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2026-07-08

Deposited version:
Accepted Version

Peer-review status of attached file:
Peer-reviewed

Citation for published item:
Medeiros, E. (2024). Transforming EU cohesion policy into a territorial self-sufficiency policy. In Eduardo Medeiros (Ed.), Self-sufficiency and sustainable cities and regions: Planning for sustainable, circular and carbon-neutral development. (pp. 7-22). London: Routledge.

Further information on publisher's website:
10.4324/9781003498216-3

Publisher's copyright statement:
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Chapter 1: Transforming EU Cohesion Policy into a Territorial Self-Sufficiency Policy

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Abstract:

This chapter discusses the role of EU Cohesion Policy increasing focus in promoting environmental sustainability processes in the European Union territory over the past 35 years. It then provides concrete policy recommendations on how to allocate part of its funding to supporting urban and regional Self-Sufficiency development approaches in particular in the areas of energy and food production, as well as in the domains of transport mobility and circular economy. Ultimately, the analysis is supported by the literature review and specifically the reading of EU Cohesion Reports as regards the implementation of EU Cohesion Policy, complemented by the latest scientific findings and advances on the discussed themes. The chapter concludes that there is a vital need to realign public policies' strategic design and implementation towards territorial self-sufficiency planning and development, as a concrete more targeted policy solution to mitigate and invert global environmental degradation and ongoing climate change-related effects.

Keywords: EU Cohesion Policy, Territorial Development, Territorial Self-Sufficiency Policy, Circular Economy, Green Transition.

1.1. Introduction

In 1987, the Brundtland Report (Brundtland, 1987) placed the goal of uniting countries to pursue a sustainable development path on the political agenda, due to an increasing realization of the persistent deterioration of the human environment and natural resources. This was meant as a development process to meet the needs of the present, without compromising the ability of future generations to meet their own needs. However, despite some positive developments in promoting environmentally friendly policy development measures (i.e., increasing the use of renewable energy sources - Atkinson, 2007), many parts of the world still face tremendous challenges in solving the continuous deterioration of natural resources. Curiously, and despite increasing global urbanisation trends and the realisation that urban areas are largely responsible for the ongoing ecological and climate crisis (UN, 2022), long-term existing pro-environmental sustainability political rhetoric continues not to be matched by action on the ground, which corresponds to the scale and urgency of the task at hand. Indeed, much of the global, European, and national environmental policy development strategies seem to continue an incremental ecological modernisation technocracy of the past, which has failed to deliver far-reaching, rapid, effective, and unprecedented systemic changes in all aspects of society required to avert the worst consequences of global climate warming, many of which are now irreversible (Daly, 2023). Critically, cities are major consumers of resources and producers of waste. As such, urban resources must be better managed to lessen cities' global ecological impact and to transform cities in resource-efficient, ecologically regenerative, and adaptive engines (Williams, 2023).

In this context, urban and regional planning for Self-Sufficiency provides a vision and a policy framework for environmentally transformative, circular, and sustainable development (May & Marvin, 2017). Curiously, there is not much literature specifically dedicated to proposing concrete solutions to implementing Self-Sufficient Cities and Regions. Here, the work of Guallart (2010) is an exception, even though it is mostly centered in analysing the potential benefits of networks of Self-Sustainable Cities for the future of mankind, and not so much analysing, with a practical urban planning lens, the implementation such a vision for an individual city, but more on how such cities can define conditions in the urban environment that will allow the urban areas of the 21st century to be inhabited in networked self-sufficiency. As such, much of the state-of-the-art related to the rationale of Planning for a Self-Sufficient City and Region is associated with the concept of sustainable cities and regions. Here, for instance, Orttung (2019) suggests that a sustainable city should meet the needs of current residents without compromising the capacity of future generations

to live at a similar or better level, by solving critical sustainability challenges and by stimulating the process of development sustainability solutions.

By acting as generators of sustainability policy and practice, sustainable cities should address climate change challenges by, for instance, repurposing urban spaces towards deeper civic needs and truly resilient communities (Fields. & Renne, 2021), via policy measures that can effectively solve issues of pollution and quality of urban life (Hodson & Marvin, 2017). In almost every way, the rationale for implementing a sustainable city plan would gain from supporting smart city planning, which can be seen as one useful approach to an evolutionary transformation in urban infrastructure and management, by focusing on optimizing coordination and planning through information technology systems and real-time data (Young & Lieberknecht, 2019). This smart-cities rationale can be linked to a circular urban development approach (Williams, 2023) to increase urban planning effectiveness in implementing Self-Sufficient Cities in several policy areas, to produce more resource-efficient, ecologically regenerative, and resilient cities.

The United Nations (UN) 2030 Agenda (UN, 2016) ambitious and transformational vision for the World embraces measures specifically focused on cities. Amongst these are the recognition of the need for sustainable urban development and planning to minimise the impact of cities on the global climate system. More importantly, however, this Agenda defines one main goal dedicated to cities (11): 'make cities and human settlements inclusive, safe, resilient and sustainable'. This goal encompasses several policy domains such as housing, transport, road safety, integrated and sustainable planning, cultural and natural heritage, risks, waste management, green spaces, and social inclusion, among others. However, there are no specific mentions of the potential advantages of 'Planning for Self-Sufficient Cities' as a potential integrated policy avenue for implementing the UN Agenda 2030 goals more effectively, by recognising cities as core intervention areas to accelerate an intended green transformative transitional development path.

Likewise, a UN World Cities Report (UN, 2020a), while revealing that urban areas are, by now, home to 55% of the world's population (68% expected by 2050), does not shed light on the potential benefits of promoting urban planning processes towards implementing Self-Sufficient Cities, as a more effective policy measure to tackle climate and environmental-related challenges faced by humankind. Crucially, the latest UN World Cities Report (UN, 2022), asserts that the vision of sustainable and equitable urban futures will not be guaranteed unless cities and subnational governments take bold and decisive actions to address both chronic and emerging urban challenges. Hence, within a global rise of urbanisation trends, coupled with increasing global environmental sustainability and urban liveability concerns this chapter discusses the potential advantages for public policies and specifically European Union (EU) Cohesion Policy (ECP) to be more effective in

achieving the UN 2030 Agenda via the 'Planning for Self-Sufficient cities and regions policy rationale' in four main critical human survival domains: access to basic nourishment, clean water, clean energy, and green mobility (public transports).

A particular focus of the self-sufficiency policy approach in this chapter will be placed on the urban domain since cities are more and more seen as the engines of development. Here, even though the notion of a 'Self-Sufficient City' is not necessarily new, it has been mostly approached from an architectural and urban networking prism (Guallart, 2010), and has not yet gained currency within ongoing EU, national, regional, and urban development/planning strategies. For instance, the EU Green Deal aims at placing "sustainability and the well-being of citizens at the centre of economic policy, and the sustainable development goals at the heart of the EU's policymaking and action" (EC, 2019: 3). It does not propose, however, an effective integrated approach for dealing with some of its main policy goals, such as supplying clean affordable and secure energy and a healthy and environmentally friendly food system, as well as accelerating the shift towards sustainable and smart mobility. Instead, the rationale for implementing the concept of a 'Self-Sufficient City Plan' embraces a rationale for a more effective and integrated approach for using public funding to face the potential future failure of critical resources, environmental shocks, and consequent social unrest.

Mostly supported by desk-based research of policy documents as well as recent scientific literature on primary analytical domains of the concept of urban and regional Self-Sufficiency (energy, water, food, and mobility), the next topic discusses the most relevant components of this novel policy concept. The following topic provides a summarised view of the implementation strategic visions of ECP over the past decades to better understand how it has contributed to promoting sustainable urban and regional development. The last topic before the conclusion presents a series of policy recommendations for transforming ECP into a key policy vehicle to support the implementation of the policy rationale of Self-Sufficient Cities and Regions in future programming periods.

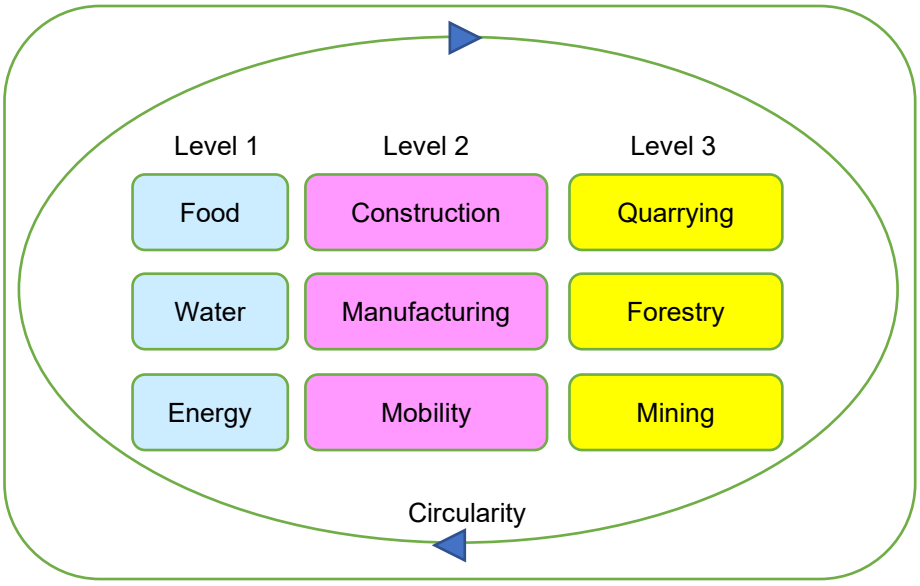
1.2 The concept of Urban and Regional Self-Sufficiency

What is a Self-Sufficient City or Region? In simple terms, it is a city or region that is fully independent of the outside world in providing the most basic needs for the survival of its dwellers. Since these needs are vast and complex, the chapter is primarily focused on four critical human needs: constant access to basic nourishment, clean energy, clean water, and sustainable mobility. This concept can then be applied to larger cities or regions and be tailor-made to its urban/regional development/planning specificities. Indeed, with increasing technological innovations, cities and

regions can soon become self-sufficient in energy (via implementing renewable energy production solutions) and food production (via implementing vertical farming food production-based solutions), as well as have the capacity to fully recycle drinking water and to implementing a sustainable and smart mobility system (public transports).

It goes without saying that, in current times, a fully Self-Sufficient city or region is still a far cry from reality. Crucially, in an ideal scenario, urban and regional self-sufficiency would require complete independence from other territories to fulfil not only basic or 'level 1' survival needs (access to potable water, nourishment, and energy) for their inhabitants but also the remaining modern standard of living related needs (Figure 1.1). Given the policy implementation complexity and challenges involved in making all urban areas and regions fully independent in all levels of Self-Sufficiency, it is recommended that this proposed policy transition process follows several distinct stages. The first stage of Self-Sufficiency embraces three basic human survival needs (access to basic nourishment, potable water, and energy) and sustainable mobility. Understandably, all the main components of Self-Sufficiency presented in Figure 1 are largely interdependent. Water, energy, and inter-city/regional food production require the construction of infrastructure which, instead, requires processed raw materials from mining, quarrying, and forestry, sometimes not available in certain regions.

Figure 1.1 General levels of Regional and Urban Self-Sufficiency



Source: Own elaboration

Again, in this Self-Sufficiency complex policy implementation context, it is proposed that the first policy stage to implement public policies towards Self-Sustainability should focus on supporting the following policy domains:

A: Self-Sufficiency to access potable water: Fresh and clean water is a vital element for human direct and indirect survival (Tortajada & Ong, 2016). On average, human beings use around forty liters of freshwater a day for drinking, cleaning, and cooking. It is also estimated that urban areas use around 11% of global freshwater withdrawals (NG, 2022). Hence, a Self-Sufficient city, or region, needs to be fully independent in accessing the needed amounts of fresh and clean water, not only to fulfil their inhabitant's needs but also to support local and regional economic activities. This implies that in territories that do not receive the necessary amount of fresh and clean water, water cleaning/recycling facilities/systems and reservoirs are built (Wester & Broad, 2021).

B: Self-Sufficiency to access basic food supplies: In a world facing systematic food insecurity (NG, 2022), the challenge for urban/regional food self-sufficiency in basic nourishment needs inevitably requires intra-city/regional food production systems via, for instance, "controlled environment agriculture (CEA), also referred to as vertical or indoor soil-less farming" which "encompasses numerous technologies including hydroponics, aeroponics, and aquaponics. Vertical farming requires only a small plot of land and can be carried out indoors, allowing for the cultivation of food in urban and industrial spaces, and leading to shorter supply chains" (FAO et al., 2023: 128). Since humans rely mostly (80%) on plant sources for food energy (calories), vertical farming at large scale is a potential solution for basic human nourishment (Beacham et al., 2019), coupled with producing plant-based meat alternatives (Tyndall et al., 2022) as well as integrated vertical farming with aquaculture (Hasimuna et al., 2023). At the regional level, future food production systems will rely both on vertical farming and controlled-environment agriculture (Benke & Tomkins, 2017).

C: Self-Sufficiency to access renewable energy: Human activities run on energy. But while the world has, over past decades, weaned itself off fossil fuels, the total renewable energy power capacity has grown substantially in past years, following national policies supporting this clean energy capacity, mostly in developed countries (NG, 2022). Crucially, a Self-Sufficient city or region needs to be fully independent in producing its full energy needs, mostly in the form of electricity, via renewable sources of energy. By now, this is possible in the context of an urban area (Hess & Gentry, (2019; Medeiros, 2020a). Recent data shows that "renewable energy is largely made up of wind and solar power and bioenergy, and also includes geothermal power. Renewables expand rapidly over the

outlook, offsetting the declining role of fossil fuels. The share of renewables in global primary energy increases from around 10% in 2019 to between 35-65% by 2050, driven by the improved cost competitiveness of renewables, together with the increasing prevalence of policies encouraging a shift to low-carbon energy" (BP, 2023: 19).

D: Self-Sufficiency to foster smart and clean mobility: Despite not being one of the three basic pillars of policy Self-Sufficiency, clean mobility can easily be aligned with them, in particular to implementing intra-city Self-Sufficiency mobility, as this can be seen as a key policy domain of urban sustainable development (EC, 2020). The use of non-motorized transport systems, as a goal towards more sustainable transport services and green, pedestrian-friendly urban areas (UN, 2020b) can be regarded as a major milestone in achieving urban Self-Sustainability in the energy sector (Freeman & Quigg, 2009). Besides favouring energy-green transition processes, sustainable urban mobility planning contributes to addressing urban inhabitants' requirements in dealing with air pollution, accessibility, congestion, and safety by increasing the share of sustainable (mostly public) transport modes and active mobility (Hartl et al., 2023).

Indeed, environmental sustainability is a critical dimension of both territorial development and territorial cohesion processes (Medeiros, 2016, 2019, 2022), at all territorial levels. In all aspects, urban areas are engines of territorial development and catalysts for innovation and creativity. However, successful urban development strategies can only be achieved through an integrated approach (Urban Agenda, 2016). Hence, the sound implementation of Self-Sufficient City Planning offers a fresh and ground-breaking perspective on urban sustainable development, as it embraces critical policy areas to make cities completely independent from the outside world in delivering basic survival needs for their inhabitants. As seen, these, as seen, include basic nourishment, energy, and water, coupled with intra-mobility (public transport) needs. Concerning the production of electric energy in cities, a wealth of literature confirms their potential for self-sufficiency via, for instance, increasing the production and use of solar energy (Medeiros, 2020). As the EU Green Deal (EC, 2019) concludes, the power sector must be based largely on renewable sources, and the clean energy transition should involve and benefit consumers, supported by a rapid decrease in the cost of renewables. The policy goal towards a transition towards global climate neutrality would also benefit from the production of food in urban vertical farms to reduce the carbon-footprint, environmental pollution, and degradation (Carolan, 2022). Incentives promoting investments such as green infrastructure into cities should also contemplate constant access to fresh water in cities which can be systematically recycled following the rationale of a circular, climate-neutral, and sustainable

economy (Mouritse, 2019). This needed clean-energy transition also requires a better understanding of cross-cutting urban and regional planning issues such as intra-urban mobility through clean solutions across all public transport modes (Cohen-Blankshtain & Rotem-Mindali, 2016).

1.3. EU Cohesion Policy past and present mainstream strategic development visions

ECP was formally initiated in 1989 with the underlying policy rationale to correct regional development asymmetries (the territorial cohesion rationale – see Medeiros, 2016) in the presently known EU. Since then, the EU has expanded its territory dramatically, not only to already highly developed Nordic countries (Sweden and Finland) but mostly to Eastern Europe, marked by below-EU socioeconomic development average indicators (EC, 2001). Moreover, since 1986, when the 'Single European Act' was introduced, and dramatically influenced the first ECP phase (1989-1939), many other EU strategic development visions affected the strategic design of subsequent ECP programming periods. For instance, the 'Agenda 2000' (Hall & Rosenstock, 1998) influenced the 2000-2006 programming period of ECP, and the 'EU Growth and Jobs Agenda' of 2005 affected the design of the 2007-2013 ECP programming period (EC, 2014). Similarly, the 2014-2020 ECP programming period was influenced by the 'EU Europe 2020 Agenda' (Budd, 2013) whereas the current ECP programming period (2021-2027) was supported by an integrated strategic development vision covered in several EU strategic documents and visions: (i) The European Green Deal; (ii) A Europe fit for the digital age; (iii) An economy that works for people; (iv) A stronger Europe in the world; (v) Promoting our European way of life; and (vi) A new push for European democracy.

Table 1.1 summarizes the changes in the main policy priorities over all the six ECP phases in which is possible to verify the widespread financial support to all the main territorial development domains, which include economic competitiveness, social cohesion, environmental sustainability, territorial governance/cooperation, and spatial planning (see Medeiros, 2019). As expected, environmental sustainability and research and innovation-related issues have gained increasing attention from more recent ECP programming phases from a policy strategic standpoint. However, systematic financial crises have shifted ECP funding towards socioeconomic development goals which were initially destined to fund other policy goals, and in particular from environmental sustainability-related goals. Moreover, several studies have demonstrated how ECP funding for supporting environmentally sustainable related projects is still largely ineffective (see Medeiros et al., 2022: Medeiros & Valente, 2023).

Table 1.1 Main policy priorities of ECP programming periods

Programming period	Main Development Vision(s)	Specific/Thematic Priorities
1989-1993	- Territorial Cohesion - Economic Competitiveness - Social Cohesion - Rural Development - Territorial Connectivity - Territorial Cooperation	- Promoting the development and structural adjustment of regions whose development is lagging behind; - Converting regions seriously affected by an industrial decline; - Combating long-term unemployment; - Facilitating the occupational integration of young people; - (a) Speeding up the adjustment of agricultural structures and (b) Promoting the development of rural areas.
1994-1999	- Territorial Cohesion - Economic Competitiveness - Social Cohesion - Rural Development - Territorial Connectivity - Territorial Cooperation	- Promoting the development and structural adjustment of regions whose development is lagging behind; - Converting regions or parts of regions seriously affected by an industrial decline; - Combating long-term unemployment and facilitating the integration into the working life of young people and of persons exposed to exclusion from the labour market, promotion of equal employment opportunities for men and women; - Facilitating adaptation of workers to industrial changes and to changes in production systems; - Promoting rural development by (a) speeding up the adjustment of agricultural structures in the framework of the reform of common agricultural policy and promoting the modernisation and structural adjustment of the fisheries sector, (b) facilitating the development and structural adjustment of rural areas; and - Development and structural adjustment of regions with an extremely low population density (as of 1 January 1995).
2000-2006	- Territorial Cohesion - Economic Competitiveness - Social Cohesion - Territorial Connectivity - Territorial Cooperation - Research & Innovation	- Promoting the development and structural adjustment of regions whose development is lagging behind; - Supporting the economic and social conversion of areas facing structural difficulties, hereinafter; and - Supporting the adaptation and modernisation of policies and systems of education, training, and employment.
2007-2013	- Territorial Cohesion - Economic Competitiveness - Social Cohesion - Territorial Cooperation	- Convergence: aims at speeding up the convergence of the least-developed Member States and regions defined by GDP per capital of less than 75 % of the EU average;

	- Territorial Connectivity - Research & Innovation	- Regional Competitiveness and Employment: covers all other EU regions to strengthen the regions' competitiveness and attractiveness as well as employment; and - European Territorial Cooperation: based on the Interreg initiative, support is available for cross-border, transnational, and interregional cooperation as well as for networks
2014-2020	- Territorial Cohesion - Economic Competitiveness - Research & Innovation - Environmental Sustainability - Social Cohesion - Administrative Capacity - Territorial Cooperation - Territorial Connectivity - Integrated Development	- Strengthening research, technological development, and innovation - Enhancing access to, and use and quality of, information and communication technologies - Enhancing the competitiveness of SMEs - Supporting the shift towards a low-carbon economy - Promoting climate change adaptation, risk prevention, and management - Preserving and protecting the environment and promoting resource efficiency - Promoting sustainable transport and improving network infrastructures - Promoting sustainable and quality employment and supporting labour mobility - Promoting social inclusion, combating poverty and any discrimination - Investing in education, training, and lifelong learning - Enhancing the capability of public authorities and efficient public administration. - European Territorial Cooperation
2021-2027	- Territorial Cohesion - Economic Competitiveness - Territorial Connectivity - Research & Innovation - Environmental Sustainability - Social Cohesion - Administrative Capacity - Integrated Development	- A more competitive and smarter Europe - A greener, low carbon transitioning towards a net zero carbon economy - A more connected Europe by enhancing mobility - A more social and inclusive Europe - Europe closer to citizens by fostering the sustainable and integrated development of all types of territories - European Territorial Cooperation

Source: Own elaboration based on several sources.

As seen, ECP has been acting as a key EU financial instrument to promote development and cohesion processes over the past 35 years (EC, 2022). However, as a recent analysis has demonstrated, there is not a clear correlation between ECP investment and territorial cohesion trends at the national level in the EU. Instead, capital cities in each EU Member State continue to present above-average national socioeconomic trends when compared with the remaining surrounding

regions (Medeiros et al., 2023). Hence, there is a case to question the effectiveness of ECP mainstream policy rationale in investing in a wealth of policy development themes, even though less socioeconomic developed regions have received the bulk of ECP funding over the past decades (EC, 2017). Taking a concrete case, Portugal has received ECP funding support since 1989 and still has four out of its seven regions (NUTS 2) in the group of less EU socioeconomic developed regions (Medeiros et al., 2023).

Understandably, ECP funding is limited given the EU socioeconomic lagging regions' development needs. The question is if ECP can be more effective by following a completely different policy implementation rationale? We think so. It is, however, undeniable that ECP provided concrete and tangible support to all EU regions in improving regional accessibility, human capital, economic activities, research & innovation, environmental sustainability, employment, integrated approaches to development, territorial cooperation, good governance, information and communication technologies, tourism, cultural activities, institutional capacity, a green and digital transition (EC, 1996, 2001, 2004, 2007, 2010, 2014, 2017, 2022). In the domain of environmental sustainability, for instance, ECP has financially supported projects aiming: (i) increasing energy efficiency; (ii) boosting renewable sources of energy; (iii) reducing greenhouse gas emissions; (iv) achieving low-carbon-transport mobility; (v) reducing the impact of climate change in flooding, coastal erosion, etc.; (vi) improving the environment via improved water quality, reduced waste production and improved air quality (EC, 2022). In more detail, for the 2013-2020 ECP phase, €68 billion were devoted to 'greener Europe' policy goals, "targeting: increases in energy efficiency and renewable energy; improvements in environmental infrastructure; the development of the circular economy; mitigation of, and adaptation to, climate change; risk prevention; biodiversity; and clean urban transport. The funding represents 19% of the total available under cohesion policy for the period" (EC, 2022: 278).

In past years, we have presented in articles, events, and reports several potential avenues to improving the effectiveness of ECP, either in its general implementation or in specific ECP policy themes like European Territorial Cooperation (see Medeiros, 2023). In essence, we have proposed that future ECP phases should maintain what has worked well so far, but that it should become more simplified as possible in its implementation process. Moreover, territorial cooperation should see its funding largely increased where transnational cooperation should have a major role in promoting EU territorial cohesion processes (Medeiros, 2017). In addition, for increasing territorial cohesion, the policy rationale for implemented territorial cohesion cities should be followed (Medeiros & Rauhut, 2020), and territorial impact assessment methodologies should be used from the ex-ante to the ex-post policy evaluation phases to assess the main impacts of ECP (Medeiros. 2020b). Finally, ECP overall budget should be significantly improved as well as the project selection process which should

benefit the general interest and not private interests. However, this chapter advances a less-mainstream policy transition avenue to implementing future ECP programming phases supported by the 'Self-Sufficient Cities and Regions', not only at the national but also at cross-border and transnational EU territorial levels.

1.4. Projecting a future of EU Cohesion Policy supporting a Territorial Self-Sufficiency Policy

By 2023 the European Commission established a Group of high-level specialists on the future of ECP, to maximize its effectiveness in tackling the multiple challenges identified in the 8th Cohesion Report. Due to the widespread policy focus of ECP, nine meetings were organised to discuss mainstream strategic development processes that have already been around ECP meanders for several decades: (i) developing the European growth model; (ii) enhancing resilience regions; (iii) supporting specific development needs; (iv) developing place-based policies; (v) discussing the development trap in Europe; (vi) complementing EU policy instruments; (vii) reassessing conditionality principles; (viii) revising the delivery mode mechanisms, taking account priorities info account; and (ix) enhancing the policy capacity to respond to sudden shocks and crisis. Although all these discussions are relevant for improving ECP implementation process in the future, in our view, they do not present a novel paradigm to effectively achieve ECP main policy goal: territorial cohesion at the EU and national levels.

The paramount question is: can territorial cohesion be achieved and, if so, how? From a theoretical standpoint, territorial cohesion can be achieved at all territorial levels (Medeiros, 2016). In practice, this policy goal is extremely difficult to attain in the EU, especially at the national level (Medeiros et al., 2023). A concrete theoretical avenue to effectively achieving territorial cohesion trends at the national level is the already mentioned 'Territorial Cohesion Cities' policy rationale, supported by the idea that medium cities are the drivers of the development of socioeconomically less developed regions, and thus ECP investment should primarily invest in such cities to invert systematic territorial exclusion processes at the national level (Medeiros & Rauhut, 2020). In this section, however, we propose a complementary policy approach in which ECP should also allocate the bulk of its investment to urban areas located in socioeconomically less developed EU regions, but with an underlying Self-Sufficiency policy rationale. In practice, a Self-Sufficiency ECP policy rationale would be developed based on the following main strategic guidance principles:

- ECP main policy goal should continue to be the attainment of European Territorial Cohesion. Hence, the bulk of ECP investment should be concentrated in medium towns located in socioeconomically less developed EU regions.
- ECP main policy goal should focus on supporting place-based and integrated investments facilitating urban and regional self-sufficiency policy approaches in the first level of self-sufficiency development (water, food, and energy), as well as in green mobility. Alongside, the goal of European Territorial Cooperation should be supported but with cross-border and transnational planning (Medeiros et al., 2023b) focus on urban and self-sufficiency as well.
- In the domain of food Self-Sufficiency ECP should focus on supporting investment in large-scale vertical farms (Martin et al., 2023) across the EU, mainly located in urban areas. ECP support to vertical farming should also be coupled with intra-city/regional aquaculture systems (Popp et al., 1018), and develop low-cost alternative plant protein (Chardigny. & Walrand, 2016)., as a more sustainable and healthy replacement for animal food production. All these ECP investments in self-sufficiency food production need to be powered by renewable sources of energy. This policy goal contributes to attaining the environmentally sustainable EU Greed Deal policy goals.
- In the domain of water Self-Sufficiency ECP should focus on supporting investment in water cleaning, recycling, and desalination facilities (Silva, 2023) when appropriate via a place-based approach and fuelled by renewable sources of energy. The ultimate goal is to make urban areas and regions Self-Sufficient in accessing potable water sources at any given time, no matter the weather conditions, not only for people but also for economic activities (Kehoe, 2023).
- In the domain of energy Self-Sufficiency ECP should focus on supporting investment in renewable sources of energy such as solar and wind, with a place-based approach (in some territories tidal, geothermal, hydroelectric, biomass, etc. -might make more sense to be explored) (Nitsch, 2018). ECP investment in renewable energy production should concentrated in urban areas to explore existing infrastructure to place, for instance, solar panels (Medeiros, 2020; Ulpiani et al., 2023).
- In the domain of mobility Self-Sufficiency ECP should only finance sustainable, smart, and affordable mobility-related infrastructure (Mantero, 2023) fuelled by renewable sources of energy. This includes support for the production and use of electric/hydrogen-powered vehicles for private and public mobility, as well as a green and smart high-speed railway network that can effectively replace many current regional flights and thus contribute to achieving EU Green Deal goals (Xiaolin, & Kai, 2022).

1.5. Conclusion

Transforming our world to advance territorial development while easing planetary pressures via a low-carbon economic development path has been slow to catch on in practical terms, despite systematic global policy strategies supporting this policy avenue. In the EU, ECP has been the most financed policy for many years and has been used to support all territorial development dimensions including environmental sustainability processes, with more or less efficacy, depending on the territory. Given the vital importance of ECP to promoting territorial development processes in the EU, this chapter proposes an alternative strategic approach to implement this policy, not only to achieve its main policy goal (territorial cohesion at all territorial levels) but also to increase its efficacy and efficiency in attaining the EU Green Deal goals to transform the EU into a modern, resource-efficient and competitive economy. We call this proposed strategic vision 'Planning for Self-Sufficient Cities and Regions', which is further developed in all the remaining chapters of this book.

From a conceptual standpoint, a Self-Sufficient City or Region is required to be fully independent from the outside world in providing the most basic needs for the survival of its dwellers. According to the proposed levels of Urban and Regional Self-Sufficiency in this chapter, the first or primary level of Self-Sufficiency considers three main policy areas: basic nourishment, access to clean water, and clean and renewable sources of energy. Hence, the proposed policy rationale supporting the implementation of future programming phases of ECP should consider the allocation of the bulk of available investment to foster the Self-Sufficiency of EU urban areas and regions in these three policy areas via the support of food production via vertical farming, the support to the production of renewable sources of energy, and the support to water cleaning infrastructure allowing constant access to clean water no matter the climate variations. A special emphasis should be given to the investment in these three policy areas in urban areas and in particular in the ones located in less-developed EU regions following the Territorial Cohesion Cities policy rationale.

Besides the concentration of the ECP funding in the domains of controlled environment agriculture, clean and renewable energy production, and clean water recycling, this policy should also include a fourth policy domain in its list of priority investments: sustainable mobility. Again, significant investment in green mobility is required to transform the current EU economy largely supported by fossil fuels into a green economy fuelled by renewable sources of energy, mostly produced within urban areas (i.e., solar). For this strategy to work, ECP also needs to robust its financial capacity as the challenges ahead to transform the EU into a no net emissions of greenhouse gases territory, and a space supported by socioeconomic development processes decoupled from

resource use by 2050, is a major policy challenge. In our view, this proposed ECP strategic design following the planning for Urban and Regional Self-Sufficiency policy rationale would contribute to accelerating the needed green economy transformation envisioned by the EU Green Deal. Moreover, the implementation of this proposed policy rationale has the potential to contribute towards a more cohesive EU territory at all territorial levels, which has been one of the main failures of ECP.

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