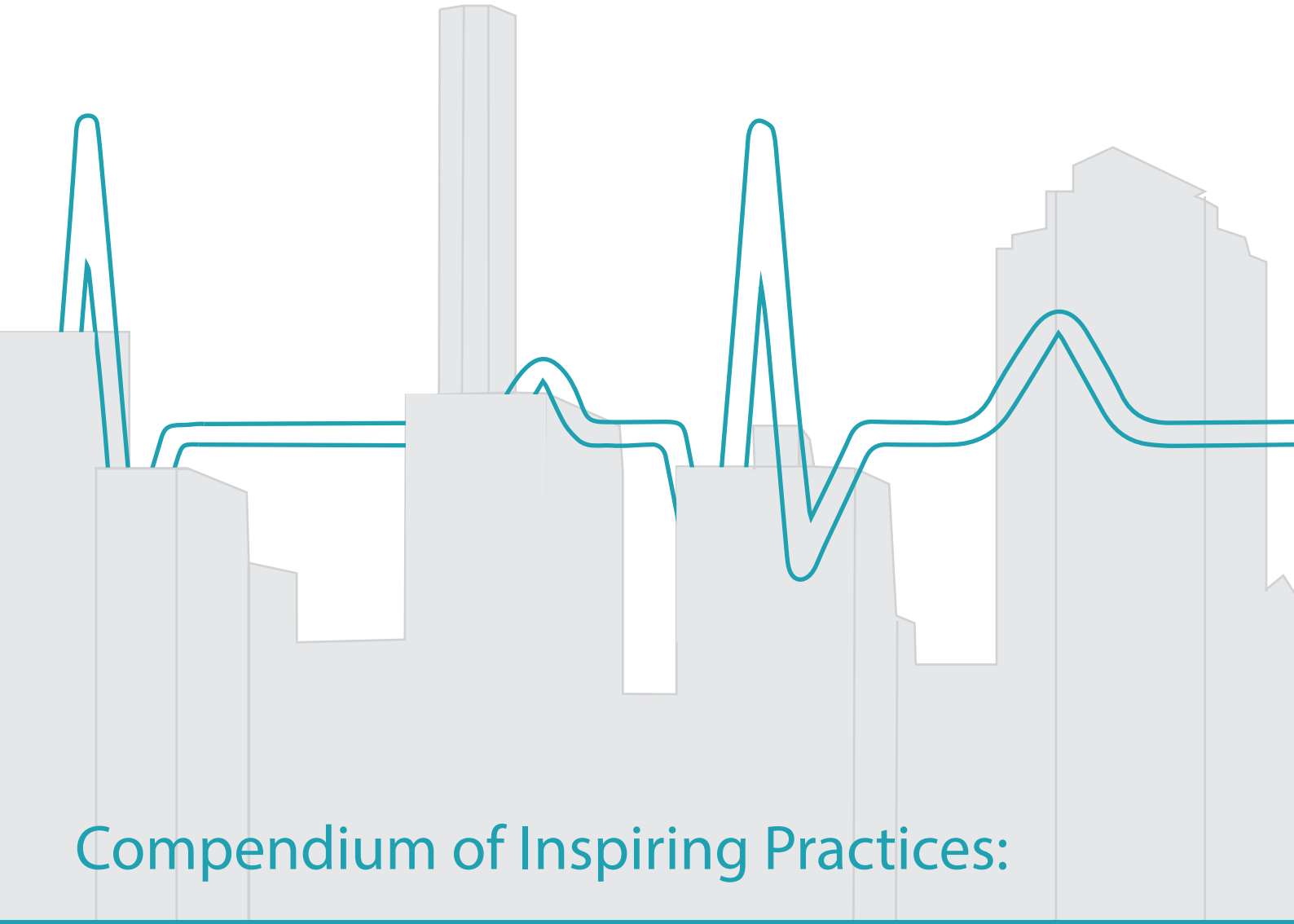

Compendium of Inspiring Practices:

HEALTH EDITION

International Guidelines on Urban and Territorial Planning

UN-HABITAT
FOR A BETTER URBAN FUTURE

Compendium of Inspiring Practices: Health Edition

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EDIBLE GREEN INFRASTRUCTURE 4.0 FOR FOOD SECURITY AND WELL-BEING

About the Case

Health issue: Malnutrition, well-being

Type of intervention: Design and policy

Spatial Level: City-region / metropolitan, city/municipal

Key focus areas: Greening, urban food security, urban sustainability, nutrition

According to the United Nations (2017), the world's population reached nearly 7.6 billion by mid-2017, implying that the world has added approximately one billion inhabitants over the last 12 years. The environmental impacts of cities are numerous and are exacerbated by this rapidly growing population. Cities produce less than 10 per cent of their food and rely on water, energy, fuel and construction materials from external sources (Ramaswami et al. 2016). Moreover, cities are critical hotspots for poverty and hunger even in developed countries. For example, in 2017 Italy Statistics estimated that 1.8 million residential households and 5.6 million individuals were living in absolute poverty in Italy, increasing mainly towards the south of the country (ISTAT, 2018). A cause-and-effect response from the escalating global population brings to the forefront the need to re-examine how urban spaces are developed, used and how urban inhabitants are fed (Ackerman et al. 2014).

Food insecurity is an important health problem and an under-recognized social determinant of health (Murthy, 2016). In the Campania region of southern Italy, the prevalence of malnutrition (including overweight and obesity) affects 37.4 per cent of children in the area, while at the national level this number reaches 24.7 per cent (ISTAT, 2017). Edible green infrastructure (EGI) is a planning approach that can improve resilience and quality of life in cities and can prevent food insecurity (Russo et al., 2017; Russo and Cirella, 2018a; Russo and Cirella, 2018b). Research within the Campania region has examined a few EGI-related programmes that assist in developing local community involvement and education.

Edible green infrastructure (EGI) is a sustainable, planned network of edible food components and structures within the urban ecosystem which are managed and designed to foster primarily the provisioning of ecosystem services. EGI typologies are provided and based on one macro category, EGI and urban agriculture, as well as on eight sub-classifications. Several cities have already integrated different types of EGI into their urban plans. However, management and planning varies in each context; geographically (e.g., climatic zones), socially (e.g., community development, educational benefits and equity) and economically (e.g., employment opportunities and inexpensive food sources) requirements. As a result, urban agriculture and EGI can be used for the sustainable regeneration of urban environments (Russo et al., 2017). An example of urban regeneration via an EGI approach is De Filippo Park in Ponticelli, one of the most degraded, overcrowded and crime-affected suburbs of eastern Naples. This area has been transformed into a variety of allotment gardens which support EGI (Russo and Cirella, 2018a).

Over the last decade, the concept of EGI has become more popular; in the city of Andernach, Germany, the label "edible city" was adopted as residents started growing edible plants in public green spaces. This practice was implemented for several reasons: to raise awareness for local food in which people could harvest for free; to help people eat healthily; to integrate different sociocultural groups into using and managing the urban food system; and to inspire public debate about how to develop the urban space (Fischer et al., 2018). In the United States, since 2008 state and city planners and urban development agencies have been actively promoting urban agriculture after an increase in the availability of unused land, where innovative development revitalized brownfield sites and increased community ties after the economic downturn (Palmer, 2018). The public's health benefited from community enhancement, stress reduction and physical activity – making this a good case for community-based policies that encourage the sustainability of urban gardens through far-sighted urban planning. As a consequence, the application of such gains began with the securing of land tenure needed for community and entrepreneur gardeners to better attribute urban health practice and context driven goals (Brown and Jameton, 2000). Whether urban agriculture and EGI make economic sense is an empirical question. It depends on their profitability and the extent to which they provide food at a lower opportunity cost in term of resources, compared to other alternative means of food production (Zezza and Tasciotti, 2010).

Many Italian municipalities are now using a Food and Agriculture Organization of the United Nations- (FAO) supported tool that helps vulnerable communities to improve their own social status as well as their city (Rusciano et al., 2017). According to the Regional Law n. 5, 30 March 2012, the Campania region recognizes and supports a multifunctional approach to agriculture as a favourable context for the development of interventions and social services, socio-health

and educational issues. Furthermore, the region has created a regional observatory on social agriculture within a multi-functional platform.

In 2009, the Regional Council of Campania published several policies to create a number of "social and community gardens", connecting vulnerable groups throughout the region and identifying beneficiaries within associated municipalities. The social assistance, planning and supervision sectors examined the financial project "social gardens" and have continued to create regional networks of urban gardening, that ensures the social inclusion of vulnerable people (Russo and Cirella, 2018a). There have been several results: the self-production of agricultural means, food and environmental education, in partnership with a third-party organization, the development of bartering among tenants, recovery of traditional crops, development of organic agriculture, promotion of new forms of sociality, training in biological horticultural techniques, and theotherapy, psychosocial, physical and motor rehabilitations. All these skills are significant health factors to drive the implementation of an EGI system in different contexts.

Inspired by these policies, many urban agriculture projects have been developed in the region, especially throughout the provinces of Benevento and Salerno. For example, in Cava de Tirreni near Salerno, the project "Matti per l'orto" gives people with mental disorders the opportunity to learn, cooperate and interact within the community by producing alternative urban food sources. In Cilento, the project "Gardens of the Mediterranean Diet" explores dietary health and offers young people the opportunity to learn about farming and food production. In Capaccio Paestum, "OrtoMondo" is a project in which 30 migrants from a nearby migrant centre take care of 11 allotments (Russo and Cirella, 2018a).

The Campania region has expanded EGI in other ways as well by including the first community garden created inside the Archaeological Park of Pontecagnano. Covering more than 22 hectares, it is one of the most important and preserved Etruscan settlements of southern Italy. At present, the community gardens are divided as follows: 54 individual plots each of 100 m2 assigned to pensioners over 55; a plot of 1,000 m2 divided by waterways (named the "Ortone") allocated to an association which gives local small groups the ability to purchase sub-plots of 50 m2 each; plots for horticultural therapy of about 50 m2 assigned to the Department of Mental Health; pedagogical gardens assigned to local schools; plots assigned to the Christian Associations of Italian Workers; plots assigned to the Campania Rheumatic Disease Association; and a garden that has been designed to entice the five senses made up of about 250 m2 (Environmental Education Centre, 2018; Marella, 2015). The Campania region has proved to be a viable EGI resource for food security and healthy living. The development of numerous EGI-related programmes is an inspiring approach for urban planners and thinkers alike in transforming ruined, abandoned, unprotected or other types of urban-oriented landscapes into a usable food source and lifestyle advantage (Russo and Cirella, 2018a). The project EGI

"The development of numerous Edible Green Infrastructure-related programmes is an inspiring approach for urban planners and thinkers alike in transforming ruined, abandoned, unprotected or other types of urban-oriented landscapes into a usable food source and lifestyle advantage."

4.0 intertwined environmental, social, human health (e.g., mental health, nutrition, outdoor activities that improves strength, mobility and flexibility) and economic benefits, and locates food sources closer to city dwellers, thus increasing food security and lessening food transport distances. It reinforces low-energy and low chemical-input practices, lessens human consumption of processed foods and teaches people from all socioeconomic levels the benefits of locally grown food. An EGI approach can therefore play a vital role in providing city planners and policy makers with further justification for green space conservation and use.

The development of using EGI corresponds with the three pillars of sustainable development in which ecosystem services can be closely integrated into an urban food network. The findings from this project linked a number of educative benefits, including the extended use of community gardens for pensioners, business development, horticultural therapy and pedagogical and experimental gardening. The "greening" of an urban landscape plays a collaborative role in public heath as well as bringing intrinsic value to a community. The health benefits of urban agriculture and EGI range from educational dietary health issues to the involvement of patients with psychological and emotional fragility in horticultural therapy-oriented projects. Urban agriculture and EGI developments can help to reduce the prevalence of "food deserts" by providing accessible, healthy food within inner-city neighbourhoods, particularly to residents of low socioeconomic status (WHO, 2018). Furthermore, EGI projects in schools have the potential to conserve agrobiodiversity and positively influence the diets of urban school children, and to reduce obesity and malnutrition (Russo et al., 2017). The educative components of this practice reconnect people (especially young people) with knowledge about the food they consume. Local food know-how includes where food comes from, how it is grown or made, who produced it and when it was planted and harvested. Local, intrinsic understanding of food production can be associated with improving one's dietary attitudes, reducing the risk of allergic disease as well as overall eating habitats (Byker et al., 2010; Mie et al., 2017).

The Campania region's EGI-integrative approach to these challenging issues is a good example of transformative urbanization from de-cementification to a "green", garden-oriented future. Such an approach introduces "green" in replacement of non or less "green-based" development, triggering the application of nature-based solutions.

Throughout the region, development concerns and lack of financial support have plagued municipalities with concerns on how to advance and move forward, often with minimal external provision. Local efforts, however, have implemented EGI and specifically fortified aspects of the EGI 4.0 project's achievements and applicability throughout the region. Its success can be expanded to other regions throughout Italy with few complications. At present, EGI methodologies from project expertise are ongoing, with enlargement research being conducted throughout Europe, Africa, Asia and North America.

Key Words: Food security | well-being | ecosystem services | edible green infrastructure | horticultural therapy

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