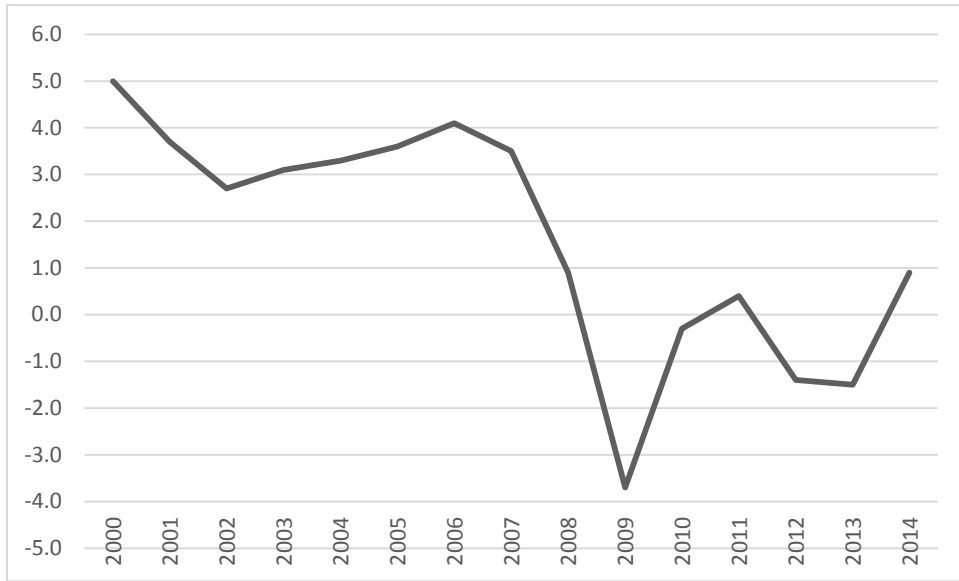


Figure 2: Percentage change in Gross Domestic Product in relation to previous period (Data source: INE)

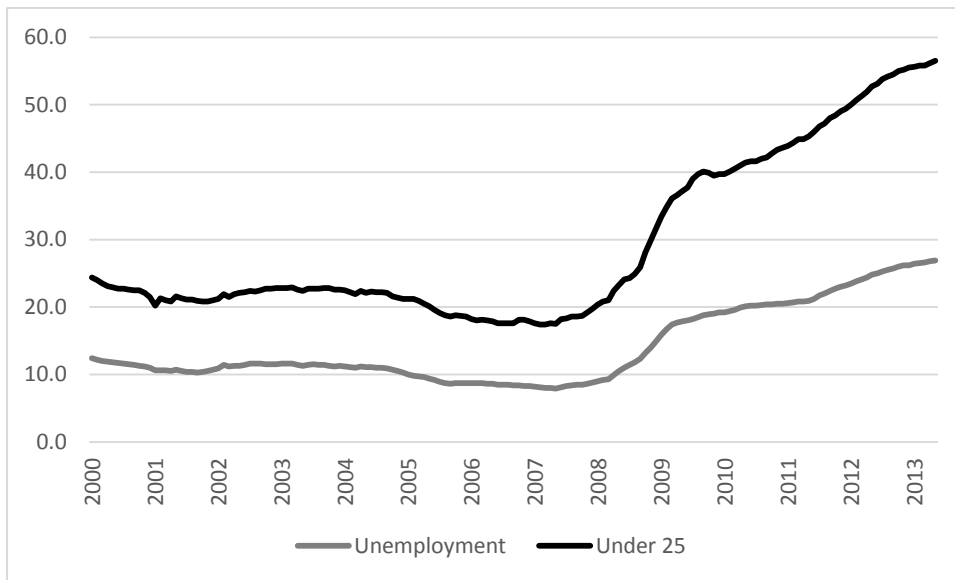


Figure 3: Unemployment rate from 2000 to 2013 (Data source: Eurostat)

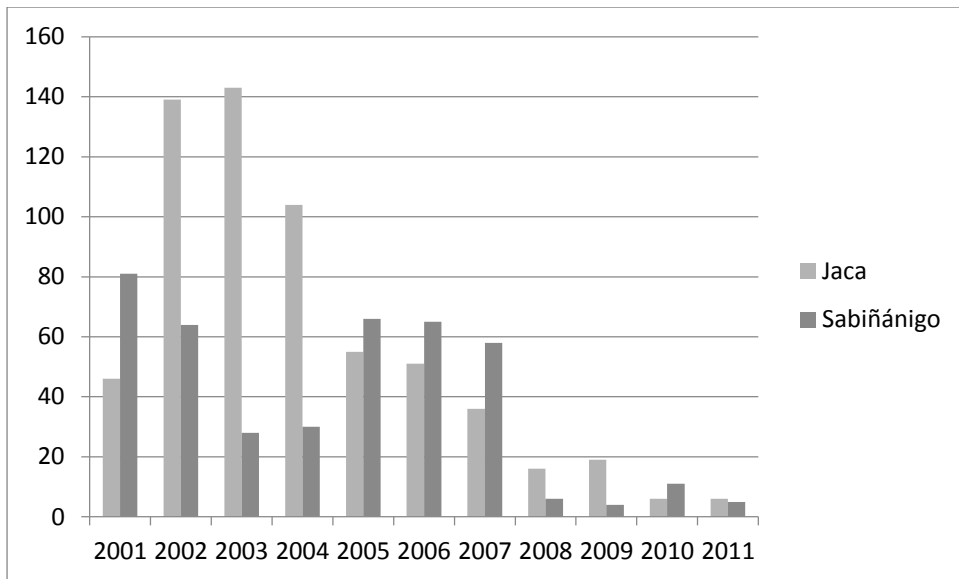


Figure 4: New buildings in Jaca and Sabiñánigo (total number; data source: Aragon's Institute of Statistics)

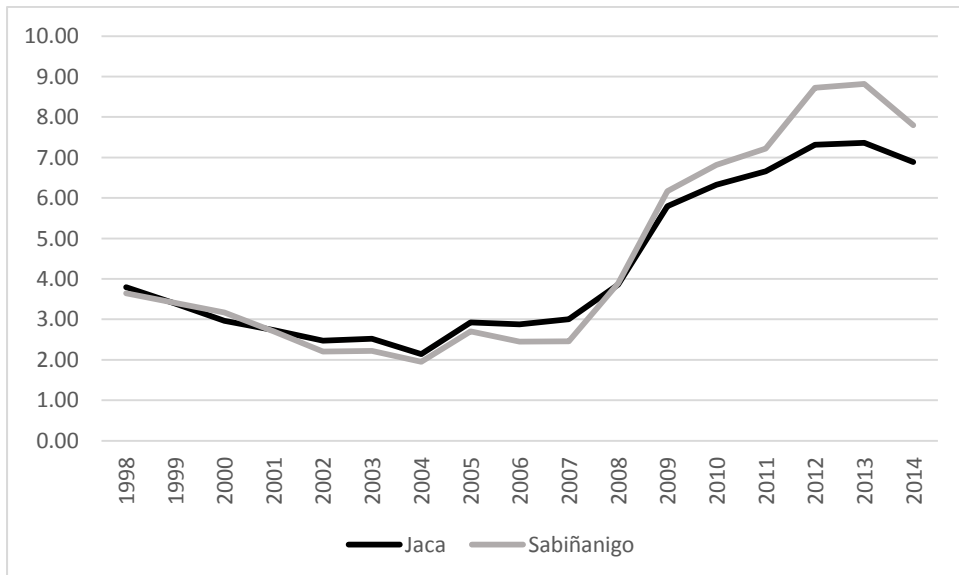


Figure 5: Evolution of the unemployment rate (unemployed annual average/total population) in Jaca and Sabiñánigo (source: Aragon's Institute of Statistics)

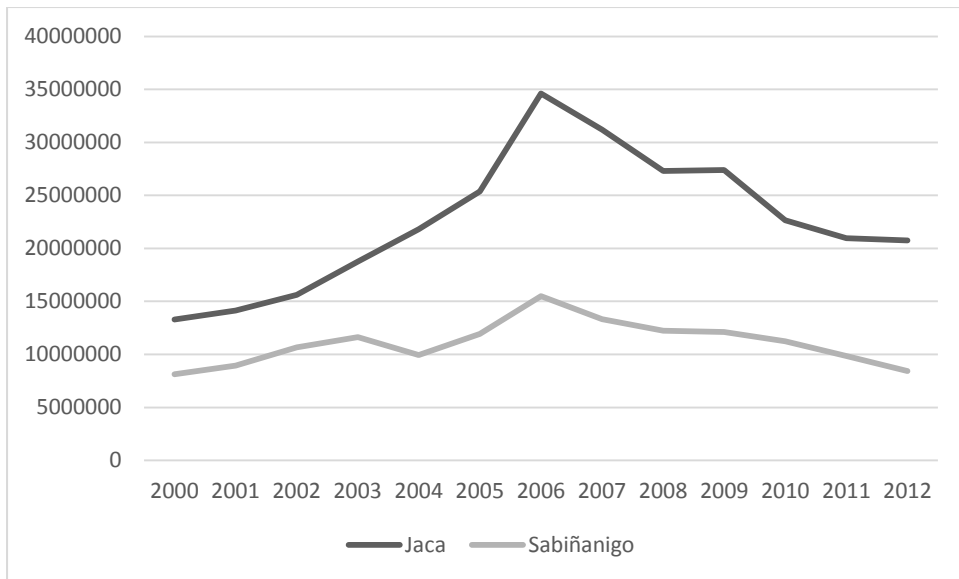


Figure 6: Evolution of municipal expenditure in Jaca and Sabiñanigo (€)(source: Aragon's Institute of Statistics)