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HI-TECH RECOVERY? DISASTER-HIT AREAS, SMART CITY STRATEGIES AND EU-JAPAN CONVERGENCES ON URBAN TECHNOLOGY ENHANCEMENT

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Abstract. Since two major earthquakes that hit Central Italy and northeastern Japan in 2009 and 2011 respectively, revisionist plans to make both countries urbanization models and power production and distribution systems more sustainable and resilient have emerged. The governments of both Italy (with the support of the European Union) and Japan have invested considerable resources in establishing model smart communities in disaster-hit areas in L'Aquila and Aizuwakamatsu. How has the smart city idea (or ideal) shaped local policies for reconstruction and recovery in disaster-affected areas? Secondly, how have they contributed to informing cooperation at the international level? These questions are relevant in the light of Japan and the European Union's pledges to strengthen their bilateral cooperation in smart cities and communities development in the context of the Covid-19 pandemic and war in Ukraine. With the launch of subsequent overarching strategies both the EU and Japan have shown their resolve to promote structural reforms through digitalization and cutting-hedge technology, in the attempt to foster economic recovery while promoting 'sustainable economic growth'. However, such narrative, common to many advanced capitalist societies, appears instrumental to concealing plans to restructure environments and social arrangements while enhancing for-profit capital restructuring and better surveillance.

Keywords: smart city, post-disaster recovery, EU, Italy, Japan, ICT

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1. Introduction

A clear epistemological paradigm-shift (particularly in the perception of the citizenry as users and consumers) in the way urban space have been interpreted in recent at the policymaking level in recent decades is notable. The emergence and dominance of the 'smart city' as a policy idea is exemplary. Conventionally, smart cities are defined as cities that use Information and Communication Technology (ICT) to achieve a series of targets such as ecological sustainability and a better quality of life, thus attracting new residents and enhancing the local place brand, or to tackle specific social issues (DeWit 2013, European Commission 2015, Gassmann et al. 2019, Gonella 2019, Gonella et al. 2019, Trencher 2019). Post-disaster urban recovery and reconstruction is one of said issues that governments across the global North tend to tackle by deploying technology. National and local governments, particularly in high-income economies, have been promoting a growth framework which is based on the preeminence of technology and economy by sponsoring the implementation of ICT in order to promote a supposedly 'green' and sustainable reconstruction, resilience and future growth (DeWit 2013, Gonella 2019, Kashiwagi 2010, 2018, Komiyama et al. 2011, Nakazawa 2014).

In the light of this consideration, how have these ideas contributed to informing cooperation at the international level between the EU and Japan? But more importantly, how have they shaped local policies for reconstruction and recovery in disaster-affected areas since the late 2000s? This puzzle is relevant for the study of EU-Japan strategic cooperation and ICT-based urbanization projects in disaster-hit areas such as Central Italy (Alexander 2010, 2018, Contreras et al. 2014, Contreras et al. 2018, Contreras et al. 2020, Fois and Forino 2020) and the Southern part of the Tōhoku region in Japan (Kainuma 2011, Oguma 2014). In particular, Abruzzo and its prefectural capital L'Aquila have been hardly hit by two of the most deadly earthquakes in Italy's recent history (in 2009 and 2016) and have been at the centre of several consecutive state-led reconstruction initiatives which are still ongoing (Alexander 2010, 2018). Similarly, the government of Japan (GOJ) has taken steps to promote reconstruction and economic revitalization in the three prefectures (Fukushima, Miyagi and Iwate) that were most affected by the 2011 'triple disaster' in what has been long considered Honshū's backwater and underdeveloped frontier (Kawanishi 2016, Kainuma 2011). Both the areas at the centre of the present paper have been testing sites where to tackle present vulnerabilities (such as structural exposure to earthquakes and tsunamis) through technological interventions in the environment, and for preventing future crises (such as aging, unemployment, progressive rural abandon). Iniatitives range from the resettlement of evacuee communities, the adjustment of seawall heights, green embankments, and IT utilization (Strusińska-Correia 2017). According to Appadurai and Alexander, however, these epistemological shifts are not politically neutral. Rather, they reshape existing social arrangements in favour of new ones (Appadurai and Alexander 2020). In fact, to say it with Geels, technology fulfils its functions only "in association with human agency, social structures and organizations" (Geels 2002: 1260). In fact,

however, such state-led and corporate-oriented programs have relatively failed to promote resilience through the rebuilding of solidarity and physical social networks (Aldrich 2012, 2019, Fois and Forino 2014). Usually, these measures are wrapped up in a narrative that prioritizes the establishment of a new city model based on innovation, on the attraction of 'value creators', and on the efficient use of data for goods and service provision to citizen-customers. Such a narrative however often leads to 'cognitive dissonance' in so far as the cities they are targeting "do not exist and are not going to exist" (Gonella 2019). Moreover, smart city models that are now widespread in Europe and Japan are clearly sponsored 'green' energy, jobs, power, research, mobility and even parking without however addressing key issues outside the "Global North" such as poverty, violence, welfare (as opposed to well-being) or inequality (Gonella et al. 2019: 8). Smart city critics like Gonella and Cristiano argue for a paradigm shift in the way we interpret cities and urban planning and development 'systemically', which might be more considerate of the flows of energy, resources, people and information which characterize and cut across the urban ecosystems (Cristiano 2018, Cristiano and Gonella 2020, Cristiano and Krähmer 2022, Gonella 2019, Gonella et al. 2019).

Against this backdrop, this paper will offer a comparative analysis between the experiences of L'Aquila (Italy) and Aizuwakamatsu (Japan). These two cases present similarities in so far as they both (a) are small to medium-scale cities within a relatively rural and depopulated area with a potential for the tourism industry; (b) sit in or close to a disaster-hit area; (c) they have been the recipient of financial aid from the central government of their respective nations aimed at recovery and reconstruction; (d) smart city initiatives have been so far relatively unsuccessful for they have not contributed to the actual solution of major socio-economic issues such as demographic decline and economic stagnation. Thus, through a close reading of available literature, official documents and press reports, this paper will engage with the following issues. First, it will offer a preliminary assessment of EU-Japan strategic cooperation in the sector of sustainability and urban 'smart' technologies in the light of the success and diffusion of the smart city policy idea across the global North. Second, by confronting the two aforementioned cases, the application of the smart city policy concept in reconstruction initiatives in disaster-hit areas in both the EU (Italy) and Japan will be discussed.

2. Converging Japan-EU efforts on 'smart' cities and communities

It is not surprising, then, that in recent years the government of Japan and the EC have pledged to strengthen their partnership on smart cities. Since 2013, the two parties have taken steps to promote bilateral cooperation in science and technology, particularly seeing ICT, aeronautics and raw materials as 'key areas of mutual interest' (*sōgo kanshin bun'ya*) by establishing ad hoc fora and committees and promoting mobility and exchange opportunities for researchers between Europe and Japan through the existing European Research Council (ERC) and Marie Sklodowska

Curie (MSC) Actions schemes (European Commission and Government of Japan 2015, Ministry of Foreign Affairs of Japan 2015). Cooperation between Japan and the EU in research and innovation applied to urban environments led, among the others, to the creation of several projects including the ClouT project, a 2.3 million euro-worth research project aimed at enhancing the Internet of Things in four model cities across Europe and Japan (Bristol, Grenoble, Fujisawa and Tsukuba) enhancing sensors across the model areas and developing specific citizen-oriented applications to collect, store and publicly share data for a more efficient use of infrastructure and natural resources (European Commission 2019).

In the light of such trailblazing projects, the 2018 EU-Japan Strategic Partnership Agreement further highlighted the need for bilateral cooperation on (a) preserving the environment, particularly as regards the promotion of an efficient use of resources (art. 23); and on (b) tackling climate change, something that had actually been on the negotiating table for a decade, since the 16th EU-Japan Summit in Berlin (Ministry of Foreign Affairs of Japan 2007). Recognizing the importance of cities as catalyst of economic growth and innovation, as well as frontiers of climate change mitigation, Art. 25 of the SPA specifies that

> The Parties shall enhance the exchange of experiences and good practices in the area of urban policies, in particular to address common challenges in this area, including those arising from demographic dynamics and climate change. The Parties shall also encourage, where appropriate, such exchange of experiences and good practices among their local governments or city authorities ("Strategic Partnership Agreement between the European Union and Its Member States, of the One Part, and Japan, of the Other Part" 2018).

On top of this cooperative endeavor, the GOJ elicited smart cities as an item of its plan to promote a "next generation mobile communication system" (6G) in the framework of its 2020 Growth Strategy. The document mentions designated towns and cities as potential 'test beds' for cloud-based service implementation in areas such as mobility, public safety, energy and environment, disaster risk reduction and medicine and healthcare, in view of export of know-how and problem-solving at a regional and global level and of investment attraction (Government of Japan 2020: 119). In the 2021 Action Plan, the GOJ further declares its resolve to enhance digital connectivity throughout the country by promoting ICT-based solutions into 'priority development areas' while supporting the creation of Super Cities, where a wide range of issues are tackled by large-scale implementation of cutting-edge technologies and IoT (Cabinet Office, Government of Japan 2020, DeWit 2018, Government of Japan 2021: 47). Concomitantly, the EC has pledged to further push ahead with actions specifically aimed at cities as crucial nodes to achieve the targets of the European Green Deal, aimed at decarbonizing the EU's economy by 2030, and, particularly upon the 2022 Russian military escalation in Ukraine, of the RePowerEU, aimed at tackling EU's structural dependence from imports of Russian gas and oil (European Commission 2022b).

Furthermore, partially in response to the pledges contained in the SPA, city-level initiatives, such as the Asia Smart City Conference, have seen an increasingly proactive role by European partners. Mainly sponsored by the Yokohama City Government and aimed at promoting Japan-ASEAN cooperation on urban development, the 2021–2022 conference saw the participation of the EU-Japan Centre for Industrial Cooperation and Finetech, a precision equipment manufacturer based in Germany (Asia Smart City Conference in Yokohama 2022b). In the Yokohama Declaration, issued at the conclusion of the conference, the conference participants vowed to enhance the cooperation between Japanese and European actors, reaffirming that

> This is an era in which cities work together beyond regional boundaries, aiming for further advancement, by leveraging their mutual strengths in areas such as decarbonization, circular economy, next-generation mobility and citizens' well-being (Asia Smart City Conference in Yokohama 2022a).

As illustrated above, the governments of the EU and Japan have demonstrated their commitment to achieve specific targets on climate change mitigation and sustainable urban planning and development. Certainly, the 2018 SPA has taken bilateral cooperation to a new and more formal dimension. Nevertheless, ahead of the agreement, policies on both ends were already converging on similar targets. Regarding smart urbanization, for instance, both the EU and Japanese governments had laid out plans and strategies on smart cities in an attempt to respond to international calls to action by other national states and NGOs. Despite its vagueness (Gonella 2019, Greenfield 2017), the concept has been adopted to tackle issues such as reducing traffic congestions and CO_2 emissions, rationalizing energy consumption and waste collection, meeting the city-dwellers demand for internet-based services and increase their quality of life. Regardless of their actual results, policies have been implemented across the Global North and will likely become models to be exported in third countries (European Union and Government of Japan 2018). Let us turn now to how the EU has shaped its policies on smart cities and how these have been received in one specific EU member state, Italy. Similarly to Japan, Italy is periodically subject to natural disasters such as earthquakes that require the state to mobilize resources (either domestic or lent by European authorities) to assist local administrations facing an emergency situation. The formulation of smart city policies in areas of the country which were affected by the socio-economic consequences of natural disasters, such as Abruzzo and its capital city L'Aquila since 2009, has provided local administrators with opportunities to attract state funds and private investments thus increasing the chances for recovery and reconstruction.

3. The EU and Italy's smart city approach

Nearly 75% of the total EU population lives in cities. As key areas for economic growth and, concomitantly, energy consumption and GHG emissions, cities have been a priority target for Brussels' policy initiatives.

Since the late 2000s, the European Commission (EC) and governments of the European Union member states took steps toward meeting its 20-20-20 climate action strategy (European Commission 2015, 2021). Particularly, the EU commission has been keen to promote both building renovation and ICT enhancement across urban areas in the attempt to foster better energy performance and efficiency. Since 2007, the cornerstone of the EU's energy technology strategy has been the SET Plan, particularly with regards to the research and innovation strategy of the EU. The plan's guidelines, updated in 2015, have been incorporated in 25 EU member states' national strategies and covers areas such as smart systems, energy efficiency, sustainable transport, carbon capture, utilization and storage (CCUS) and nuclear energy. In 2021, with the adoption of the European Green Deal and of the 2030 climate objectives and decarbonization strategy, and subsequently in 2022 with the launch of the RePowerEU aimed at reducing the EU's structural dependence on Russian energy imports, the plan has been revamped and aligned to the new EU targets (Joint Research Centre 2022). The launch of the SET Plan coincided with the early phase of the smart city policy idea diffusion across Europe. In 2008, the Covenant of Mayors for Climate and Energy was launched bringing together local and regional authorities across EU member states sharing the commitment to cutting CO_2 emissions, increasing resilience against climate change and address the issue of energy poverty (European Commission 2022a).

In light of these facts, the EC elicited smart cities and communities as a priority area to achieve its carbon emission reduction, energy efficiency, and quality of life improvement targets providing millions of euros through competitive calls and tenders open to interested parties (European Commission 2015). The EC interpreted smart cities and communities along the same lines of the Japanese authorities, particularly regarding the use of ICT to tackle environmental and societal and health issues. To do this, the EC promoted the creation of partnerships between public and private actors in order to boost European cities and industries competitiveness. The initial budget allocated by the EC to the European Innovation Partnership for Smart Cities and Communities (EIP-SCC) was 81 million euro in 2011 but grew with the incorporation of the transport sector in 2012 to 365 million (Maschio 2016). It is worth noting that the EC also established a specific platform, the Smart Cities Marketplace, to match city administrators' needs with public research institutions and or private enterprises' offering financial backing through a series of financing schemes, such as the Horizon 2020 and Horizon Europe programs. The Marketplace has so far served as a platform where public calls for project proposals and other networking events are advertised with the aim to foster a 'just and clean urban transition' (European Commission n.d.). The Covenant facilitates networking initiatives among local administrations that can eventually cooperate to apply for European funds to implement projects.

Particularly, the EC has so far adopted an approach centred on identifying model areas where 'smart' urban solutions are implemented and then replicated across the EU-member states. In the EU jargon, these are the so-called 'scalable cities' (European Commission n.d.). However, through the identification of action clusters, such as citizenry-oriented city-making initiatives and urban data sharing, and business-oriented networking activities, the EC's general approach to smart-city development appears to be more inclusive and transparent. Nevertheless, concepts such as city competitiveness, resource efficiency, and the need for paradigm shift in the service provision to citizens as customers (or prosumers) is highlighted (DG Energy 2016).

3.1. L'Aquila as a test case for smart city-oriented reconstruction

As an EU member state, Italy has incorporated regional guidelines into its national energy and climate policies. Particularly interesting though, is the Smarter Italy Plan (SIP) launched in 2019 by the Ministry of Economic Development (MISE), the Digital Transformation Department of the Prime Minister's Office and the Ministry of University and Research and implemented by the Agency for Digital Italy. Within the SIP framework, to which the Italian government allocated a total 90 million euro, several calls and tenders have been launched that were targeted at both private and public actors. If successful in winning the tender, these subjects would 'create new solutions' suited to respond to the most complex social challenges with regards to mobility, health and well-being, culture and heritage, and environmental sustainability. The program has been conceived, on the one hand, to tackle actual problems, such as traffic congestions, air pollution and the inefficiency of existing logistics networks in the country (Ministero dell'Università e della Ricerca 2022). Among the program's elicited test areas for SIP-funded urban solutions is L'Aquila, the provincial capital of Abruzzo, in Central Italy.

Classified as a SIP 'smart city' along with other 10 major Italian cities such as Bari, Genoa, Turin, Milan and Rome (Dipartimento per la trasformazione digitale 2022), since 2009, L'Aquila, then a city with a population of nearly 73,000 people close to the Appennini mountain range, has undergone profound transformations following a devastating earthquake that killed 309 people and forced tens of thousands out of their houses (Alexander 2010, Contreras et al. 2014, Contreras et al. 2020, D'Ayala and Paganoni 2011). In the event's aftermath, the city's historic center was cordoned off, its residents and inhabitants relocated in the surroundings in temporary shelters, hotels and rented houses. Soon afterwards, the Italian government launched an EU-supported 814 million-euro recovery initiative aimed at rehousing between 14,500 and 23,000 victims in 19 'new towns' and other temporary housing facilities located within a 17-km radius from L'Aquila, in many cases isolated and deprived of services (Alexander 2018, Contreras et al. 2014, Contreras et al. 2018). Despite their ambitious aims, these recovery initiatives had no clear plans for a long-term future and had enormous social costs which have hampered the recovery of the area. Administrative delays caused by a series of factors such as poor decision making, central and local governments' fiscal constraints and political scandals have

further prevented an effective reconstruction of the city and its resident community (Alexander 2018, Contreras et al. 2018).

Amidst these setbacks, Italy's central government has allocated nearly 320 million euro since 2012 to the reconstruction of L'Aquila. The second 4-year plan (the "Restart" program) specifically directed 25% of the funds (54.9 million euro) to support tourism and environmental protection, 20% (44.1 million euro) to research and innovation and 2% to digitalization and e-government (4.5 million) (Open Data L'Aquila n.d.). Against this backdrop, several 'smart' city projects (mostly public private partnerships, PPP) of national relevance were launched. In 2017, the MISE announced that L'Aquila would become a pilot area for 5G technology experimentation, a project that would see the direct involvement of the national government through its investment fund, Cassa Depositi e Prestiti (CDP), energy utility Enel, Italian telecom company Wind Tre and the Chinese telecom giant ZTE (Rete8 2018, Ufficio Speciale per la Ricostruzione dell'Aquila n.d.). On top of other projects concerned with the introduction of electric vehicles (EV) and bicycles, data collection and monitoring, emphasis has been put on the 'smart tunnel', whose construction started in late 2012, after the project received the green light from Rome. With a total estimated value of 80 million euro, the tunnel is a 12-km long technology-based underground passage underlying the historic center of L'Aquila where the city's utility networks (electricity, water, sewage and telephone and optical fibre cables) are jointly accommodated to facilitate monitoring and maintenance while reducing the potential impact of public works on traffic, mobility and cultural heritage. Its construction has been contracted by the city water utility company to local construction firms.

Praising the project in 2016, the then mayor of L'Aquila Massimo Cialente stated that the smart tunnel was a 'revolutionary' construction project conceived to ensure the city's own resilience against a possible new devastating earthquake and quality of life of its citizens in the long run (Hdna Films 2016). Cialente's successor, Pierluigi Biondi, leader of a center-right coalition administration, has benefitted from previous projects and made effort to boost his city's post-earthquake image of 'smartness' both nationally and abroad through the participation of a city delegation at the 2019 Smart City Expo World Congress in Barcelona and visits by foreign delegations (Antenucci 2019, Rosone 2019). In the wake of the 2022 city elections, Biondi pledged in his program to make L'Aquila the core of an Italian Silicon Valley where cutting-edge research combines with the artistic and architectural heritage of the city's 13th century medieval historic centre to attract new investments (Scopece 2022).

In this context, in early 2020, the city government revamped its plan to become a 'smart city' in line with the EU directives targeted at both urban and rural and depopulated areas. In the city's guidelines, the 'smart' factor is described as key to rebuilding ties between the city and mountain villages in the surroundings while promoting the image of L'Aquila as a connecting node between large and densely populated urban areas (such as Rome, Italy's capital, which sits at 150 km from L'Aquila) and small villages in remote areas subject to demographic decline

and lack of service and infrastructure (Comune dell'Aquila 2020, 9-11). The plan is articulated into several pillars, in particular (a) building renovation for energy efficiency; (b) security; (c) economic growth through innovation and ICT implementation; (d) self-sufficient energy systems and smart energy management (smart grids); (e) environment and waste management; (f) digitalization of public administration and e-governance; (g) urban wellbeing and digitalization of medical services; (h) smart mobility, optimization of local logistics for 'smart delivery' and air pollution reduction. To address these priority areas, the plan stressed the importance of promoting the coordination between the public and the private sectors through innovative procurement, PPP, and inclusive co-creation processes. Given the city's post-earthquake urban configuration characterized by the presence of new settlements across an area of 55 km in extension, the mobility sector has taken on a pivotal role in the redesign of the local urban system along the lines of the smart city policy idea. New up-to-date vehicles (mostly electric) would guarantee a reduction in CO_2 emissions. The application of ICTs to the transport sector would also ensure social inclusion, increased safety for car users, better logistics and intermodality through data collection and management. In turn, these processes would help to achieve enhanced liveability, a better quality of the urban space, the inclusion of more vulnerable residents (elderly and people with disabilities), and, lastly, more investments (Comune dell'Aquila 2020: 33-35).

The relation between the smart city initiative and local socio-economic recovery is clear in the case of L'Aquila. In September 2021, former Prime Minister Mario Draghi visited L'Aquila announcing a specific 1.78 billion euro-worth assistance package to the territories in Central Italy that were hit by subsequent damaging earthquakes in 2009, 2016 and 2017, through the EU-backed Plan for National Recovery and Resilience (PNRR). On the occasion, Draghi vowed to support the revitalization of local communities and towns in mountainous or rural areas (borghi) through investments in safety, sustainability and internet connectivity. IN doing this, he added, Rome would support innovative enterprises, research and human resource development for both the private and public sectors (Il Sole 24 Ore 2021).

In fact, while city authorities keep characterizing L'Aquila as a 'smart' city, several issues seem to contradict this narrative. First, public reconstruction is still lagging (only less than 50% of the approved projects have been concluded), as opposed to private reconstruction which has proceeded steadily, particularly between 2013 and 2019 (Ufficio Speciale per la Ricostruzione dell'Aquila 2022, 2023). Second, the infrastructure that could potentially enhance the use of ICTs in the city, i.e., broadband networks, is yet to be improved. According to available data, the installation of optical fibre and wireless is still in its design stage (Ministero delle imprese e del Made in Italy 2023). In addition, data collected by the Italian financial newspaper *Il Sole 24 Ore* in 2017, pointed to a 11.1% reduction of the added value for enterprise as opposed to a 5.6% increase at the national level, a 2.2% increase of unemployment, and a 20.1% decrease in the volume of exports against a 6.9 increase nationally between 2012 and 2015 (Romano 2017). More recent media reports seem to confirm these trends. The impact of the Covid-19 pandemic and rising energy and

raw materials costs since 2022 have hit local small-medium enterprises (Agenzia ANSA 2022, Santucci 2022). Fourteen years after the April 6, 2009 earthquake, residents still lament the lack of basic services such as public lighting, water, gas and electricity supply, and waste management in addition to social issues such as drug use and petty crime (La Repubblica 2023). The decline of the resident population may be a direct consequence of the limited effects of the aforementioned recovery strategies. In 2021, the registered resident population of L'Aquila was around 8 percent down from the 2009 levels, at 69,210 people (ISTAT and Tuttitalia 2023) (Figure 1).

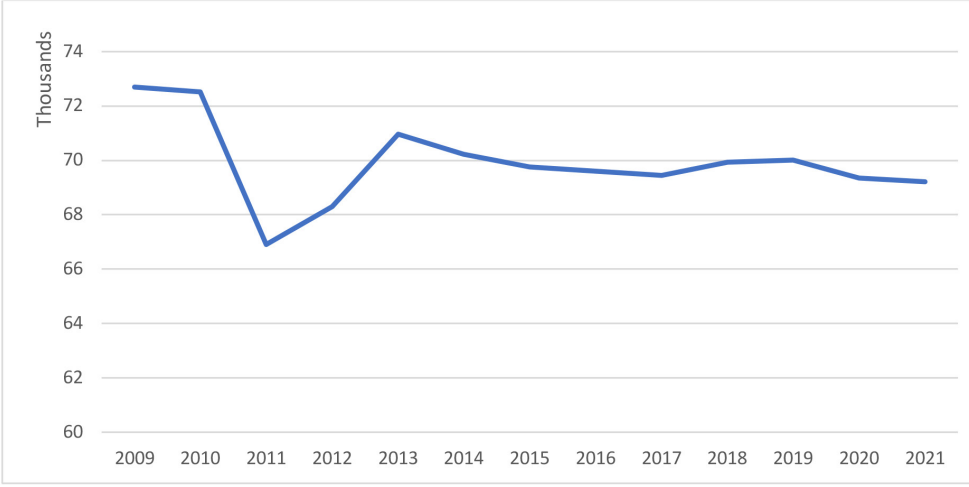

Figure 1. Population trends in L'Aquila (2009–2021). Elaborated on ISTAT and Tuttitalia 2023.

In the following paragraphs the paper will shed light on smart city strategies in Fukushima Prefecture, and, more specifically, in Aizuwakamatsu, one of the major tourist destinations in the region which was, though indirectly, affected by the 2011 triple disaster. Here too, the formulation of a smart city scheme has helped local administrators to attract funds from the state based on specific proposals that were designed following Tokyo's guidelines and investments from the private sector.

4. Japan's multilevel approach and smart city policies in disaster-hit areas

Similarly to what happened in Italy after the March 11, 2011 earthquake, tsunami and nuclear crisis, the Japanese government has sought for ways to rationalize its energy mix in the light of the phase-out of several of its nuclear reactors, and to redesign urban settlements in the disaster-hit areas of Tōhoku in line with Tokyo's international decade-long commitment to curb its CO_2 emissions through technological enhancement. Since the late 1990s, the Japanese government has taken steps to (a) on the one hand reduce local governments' dependence on the state's finances; (b) favour a rationalization and reorganization of villages and small

towns; and (c) increase local governments' autonomy in sectors such as city planning and energy and promote their engagement with local private stakeholders. Against this backdrop several programs have been launched to subsidize initiatives aimed at fostering 'green' economic growth, starting from the nation's cities, based on proposals modelled after the central government's guidelines. One of the results of this wave of neoliberal reforms in local governance was an increased competition among locales for funds and investment attraction (Holroyd 2014, Nakazawa 2006, 2014, Niimura 2018, Sugiyama and Takeuchi 2008).

Since the mid-2010s, the LDP-led administration further expanded its efforts declaring its willingness to materialize a data-driven 'society 5.0', as an integral part of its '*abenomics*' master strategy, focusing on non-urban areas. Several ministries and government agencies, including the Ministry of Internal Affairs and Communication (MIAC) and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), have thus contributed to the enhancement of Internet connectivity (for example, supporting the expansion of the 5G network across the archipelago) and to the optimization of infrastructure management and maintenance through ICT utilization. Against this backdrop, technological advance became key to economic revitalization. As in the European and Italian case, such programs identified model area where new solutions could be tested to be replicated elsewhere.

Japan's smart city initiative is very diverse and articulated upon areas of intervention, ranging from environmental protection to mobility to disaster prevention. By enhancing ICT (particularly the Internet of Things (IoT) and big data), vehicle automation and car sharing service (Mobility as a Service, MaaS) and biometrics-based services (such as automatic remote bus-fare payments), each smart city project aims at the resolution of a specific issue, but, in addition, the GOJ has identified thirty 'super cities' where intersecting issues are addressed in a more comprehensive manner mostly through efficient data management (Shushō kantei 2020).

Despite the GOJ's expectations, these programs for regional revitalization through ICT enhancement have largely missed their expected targets. Particularly, lagging installation of optical fibre and 5G in remote areas, the extreme concentration of workforce with digital skills in urban areas and technological divide, and the relatively low degree of open data and e-governance in local governments are among the factors hindering the creation of a 'society 5.0' (Naikaku kanbō 2019). To invert this trend amidst the Covid-19 pandemic, between late 2020 and early 2021, Prime Minister Suga Yoshihide pledged to make the digital sector one of the pillars of its government's economic strategy and established the GOJ's Digital Agency (DA) tasked with centralizing the development and management of the central government's IT systems and data centres (Suzuki 2021).[1] He also promised to cut Japan's carbon emissions by 46% from the 2013 level and reach 'zero' emissions by 2050, thus tracing the path for his and subsequent cabinets' initiatives in the energy

[1] Particularly, the global pandemic exposed how inhomogeneous and ill-equipped the national and local governments were relative to other governments in the world, with regards to online services, contact tracing and vaccination-related procedures.

and IT sectors (Suga 2021). Suga's successor has so far proved to be willing to continue with his predecessors' breakthrough steps.

The recently launched DGCN plan aims to capitalize on previous experiences and spur 'bottom-up growth' through massive public and private investments in the digital sector and infrastructure modernization (Kishida 2022). In this effort, Kishida has sought the DA's proactive involvement as one of its main tasks is to promote regulatory reforms, supervise the implementation of a unitary ID management systems (i.e., the infamous MyNumber Card), and other public services through online platforms requiring safe authentication systems. Therefore, by coordinating with the various ministries and agencies' local initiatives, the DA's contribution to the DGCN is key to creating an efficient and sustainable digital environment facilitating both residents' and companies' access to public services and data to guarantee both 'sustainability' and 'well-being'. At the foundation of this concept is the idea that the enhancement of a working digital infrastructure requires the collaboration of the state, businesses and universities but that its management needs to revolve around the private sector though supported by the national and local governments with the aim to create a 'shared' model where governments and enterprises can share hardware, systems and human resources for goods and service provision (*kyōjo*) (Makishima 2021).

To show his determination to pursue the DGCNS, in late 2021, Kishida has chosen to visit Aizuwakamatsu, a town in disaster-hit Fukushima Prefecture, one of GOJ-supported historic smart community projects. While there, Kishida participated in an online sale of local sake and could see how automated small vehicles are utilized in goods delivery. On top of that, he pledged the GOJ's resolve to continue promoting digitalization and rural revitalization, particularly in the 2011 disaster-hit Fukushima, through investments in optical fiber, undersea cables, and 5G infrastructure development in consideration of the needs of local communities (Fukushima News "FukuTere" 2021).

4.1. The Aizuwakamatsu smart city

Aizuwakamatsu, a city of 117,376 residents in Western Fukushima prefecture, was one of the first designated METI-supported smart community projects in Tōhoku. Known mostly for its Tsuruga Castle, *buke yashiki* and the views on Inawashiro lake, Aizuwakamatsu is one of the major tourist spots in Fukushima prefecture and the whole region. The city was not directly affected by the 2011 tsunami and Fukushima Daiichi nuclear accident, being considered relatively safer than other locations by evacuees from the Fukushima coast (Watanabe 2019, Yagasaki 2016). After Aizuwakamatsu's designation as a model area for rural revitalization (*chiiki kasseika*) by the GOJ in 2014, the city government moved to applying for state's funds to implement several smart city projects that could enhance the city's standing and reputation. Thus, Aizuwakamatsu became central in the Fukushima Prefecture's Plan for Revitalization amidst a faltering tourism sector and demographic decline (Nguyen et al. 2021), The plan was conceived along the GOJ's guidelines to attract investments for local recovery and reconstruction enabling environmental

sustainability, energy self-sufficiency, and disaster-resilience.

Against this backdrop, the city government started discussing ideas for the utilization of ICT in everyday urban life, through data collection and privacy-respecting data management systems, home appliances, biometrics-based payment systems in shops and restaurants and data-based healthcare (particularly helpful in monitoring the medium and long-term impacts of radiation on the prefecture's residents) and decided to create a specific space – the so-called ICT building (*ICT biru*) – aimed at hosting offices and spaces to attract tech and innovative companies. The *ICT biru*, a 3-storied 550 m^2 office building formerly owned by Japan Tobacco (JT) located in the vicinities of both the Tsuruga castle and Aizu University campus where the former, would become the cornerstone of the Aizuwakamatsu smart city program. The plan was supported by mayor Muroi Shōhei (Independent-LDP, confirmed for a third term in office in 2020) whose aim was reportedly to 'create jobs' and 'revitalize the city center' (*chūshin shigaichi no kasseika*). The estimated cost for the city's finances were estimated at nearly 11 million euro for land purchase and subsidies to investors. Despite the initial resistance by the opposition within the city council, however, the city administration succeeded in securing the city council's support, purchased the land and started its refurbishing works (Asahi Shimbun 2014, Komatsu 2016, 2018).

According to the final version of the project, the Aizuwakamatsu *ICT biru* would accomodate 500 workers from several big tech firms (i.e., Microsoft Japan), joint ventures with local and university-related start-ups, cafes and small restaurants. Furthermore, the opening of such a business incubator would generate nearly 26-27 billion yen-worth business volume thus contributing to the economic development of the area. Clearly, a major benefit for companies willing to move to Aizuwakamatsu would be reducing costs for office rents and maintenance, but Muroi personally sponsored his administration's policies to facilitate daycare for workers with children or elderly parents (Komatsu 2018).

Upon completion of the refurbishing works and ahead of the official inauguration of the AiCT (the current name of the *ICT biru*) in April 2019, a third of the office lots were still vacant and the estimates on the future workforce turnover reduced to 420 from the initial 500 (Komatsu 2019). In compliance with the GOJ's guidelines, in January 2020, the city administration submitted to Tokyo a new proposal to 'continue, enhance and deepen' its 'smart city' program.

Despite having missed its target on increasing the city's fertility rate to 1.8, the city administration defended its achievements in the adoption of ICT to facilitate local businesses and respond to emerging needs in traditional sectors, such as agriculture, related to a decreasing workforce. The city government has thus pledged to further expand ICT-based services to citizens, in order to make the smart city more visible to the citizenry (Komatsu 2020). Prime Minister Kishida's visit in late 2021 further confirmed the national and local authorities' resolve to push smart city programs in the country and in Fukushima Prefecture, boosting Aizuwakamatsu's city image.

The city's endeavors have actually produced a few visible results. Particularly, in addition to open-data-based smartphone applications for waste collection and disaster

relief (Ōtsuka 2020), more than thirty shops and restaurants across the city have adopted a software allowing the issue of payment receipts directly on the customer's smartphone as a sign of the digitalization of the city's economy. The motto for this initiative is "making shopping more convenient through digital technologies" (*dejitaru gijutsu de kaimono o motto benri ni*) (Aizuwakamatsushi kōshiki channel 2021a, Aizuwakamatsu shi 2021). On top of this, the city has promoted initiatives in the farming sector such as the enhancement of sensors and drones that could help young and older farmers to stay in the job against the backdrop of a decline in residents and workforce (Aizuwakamatsushi kōshiki channel 2021b).

The private sector has, as in the case of L'Aquila, involved in the city redesigning process. Particularly, Japanese tech giant Fujitsu supported the implementation of the project installing PV panels and establishing energy control centers (EEC) for efficient energy supply and monitoring. Fujitsu also laid the groundwork for a sustainable biomass (wood)-fueled heating distribution system in the community (Tada et al. 2014). Accenture Japan, the Japanese branch of the US consultancy company, had supported the city's digitalization and PR efforts. Based in Aizuwakamatsu since 2011, after slightly less than 8 years, the company had managed the tourist information portal "Aizuwakamatsu +" web portal and stressed its contribution to the revitalization of the region through enhanced data and information management and provision to both residents and tourists. The Aizuwakamatsu's experience could then serve as an example of best practices to other small towns in rural areas coping with depopulation and workforce decrease.

Despite the emphasis mayor Muroi and his admistration have put on the smart city plan, local residents seem relatively indifferent to the aforementioned developments. Analyzing the most researched terms on the city's website as of late May 2023 (time of writing), it is possible to note that 'smart city Aizuwakamatsu' (*sumāto shiti Aizuwakamatsu*) is only 17th in the ranking, well behind information on Covid-19 vaccination, Covid-19-related compensations to enterprises, recycling and waste management, tourism and employment-related information (Aizuwakamatsu shi 2022b). The current pandemic has arguably reoriented the local community's interests toward issues unrelated to the advance of service digitalization. In response to these needs, the city administration aims to further promote digital health care services such as remote examinations, appointment booking via smartphone applications and digitalization of medicine prescriptions (Aizuwakamatsu shi 2022a). However, considering the constant decline of the local population which has caused a loss of nearly 10,000 residents between 2011 and 2023 (Figure 2), a major issue for the future city administrations will be to 'build' the people (*hitozukuri*) through training, education and further incentives to move in the city (Muroi 2019).

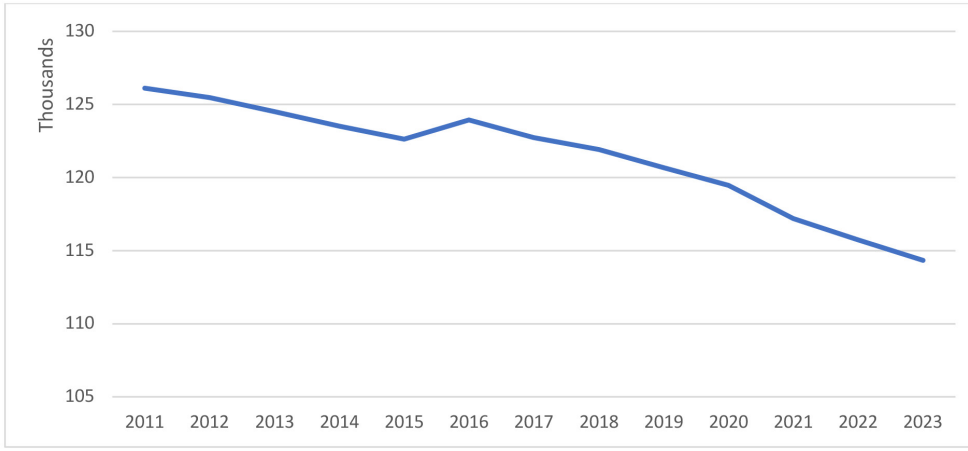

Figure 2. Population trends in Aizuwakamatsu (2011–2023). Elaborated from Aizuwakamatsu shi 2023.

5. Conclusion

The two cases that have been presented above clearly show how pervasive and dominant the smart city policy idea has become since the late 2000s in high-income countries. The formalization of the EU-Japan cooperation on the containment of climate change, energy and smart and sustainable urban models in 2019 is the culmination of a process of ideas and policy diffusion resulting in the adoption of comparable policy frameworks in regards of smart cities. When implemented in disaster-hit areas, these policies have favoured a proactive engagement of the private sector *contra* a diminished role for the local community. Therefore, a trend toward the diffusion of a dominantly urban form of consumerism based on connectivity, convenience and *dehumanization* of service providers (and to an extent, users) (Appadurai and Alexander 2020: 59-62) can be highlighted.

As both L'Aquila and Aizuwakamatsu's cases demonstrated, state-led recovery and reconstruction schemes based on technological enhancement and on the 'smartification' of urban settlements tend to be shaped along national and local governments and companies' interests and preferences rather than on the awareness of the importance to rebuild social capital and solidarity-based networks which are often at the center of independent self-organized initiatives by groups of local residents (Aldrich 2012, Fois and Forino 2014). In this regard, the diffusion of proposal-based financing schemes both in the EU and in Japan, leading to PPPs that, in the end, have to be financially sustainable, accountable and, more importantly, profitable for involved private actors is a notable feature of the policy making and implementation phases. The idea of *kyōjo* (joint help) which is reiterated in GOJ documents on the DGCNS appears as an indicator of the awareness that the private sector can make up for the public sector's withdrawal. Conversely, the steady population decline (though less steep in L'Aquila than in Aizuwakamatsu) in both

areas following the 2009 and 2011 natural disasters is telling of the relative failure of recovery and reconstruction policies so far.

Therefore, it might be possible to agree with smart city critics on the fact that smart city projects tend to be based on the privatization and corporatization of public spaces and goods while being *de facto* inapplicable outside of high-income countries in the Global North if not as mere technocratic interventions in the social fabrics by states (Scott 1998).

More concretely, the focus on technology and 'smartification' of life in small and medium-sized urban as those described above seems to have specific political aims. First, they put up a smokescreen on the fact that local economies are failing to achieve recovery and that the 'public' is gradually receding (if not as a provider of basic infrastructures). Second, they alienate local communities from potential more horizontal and cooperative approaches that might help fostering social and ecological sustainability, particularly in disaster-hit areas as shown above (Aldrich 2012, 2019, Cristiano 2018). In fact, skills and know-how needed to administer the ICT transition in rural areas, and the new kinds of interactions designed in cooperation with the state and local administrators as if it were an 'abstract' space à la Lefebvre (1991), lie within private technology companies enjoying relative liberty with regards to data collection and management if not strictly monitored by their governmental counterparts. In this sense, local communities should be central in identifying development priorities, technological needs and data collection and management processes.

More broadly, however, the above-described approach at the policymaking level appears to be informed by ideas such as convenience, efficiency, attractiveness and competitiveness that are contributing to a shift toward 'dividualism' (Appadurai and Alexander 2020: 62) with possible negative repercussion on physical social networks and local communities.

In light of the above, it might be worth stressing that resilience and sustainability cannot be built upon merely technological solutions, rather they have to be holistic and comprehensive, including the 'human' side of it. Future EU-Japan cooperation in this field should have this priority which, based on the current analysis, does not seem to be present at least in official documents and agreements. This perspective is however consistent with a certain state-centered, top-down approach to 'smart' urbanization projects that has been observed in recent years and reminds us of the technocratic rationalizing projects states across Europe, the Americas and Asia have implemented to achieve a more effective governance on their respective surrounding realities. If, in fact, not involved in the decision-making process, local communities may end up alienated by their own representatives' plans to achieve technology-based absolute efficiency and rationalization of resources and continue struggling to get recognized as full-fledged citizens granted access to a specific set of services and not just as users or, worse, mere consumers whose data are continuously collected and shared by private actors.

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References

Agenzia ANSA (2022) "Ucraina: Confidustria L'Aquila, calo produzione 16% aziende". [Ukraine: L'Aquila Industrial Federation, local firms' output down 16%.] *Agenzia ANSA*, 11.04.2022. Available online at <https://www.ansa.it/abruzzo/notizie/2022/04/11/ ucraina-confidustria-laquila-calo-produzione-16-aziende_7f0a4a54-ed16-4cd6-99e7-fa6554703c14.htm>. Accessed on 18.05.2023.

Aizuwakamatsu shi (2021) "Dejitaru gijutsu de kaimono o motto benri Ni". [Shopping with digital technologies is easier.] Available online at <https://www.city.aizuwakamatsu.fukushima.jp/docs/2013101500018/files/kessai.pdf>. Accessed on 20.05.2023.

Aizuwakamatsu shi (2022a) "Sumāto shiti aizuwakamatsu de mezasu imēji ya shōraizō o shōkai shimasu". [Aizuwakamatsu smart city: introducing the image and future we aim at.] Available online at <https://www.city.aizuwakamatsu.fukushima.jp/ docs/2013101500018/files/helthcare.pdf>. Accessed on 19.05.2023.

Aizuwakamatsu shi (2022b) "Kīwādo de sagasu". [Keyword search.] *Aizuwakamatsu shi.* 24.05.2022. Available online at <https://www.city.aizuwakamatsu.fukushima.jp/keyword.html>. Accessed on 19.05.2023.

Aizuwakamatsu shi (2023) "Toshigoto genju jinkō viewer". [Resident population by year – Viewer.] *Aizuwakamatsu shi*. Available online at <https://app.data4citizen.jp/30_GenjupopulationByYear/>. Accessed on 20.05.2023.

Aldrich, Daniel P. (2012) "Social capital in post disaster recovery: towards a resilient and compassionate East Asian community". *Economic and Welfare Impacts of Disasters in East Asia and Policy Responses.* ERIA Research Project Report 2011, 8.

Aldrich, Daniel P. (2019) *Black wave: how networks and governance shaped Japan's 3/11 disasters*. Chicago: University of Chicago Press.

Alexander, David E. (2010) "The L'Aquila earthquake of 6 April 2009 and Italian government policy

on disaster response" .*Journal of Natural Resources Policy Research* 2, 4, 325–42.

Alexander, David E. (2018) "L'Aquila, Central Italy, and the 'disaster cycle', 2009–2017." *Disaster Prevention and Management: An International Journal* 28, 4, 419–33.

Antenucci, Giulia (2019) "Smart City, la città dell'Aquila presente al City Expo di Barcellona insieme alle maggiori città europee". [Smart City, L'Aquila among major European cities at the Barcelona City Expo.] *AbruzzoLive*, 18.11.2019. Available online at <https://abruzzolive.it/smart-city-la-citta-dellaquila-presente-al-city-expo-di-barcellona-insieme-alle-maggiori-citta-europee/>. Accessed on 18.05.2023.

Appadurai, Arjun and Neta Alexander (2020) *Failure*. Cambridge and Medford: Polity.

Asahi Shimbun (2014) "ICT tasaina jirei, kenkō shōgyō ni ōyō: Aizuwakamatsu de shimpo". [ICT's many uses, practical applications in the healthcare industry: first steps in Aizuwakamatsu.] *Asahi Shimbun*, 18.03.2014. Available online at <https://xsearch.asahi.com/>. Retrieved on 01.05.2022.

Asia Smart City Conference in Yokohama (2022a) "10th Asia Smart City Conference 'Yokohama Declaration': building smart cities aiming for carbon neutrality through city to city collaboration under the influence of COVID-19". Available online at <https://yport.city.yokohama.lg.jp/wp-content/uploads/2021/11/10thASCC_Yokohama Declaration-.pdf>. Accessed on 20.05.2023.

Asia Smart City Conference in Yokohama (2022b) "The 10th Asia Smart City Conference official report". Yokohama. Available online at <https://yport.city.yokohama.lg.jp/wp-content/uploads/2022/05/The-10th-Asia-Smart-City-Conference-Official-Report-.pdf>. Accessed on 20.05.2023.

Cabinet Office, Government of Japan (2020) "Japan's Smart Cities: solving global issues such as the SDGs, etc. through Japan's Society 5.0". Available online at <https://www.kantei.go.jp/jp/singi/keikyou>. Accessed on 20.05.2023.

Comune dell'Aquila (2020) "Linee guida L'Aquila Smart City". [Guidelines on the smart city of L'Aquila.] Available online at <https://trasparenza.comune.laquila.it/moduli/downloadFile.php?file=oggetto_allegati/20571744550O__ODGC_24-02-2020+n+104+%28Approvazione+Linee+Guida+Smart+City%29.pdf>. Accessed on 18.05.2023.

Contreras, Diana, Thomas Blaschke, Stefan Kienberger, and Peter Zeil (2014) "Myths and realities about the recovery of L'Aquila after the earthquake". *International Journal of Disaster Risk Reduction* 8, 125–42.

Contreras, Diana, Giuseppe Forino, and Thomas Blaschke (2018) "Measuring the progress of a recovery process after an earthquake: the case of L'Aquila, Italy". *International Journal of Disaster Risk Reduction* 28, 450–64.

Contreras, Diana, Sean Wilkinson, Nipun Balan, and Philip James (2020) "Assessing post-disaster recovery using sentiment analysis: the case of L'Aquila, Haiti, Chile and Canterbury". *Earthquake Spectra* 38, 1. DOI: https://doi.org/10.1177/87552930211036486

Cristiano, Silvio (2018) "Systemic thoughts on ecology, society, and labour". In *Through the working class: ecology and society investigated through the lens of labour*, 9–23. (Culture del lavoro.) Venice: Edizioni Ca' Foscari.

Cristiano, Silvio and Francesco Gonella (2020) "'Kill Venice': a systems thinking conceptualisation of urban life, economy, and resilience in tourist cities". *Humanities and Social Sciences Communications* 7, 1, 1–13.

Cristiano, Silvio and Karl Krähmer (2022) *Città Oltre La Crescita. Un Dibattito Internazionale per*

Trasformazioni Urbane Ecologiche e Sociali. Rome: Castelvecchi.

D'Ayala, Dina F. and Sara Paganoni (2011) "Assessment and analysis of damage in L'Aquila historic city centre after 6th April 2009". *Bulletin of Earthquake Engineering* 9, 1, 81–104.

DeWit, Andrew (2013) "Japan's rollout of Smart Cities: what role for the citizens?" *The Asia-Pacific Journal: Japan Focus* 11, 24/2: 1–11.

DeWit, Andrew (2018) "Japan's Smart Cities". Preprint. DOI: https://doi.org/10.13140/RG.2.2.31383.06561

Dipartimento per la trasformazione digitale (2022) "Smarter Italy". *Dipartimento per la trasformazione digitale*. Available online at <https://innovazione.gov.it/progetti/smarter-italy/>. Accessed on 17.05.2023.

European Commission (2015) "Smart Cities". *Digital Single Market*. Available online at <https://wayback.archive-it.org/12090/20170401072431/https://ec.europa.eu/digital-single-market/en/smart-cities>. Retrieved on 18.05.2023.

European Commission (2016) "Analysing the potential for wide scale roll out of integrated smart cities and communities solutions". Final report, June.

European Commission (2019) "Big data meeting cloud and IoT for empowering the citizen clout in smart cities. BigClouT Project: Fact Sheet". H2020, CORDIS. 30.06.2019. Available online at <https://cordis.europa.eu/project/id/723139>. Accessed on 19.05.2023.

European Commission (2021) "Climate action: 2020 climate & energy package". Available online at <https://wayback.archive-it.org/12090/20210102060423/https://ec.europa.eu/clima/policies/strategies/2020_en>. Retrieved on 20.05.2023.

European Commission (2022a) "Smart cities marketplace forum 2022: key facts & figures". *Smart Cities Marketplace.* 05.02.2022. Available online at <https://smart-cities-marketplace.ec.europa.eu/news-and-events/news/2022/smart-cities-marketplace-forum-2022-key-facts-figures>. Accessed on 18.05.2023.

European Commission (2022b) "In focus: energy and smart cities". Available online at <https://commission.europa.eu/news/focus-energy-and-smart-cities-2022-07-13_en>. Accessed on 17.05.2023.

European Commission (n.d.) "Creating Smart Cities together: Smart Cities marketplace". Available online at <https://smart-cities-marketplace.ec.europa.eu/>. Accessed on 19.05.2023.

European Commission (n.d.) "Scalable Cities: Smart Cities marketplace". Available online at <https://smart-cities-marketplace.ec.europa.eu/scalable-cities>. Accessed on 19.05.2023.

European Commission and Government of Japan (2015) "Towards a new strategic partnership in research and innovation between the European Commission and the Government of Japan: joint vision". Available online at <https://www.mofa.go.jp/files/000084690.pdf>. Accessed on 19.05.2023.

European Commission and Government of Japan (2018) "Strategic Partnership Agreement between the European Union and Its Member States, of the One Part, and Japan, of the Other Part". Available online at <https://www.mofa.go.jp/files/000381942.pdf>. Accessed on 19.05.2023.

Fois, Francesca and Giuseppe Forino (2014) "The self-built ecovillage in L'Aquila, Italy: community resilience as a grassroots response to environmental shock". *Disasters* 38, 4, 719–39.

Fukushima News "FukuTere" (2021) *Kishida shushō "Aizuwakamatsushi de torikumi wa ōini sankō ni naru no dewa" it katsuyō no genba o shisatsu*. [Prime Minister Kishida visits the place where IT is applied. 'Aizuwakamatsu's policies might become an inspiration for others'.] Available

online at <https://www.youtube.com/watch?v=haefEbyhLdE>. Accessed on 19.05.2023.

Gassmann, Oliver, Jonas Böhm, and Maximilian Palmié (2019) *Smart Cities: introducing digital innovation to cities*. Bingley: Emerald Group Publishing.

Geels, Frank W. (2002) "Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study." *Research Policy* 31, 8, 1257–1274.

Gonella, Francesco (2019) "The smart narrative of a Smart City". *Frontiers in Sustainable Cities* 1. Available online at <https://www.frontiersin.org/articles/10.3389/ frsc.2019.00009>. Accessed on 24.04.2023.

Gonella, F. et al. (2019) "Is technology optimism justified? A discussion towards a comprehensive narrative". *Journal of Cleaner Production* 223, 456–65.

Government of Japan (2020) "Follow-upon the growth strategy". Available online at <https://www.cas.go.jp/jp/seisaku/seicho/pdf/fu2020en.pdf>. Accessed on 29.04.2023.

Government of Japan (2021) "Action plan of the growth strategy". Available online at <https://www.cas.go.jp/jp/seisaku/seicho/pdf/ap2021en.pdf>. Accessed on 29.04.2023.

Greenfield, Adam (2017) *Radical technologies: the design of everyday life*. London, New York: Verso.

Hdna Films (2016) *Lo smart tunnel come non l'avete mai visto.* [An exclusive look at the smart tunnel.] Available online at <https://www.youtube.com/watch?v=8Qsjxtd8n_8>. Accessed on 18.05.2023.

Holroyd, Carin (2014) "Japan's green growth policies: domestic engagement, global possibilities". *The Japanese Political Economy* 40, 3–4, 3–36.

Il Sole 24 Ore (2021) "Terremoto, Draghi: 'Nel Pnrr 1,78 miliardi per la ricostruzione'". [Earthquake, Draghi: '1.78 billion for reconstruction in the National recovery and resilience plan.] *Il Sole 24 ORE*, 28.09.2021. Available online at <https://www.ilsole24ore.com/art/terremoto-draghi-nel-pnrr-178-miliardi-la-ricostruzione-AEbLqyl>. Accessed on 18.05.2023.

ISTAT and Tuttitalia (2023) "Popolazione L'Aquila (2001-2021) grafici su dati ISTAT". [Population of L'Aquila (2001-2021).] *Tuttitalia.it*. Available online at <https://www.tuttitalia.it/abruzzo/98-l-aquila/statistiche/popolazione-andamento-demografico/>. Accessed on 18.05.2023.

Joint Research Centre (2022) *SET plan progress report 2022*.

Kainuma, Hiroshi (2011) *"Fukushima-ron" genshiryokumura wa naze umaretanoka.* [Fukushima-ism: why was it born?] Tōkyō: Seidosha.

Kashiwagi, Takao (2010) *Sumāto kakumei.* [The smart revolution.] Tokyo: Nikkei BP.

Kashiwagi, Takao (2018) "Bunsan-gata enerugī ni yoru chiiki sōsei". [Rural revitalization through distributed and dispersed energy generation.] Presented at the "Sekai shuchō seiyaku/Nihon" seminar, August 27.

Kawanishi, Hidemichi (2016) *Tohoku: Japan's constructed outland*. (Regional Spaces, Cultures and Identities of East Asia, 2.) Leiden and Boston: Brill.

Kishida Fumio (2022) "Reiwa 4 1 gatsu 4ka Kishida naikaku sōridaijin nentō kisha kaiken". [Prime Minister Kishida's New Year's Press Conference, 4 January 2022.] Prime Minister's Office of Japan. 01.04.2022. Available online at <https://www.kantei.go.jp/jp/101_kishida/statement/2022/0104nentou.html>. Accessed on 20.05.2023.

Komatsu, Yasuo (2016) "Aizuwakamatsu – ICT biru kanren yosan, honkaigi mo sakujo an Kaketsu/Fukushima ken". [Aizuwakamatsu, ICT Building budget, approved a bill to cancel the main building from.] *Asahi Shimbun*, 26.05.2016. Available online at <https://xsearch.asahi.com/>. Retrieved on 01.05.2022.

Komatsu, Yasuo (2018) "ICT biru ni 'zehi shishutsu o' Aizuwakamatsu shi, Tōkyō de yūchi Seminā/ Fukushima ken". ['Please invest in the ICT Building' The appeal during a promotional seminar in Tokyo.] *Asahi Shimbun*, 02.06.2018. Available online at <https://xsearch.asahi.com/>. Retrieved on 01.05.2022.

Komatsu, Yasuo (2019) "ICT Ofisu Biru, 3wari 'aki' de Shidō? Aizuwakamatsu-Shi, 4gatsu 22nichi Ni Kaishoshiki/Fukushima-Ken". [ICT Office building. Starting operations with a 30% vacancy? Opening on 22 April in Aizuwakamatsu.] *Asahi Shimbun*, 02.06.2019. Available online at <https://xsearch.asahi.com/>. Retrieved on 01.05.2022.

Komatsu, Yasuo (2020) "Sumāto shiti, keizoku-hatten-shinka Aizuwakamatsu-Shi No Shinsenryaku-an/Fukushima-Ken". [Smart City, continuity-development-deepening, Aizuwakamatsu's new strategy.] *Asahi Shimbun*, 31.01.2020. Available online at <https://xsearch.asahi.com/>. Retrieved on 01.05.2022.

Komiyama, Hiroshi, Tsutomu Ōkubo, Ichiro Sakata, Yoshimasa Hayashi, Kenzo Fujisue, Katsumori Matsushima, Yōichi Miyazawa, Akira Morita, and Shigeru Morichi (2011) "Teigen: Nihon no chiiki 'shinsei' bijon". [Proposal: a vision for the rebirth of the Japanese countryside.] Available online at <https://s3-us-west-2.amazonaws.com/jnpc-prd-public-oregon/files/2011/04/dae39d9e983ac786949d6dc129b373b8.pdf>. Accessed on 01.05.2022.

La Repubblica (2023) "Vivere all'Aquila 14 anni dopo il terremoto: il centro è ancora un megacantiere". [Living in l'Aquila 14 years on. The historic center is still a large work in progress.] *la Repubblica*, 05.04.2023. Available online at <https://www.repubblica.it/cronaca/2023/04/05/news/laquila_terremoto_2009_centro_ancora_megacantiere-394954541/>. Accessed on 18.05.2023.

Lefebvre, Henri (1991) *The production of space*. Oxford and Cambridge, Mass., USA: Wiley.

Makishima, Karen (2021) "Dejitaru kara kangaeru dejitaru den'en toshi kokka kōsō". [Thinking the digital garden city nation plan from the digital point of view.] Presented at the 1st meeting of the committee for the implementation of the digital garden city nation plan, Tokyo, 11.11.2021. Available online at <https://www.cas.go.jp/jp/seisaku/digital_denen/dai1/siryou4.pdf>. Accessed on 19.05.2023.

Maschio, Isabella (2016) "European innovation partnership on Smart Cities and communities." Text. 14.01.2016. Available online at <https://e3p.jrc.ec.europa.eu/articles/european-innovation-partnership-smart-cities-and-communities >. Accessed on 20.05.2023.

Ministero delle imprese e del Made in Italy (2023) "Mappa". [Broadband Connectivity Map.] *Banda Ultra Larga*. Available online at <https://bandaultralarga.italia.it/mappa/>. Accessed on 18.05.2023.

Ministero dell'Università e della Ricerca (2022) "Smarter Italy: pubblicato il secondo bando sulla mobilità urbana sostenibile delle merci". [Smarter Italy: out the second call on the sustainable urban mobility of goods.] *Ministero dell'Università e della Ricerca*. Available online at <https://www.mur.gov.it/it/news/mercoledi-14092022/smarter-italy-pubblicato-il-secondo-bando-sulla-mobilita-urbana-sostenibile>. Accessed on 17.05.2023.

Ministry of Foreign Affairs of Japan (2007) "The 16th Japan-EU Summit (Joint Press Statement) (Berlin, 5 June 2007)". Ministry of Foreign Affairs of Japan. 06.05.2007. Available online at <https://www.mofa.go.jp/region/europe/eu/summit/joint0706.html>. Accessed on 20.05.2023.

Ministry of Foreign Affairs of Japan (2015) "The 3rd Joint Committee on Scientific and Technological Cooperation between the EU and Japan". Ministry of Foreign Affairs of Japan. 18.05.2015.

Available online at <https://www.mofa.go.jp/dns/isc/page3e_000347.html>. Accessed on 19.05.2023.

Muroi, Shōhei (2019) "Shichō messēji". [The mayor's message.] Aizuwakamatsu Shi. 19.08.2019. Available online at <https://www.city.aizuwakamatsu.fukushima.jp/docs/2016080800025/>. Accessed on 20.05.2023.

Naikaku kanbō (2019) "Mirai gijutsu x chihō sōsei kentō kai chūkan torimatome". [Interim report by the research committee on future technologies and the revitalization of the countryside.] Tokyo: Cabinet Office, the Government of Japan. Available online at <https://www.chisou.go.jp/sousei/meeting/miraigijyutu/r01-05_chuukan.pdf>. Accessed on 18.05.2023.

Nakazawa, Hideo (2006) "Between the global environmental regime and local sustainability: a local review on the inclusion, failure and reinventing process of the environmental governance". *International Journal of Japanese Sociology* 15, 1, 69–85.

Nakazawa, Hideo (2014) "Chihō to chūō – 'kinkō aru hatten' to iu tatemae no hakai". [The centre and the periphery: the end of the myth of equal development.] In *Heisei shi*, 217–266. Tokyo: Kawade shobō.

Nguyen, David N., Moe Kumamura, Shogo Kudo, Miguel Esteban, and Motoharu Onuki (2021) "Overcoming negative disaster images: how Fukushima's sake breweries challenged negative stereotypes and rebuilt its regional brand". *Journal of Tourism Futures* 7, 3, 390–405.

Niimura, Towa (2018) "Decentralization reform in Japan". *Seikei Hōgaku* 89, 95–108.

Oguma, Eiji (2014) *Heisei shi*. Tokyo: Kawade books.

Open Data L'Aquila (n.d.) "Sviluppo economico". [Economic development.] O*pen data L'AQUILA*. Available online at <https://www.opendatalaquila.it/appsmaps/sviluppo-economico/>. Accessed on 18.05.2023.

Ōtsuka, Aki (2020) "(Rettō o aruku) saigai kara kangaeru kōkai jōhō de bōsai apuri sakusei 'ōpun dēta' shimin ra kyōdō/tōkyō-kyōtsū". [Walking throughout the archipelago – creating a disaster-relief app based on open data, rethinking the disaster: 'Sharing the data with the citizens'.] *Asahi Shimbun*, 21.01.2020. Available online at <https://xsearch.asahi.com/>. Retrieved on 01.05.2022.

Pham, Clarisse (2014) "Smart Cities in Japan: an assessment on the potential for EU-Japan cooperation and business development". Tokyo: EU-Japan Centre for Industrial Cooperation.

Rete8 (2018) *L'Aquila – ZTE Presenta Il 5g.* [L'Aquila, ZTE presents its 5G.] Available online at <https://www.youtube.com/watch?v=shVLDHjevbo>. Accessed on 18.05.2023.

Romano, Michele (2017) "L'Aquila al voto tra ricostruzione post-sisma e ricerca di nuova vocazione hi-tech". [L'Aquila votes amid the post-disaster reconstruction and the strive for a new role in the hi-tech sector.] *Il Sole 24 ORE*, 24.05.2017. Available online at <https://www.ilsole24ore.com/art/l-aquila-voto-ricostruzione-post-sisma-e-ricerca-nuova-vocazione-hi-tech-AEj27dRB>. Accessed on 18.05.2023.

Rosone, Daniela (2019) "L'Aquila, delegazione di Bogotà in visita allo smart tunnel". [L'Aquila, a delegation from Bogotà to see the smart tunnel.] *Il Messaggero*, 28.11.2019. Available online at <https://www.ilmessaggero.it/abruzzo/l_aquila_delegazione_di_bogota_visita_allo_smart_tunnel-4890185.html.>. Accessed on 18.05.2023.

Santucci, Kristin (2022) "Caro bollette, ristoranti e bar staccano la spina: 'È una selezione naturale, chi vive e chi muore". [Price hikes: restaurants and bars forced to shut down. 'It's natural selection'.] *Il Capoluogo,* 07.10.2022. Available online at https://www.ilcapoluogo.it/2022/10/07/caro-

bollette-ristoranti-e-bar-staccano-la-spina-e-una-selezione-naturale-chi-vive-e-chi-muore/. Accessed on 18.05.2023.

Scopece, Maria (2022) "L'Aquila al voto. Biondi o Pezzopane? I programmi dei 2 candidati principali". [L'Aquila decides: Biondi or Pezzopane? The two candidates' programs.] *Policy Maker*, 01.06.2022. Available online at <https://www.policymakermag.it/ italia/laquila-al-voto-biondi-o-pezzopane-i-programmi-dei-2-candidati-principali/>. Accessed on 18.05.2023.

Scott, James (1998) *Seeing like a state: how certain schemes to improve the human condition have failed*. New Haven and London: Yale University Press.

Suga, Yoshihide (2021) "Leaders' summit on climate, remarks by H. E. Mr. Suga Yoshihide, Prime Minister of Japan." Available online at <https://www.mofa.go.jp/files/100181623.pdf>. Accessed on 18.05.2023.

Sugiyama, Noriko and Tsuneo Takeuchi (2008) "Local policies for climate change in Japan". *The Journal of Environment & Development* 17, 4, 424–441.

Suzuki, Wataru (2021) "Japan launches agency to undo 'digital defeat': 5 things to know". *Nikkei Asia*, 09.01.2021. Available online at <https://asia.nikkei.com/Politics/Japan-launches-agency-to-undo-digital-defeat-5-things-to-know>. Accessed on 20.05.2023.

Tada, Naoto, Motohiro Marui, and Akihiro Mizutani (2014) "Promotion of smart community in Aizuwakamatsu city area". *FUJITSU Sci. Tech. J.* 50, 2.

Trencher, Gregory (2019) "Towards the Smart City 2.0: empirical evidence of using smartness as a tool for tackling social challenges". *Technological Forecasting and Social Change* 142: 117–28.

Ufficio Speciale per la Ricostruzione dell'Aquila (2022) "Ricostruzione pubblica". [Public reconstruction.] *USRA*. Available online at <https://usra.it/datipratiche/index.php?lang=it&section=ricostruzione-pubblica>. Accessed on 18.05.2023.

Ufficio Speciale per la Ricostruzione dell'Aquila (2023) "Sintesi ricostruzione private". [Private reconstruction: synthesis.] *USRA*. Available online at <https://usra.it/datipratiche/index.php?lang=it&section= ricostruzione-privata>. Accessed on 18.05.2023.

Ufficio Speciale per la Ricostruzione dell'Aquila (n.d.) "5G." *USRA*. Available online at <https://usra.it/intervento/lo-sviluppo/smartcity/5g/>. Accessed on 18.05.2023.

Watanabe, Toshitsuna (2019) "Fukushima diary, part two: overwhelming kindness and a new home". *The Guardian*, 08.06.2019. Available online at <https://www.theguardian.com/environment/2019/jun/08/fukushima-diary-part-two-overwhelming-kindness-and-a-new-home>. Accessed on 18.05.2023.

Yagasaki, Katsuma (2016) "Internal exposure concealed: the true state of the Fukushima nuclear power plant accident." *The Asia-Pacific Journal: Japan Focus,* 15.05.2016. Available online at <https://apjjf.org/2016/10/Yagasaki.html>. Accessed on 18.05.2023.