

COMMENTARY

A more sustainable urban future calls for action: the city of Lahti as European Green Capital 2021

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Abstract

In 2020, a small urban center from southern Finland, the City of Lahti, was awarded the 2021 European Green Capital, which recognizes and rewards local efforts that seek to improve the urban environment, together with its economy and the quality of life for its inhabitants, further posing ambitious goals for ecological improvement. In this commentary, we describe some of the key elements that made Lahti the 2021 European Green Capital, as well as some of the future plans for the city. We also highlight the importance of research-based knowledge as the foundation for achieving better outcomes in urban decision making.

Key words: European Green Capital, Finland, urban ecology

The human population is increasingly concentrated in urban centers. Interestingly, although major mega-cities are home to tens of millions of urbanites (e.g., Tokyo 37.5 million, Delhi 28.5 million, Shanghai 25.6 million, São Paulo 21.7 million, Mexico City 21.6 million), close to half of all urban dwellers in the world live in settlements of <500 000 inhabitants (UN 2018). Such human agglomerations in urban centers require an immense quantity of resources and goods, making the ecological footprint of cities often 200 times greater than their geographic extent (Wigginton et al. 2016). Thus, the vast effect that the urbanization process has on replacing pre-existing systems (ranging from modifications of the local topography and the channeling of water bodies to the provision of many artificial structures that characterize modern urban systems; Eldredge and Horenstein 2014), as well as the unbalanced metabolism of cities (i.e. water, material and nutrient flows; Kennedy et al.

2011) have put urban areas in the spotlight among the leading causes of global change (Grimm et al. 2008; Maxwell et al. 2016).

Recognizing the environmental role of cities and the myriad of efforts across Europe to make cities less ecologically harmful, the European Commission established the European Green Capital Award. This yearly distinction recognizes and rewards local efforts that seek to improve the urban environment, together with its economy and the quality of life for its inhabitants, further posing ambitious goals for ecological improvement (European Commission 2021a). The core indicators considered for the evaluation process are diverse and highly pertinent, ranging from air quality, noise, waste, and water to nature and biodiversity, sustainable land use and soil, green growth an eco-innovation, climate change mitigation and adaptation, sustainable urban mobility, energy performance, and governance (European Commission 2021b). Cities

are required to provide evidence of the current state of each one of the indicators together with information of previous conditions, including the implemented strategies to address them over the last 5–10 years, and the short- and long-term objectives and approaches to tackle them in the future. Finally, participants are required to provide context about their city indicating the main challenges it faces and how they plan to deal with them, as well as a ‘Good Practice Section’ to conclude with the application, where cities are invited to submit three examples of ‘good practices’ they are undertaking across three of the evaluated core indicators. Regarding the evaluation process itself, the European Green Capital Award gathers a panel of experts to assess the information provided by each city participating in the process (European Commission 2021b,c). Since 2010, when Stockholm (Sweden) was granted the European Green Capital Award, many cities have redoubled their efforts to include more sustainable practices and transitions. In 2020, a small urban center from southern Finland, the City of Lahti (referred to as Lahti hereafter), was awarded the 2021 European Green Capital.

Lahti, established in 1905 and being the 6th largest Finnish urban agglomeration (~120 000 inhabitants; population density 261 inhabitants km⁻²), is the capital of the Päijät-Häme region (OSF 2020). The urban continuum of Lahti (i.e. polygon of the city constructed following parameters of building aggregation and communication) covers an area of 54 km², which stretches along the limits of Lake Vesijärvi, and also contains several smaller water bodies within its borders (Figs 1 and 2). The Salpausselkä ridge crosses the middle of the city, conferring on it a characteristic hilly topography. Located in a boreal vegetation zone (sensu Pfadenhauer and Klötzli 2020), the vegetation of Lahti is characterized by conifer trees, dominated by Norway spruce (*Picea abies*), Scots pine (*Pinus sylvestris*), and other intersperse species such as birches (e.g. *Betula* sp.) and aspen (*Populus tremula*).

Recognizing Lahti as the 2021 European Green Capital was the cherry on top of the pie of the immense efforts to transform an industrial city with a highly polluted lake, as Lahti used to be characterized for, into an evolving case of success. Before its nomination for the award, Lahti had already set the bar high and decided to become carbon-neutral by 2025. This is the tightest target timeline for a major Finnish city and 10 years ahead of the national target. Lahti has made notable investments in its environment, creating possibilities for new economies and welfare. Lake Vesijärvi was one of the worst polluted lakes in Finland in the 1970s. This is where the city started its journey towards becoming a European Green Capital: the Lake Vesijärvi Project. Working as a team, the city, private companies, scientists, and voluntary citizens united to restore the lake’s water quality. Currently, this iconic lake serves as an outdoor ‘living room’ for Lahtians, providing not only aesthetic experiences but also an arena for fishing, boating and other forms of relaxation. Following a fluctuating economic scenario marked by unemployment—starting when trade with the Soviet Union seized in the early 1990s—Lahti has managed to achieve monumental changes. For instance, the city abandoned the use of coal in the production of district heating. Additionally, the local industrial sector has renewed its status, shifting toward the latest circular economy solutions and digital technologies. Together with such efforts, the city has made sizable complementary investments in education and science.

Lahti has strongly supported environmental research for the past three decades. Due to active research efforts (e.g. Vakkilainen et al. 2004) and science-based investments in restoration practices, issues such as the polluted state of Lake Vesijärvi have been gradually but successfully tackled using evidence-based knowledge, such as biomanipulation and the removal of aquatic vegetation (see Anttila et al. 2013). Joint efforts combining major public and private investments through the Vesijärvi Foundation have been the keystone for transforming knowledge into action. Currently,

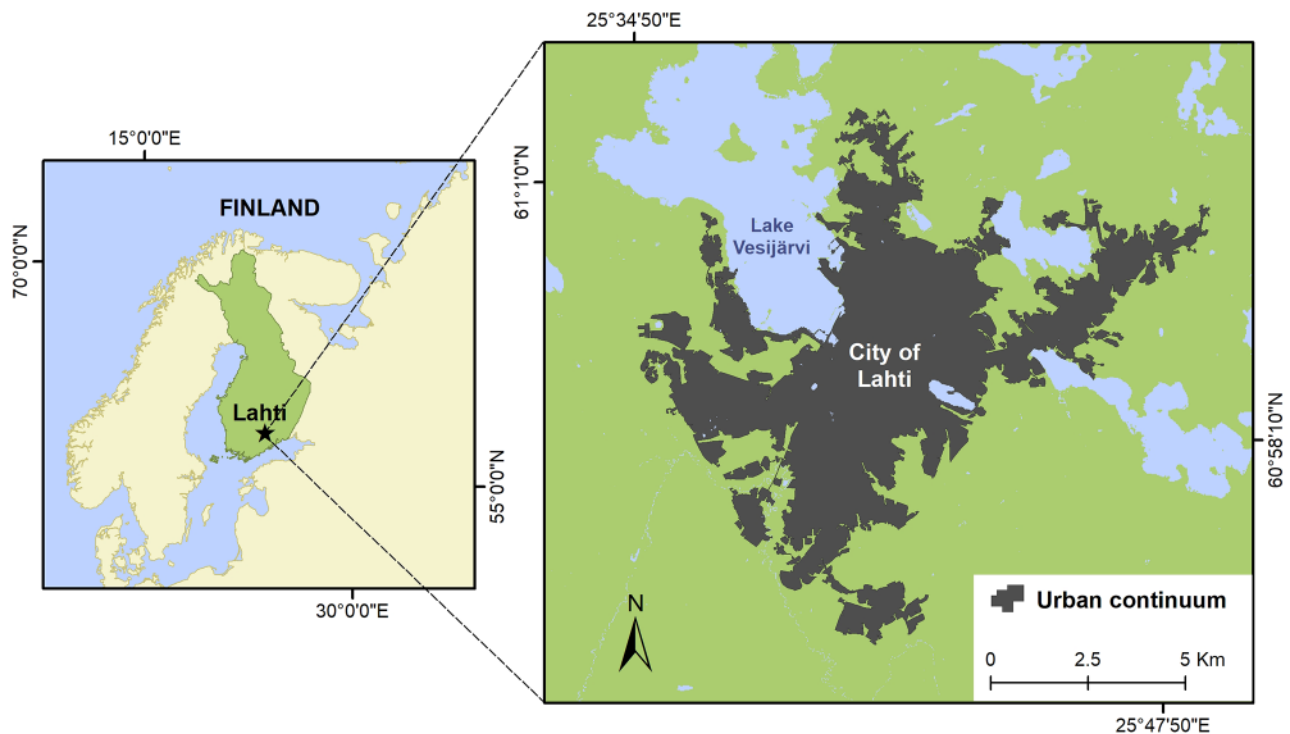


Figure 1: Map depicting the location and spatial extent of the built continuum of the City of Lahti.

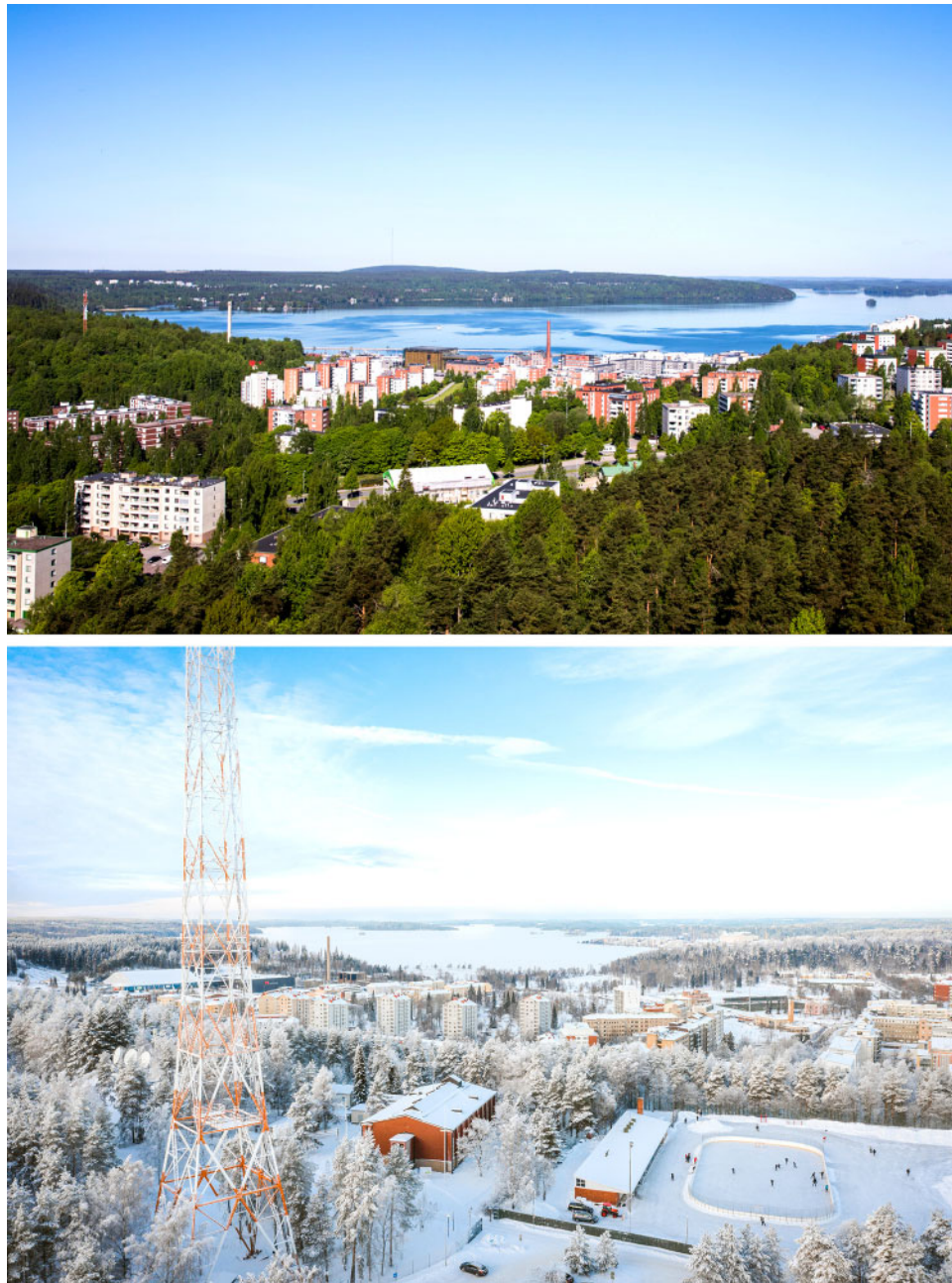


Figure 2: Urban landscapes of the City of Lahti in its most contrasting seasons: summer (top; photo credit: Lassi Häkkinen/City of Lahti) and winter (bottom; photo credit: Juha-Pekka Huotari/City of Lahti).

Lahti is pushing forward in matters of water issues with large research projects investigating the quantity and quality of stormwater contaminants that derive from catchments of varying land-use intensity and exploring the influence of urban greenspaces in retaining and purifying runoff. Knowledge generated by such projects are starting to be fruitful (see [Valtanen et al. 2014a, b](#) and [Silvennoinen et al. 2017](#)), allowing university researchers, together with landscape architects, and Lahti officials to establish rain-gardens and other small-scale infrastructures in downtown areas ([Jauni et al. 2020](#)), as well as large-scale stormwater detention/retention ponds in the city outskirts to mitigate various problems caused by stormwater ([Järveläinen 2019](#)). The use of urban greenspaces in reducing traffic-derived air pollution has also been of interest to the city, inspiring cutting-edge research at the Lahti

University Campus (*Lahten Yliopistokampus*), where the University of Helsinki is currently propelling urban research efforts. Although vegetation in urban parks and other urban infrastructures (e.g. road verges, remnant forest patches) has been shown to reduce concentrations of large-sized particles, such as road dust ([Setälä et al. 2013](#)), the effect of urban vegetation in purifying gases (such as NO₂ and polycyclic aromatic hydrocarbons-PAHs) and smaller particulates (PM₁₀, PM_{2.5}, nanoparticles) appear negligible ([Viippola et al. 2016, 2018](#)).

Recently, research in the city has broadened and diversified in scope, including the study of citywide relationships between the ecological, social, and physical dimensions of the city, the provision of ecosystem services in parks (e.g. [Setälä et al. 2016, 2017](#); [Lu et al. 2021](#)), and assessments that seek to

untangle the mechanistic processes and key drivers of biodiversity loss due to urbanization (e.g. Hui et al. 2017a,b; Prass et al. 2017; Francini et al. 2018; Fig. 3). All evidence-based knowledge generated within and nearby Lahti is currently being considered in the decision-making of the environmental sector of the city, maintaining a virtuous circle of researchers who provide both basic and targeted information to decision-makers, which in turn generates new questions that need scientific assessment.

The mindset of Lahtians has been in agreement with many of the environmentally friendly urban practices for decades now. Yet, not satisfied with all achievements, Lahti assesses current environmental issues and invests in tackling them. Such is the case of the excessive use of natural sources (e.g.

primary sand material in road construction instead of a wider use of recycled land masses), which is still worrisome in the city. Nonetheless, winning the European Green Capital Award has not only provided a reason to celebrate decadal environmental achievements but has also inevitably leveraged all environmental measures and goals of the city. Besides seeking conventional ways to address these types of issues (e.g. environmental education and specialized advice), the city is also seeking innovative ones, such as the promotion of sharing and circular economies. Additionally, Lahti is highly active in piloting and developing new public participation methods, including participatory budgeting. Lahti is the first city in the world to pilot personal carbon trading on mobility emissions with a digital application (CitiCAP UIA 2018–2020). The challenge is to



Figure 3: Examples of biodiversity of the City of Lahti: European Pine Marten (*Martes martes*) (top); Hoopoe (*Upupa epops*) (bottom). Photo credit: Timo Kairesalo.

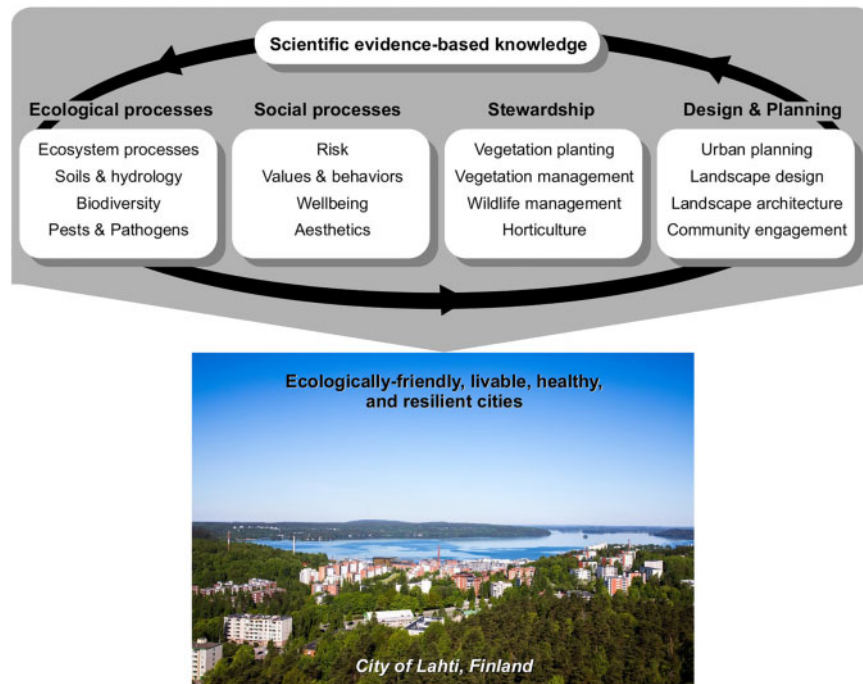


Figure 4: Dynamic set of components required to bridge the gap between scientific evidence-based knowledge and ecologically-friendly, livable, healthy, and resilient cities. Photo credit: Lassi Häkkinen/City of Lahti.

change the mobility attitude and behavior of citizens to promote a shift from private car use to environmentally friendly mobility. Lahti has also developed and launched an experiment in which it inspires around 60 families to shift to a 1.5-degree lifestyle, which targets and provides alternatives for reducing lifestyle carbon footprints (Lettenmeier et al. 2019). This model will be brought to all schoolkids in the eighth grade to gain even more impact. In addition to reaching the entire age group, the effect is expected to be broader as children pass on the message of sustainable lifestyles to their families at home.

Most recently, a novel and timely urban ecology paradigm was coined: ecology ‘for’ the city (Childers et al. 2015). This paradigm seeks to present a transformative model based on systemic and creative ‘knowledge-to-action’ foundations. Thus, this new paradigm ‘encourages ecologists to engage with other specialists and urban dwellers to shape a more sustainable urban future’ (Pickett et al. 2016). In this sense, Lahti has been working together with local schools, the industrial sector, small and mid-sized enterprises, governmental institutions, and even other Finnish cities for over a decade now to build a ‘highway’ of action founded on evidence-based knowledge, as well as the expertise of scientists and stakeholders at all levels. Taking care of the environment is at the core of this strategy and it will be incorporated into all plans, budgets and actions. In a nutshell, the main current environmental goals of Lahti are to: (i) become a carbon-neutral city by 2025, which means cutting down greenhouse gas emissions by 80% compared to the level of 1990; (ii) become a zero-waste circular economy city by 2050; (iii) protect nature and valuable surface water and groundwater areas and have at least 8% of areas strictly protected by 2030; and (iv) encourage people to shift their lifestyles more towards One-Planet living (e.g. by following environmentally friendly modes of transport and renewable energy). Today, Lahti’s transformation story is a source of inspiration as the city offers scalable environmental solutions that have a global impact, including scaling

from ecology ‘in’ the city to that ‘of’ and ‘for’ the city (sensu Pickett et al. 2016).

From Stockholm (2010 award) to Lahti (2021 award), the European Green Capital Award has set a high bar and pushed many European cities forward toward ecologically friendlier, livable, healthier, and resilient cities. We encourage awards like the European Green Capital to promote more systemic visions that allow transitioning to a more trans-disciplinary approach in tackling the pressing environmental and social aspects of cities across the globe. Cities require more detailed information to set the baseline to understand the nature and particularities of their urban systems, for which trained urban ecologists are a crucial cornerstone. Bridging the gap between current cities and those with an ecologically friendlier, livable, healthier, and resilient essence require high-quality scientific evidence-based knowledge to allow integral responses from the urban stewardship, design, and planning arenas. Long-term monitoring of the ecological, social, and physical dimensions of cities is fundamental in completing the flow of such an intricate process (Fig. 4). Notably, all implied actors need to share a common language and goal, with appropriate resources and the willingness of the stakeholders for each transition representing the main driver toward success.

Conflict of interest statement. The authors declare no conflict of interest.

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