URBiNAT

Business Cases for Replication and Scaling in URBiNAT Follower Cities

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Purpose

The purpose of the present report is to examine the replicability and scalability of Nature-Based Organisations (NBO), with focus on Nature-Based Enterprises (NBE). The approach centres on advancing a portfolio of best practice cases, identified and characterised following a search and evaluation of a wider population of NBE in URBiNAT's frontrunner cities. Part of the purpose is to build a better understanding of how to frame constructive processes and interactions featuring local community and citizen engagement in the follower cities. In this, working out ways of addressing hurdles as well as invigorating facilitators is of high importance. While the individual characteristics of NBE as well as the follower cities are taken into account, lessons of more general relevance are aimed for in support of realising benefits from NBS and the replication and scaling of NBE.

Executive summary

This report builds on earlier work to identify and characterise best practice NBE in URBiNAT's frontrunner cities. After reviewing the concept of NBE along with the presence of hurdles and issues, the report places emphasis on considering opportunities for their replicability and scalability. The methodology applied draws on URBiNAT's Community of Practice (CoP), combining inter-city and intra-city interlinkages in support of constructive avenues for knowledge exchange and collaboration. Consultative processes, initiated to support the prioritisation and advancement of specific opportunities for replication and/or scaling, are taken stock of. An important element was the arrangement of workshops, initially informing and engaging representatives from all follower cities in the exercise under way. In the next stage, as workshops were held with individual follower cities, the focus was placed on achieving relevant representation and engagement from within each city. Distinguishing how NBE relate to different NBS categories, having each linked to relevant so-called Communities of Interest (CoI) further emanated as key for constructive matchmaking. Given that the report takes stock of what has been achieved only in an early stage of the process, concluding on the final results goes beyond its scope. Based on the observations and indications thus far, however, the greatest advances towards replication and scaling appeared for NBE drawing on participatory and social & solidarity NBS. Beside concrete openings for identifying value-enhancing matching between specific best practice NBE and local communities or entities, the report concludes on opportunities to identify complementary value-enhancing initiatives. Nurturing replication and scaling of NBE may eventually come down to framing a context that thrive on shared value, collaboration, blended finance models, co-creation, and co-governance.

1. Introduction[1]

The present report builds and expands on work pursued by the URBiNAT project in the preceding years. This applies particularly to Andersson et al (2023), which identified successful Nature-based Solutions (NBS) organisations with the frontrunner cities[2] of the project, presenting candidates for replication and scaling. Those in focus in the present report are so-called Nature-based Enterprises (NBE), i.e., formally established Nature-based Organisations (NBO), for profit as well-as not-for-profit.

So-called "best practice" NBE refer to such ventures concluded most viable in successfully innovating and realising value by drawing on NBS. The present report further examines the staging and pursuing of a process for examining the opportunities for their replication and scaling, notably in URBiNAT's follower cities[3], and gaining lessons thereof.

An in-depth analysis of the properties and performances of the selected NBE has been provided in Andersson et al. (2023). Additionally, inter-linkages between NBE and some specific features pertaining to each follower city were outlined and illustrated in URBiNAT (2022). Further attention will be paid in this report to conditions that impact opportunities for matching NBE with candidate cities for their replication and scaling.

The preparations of the report have drawn extensively on the framing of tailored consultative processes with each of the follower cities, featuring the engagement of diverse parties. The report offers observations and analysis of influences by various factors on those process and the outcomes as far as they can be judged at the present stage. This includes preliminary conclusions and indications offered by city representatives and other actors involved in concrete advancement on the ground, in each city.

Where needed, the city consultations have been complemented with observations and results of side-visits to those cities by the project team. Determinants of progress include features of the specific NBE as well as the NBS categories and kind of benefits they relate to, and also the scope for citizens, relevant communities, and stakeholders to engage in constructive networking and complementary activities. Of particular interest in this context is the presence of a local network or communities held together by joint interests, which may be referred to as "Communities of Interest" (CoI).

Beyond the identification of specific opportunities associated with the pool of NBE at hand, the work has been framed with the aim of generating lessons of more general validity. How

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[2] The Frontrunner Cities are: Porto, Nantes, and Sofia.

[3] The Follower Citie covered in the report are: Nova Gorica, Høje-Taastrup, Siena, Bruxelles, and Khorramabad.

to inspire and facilitate replication and scaling of NBE, as a way of realising the benefits from NBS more broadly, is of fundamental importance in this context.

Issues arising from cities' fragmentation and polarisation require careful consideration. Deprived areas tend to suffer from less connectedness with policymakers/influential stakeholders. Typically bestowed with a weaker business sector, less prevalence of innovation and citizens burdened more by pressing social concerns, they typically foster fewer NBE. Such areas are, however, in great need of economically sustainable operations offering job creation and higher incomes, as well as a reinforcement of public goods such as those that tend to flow from green space. It is well-established that proximity to green "infrastructure" carries benefits of recreation, reduces stress, and increases well-being, while exerting upward pressure on property prices (Irwin, 2002; Hoshino, 2010). More amenable conditions can thus be accompanied by higher rents and housing costs hurting vulnerable groups. Especially over the medium term, this can be further exacerbated by a spike in incomes following from NBE development, requiring special considerations and balancing in such areas.

The report is structured as follows. Next, Chapter 2 provides brief background and a literature review of relevance to addressing the replicability and scalability of best practice NBE. The focus of Chapter 3 is on the methodology applied in the present work, detailing the consultative processes through which information on best practice has been disseminated and shared, including workshops featuring diverse follower city representation. Chapter 4 starts out by reviewing the context for the follower cities' engagement, including linkages to CoI, followed by the presentation and examination of main results. The last section concludes and presents recommendations.

2. Background and literature review

The present report draws in part on previous reports defining, analysing, and evaluating real-world cases of Nature-based Enterprises (NBE) in URBiNAT's frontrunner cities (Andersson et al., 2023). While those cases have been at the centre of the presentations and discussions that this report is spinning around, the focus here is shifting to the means of communicating and realising opportunities through their replication and scaling in follower cities. That in turn links to promoting and leveraging the benefits of NBS through innovation and enterprise development but also through social benefits and public goods (Jensen, 2021).

The notion that innovation is pursued in the most advanced countries and translates into new technologies and products associated with high rents, followed by stages of maturing, knowledge diffusion, standardised production and relocation, originates in the theory of the project life-cycle (Vernon, 1966). The stylised model gradually gave way to considerations of links between organisational change and innovation (Van de Ven et al., 1999). Studies of organisational learning went from a focus on knowledge creation (Nonaka and Takeuchi, 1995) to the pursuit of acquisition and exploitation of knowledge, in part through adaptation (Lewin and Volberda, 1999). From there on, increasing attention has

been paid to the role of multiple actors, spanning suppliers, customers, partners, competitors, and so forth, in fostering innovation and value-creation (Teece, 2007).

While the impetus of institutions and policies attracted attention from early on, new aspects have come to the forefront when it comes to their role in supporting market dynamics that reflect the value streams linking nature and society. Growing attention has been paid to the role of socio-ecological innovations, where changes in society and the environment come together in fuelling the demand for new solutions and market developments (Elands et al., 2019; Dignum et al. 2020; van der Jagt et al., 2020). By (re)establishing connectedness between people and nature, NBS contribute to pro-environmental behaviour drawing on greater awareness of the significance of sustainability in everyday urban life (Soga and Gaston, 2020; West et al., 2020). An important aspect has to do with mainstreaming planning, care for the living, and appreciation of nature as the 'new normal' (Cohen-Shacham et al., 2019; Davies and Lafortezza, 2019; Moosavi et al., 2021). Such processes of communication and learning around NBS in the urban environment extend to exchange and cooperation between cities (Kabisch et al, 2016).

Questions remain, however, how to achieve greater progress in realising the potential value streams of NBS. As concluded by EIB (2023), investment in NBS remains heavily dependent on public funding. This fact relates closely to the multifaceted nature of their potential benefits. "Green" areas, for instance, offer recreational opportunities (Fischer et al., 2018), reduce less mental stress (WHO, 2022), improve air quality (Manisalidis et al., 2014), protect against heating (Lungman, 2023), and raise well-being (Hartiq, 2014). Despite urban planners being generally aware, there is a high tendency for "grey" solutions to win out. Few cities realise effective synergy between the planning and development of NBS with the health sector, to mention one of the social spheres which could capture huge potential rewards (Andersson and Cardani, 2023). Meanwhile, a range of external factors influence the scope for benefits, pertaining to both to the urban environment, as when it comes to congestion or the quality of air, water, and sanitation, and the health status of the concerned citizens. Vulnerable populations, commented on just above, reflecting age distribution or the prevalent housing situation, typically have less access but actually stand to benefit more from NBS.

Outcomes much depend on the processes through which NBS are selected, designed, implemented, and managed. Ample studies demonstrate that co-creation by citizens, prepared and initiated from early on and kept up through the lifecycle of NBS, support their local relevance, while also supporting citizens' buy-in. In a similar vein, NBO, including NBE, play a critical role for the potential benefits of NBS to materialise in practice. In this case, key mechanisms include value-enhancing innovations along with the development and operationalisation of various kinds of services.

2.1 Nature-based Enterprises

Nature-based Solutions (NBS) are defined by IUCN (2020) as "Actions to protect, sustainably use, manage and restore natural or modified ecosystems, which address societal challenges… providing human well-being and biodiversity benefits". Similar definitions have been adopted by UNEP, EU, and others. In the present project, NBS are further divided into four sub-categories, reflecting territorial, technical, participatory, or social and solidarity economy features. NBE, which may draw on, leverage, and commercialise the benefits of NBS, may equally be classified on this basis (URBiNAT, 2022).

Entrepreneurship has long been recognised as imperative for boosting innovation and for risk-taking, testing and experimentation of new solutions (Hall et al, 2010). There are several conceptualisations in relation to sustainable development. Examples include green enterprises and eco-enterprises, ecological and environmental enterprises, sustainable entrepreneurship, and nature entrepreneurship (Dean and McMullen, 2007; Gast et al., 2017; Gliedt and Parker, 2007; Schaltegger, 2002). NBE basically refer to the full range of formal organisations that operate in this space, covering various business models, while the broader concept of Nature-based Organisations (NBO) incorporates social community initiatives of informal nature.

Related to the public-goods nature of NBS, market mechanisms are poorly equipped to reflect and distribute the benefits of NBS. The difficulties for investors to internalise the value streams result in, for instance, systematic under-investment by markets and also, in fact, by governments (McQuaid et al., 2022; Andersson, 2023). In this situation, the rise of NBE offers a critical channel for entrepreneurial and innovative ingenuity to tap into the diverse value streams of NBS to structure products that can match with the needs and demands of various market actors, as well as by society more broadly (Jensen et al., 2021; Cohen, et al, 2016; Shaltegger and Wagner, 2011). Some of the benefits will take the shape of positive spillovers emanating through knowledge transfers or demonstration effects that raise environmental awareness or create quality consciousness among the customer base (Rodgers, 2010; Bocken and Short, 2016). The ability to package or leverage diverse value streams from NBS, making them attainable partly as commercial and partly as public goods, varies between NBE. The character of the NBS they relate to, along with the motivations of their owners and the business model they apply, can make a big difference. Partly reflecting such factors, the rise and success of NBE may show up as commercial revenues and corporate profits, as social benefits, or as a combination of the two.

Ample studies have demonstrated the influence of entrepreneurs on the corporate orientation and performances of businesses (Hansen and Klewitz, 2012). The direction of effort, including innovation, is impacted by the personal characteristics and expectations of company owners and managers (Williams and Schaefer, 2013). In pursuing a development-oriented agenda, meanwhile, businesses may transform not just their own operations but also the markets they operate in (Loorbach et al., 2010; Loorbach and Wijsman, 2013). Considering variation in the driving forces, we distinguish by essentially three main types of influences by owner features. In the first, the traditional model, owners are viewed as addressing sustainability considerations while carrying out convention profit maximisation (Garrod and Chadwick, 1996; Dillon and Baram, 1993). The second model

views NBE as strongly motivated by fulfilling social objectives (Laville, 2014). A third model views a combination of the two as the key to success (Freeman et al., 2007; Gupta, 2011).

Along with in-depth consideration of the role played by the motivations of the founders, Andersson et al. (2023) identification and characterisation best practice NBE in the frontrunner cities on the basis of several criteria. These included the most marketable and bankable, target groups and ambitions, business model development, challenges with regard to environmental, social and solidarity economy aspects, and finally aspects influencing their replicability and scalability. Related considerations featuring in the literature cover technologies, business models, value chains, organisational models, regulations, the institutional context, user practices, and lifestyles (Rip and Kemp, 1998).

2.2 Challenges and enablers

The realisation of NBS is known to meet with major barriers, including financial and institutional (Mayor et al., 2021). The actual funding mobilised for NBS to date is vastly dominated by public sources, with only 3% of all NBS projects receiving more than 50% funding from the private sector (European Investment Bank, 2023).

Despite the appearance of various mechanisms for channelling private funds to projects that support sustainable development, including NBS, a host of issues remain. Green start-ups specifically suffer from low access to adequate finance, including to realise green tech innovation (Demirel and Parris, 2015; Bergset and Fichter, 2015).

The dearth of private funding reflects a range of factors. Weaknesses in competency among private financiers to evaluate NBS projects translate into high transaction costs, due to the complications of carrying out due diligence, and difficulties to evaluate perceived risks. Competences may also be lacking on the part of project managers – for instance when it comes to investment literacy, i.e., how to structure and communicate information on terms that meet with investor requirements. Additionally, projects may be associated with downsides and risks that confront private investors with unmanageable conditions. These may emanate from the lack of mechanisms for project owners to reap return from their operations, or their unwillingness/inability to do so. A lack of stable and reliable policy conditions may simply make projects unbankable. In such cases, various studies have demonstrated that a spurt in relevant public investment can make a difference by signaling a change in government policy (Lerner, 2011), as can happen also through supportive regulation and legislation (Toole and Turvey, 2009).

Not only the competences of investors and their perception of risk matter, but so do their time horizon and mindset what represents a viable business and financing model. The issue at hand is maintained by different actor categories. Business schools and venture capital funds tend to place focus squarely on short-term growth and shareholder returns. Public administrations may assume a narrow, sectoral perspective (Egusquiza et al, 2019; Ershad Sarabi et al., 2019). “A combination of entrenched vested interests mingles with organisational culture in underpinning path dependency, putting up resistance to

experimentation and inviting novel competencies capable of evaluating alternative financing approaches" (Mayor et al., 2021).

Changes in corporate objectives have been visible for some time (Krishnamoorthy, 2021), however. This is exemplified by a gradually upgraded role for Corporate Social Responsibility (CSR) in many firms (Greenwood, 2007). More recently, a combination of increasingly demanding EU requirements, from the Green Deal onward, along with a common sharpening of industry standards, are subjecting both banks and firms to much more demanding reporting requirements, including actual plans how to cut emissions and deliver on commitments to achieve carbon neutrality or support biodiversity. The most widespread counterforce to entrenched financial practices is that of Environment-Society-Governance (ESG) certification.

Over a fairly short period, a major share of the world's financial and corporate sectors have opted to bring ESG on board, reportedly due to a combination of internal and external pressures (Callahan et al., 2021). The impacts are widely debated, and quite controversial. Several studies have found ESG compliance to open for a significant reduction in the cost of capital, referred to as the "greenium" effect. Although opinions differ in this regard, and some studies point to the presence of costs and negative effects as well, improved access to capital has been vindicated for both debt and equity (Larcker and Watts, 2020). Meanwhile, financial brokers regularly charge higher fees and multiple investors and also trading parties limit their transaction to ESG-compliant parties. Meanwhile, other instruments in support of green finance have arisen as well, including orderly frameworks for issuing and trading in "green bonds".

Despite apparent progress, major issues remain, notably when it comes to linking sustainability funding with actual impacts. While extensive reporting sets out plans for action as well as describe means for delivery on commitments, concerns with so-called Greenwashing have rapidly come to the forefront. It is as if much of the reporting and certification activity focuses on making firms look good – becoming a means of marketing coupled with access to finance and supply chains coupled with refuge from criticism, while operating in a context where adequate means for verification and validation are simply lacking (Font and McCabe, 2017). Attempted remedies, such as the EU taxonomy legislation, is struggling in coming up with counterforces, and has itself been accused of Greenwashing (Möllers, 2022).

In regard to the funding of green projects, achieving a diversity of options is key. Studying green roofs, Calheiros and Stefanakis (2021), observed that successful implementation was dependent on the presence of several facilitators. They call for parallel efforts to further identify and remove barriers, devise supportive policies, sharpen financial sector incentives, build awareness, and disseminate information. Meanwhile, according to the EIB (2023): "Instead of a one-size-fits-all instrument for nature-based solutions, successful case studies show that tailored structures, combining different funding, financing and revenue streams for various operations, are the most effective strategy."

While often playing second fiddle in traditional industry and enterprise policy, business success ultimately hinges on ability to thrive from interface with customer demand.

Demand-led policy has gradually arisen as one of the most potent, if not yet fully understood, vehicles for stimulating business development. Public procurement represents the mainstream and most direct vehicle to stimulate business from the demand-side, but there are plenty of other opportunities as well. In the context of green products, critical contributions to sustainability emanate from replacing industrial, or "grey", production methods with eco-friendly ones. How customers perceive of value the replacement is another matter. In the case of eco-food, for instance, providers of "green" products commonly struggle to convince customers that no pesticides or antibiotics have been used, or that they let livestock spend time outdoors, etc. Well devised industry or product standards, subjected to serious accountability checks, may add crucial credibility. Activation and collaboration with NGOs and consumer groups may offer ways forward in this area, representing an alternative to government policy. Market actors as well as authorities and representatives of civil society on a mission to strengthen conditions for NBE have good reason to consider collaborative schemes that can help support novel, innovative avenues to increase credibility and trust.

2.3 Replicability and Scalability

The concepts of replicability and scalability are akin to those of diffusion and emulation. In reality, activities are generally not copied straight off when applied in another context or when they are to grow to fit a larger costume, but elements of innovation and adjustment tend to enter the scene as greatly important for such processes to turn out successful.

Replicability and scalability are related concepts that both reflect the presence of an inherent quality making an activity prone to expansion and further development in one way or another. Replication refers to the case when an existing model or activity can be emulated and re-applied, possibly with some adjustment, in another context. Replication may be undertaken by the same organisation, or another one may step in and pursue replication and also run the replicated activity. By contrast, scaling rather refers to embarking on a process where a certain activity can be expanded and improved through innovation or other value-enhancing mechanisms. Scaling thus denotes a more extensive undertaking, referring not just to expansion but also to improvement and upgrading in order to target new customers, present revised product offers, add-on services, etc.

In addition to factors at work within an organisation, or with respect to a particular product considered for replication and scaling, social frameworks, demand, and the acceptance by citizens of new solutions, are of high importance. A number of studies have examined processes through which new ideas or solutions spread and gain gradual acceptance within a population, or jump from one group to another. Basic principles for much of this work were laid out by Rogers (1962), who observed varying features of adoption along different stages of a diffusion process. Those hooking on at the outset he characterised as "early adopters", more ready than others to embrace new ideas while not already proven and vindicated by the many. This group may also have a natural interest in or need of the new solution under way. Those who require more evidence and/or have something to lose, perhaps as they are invested in status quo, will take longer time. Once a sufficient number

has shifted to the new practice, however, the old one will become obsolete, perhaps by triggering a removal of supportive infrastructure, or by just putting it out of fashion.

Various factors influence the direction and speed of diffusion. Influential members of a network, whether formal leaders or informally respected opinion leaders, map step forward as facilitators or "champions". Transdisciplinary of merely "soft" skills and an open, constructive mindset help overcoming suspicion. If a new solution is to transpass borders and gain accepted in another domain, successful mediation may be critical to align interests and realise synergies with incumbent actors. Absent success in such respects, perceived conflicts of interest are likely to arise, resulting in delays or that transfers will be blocked altogether (Bradley et al., 2004).

When transfers are to occur from one context to another, as in the case of different cities, the handling of needs for modification, or customization, become greatly important. Successful adaptation supports faster and more effective uptake, but many also water down usefulness. Generally, adding supplemental components is less likely to dilute effectiveness than modification, which may involve alteration or the total loss of core components (Blakely et al., 1987). It has been observed that success in process adaptation is likely to depend on the presence of explicit codified information rather than tacit knowledge (Edmondson et al., 2003). Resources for training, time to learn and apply a new solution, may help overcome the issues.

In modern society, exchange of experience and learning increasingly occurs through informal processes embodied in social relations and interactions (Macia and García, 2016). Their orientation matters for what interactivity takes shape (Conrad and Poole, 1998; and Dainton and Zelley, 2005). Whether a particular network or society is open to ideas from elsewhere depends on several factors. One has to do with the presence of influential agents, or "ambassadors", for new ideas (Young, 2013). Those are individuals with a stature and credibility in standing up for virtues arriving from elsewhere. Another sort of role is played by so-called "facilitators", exercising a low-key supportive role in making new solutions understandable and acceptable. Ambassadors and facilitators may assume their roles on an informal basis, or due to formal responsibilities. Effectiveness will at any rate depend on a combination of organisational mandates, for instance in the capacity of a city administrator or urban planner, and personal traits. Communication and social skills are coming into focus, as well as the openness to connect with and inform various other specific relevant groups of actors and competencies of opportunities at hand. The actors of relevance in a particular case may operate from within, or be part of "another" community.

Of high relevance here, processes of replication and scaling of NBO, including NBE, are associated with features that differ from what applies to commercial entities generally. These have to do with their role in drawing on the value streams inherent to NBS to realising a blend of commercial outputs and spillovers adding to the public goods aspects. The nature of these interactions opens special opportunities for cities to identify and remove costly barriers, or in other ways help tackling outstanding economic, social, and environmental challenges. They may also link effectively to cities' evolving strategies solidified under headings of "green cities", "eco-cities", or "sustainable cities". Another relevant label is that of "the circular economy", of high relevance for mature industry as

well as NBE, although role for sustainability and also industrial performance remain challenging (Korhonen et al, 2018). It is nevertheless envisaged as potentially important for decoupling growth and environmental degradation (Wijkman et al., 2020).

The introduction of NBS is increasingly recognised as a means of addressing a wide range of issues in cities and communities. URBiNAT has taken another step by placing focus on the combination of NBS with Healthy Corridors, tailored to addressing challenges related to compartmentalisation, polarisation, and exclusion. Where actors can come together to jointly consider the breath of opportunities at hand, we hypothesise that more arguments and vehicles may be at hand to gain acceptance and for diverse actors to come together for constructive considerations and actions in support of replication and scaling.

Learning processes are of high importance for realising both. Success in bridging between one context and another is likely to require verification that enabling conditions are in place, whether hindering factors are absent or can be overcome, and that complementary competencies coupled with joint interests in replicating or upscaling operations are in place. Not just factual conditions matter here, but also whether it is possible to establish interfaces with constructive actor categories, thereby lowering the complexity, costs and risks involved. Parameters by way of environmental, social, and economic impacts matter greatly too, including by offering valuable add-on benefits to complement the scope for organisational or commercial benefits.

3. Methodology

3.1 Best practices, replication, and scaling

Methodology for identifying best practice and drawing lessons for their transferability has been around since at least the 1990s. Extending from earlier benchmarking and peer review approaches, the characterisation and identification of best practices arose as a means to counter the previously common notion that an optimal level of investment or resource use could help guide free markets. Due to feed-back loops between interacting policies and corporate behaviours, observations of “best practice” performances offer a snapshot that is valid at a particular point in time. Through processes involving interfaces with other firms and organisations, all engaged in information uptake, learning, and further improvement, leadership may pass to followers who then overtake the lead, only to later lose it to others, without ever facing any absolute boundaries what is possible (OECD, 1998).

Established socio-technical systems, similar to large organisations, generally feature gradual, incremental change rather than undergo radical transformation (Dosi, 1982; Frantzeskaki et al., 2012). The degree to which the best practice approach can help open for transformational change, largely depend on the strength of the diffusion mechanisms. While allowing for exposure to lessons derived through the experience of others, the key challenge centres on making sense of what works another context.

In the present report, the focus is on best practice NBE transfer from one city, or one city context, to another. While such transfers occur in the marketplace, here we engage in a distinct kind of intervention, not government-orchestrated but flowing from the context of the regional collaboration framework induced the EU Horizon NBS Research and Innovation projects. Indeed, the undertaking here strongly centres on the establishment of communication channels, a consultative process the outcome of it is strongly influence by what actors become involved. Several potential actor categories are on the list - the enterprise community, NGOs, citizens, policymakers, and so forth.

Figure 1: Matrix mapping NBE against NBS, URBiNAT frontrunner cities

Categories of Nature-Based Enterprise

URBiNAT Frontrunner Cities	Technological NBE	Territorial NBE	Participatory NBE	Social & Solidarity Economy NBE
Nantes	Moneko	Phytolab	Cocotte Solidaire	Solilab
Porto	Noocity Urban Ecology	Good Food Hubs	Cidade+	Reboot
Sofia	Shit and Blossoms	Mr Green Walls	Food, not Bombs	Bread House Network

Source: Andersson et al. (2023)

The task at hand has been devised so as to allow for adaptation and specialisation, a tailoring of the processes to the conditions that apply in the specific case. At the same time, lessons are aimed for that apply not just to individual NBE and specific cities, but which are appliable in a wider context. Examples of such lessons may have to do with the realisation what conditions represent costly barriers, and how they can be dismantled. They may also have to do with the observations what represent opportunities at hand, e.g.., to instigate valuable co-creation and stakeholder involvement, or stimulate demand through public procurement, awareness creation, or facilitating the formation of CoI.

In the previous work leading up to this report, NBE were mapped across URBiNAT's frontrunner cities, followed by a systematic evaluation and ranking with the objective of arriving at a select set of NBE considered "best practice". Particular attention was devoted to ventures set up in the special study areas of each city, but the search was extended more broadly. The main criteria applied centred on the viability of their business models linked to marketability, bankability, and sustainable business growth, along with their potential for replication and scaling within a wider geographical context, stretching beyond their present respective domains. The final list arrived at is incorporated in Figure 1, which maps

each case across the front-runner cities as well as the prime NBS they relate to. See Appendix 2 for additional observations on individual NBE and related organisations connected with relevant CoI.

Thus, while the previous work resulted in a pool of best practice NBE originating in URBiNAT's frontrunner cities (Sofia, Porto and Nantes), the task taking central stage here is that of communicating the possibilities they offer and examine the scope for replicability and scaling. We particularly aim to arrive at conclusions regarding scalability and replicability in the follower cities (Brussels, Høje-Taastrup, Nova Gorica, Siena, and Khorramabad), although we will also bear in mind and come back to lessons of more generic viability.

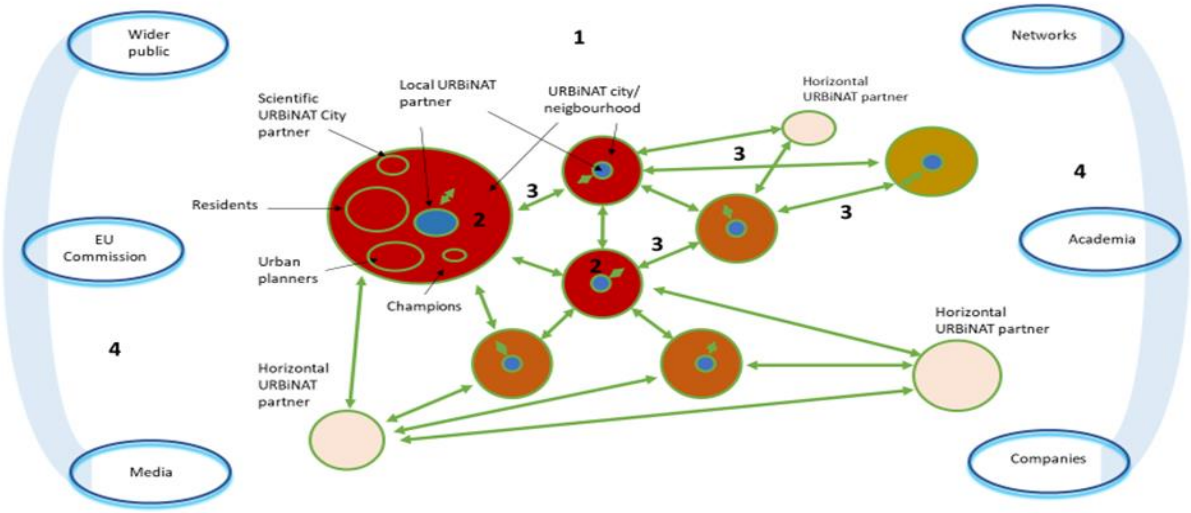
3.2 CoP activation

URBiNAT's Community of Practice (CoP) utilises various methods and practices conducive to sharing of experience and joint learning. Beyond that, it aims to support results "on the ground", within as well as beyond the project itself.

As elaborated in Andersson et al. (2020), the CoP is structured around 4 layers, or circles of interaction, all of which are depicted, and numbered, in Figure 2. They refer to respectively:

- *Level/Circle* 1: The consortium members, taking part as partners or observers;
- *Level/Circle* 2: Inside URBiNAT cities, mobilisation and engagement of relevant actors;
- *Level/Circle* 3: Between the cities, and;
- *Level/Circle* 4: The wider world, sister projects, academic society, other cities, international organisations, and so forth.

Figure 2: Main actors at integrated CoP Level



Source: Andersson et al. (2020)

In the present context, the consortium partners in the first circle have been driving the process of identifying, examining, and structuring a pool of best practice NBE in the frontrunner cities. The present work has advanced to devise and then test the most productive ways of presenting these cases to the follower cities. In doing so the entry point remains the city representatives and their scientific partners at the first level of the CoP. Serious progress requires, however, to advance the exchanges from there so as to achieve the best possible connection to the second level, not in terms of number of actors but so that those that are most relevant and likely to discern prospective opportunities through replication and scaling, are reaching and becoming active in the exchange. Building on from there, the aim is to test the scope for inspiration and learning in the second circle, with focus on the follower cities, drawing on the identified NBE cases in the frontrunner cities (level 3). The lessons learned aim for relevance in the wider context of the 4th circle too.

It has been an open question from the start which actor categories within the 2nd circle will account for the most productive dynamic. Naturally, it is not a question of just which ones become involved, and in what numbers, but which ones, and how. The importance of opening for the involvement of business, along with citizens and others, needs to be underlined. This applies to existing NBE in each follower city, but also to other businesses which may discern opportunities from establishing linkages in a capacity of customers, suppliers, financiers, or partners in various respects. On the other hand, it needs to be borne in mind that some businesses may prove sceptical, or even outright adversely positioned, due to competition. Citizens, local communities, and stakeholders may discern spill overs from the know-how or services offered, possibly linked to potential benefits of NBS that can be realised through the NBE activities. The various potential value categories should not be approached in a piecemeal fashion. Realising the possibilities at hand may hinge on constructive interactions between several actors. Suitable venues, such as relevant living labs (Dignum et al., 2020), may hold the key to enabling local actors to come together and forge the kinds of synergies required for realising opportunities at hand.

3.3 Mobilising Communities of Interest (CoI)

Communities of Interest (CoI) represent important manifestations of social processes entailing learning, capacity building and the build-up of qualified demand in areas where citizens and organisations share joint interests. Such CoI represent a potent driving force for public engagement, meriting attention by both politicians and enterprises. They are of high relevance to NBE which tend to strongly depend on the formation of positive expectations and a willingness by consumers to pay a premium for eco-friendly products, whose production typically requires greater effort and costs than ordinary products.

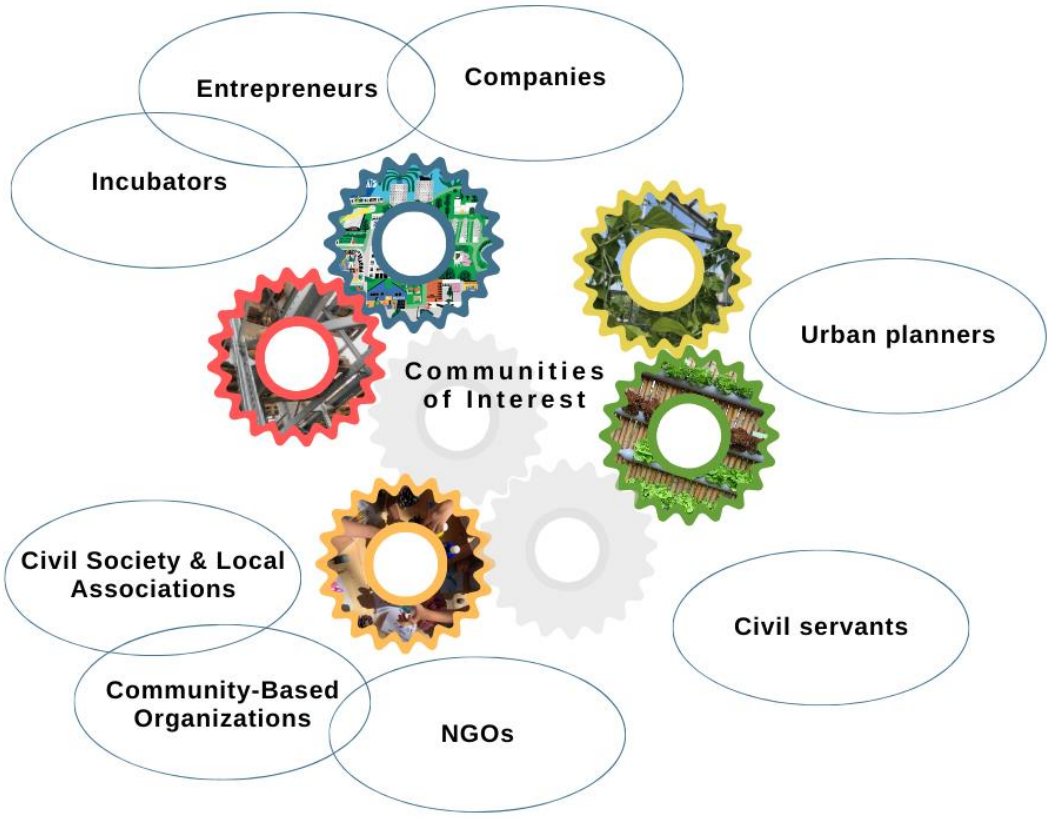
CoI in a sense take the shape of networks comprising of citizens, which are also linked to enterprises and other bodies, due to the sharing of a particular interest. That interest translates into more or less intensive exchanges or joint activities. Related to that, there is the possibility of readiness for welcoming and engaging new initiatives in that particular field. In the presence of adequate supportive mechanisms, reflected in Section 2.3, this may translate into aggregate demand and relate to facilitation of replication and scaling. While CoI have previously been observed in relation to particular knowledge fields, goods, and

services, in this report they are introduced as part of an organic process of proven relevance with reference to the best practice NBE under consideration.

Through CoI, various kinds of demand and complementary interests may come together. This is shown by the stylised illustration of the CoI stakeholder system displayed in Figure 3. In here, the prime actor categories are grouped together. Precisely how will vary across various CoI, symbolised by the gear wheels.

Apart from the actors "on the ground", important functions are fulfilled by city planners and civil servants, not least with regard to coordination and the identification of indirect, second- or third-order effects. They assume special roles in picking up on and calling attention to the prevalence of unproductive hurdles or bottlenecks, e.g., in regard to infrastructure and institutional fabric, that may hinder realising the benefits of NBS and NBE more generally, possibly as a consequence of exchanges set in motion by the process of considering the best practice NBE. Outcomes by way of observed measures being taken to remove constraints and realise opportunities with reference to the wider CoI stakeholder ecosystem in each follower city are of high interest.

Figure 3: CoI Ecosystems



Source: ITEMS and IKED (2023)

3.4 Consultations and Workshops

The project team initially engaged in consultations with the consortium as a whole, and also invited all to a workshop in Nova Gorica (in March 2023), on how to arrange with follower cities interfaces. In this way, all parties were invited to provide insights on how best to present best practice NBE in a way that is effective and relevant for the local context. This was followed by deliberations undertaken individually with representatives of each follower city. Subsequently, workshops were prepared on the topic "Nature-based solutions and business cases for replication and scaling". While all follower cities were invited to arrange such workshops, with diverse participation bringing together relevant competences, stakeholders, and citizens - off-line or on-line - the ensuing process played out quite differently across the follower cities.

In the initial exchanges, raising interest resulting in a diverse representation of competence and actors, proved difficult. Observations of what enabled progress in communication and networking, however, generated valuable lessons for devising workshops in support of a gradual build-up of exchanges and substantive presentations. In the early stages, limited direct feedback on the pool of best practice NBE could be collected. The key source of progress in that stage rather had to do with the ability to inspire a broader reasoning within each follower city, on what conditions were most promising, including which actors may take a direct interest in specific NBE presented. In effect, this resulted in a focus on identifying constructive dynamics around CoI. As we will come back to, through this process, five such CoI materialised across the follower cities.

In the end, full-fledged on-line workshops with broad-based participation ended up being hosted by Nova Gorica and Khorramabad. The latter featured additionally a hybrid format, with some participants taking part on-line. Following that event, Khorramabad additionally arranged with an even more ambitious physical follow-up event, to further advance and deliver on the outcomes. In other cities too, initial consultations and group discussions were followed up locally in ways that were deemed suitable in each city. In this sense, the overall process of interactions assumed a hybrid format applying to each city case. In the case of Høje Taastrup and Siena, a sequence of on-line exchanges was organised notably with representatives of relevant CoI. In Brussels, finally, turnover within the responsible city administration and other practical issues prevented the establishment of an effective sounding board capable of effective reach among local communities.

Each follower city, representatives were asked to invite approx. 10 entrepreneurs, companies, urban planners and/or other organisations working with green solutions, to participate in an online workshop on NBS and their connected "market potential" for engagement of entrepreneurs and NBE. Prior to the workshop a word document and a PPT file with information about the NBE identified in the frontrunner cities was sent to the workshop organisers or participants.

The workshops were facilitated by representatives notably from IKED, and at times by those of other project partners. At the start of the process, participants were welcomed followed by a round of introductions. Attention was devoted to the special characteristics

of NBO/NBE, including the specific best practice cases under consideration. The introductory phase awarded roughly equal weight to all 4 included from each city - Porto, Nantes and Sofia - thus 12 in total. This was followed by time set aside for observations by participants along with questions and further deliberations. The processes and results are reported and examined in the ensuing session.

4. Results

4.1 Context in the follower cities

The screening process and consultations with the follower cities called attention to a number of factors of relevance to the viability of various NBE, including the relevance of our best practice cases. Among them, the study areas of the follower cities already displayed functional NBE of various kinds, some of which were of relevance when considering replicability and scalability. The relevance could work out both negatively and positively, in the sense that the space for additional entities would already be taken up, so that the entry of another NBE would risk causing troublesome competition. Where the orientation of existing NBE and the best practice offers are mostly complementary, the existence of the former may pave the way for the latter, and hold promises of benefits for both. It may also be that the best practice consideration could open for partnerships, or simply inspire additional activity or policy adjustments conducive to the upgrading and furthering of the existing operation.

The scope and nature for matching opportunities have been seen to be influenced by follower city characteristics in other ways too. Where there is a high awareness of a distinct and particular need for solutions, a NBE that can be seen as engaged in what could represent a clear-cut contribution to filling the gap, an interest specifically in replication may arise. Where there is less of a direct match, but opportunities for value-enhancing adaptation can be discerned, scaling moves into focus.

Characteristics that pertain to the specific best practice NBE matter too. Selected information is found as well in Appendices 1 and 2 of this report. The previous work examining the pool under consideration, found that the motivation and orientation of the entrepreneurs and enterprise leaders that stand behind them, vary significantly. A few appear close to traditional business, other have hybrid objectives, while some apply a markedly social orientation (Andersson et al., 2023). The maturity of the entities at hand, which influences the scope for evaluating traction and performances, as well as key business models and financial solution, are other factors of high importance. Finally, the willingness and ability of the NBE representatives to communicate and connect with potential partners in consultations and joint actions leading to replication and scaling, need to find its counterparts in specific contexts of a particular follower environment.

Beside the properties of the various NBE, a consideration that has gradually been concluded of high importance, is whether a matching societal fabric can be found in the

follower cities. The prevalence of a vibrant Community of Interest can be greatly helpful, as already elaborated above. While the precise influence will vary from case to case, it appears that functional, relevant CoI facilitate for the city administration to arrange with relevant local representation in the consultative process. This includes local NBE, as well as stakeholders that are better informed and more interested while also capable of adopting a qualified stance on what a particular best practice NBE stands to offer.

4.2 Workshop results

In each follower city, an organising team was engaged in planning the format for local engagement, including workshops. Proposed working material to be shared in the process was exchanged and agreed. They produced written invitation letters, generally in English but where needed in the local language, distributed to local bodies where required.

Each city was recommended to welcome participation from the municipality, NBE and other NBO, individual start-ups with a particular interest in NBS, so called “green incubators”, local communities, NGOs, and other relevant actors. In terms of content, all communication aimed to put priority on:

- Careful explanations and clear communication on the opportunities offered by the best practice NBE at hand, avoidance of misunderstandings and facilitation of the follower city representatives coping with requirements for replication and scaling.
- An inclusive format and messaging signalling flexibility and openness to connecting with various actor categories.

The consultation process aimed to support each follower city’s move from initial consideration of the full set of options to gradually narrow in on advancement of selected choices. The sequence of consultations ranging from interviews/bilateral meetings to the arrangement of workshops was timed and finetuned on this basis.

While taking account of some variation at what stage of the process a particular workshop took place, most were structured so as to allow maximum attention to the coverage of four main themes, or categories of questions, namely:

1. What are the possibilities for replicability and scalability of the presented NBE in URBiNAT’s follower cities?
2. What experiences do URBiNAT’s follower cities have when it comes to NBE? Existing interesting cases or best practices?
3. How can, and should, NBE be supported to achieve success?
4. What policies, processes and initiatives are needed to support NBE (e.g., regarding procurement, collaboration, platforms)?

Consider here particular features, and also some issues and lessons learned, associated with the three most properly prepared workshops:

Workshop 1: *Nova Gorica (on-site)*

- Broad-based and constructive participation by multiple stakeholder categories, including different municipality services, NBE and also the business sector more generally, entrepreneurs, and a well-placed incubator representative.
- Active and constructive engagement by representatives of Urban Gardening CoI.
- A renewable energy solution provider showcasing a novel solution for citizen participation which facilities broad-based acceptance of unconventional entry points for replication and scaling.
- <u>Lessons learned regard aspects of the set-up that can be improved:</u>
- Invited NBE from Nova Gorica took too much time presenting themselves in general terms.
- NBE from frontrunner cities were constructive and inviting, although they devoted too much time to presenting themselves in general and made too little effort to inspire the audience for replication and scaling.
- In a few cases, language-issues may have diminished the scope for connecting with front runner city representatives, but this did not appear a major factor.
- During the Q&A session, the scope for interactivity was diminished by distractive comments unrelated to the purpose, made by some participants.

Workshop 2: *Nova Gorica follow-up (on-line)*

- Identified priority NBE were presented in greater detail.
- This opened for focused coverage and identification of key factors supporting or diminishing the scope for replicability and scalability.
- Valuable exchanges and potential outcomes arose on the themes targeted procurement by the municipality, the case of awareness sessions to raise demand for NBS value streams and the scope of innovation and NBE development.
- Action-oriented constructive proposals were forward on the formation of a business association for NBE, offering support, advocacy, and collaborative avenues for members.

Workshop *3: Khorramabad (hybrid)*

- The local partners had engaged in productive preparations and arranged with broad-based invitation to relevant local parties.
- Following presentation of frontrunner NBE, constructive ensuing discussions placed the focus on opportunities for local adaptation in support of effective replication and scaling. This landed in the following concrete proposals: i) Establishing collaboration with the local entrepreneurship centre for the purpose of strengthening general understanding about NBS and associated opportunities for NBO; ii) arrangement by URBiNAT of a workshop for start-up enterprises on marketable NBS.
- Specific interests expressed in opportunities arising from value-generating links between NBS on the one hand, and culture, arts, music, and handicraft on the other hand.
- Concrete interest was expressed at the workshop by a local organisation in taking active part in partnering with the Sofia-based NBE Shit & Blossoms to work out avenues notably for replication in Khorramabad.

- Lessons learned regarding success factors:
- The hybrid format arranged by the Khorramabad hosts turned out to be highly effective, constructive, and engaging. The participants on-site were mingled and given the opportunity to continue with post-workshop discussions and activities.

The results of the workshops were subsequently followed up on by smaller groups, then with focus on the further prioritised NBE, selected as most suitable in each case, achieving interface with the most relevant local audiences and actor categories.

4.3 Mapping and structuring CoI

Across all five follower cities, some CoI were identified already in the local diagnostic carried out in URBiNAT's early work. Some have played a role in subsequent stages, as in the formation and operations of living labs. In the present activity, their active engagement arose organically. As city representatives considered the features of each best practice NBE presented to them, their reflection on issues and opportunities swiftly touched upon whether a fruitful matching ecosystem could be identified, particularly in the study areas at the heart of the project.

Where a fruitful match between a particular best practice NBE and a resourceful, dynamic Community of Interest came to the forefront, arguments in favour of replication and/or scaling tended to be received more favourably. Their active engagement typically meant that more diverse actors came forward with constructive observations on a range of aspects, such as, relevance for local needs, angles to the activity viewed as particularly innovative and valuable in the local context, opportunities for adaptation, relevant complementary actors, or other useful observations on initiatives that could support realising replication or scaling in the local environment. There was also a positive impetus, as the early reflection stage gave room to subsequent rounds of consultations, on the degree to which one or several serious local entry points had been achieved.

The identification of at least one particular Community of Interest, forming some sort of matching with a best practice NBE, occurred across all the follower cities (in the case of Brussels, as part of the technical visits). In the present case, the 12 NBE cases featured an association with all four of URBiNAT's NBS categories, basically with one NBE from each category in each city. The follower city dialogue ended up crystallising the prevalence of five relevant CoI categories, which additionally are partly interlinked as illustrated in Figure 4. Probably reflecting that each city considered the same set of best practice NBE, there was a high degree of similarity in the CoI representation that materialised across all five.

In brief, the reasons for the relevance of each CoI category is as follows:

i) Food (green): Of high relevance to several categories of NBS. Relevance relates to the way it is introduced. Citizens source food locally and engage in cooking food together and the co-creation activities generate a raised awareness about nature and nutrition. Participation in food networks, such as the one created by Good Food Hubs, an NBE in Porto that started as a project in June 2021. Apart from creating a food network, the

mission of Good Food Hubs is to facilitate meeting moments and pop-up spaces with healthy, sustainable, and locally produced food at the very centre. At the core of the NBE is moreover to connect producers and consumers of biological vegetables and good food as well as a digital platform to stimulate direct transactions and facilitate logistics. The project also aims to prevent food waste.

Due to the growing disruptions to global food systems, ensuring the availability of locally produced quality food, based on a systems approach that is sustainable and secure, is increasingly viewed as essential (Enthoven and Van den Broek, 2021). This does not necessarily translate, however, into a healthy growth environment for NBE in the food sector. This is partly due to the common continued strong presence of cheap, processed alternatives whose association with damaging environmental and social side-effects keeps going "under the radar". In order for CoI to arise as a factor underpinning positive user experiences, synergies between various social activities and broader networks matter greatly. A sufficient user demand drawing on awareness and willingness to pay for quality is strongly inter-related with the scope for the rise of specialised, economically viable NBE capable of thriving on a wave of clients transform from passive recipients of mass-produced standard products to conscious consumers and active participants playing their part in shaping the food system.

The best practice NBE identified in the frontrunner cities have shown that adding value through replication or scaling, services offered by NBE operating in this specific Community of Interest have to address different sub-systems of the food system (Where is my food coming from? What about water and energy usage to grow food? How is soil important for food? What about waste management? How to prepare fresh and healthy meals? …), while at the same time supporting the community aspect.

Figure 4: Prevalence of five relevant CoI

Source: ITEMS and IKED (2023)

ii) Urban Farming (yellow): Urban Farming has great potential when it comes to reconnecting urban citizens with nature. This is in focus for the Porto based for-profit company Noocity. Noocity's products and services for domestic and small-scale farming and agriculture, including self-watering vegetable boxes sold to companies and private households along with educational services and team building exercises, are already sought after in urban areas around Europe. As such, Noocity has shown great potential, applying as well to "Les mains dans la Terre" and allotment gardening activities in Nantes. All follower cities have tangible activities linked to active such CoI. Examples are citizens' vegetable boxes in Høje Taastrup and Brussels, horticulture gardening in Siena, and fruit trees plantations in Nova Gorica.

iii) Culture (orange): Festivals and events that gather people around art, music and other cultural expressions can be an important driving force for social transformation and impacting collective behaviour towards more sustainable ways of living. Cidade Mais in Porto is a good example of this, which moreover holds warm-up events in Campanha, the study area in Porto. The annual festival is free, and open to all. While arranged in the centre of Porto, so-called "warm-up events" are arranged in different areas of the city prior to the festival, to market the festival, raise curiosity and interest, and attract a wide spectrum of attendees. As activities of culture and connecting festivals are very common elements in urban areas the importance here is to embed sustainable practices and generate increased awareness as well as interest in NBS.

iv) Repair and Reuse (blue): CoI within "Repair & Resource Management" (R&R) are typically dynamic and innovative, featuring a strong presence of enterprises dedicated to the repair and recycling of materials. These tend to actively promote circular economy principles, innovate, and adopt solutions to reduce waste while also extending the lifespan of products through repair, refurbishment, and creative repurposing. ReBoot in Porto offers an excellent example, harnessing great capabilities to stimulate the repair business, including by training citizens in repair practices, boosting shared infrastructures, and reducing poverty through its computer recycling programme and repair club.

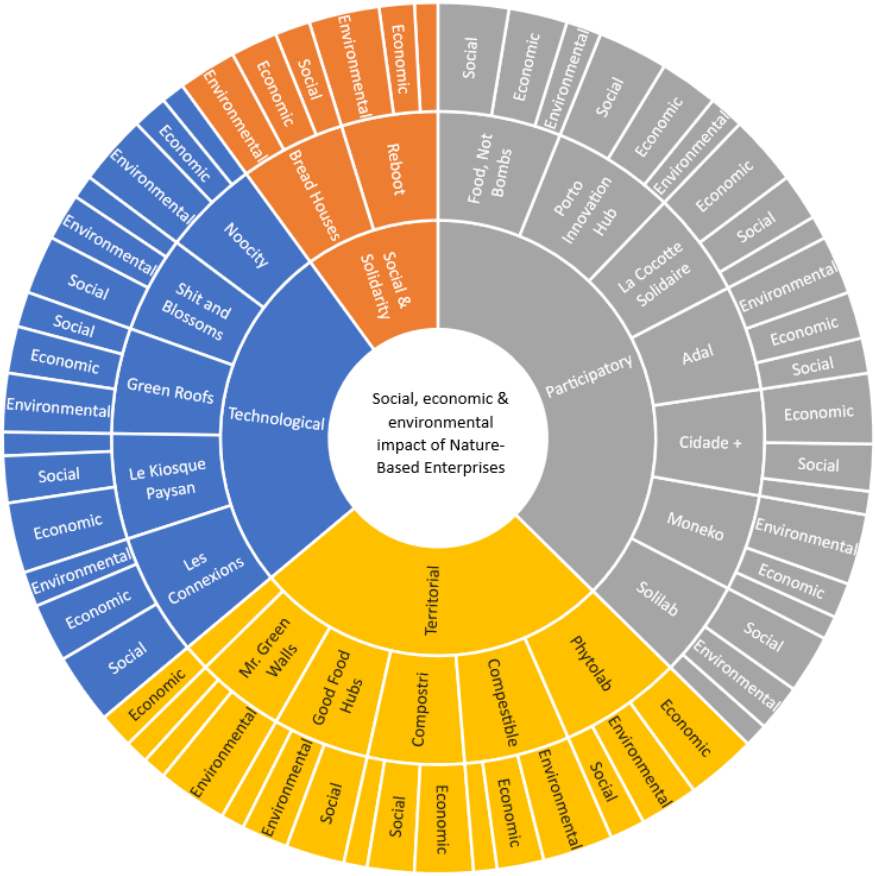
A distinguishing feature of CoI in this category has to do with high dependency on community participation, with citizens actively engaged in repair based on a strong sense of ownership and empowerment. Drawing on such active involvement by locals, these enterprises contribute to efficient resource use while also strengthening social cohesion and promoting a culture of sustainable consumption. Through their

collaborative efforts, the “Repair & Reuse” URBiNAT CoI exemplify a forward-thinking approach towards creating resilient and resource-efficient cities.

v) Start-Up communities (red):

Another Community of Interest that came to the forefront in several follower city, connects to the strive to engage in activities of enterprise generation and social innovation. The study areas in the URBiNAT cities are characterised by a combination of limited local employment opportunities and relatively low employability among its citizens, with a bearing on the need for entrepreneurship and start-up activities. NBS and their marketability potential have inspired several of the neighbourhoods to explore openings for broadened venture creation as well as opportunities for social innovation projects. In the frontrunner cities examples or start-up communities, incubators, and related activities such as the Solilab in Nantes have generated a strong interest in the follower cities to exchange ideas and experiences. For example, in Khorramabad a new training institute for entrepreneurs has developed and the incubation centre in Nova Gorica has plans to make special sessions for start-up activities connected to NBS. In Høje Taastrup the municipality has supported an incubation activity with focus on circular economy and the interest for NBS is gradually growing.

Figure 5: Overview NBS categories, best practice NBE and CoI



Source: URBiNAT (2022)

Before proceeding to reporting the matching results, a few observations are merited on how to interpret the results. Why a particular match appeared for a particular NBE in one city, while not for another NBE, or in another city, is difficult to point at with certainty. Broadly speaking, however, the factual presence of a substantive match represents the fundamental prerequisite, at least that has to be expected if the interface is to prove successful over time. Whether such a match was then translated into an actual connect is another matter. On that point, various influences clearly enter the process, including personal connections, communication skills, and the culture prevalent in the cities. The factual match may be viewed as a necessary condition, presenting the NBE and the CoI with a potential opportunity, but it is not sufficient. These other add-on elements need to come into play as well.

Conversely, the presence of a certain match does not preclude that other more important such matches could potentially have arisen for other cases. As is illustrated by Figure 5, many potential links may exist between specific NBS, NBE and CoI – spotting and evaluating all will be hard under any circumstances. The quality of a city's internal network and communication culture will influence the quality of CoI – NBE matching.

We will return below to the specific influences and role of CoI in the specific cases, as well as to the lessons for the process of identifying opportunities for replication and scaling.

4.4 Identified opportunities for replication and scaling

In the four cases where consultations and workshops went forward in an orderly fashion, concrete progress was achieved both when it comes to formulating preferences among the specific NBE cases, and in regard to strengthened insights and interest among diverse actors to improve conditions for NBE via CoI, business sector relations, specific initiatives to boost the demand for NBS services.

Through the interfaces with the follower cities, the pool of NBE best practices was subjected to scrutiny and valuations by a quire wide range of diverse actors. The resulting observations and responses have led to a tentative identification of the most promising cases for replication or scaling in each city. In the one case where adequate consultations could not be pursued by way of workshops, two technical visits were undertaken by the responsible team, based on which as extensive networking activity as possible was undertaken. In that city too, connections were made by CoI, allowing for corresponding observations and conclusions, although based on a less systematic process in that case.

Keeping the caveats in mind, on this basis we arrived at a total of six (6) NBE which we could reckon have entered a stage of serious consideration for replication or scaling. The cases are divided by way of two (2) NBE in the category of replication, while (4) NBE are rather relevant for scaling. The cities referred to, the case of NBS, CoI involved, as well as other pertinent aspects, are noted below for each case.

It should be underlined, however, that the results arrived at thus far represent interpretations that are neither absolute nor final. Individual actors may have judged the

outcome differently. Above all, more time will be required for continued interactions and concrete testing before eventual concrete outcomes can be demonstrated.

For these reasons, due to the early stage of the process and the inevitably high variation in approach across the follower cities, no attempt has been made to aggregate, or weigh, the priorities or ranking that emerged in each city. Rather, the NBE cases coming out in front were simply the ones receiving at least one set of responses deemed to constitute a tangible opening for either replication or scaling, meaning that those NBE have got the closest to being in a situation where an actual collaborative process can be embarked upon with serious partners in at least one of the follower cities.

While the factors underpinning replicability and scalability display similarities, opportunities for replication were distinctly identified in the case of Cidade Mais, applying to Nova Gorica, and also for Moneko where both Nova Gorica and Khorramabad have initiated considerations of possible replication. In both cases, the follower response was embedded in the most relevant Community of Interest, shaped around culture in Nova Gorica whereas the Start-up CoI in Nova Gorica and Khorramabad respectively assumed that role for Moneko. Other context-specific factors played a role as well, such as a challenging external environment underpinning a need and a readiness in both cities to identify facilitators for leveraging local competences and solutions.

By contrast, scaling rather refers to embarking on a process whereby a certain activity is expanded, improved, and innovated around. The NBE that brings the solution would be expected to be directly evolved. In the present context, scaling has particularly taken the shape of a “twinning” model. Success has arisen where the opportunity for a matching interest and effort with an organisation in a follower city. Four distinct opportunities have materialised, each relating to a CoI. In effect, four of the five categories of CoI identified were part of a successful matching. The attitude and readiness of the representatives of NBE played a strong role, serving as a prerequisite for advancement in these cases.

For an overview how the overall pool of best practice NBE matches with CoI, Figure 6 colours each case where that appeared, using the colour of the respective Community of Interest. The format is the same as that of Figure 1, with the frontrunner origin on the vertical axis, and NBS categories horizontally. As can be seen, most best practice NBE could be associated with CoI. Mr. Green Walls and Food Not bombs were the two exceptions in this regard, not viewed as meeting up with any such match. This may have weakened chances for their replicability or scaling; at least such facilitating fabric did not appear in their case.

Of the 12 cases, 3 were associated with the food cluster, one from each frontrunner. The same applies to Urban farming. Only one NBE, Cidade Mais fits the culture CoI. One case, Reboot, fits squarely with R&R, while two, Moneko and Solilab, has been seen to match with entrepreneurship CoI.

From another angle, urban Farming was most closely related to technological NBS, although one case - Phytolab - rather relates to territorial NBS. The cultural NBE relates

squarely to participatory NBS. The two NBS related to the start-up CoI were divided between technological and social & solidarity NBS, while R&R linked to the latter.

Those cases that are in the lead for replicability have been marked by a black circle in Figure 6, while those drawn for scaling are blue marked. Interestingly, we have a concentration of both kinds of cases on the right-hand side. The three best practice cases associated with Social & Solidarity NBS, and two of those associated with Participatory NBS, have gone through to the present case. The third case in the Participatory category did not meet with any matching Community of Interest. By contrast, only one of the cases associated with Technical or Territorial NBS have been identified as ripe for replicability or scaling that far.

The six selected lead cases are summed up in Table 1, here with some additional core metrics included. NBE from each frontrunner are included, all three from Nantes and one from Porto and Sofia each. All follower cities are linked to at least one case, with two each for Nova Gorica and Khorramabad, the two sides which arranged with the most elaborated and structured consultation processes. The NBS categories and CoI have already been commented on. In regard to business models, the lead cases were predominantly hybrid, i.e., neither pure commercial nor purely social business models came out on top, except one in the former category, namely Reboot. As for maturity, cases from all categories came through, although higher maturity did better on the whole. Moneko was deemed as the only case as having low maturity.

As for any distinctions between cases selected for replication versus scaling, only the Start-up Community of Interest category was associated with both kinds. Food and R&R CoI were prone to scaling, while Culture CoI was picked up for replicability.

Figure 6: Matrix classifying best practice NBE against NBS categories and CoI

Frontrunner Cities /NBS category CoI	Technological	Territorial	Participatory	Social & Solidarity
Nantes	Moneko	Phytolab	Cocotte Solidaire	Solilab
Porto	Noocity UrbanEcology	Good Food Hubs	Cidade Mais	Reboot
Sofia	Shit and Blossoms	Mr Green Walls	Food, not Bombs	Bread House

Colour code CoI	Food	Urb. Farming	Culture	Rep. & Re-use	Start-ups

Table 1: Results and NBE characteristics

Selected NBE		Frontrunner base	NBS	CoI	Business model	Maturity	Follower choice
Replicability							
i)	Moneko	Nantes	Tech	Start-up	Hybrid	Low	Khorr N G
ii)	Cidade Mais	Porto	Part	Cult	Hybrid	High	N G
Scaling							
iii)	Bread House	Sofia	S & S	Food	Hybrid	High	Siena
iv)	Cocotte Solidaire	Nantes	Part	Food	Hybrid	Moderate	Brussels
v)	Solilab	Nantes	S & S	Start-up	Hybrid	High	Khorr
vI	Reboot	Porto	S &S	R & R	Traditional	Moderate	H T

Figure 7: Matrix mapping NBE prioritised by follower cities against CoI

Follower Cities/CoI	Food	Urb Farm	Culture	Rep & Reuse	Start-ups
Siena	Cocotte Solidaire (P)	Noocity (Te)		Reboot (S)	
Nova Gorica	Bread House (S)	Phytolab (Tr) Noocity (Te)			Moneko(Te)
Hoje T	Good Food Hubs (Tr)	Phytolab (Tr)	Cidade Mais (P)	Reboot (S)	Solilab (S)
Brussels	Bread House (S) Cocotte Sol. (P)	Noocity (Te)	Cidade Mais (P)		
Khorra-mabad	Good Food Hubs (Tr)	Shit & Blossoms (Te)	Cidade Mais (P)		Solilab (S) Moneko (Te)

Replacing the frontrunners with the follower cities on the vertical axis, the outcome of the selection process in each is depicted in Figure 7. Here the CoI categories are shown on the horizontal axis, meaning that the choices of each follower are mapped against them. As can

be seen, each follower selected cases that relate to different CoI. All favoured a case relating to Food, with all three cases in that category of CoI represented by at least one city. The same applied to Urban farming. Three cities favoured a case that related to the Cultural Community of Interest, namely Høje Taastrup, Brussels, and Khorramabad. R&R cases were favourably received only in Siena and Høje Taastrup. Three cities, Nova Gorica, Høje Taastrup and Khorramabad, responded favourably to cases related to start-ups.

As noted, the observations and conclusions presented which NBE received some sort of appreciate feedback, translating into indication of interest for replicability and scaling. This will have to be followed up and further verified through continued exchange involving the respective NBE. The indications received thus far are nevertheless examined further below. This applies to Brussels as well, although the less comprehensive consultations state of feedback should be kept in mind.

4.5 Impetus and lessons

It is too early to judge which of the best practice NBE cases considered in this report will proceed the whole way to actual replication and scaling in the follower cities. Having said that, certain impacts have already materialised from the consultative process, including the advancement of six specific cases to a situation in which favourable opportunities are under consideration.

Some of the progress achieved is closely related to the activation of a Community of Interest, with a bearing on both the breadth and depth of the communication activity achieved. Beyond the CoI, city representatives and other stakeholders have engaged in reflections on outstanding local issues and gaps, and how those could be amended through complementary initiatives. The latter kind of response is visible in Nova Gorica, Khorramabad, and Hoje Tastrup, which all face issues regarding the scope for entrepreneurial initiatives and innovation.

Where positive links and connectedness were visibly established either directly with a Community of Interest, or with stakeholders or administrators familiar with its members and activities, the attitudes and action of the city representation in regard to a particular NBE appeared to receive a positive boost. This is hardly surprising, as a constructive CoI opens for a networking fabric that will facilitate receiving informed responses on the ground. In the absence of CoI, or other similar mechanisms, administrators may face fewer and less manageable avenues to judge the way forward for specific NBE, reflecting that their operations and capabilities are quite specific and hard to evaluate from a theoretical or general viewpoint. The lack of sufficient awareness or knowledge by official city representatives of an existing suitable intra-city local community and social fabric in this regard, may conversely serve as a drag on working up constructive inter-city channels in support of NBE replication and scaling.

The overly positive nature of the consultative processes observed in the cases under consideration in this report, indicates a markedly greater scope for collaboration among and around NBE, than what could be expected in a similar exercise devoted to enterprise

development in general. This likely reflects the special character of the NBE story, as one that mixes enterprise development with the fuelling of public goods, an improved local development and enhanced wellbeing. In the present case, it appears that positive dynamics were equally boosted by genuine expectations of favourable outcomes of the consultations and information exchange put in motion.

Awareness in the follower cities of existing gaps in innovation and enterprise development around NBS, coincided with high appreciation of opportunities for working out solutions. The material and consultative processes prepared, along with the features and presentations of the best practice NBE on offer, have thus far been able to sustain positive expectations in this regard. For instance, in the specific case of CoI for food, present in all the follower cities, the best practice cases presented were perceived as offering a match with local interests, showing up in positive dynamics across the board. It naturally remains to be seen what continued progress can be achieved in demonstrating and realising true potential in potential for realising such value-streams through cases of replication and scaling going the whole way.

5. Conclusions and recommendations

Drawing on the pool of best practice cases of Nature-based Enterprises (NBE), identified across URBiNAT's frontrunner cities in previous work, covering but not limited to their special study areas, the present report has ventured into opportunities for replication and scaling in the follower cities. Beyond observations and conclusions of outcomes for the specific NBE under consideration, the undertaking has been devised and examined with a view to arriving at conclusions and recommendations of more general validity.

The exercise at hand represents an unconventional sort of intervention, here pursued not under the aegis of policymakers as such, but by the research and innovation consortium behind URBiNAT. By activating the project's Community of Practice (CoP), various actor categories being part of - and engaged in - urban development, have been engaged applying a collaborative and inclusive format. Here, the focus has been on the combined activation of inter-city and intra-city communication and learning, for the immediate purpose of breeding replication and scaling of selected best practice NBE. This, in turn, aims to realize the associated opportunities for innovation, commercialisation, and also further articulated public goods aspects that can be brought about by these NBE and their association with NBS.

As a caveat, it should be noted, many NBO in the follower cities, whether NBE or more informal operations, do not label themselves as organisations drawing on NBS. Commonly, NBO characterise themselves as "sustainability companies", "eco-enterprises" or green organisations. This implies that the definition of NBS may not be widely understood, or presently represent a terminology without practical use for NBO/NBE. Such lack of familiarity may be rooted in other factors as well, including prevailing perceptions what enterprise development is about, where synergies between nature and society, or between environmental considerations and business, still aren't broadly recognised. This is then

likely to have a bearing on corporate culture, including whether there is openness to business experience from elsewhere, or rather a preference to rely on home-grown practices.

Having said that, many NBO express a strong interest in exploring the concept of NBS and how their revenue streams can be approached as a source of viable business. In future work it will be important to follow up on that point, and also explore how administrators perceive the NBS-NBE-CoI nexus, among others. This may help define avenues for continued experimentation and learning.

In the present case, a consultative process was staged and embarked on to enable and facilitate orderly considerations of opportunities offered through replication and scaling of each of the selected best practice NBE. This has, in the end, come down to the question of what can be achieved by this sort of intervention - opening for the engagement of the full spectrum of actors -among local authorities/city government, citizens, and stakeholders – in bringing about a match between best practice NBE and local counterparts in each follower city to work together in realising untapped opportunities from replication and scaling.

As lessons appeared gradually during the course of the consultative process, the team and also the cities were in the position to make adjustments along the way. Particularly useful was the experience of the initial workshops, from limitations both when it came to what actors were invited or actually showed up at the workshops, and in regard to what contributions were made by those who attended. On that basis, the matchmaking process became markedly more effective where cities were able to organise subsequent workshops, or follow-up consultations, more focused on key priorities and the actors of highest relevance in each case.

<u>Take-aways in regard to the specific best practice NBE and the follower cities</u>

- The output thus far has demonstrated the value of a structured process featuring inclusive, creative dialogue, centring on practical issues, to help inform and guide policy initiatives and enterprise/community/market action.

- As for the actual results, cases of best practice picked up on appear to benefit from cities having a presence of similar activities.

- It appears advantageous when both sides, the NBE and local actors, observe a seed, an opening, for realising some sort of marginal improvement, a service or product presently lacking, if proceeding with a collaborative effort in support of replication of scaling.

- This can be interpreted as a presence of potential mutually value-enhancing synergies between the two sides. Indications suggest that continued progression may hinge on growing momentum and mutual agreement on coordinated adjustment to fulfil “low hanging fruit”/untapped opportunities in this regard.

- Related revised offerings to the customer base, possibly directed to enlarged or more differentiated target groups, may hold the key to enhanced quality products, customer reach and citizen satisfaction, as well as revenue growth and profitability.

- Insights were gained by the cities on what specific initiatives could be pursued to support NBE. Examples include instituting a circular economy incubator in Høje-Taastrup as well as Khorramabad Entrepreneurship School, both inspired by Solilab in Nantes.

More general take-aways:

- While only tentative results are at hand by this time, the findings to date indicate high validity and expectations of tangible benefits from embarking on the kind of exercise at hand.

- In the present case, similarities and differences between cities' local context, with implications for the matching of best practice NBE from frontrunner cities with actors and communities in the follower cities, were fairly well known from the start, based on the local diagnostics carried out in previous work. Where such studies and existing knowledge is not in place, adequate preparations need to be pursued before actual efforts to pursue consultations and match-making begin.

- Other observations pertain to success factors for the consultation process, how various features of NBE and the NBS categories they relate to have a bearing on the scope for various kinds of benefits, and also the way that the recipient environment, including specific local communities and networks, influence what can be achieved.

- Overall, the consultative processes deployed appear to have resonated with constructive attitudes towards identifying opportunities for matching linked to replication and scaling.

- The cases that have indeed been picked up on, connect with a clearly identified need at the recipient end, and are well-matched by a fruitful local community context.

- The best practice NBE meeting with the strongest responses further tend to associate with NBS that have markedly participatory and social features.

- These observations suggest that the context for NBE, where innovation and the marketability and performance of enterprises is interwoven with public goods aspects, frames high potential for community-engagement to lend favourable support to the transfer of best practices.

- Deprived city areas meet with challenges, and often reflect greater distance to policy- makers and influential stakeholders, as well as the presence of relatively few existing companies and nature-based organisations/enterprises. Special efforts are

needed to build an understanding of what is required for transferring, or drawing lessons from, best practice, in ways that are of relevance in that context.

Rationale for the intervention

An important question from an economic as well as a policy perspective has to do with the scope for beneficial outcomes that appear from the "interventionist" – rather than purely market based - approach, adopted and examined in the present report.

As discussed in the report, the mainstream efforts by mainstream financial and corporate actors with regard to sustainability has shifted from traditional CSR to sustainability reporting and certification schemes, such as ESG. Stakes are high for companies to communicate their practices with the aim to create a positive impression amongst their stakeholders (Branislav and Zivković, 2012). Verification and validation of impacts are weakly present, however, and economic and environmental considerations out of sync for much of industry. By undermining public trust, greenwashing weakens the case for industry as a whole to pursue serious investment in sustainability, while facilitating for those responsible for mismanagement to continue unabated (Font and McCabe, 2017). Active measures are required to highlight, spur and reward corporate behaviours in favour of sustainability. Serious evaluation and identification of best practice NBE, and the promotion of their replication and scaling through mutually rewarding interfaces with prospective partner organisations in other domains, carry a strong rationale by shifting focus back to real impact.

A key aspect of the present intervention comes down to the enabling and facilitation of a consultative processes focusing on replicability and scalability of NBE. It is worth noting, in the case of squarely commercial undertakings, replication and scaling would occur as a natural consequence of market interactions. The decision of individual firms to approach such openings, as well as the response of others to partner or not partner in such undertakings, may require limited policy interest. For NBE, which are connected to NBS and a context of inherent difficulties to realise and optimise multiple potential values flows, there is a high prevalence of entrepreneurs and business leaders who pay serious attention to social and environmental impacts, beyond commercial success in a narrow sense. Policymakers as well as citizens and stakeholders similarly engage based on a broader spectrum of the benefits than merely economic returns.

While we set out with such observations in mind, the exercises that have been carried out along with the analysis of the present report, point to the very strong impact of social networking and the broader spectrum of diverse value streams in shaping opportunities for learning and potentially replicating and scaling best practice, that applies in this case. This in turn points to the presence of great scope for benefits that have not been much observed or reflected on in the literature, or in policy circles. The benefits that appear plausible would not arise from pure market interactions, neither would they become attainable from mainstream corporate reporting on sustainability. Rather, we have demonstrated succinct promises emanating from a well prepared, inclusive consultative process, where opportunities can be tested on the ground, diminishing the scope for

misleading by counterparts or market actors. While the results are preliminary, what we have found merits attention and further evaluation in future research as well as stakeholder engagement and policy work.

Main message in short:

Given that the report takes stock of what has been achieved only in an early stage of the process, concluding on the final results goes beyond its scope. Based on the observations and indications thus far, however, the greatest advances towards replication and scaling appeared for NBE drawing on participatory and social & solidarity NBS. The opening for setting off, or inspiring, a consultative process among local authorities/city government, citizens, and also relevant communities, networks and stakeholders. Beside concrete openings for identifying value-enhancing matching between best practice NBE and local communities or entities, opportunities arise in the process for complementary initiatives offering added value in various ways. Depending on the local context and issues at stake, nurturing chances for the replication and scaling of NBE may eventually come down to framing a context that thrive on shared value, collaboration, blended finance models, co-creation and co-governance. Therein lies important lessons and guidance for future interventionist policies or other initiatives in support of replication and scaling of best practice NBE.

References

Andersson, I., Andersson, T., and Björner, E. (2020). On the Establishment of URBiNAT's Community of Practice (COP), IKED, Malmö.

Andersson, I., Björner, E., and Prisca Ohler, L. (2023). Business cases for the most marketable and bankable NBS solutions in URBiNAT frontrunner cities, IKED, Malmö.

Andersson, T. (2023). "Revamping Investment for Regenerating Nature", Multistakeholder Forum Report, Davos, January 18, 2013, IKED, Malmö.

Andersson, T. and Cardinali, M. (2023). "Impetus and Policy Implications: Nature-based Solutions (NBS), Human Health, and Wellbeing", presented at the 7th WHO and UNEP Ministerial Conference on Environment and Health, July 6th, Budapest.

Bergset, L. and Fichter, K. (2015). "Green start-ups–a new typology for sustainable entrepreneurship and innovation research", *Journal of Innovation Management* 3(3), pp. 118–44.

Blakely, C.H., Mayer, J.P., Gottschalk, R.G., Schmitt, N., Davidson, W.S., Roitman. D.B., et al. (1987). "The fidelity-adaptation debate: Implications for the implementation of public sector social programs", *American Journal of Community Psychology* 15, pp. 253–68.

Bocken, N.M.P. and S.W. Short (2016). "Towards a sufficiency-driven business model: Experiences and opportunities", *Environmental Innovation and Societal Transitions* 18, pp. 41-61.

Bradley, E.H., Webster, T.R., Baker, D., Schlesinger, M., Inouye, S.K., Barth M.C., et al. (2004). Translating research into practice: Speeding the adoption of innovative health care programs, Issue brief, The Commonwealth Fund, Washington, DC.

Branislav, R., Ilic, M., and Zivković, Z. (2012). Green Marketing and Sustainable Development - Experiences from Republic of Serbia. *Journal of Economic Development, Environment and People* 1(3), pp. 74–87.

Calheiros, C. and Stefanakis, A. (2021). "Green Roofs Towards Circular and Resilient Cities", *Circular Economy and Sustainability* 1, pp. 395-411 https://doi.org/10.1007/s43615-021-00033-0.

Callahan, M., J., Larcker, D.F., and Tayan, B. (2021). "The General Counsel View of ESG Risk," *Stanford Closer Look Series*, September 14.

Cohen-Shacham, E., Walters, G., Janzen, C., Maginnis, S. (2016). *Nature-Based Solutions to Address Global Societal Challenges*, IUCN, Gland.

Conrad, C. and Poole, M. S. (1998). *Strategic organizational communication into the twenty-first century* (4th ed.), Harcourt Brace College, New York.

Dainton, M. and Zelley, E. D. (2005). *Applying communication theory for professional life: A practical introduction,* Thousand Oaks: Sage publications.

Davies, C. and Lafortezza, R. (2019). "Transitional path to the adoption of nature-based solutions", *Land Use Policy* 80, pp. 406–09.

Dean, T.J. and McMullen, J.S. (2007). "Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action". *J. Bus. Ventur.* (*22)*, pp. 50–76.

Demirel, P. and Parris, S. (2015). "Access to finance for innovators in the uk's environmental sector", *Technology Analysis & Strategic Management* 27(7), pp. 782–808.

Dignum, M., Dorst, H., van Schie, M., Dassen, T., and Raven, R. (2020). "Nurturing nature: Exploring socio-spatial conditions for urban experimentation", *Environmental Innovation and Societal Transitions* 34, pp. 7–25.

Dillon, P. and Baram, M.S. (1993). 'Forces shaping the development of product stewardship in the private sector', in K. Fisher and J. Schot (eds), *Environmental Strategies for Industry: International Perspectives on Research Needs and Policy Implications*, Washington, DC: Island Press, pp. 329–42.

Dosi, G. (1982). "Technological paradigms and technological trajectories: a suggested interpretation of the determinants and directions of technical change, *Research Policy* (6), pp. 147-6.

Edmondson, A.C., Winslow, A.B., Bohmer, R.M., and Pisano G.P. (2003). "Learning how and learning what: Effects of tacit and codified knowledge on performance improvement following technology adoption", *Decision Sciences,* 34, pp. 197–223.

Egusquiza, A., Cortese, M., and Perfido, D. (2019). "Mapping of Innovative Governance Models to Overcome Barriers for Nature Based Urban Regeneration", *IOP Conf. Ser. Earth Environ. Sci*, (*323)*, 012081.

Elands, B.H.M., Vierikko, K., Andersson, E., Fischer, L.K., Goncalves, P., Haase, D., Kowarik, I., Luz, A.C. et al. (2019). "Biocultural diversity: A novel concept to assess human-nature interrelations, nature conservation and stewardship in cities", *Urban Forestry and Urban Greening* 40, pp. 29–34.

Enthoven, L. and Van den Broeck (2021). "Local food systems: Reviewing two decades of research", *Agricultural Systems 193,* //doi.org/10.1016/j.agsy.2021.103226.

Ershad Sarabi, S., Han, Q., Romme, A.G.L., de Vries, B. and Wendling, L. (2019). "Key Enablers of and Barriers to the Uptake and Implementation of Nature-Based Solutions in Urban Settings: A Review", *Resources (8)*, 121.

European Investment Bank, EIB (2023). *Investing in nature-based solutions: State-of-play and way forward for public and private financial measures in Europe*, Luxembourg.

Fischer, L.K., Honold, J., Cvejic, R., Delshammar, T., Hilbert, S., Lafortezza, R., Nastran, M., Nielsen, A.B., et al. (2018). “Beyond green:Broad support for biodiversity in multicultural European cities”, *Global Environmental Change* 49, pp. 35–45.

Font, X. and McCabe, S. (2017). “Sustainability and marketing in tourism: Its contexts, paradoxes, approaches, challenges and potential“, *Journal of sustainable tourism 25*(7), pp. 869-83.

Garrod, B. and Chadwick, P. (1996). “Environmental management and business strategy: Towards a new strategic paradigm”, *Futures* 28(1), February, pp 37-50.

Gast, J., Gundolf, K. and Cesinger, B. (2017). “Doing business in a green way: A systematic review of the ecological sustainability entrepreneurship literature and future research directions”, *J. Clean. Prod.* (*147)*, pp. 44–56.

Gliedt, T. and Parker, P. (2007). “Green community entrepreneurship: Creative destruction in the social economy”, *Int. J. Soc. Econ.* (*34)*, pp 538–53.

Greenwood, M. (2007). “Stakeholder engagement: Beyond the myth of corporate responsibility”, *Journal of Business Ethics 74*(4), pp. 315–27.

Gupta, A. K. (2011). “The relational perspective and east meets west: A commentary”, *Academy of Management Perspectives 25*(3), pp. 19–27.

Hall, J.K., Daneke, G.A. and Lenox, M.J. (2010). “Sustainable development and entrepreneurship: Past contributions and future directions”, *J. Bus. Ventur*. (*25)*, pp. 439–48.

Hansen, E.G. and Klewitz, J. (2012). ”Publicly mediated inter-organizational networks: a solution for sustainability-oriented innovation”, in M. Wagner (ed.), *SMEs, in Entrepreneurship, innovation and sustainability*, Greenleaf, Sheffield.

Harrison, J. S. and Wicks, A. C. (2019).”Harmful stakeholder strategies”, *Journal of Business Ethics*, pp. 1–15.

Hartig T., Mitchell R., de Vries, S., and Frumkin, H. (2014). “Nature and health”, *Annu Rev Public Health* 35, pp. 207-28. doi: 10.1146/annurev-publhealth-032013-182443

Hoshino, T. and Kuriyama, K. (2010). “Measuring the benefits of neighbourhood park amenities: Application and comparison of spatial hedonic approaches“, *Environmental and Resource Economics* 45(3), pp. 429-44.

Irwin, E.G. (2002). The Effects of Open Space on Residential Property Values”, *Land Econ* 78, pp. 465-80.

IUCN (2020). *Guidance for Using the IUCN Global Standard for Nature-Based Solutions: A User-Friendly Framework for the Verification, Design and Scaling Up of NbS*, Gland.

Jan der Jagt, A.P.N., Raven, R., Dorst, H., and Runhaar, H. (2020). “Nature-based innovation systems”, Environmental Innovation and Societal Transitions 35, pp. 202–16.

Jensen, A. and López Gunn, Elena (2021). “State of the Art and Latest Advances in Exploring Business Models for Nature-Based Solutions”, *Sustainability* (*13),* 7413.

Kabisch, N., Strohbach, M., Haase, D. and Kronenberg, J. (2016). “Urban green space availability in European cities”, *Ecological Indicators* 70, pp. 586–96.

Kooijman, E. D., McQuaid, S., Rhodes, M. L., Collier, M. J., and Pilla, F. (2021). “Innovating with nature: From nature-based solutions to nature-based enterprises”, *Sustainability 13*(3), 1263.

Korhonen, J., Honkasalo, A. and Seppälä, J. (2018). “Circular Economy: The Concept and its Limitations”, *Ecological Economics* 143, pp. 37-46.

Krishnamoorthy, R. (2021). “Environmental, Social, and Governance (ESG) Investing: Doing Good to Do Well”, *Open Journal of Social Sciences* 9, pp. 189-97.

Larcker, D. F., Tayan, B., and Watts, E. (2021). “Seven Myths of ESG“, Rock Center for Corporate Governance at Stanford University Working Paper Forthcoming, Available at SSRN: https://ssrn.com/abstract=3956044

Laville, J.-L. (2014). “The social and solidarity economy: A theoretical and plural framework”, In Defourny, J., Hulgård, L. and Pestoff, V. (eds.), *Social enterprise and the third sector: Changing European landscapes in a comparative perspective* Routledge, London, pp. 102-13

Lerner, J. (2011). “Venture capital and innovation in energy“, in: *Accelerating Energy Innovation: Insights from Multiple Sectors*, pp. 225–60. University of Chicago Press, Chicago.

Lewin, A. Y. and Volberda, H. W. (1999), “Prolegomena on Co-evolution: a Framework for Research on Strategy and New Organizational Forms”, *Organization Science* (10), pp. 519-34.

Loorbach, D., van Bakel, J. C., Whiteman, G., and Rotmans, J. (2010). ”Business strategies for transitions towards sustainable systems”, *Business Strategy and the Environment* 19(2) pp. 133-46.

Loorbach, D., and Wijsman, K. (2013). “Business transition management: exploring a new role for business in sustainability transitions”, *Journal of Cleaner Production* 45, April, pp. 20-2.

Lungman, T., Cirach, M., Marando, F., et al. (2023). “Cooling cities through urban green infrastructure: a health impact assessment of European cities”, *Lancet* 401, pp. 577-89.

Lyon, T. P. and Montgomery, A. W. (2015). “The Means and End of Greenwash, *Organization & Environment*“, *28*(2), pp. 223-49.

Macia, M., and García, I. (2016). “Informal online communities and networks as a source of teacher professional development: A review”, *Teaching and Teacher Education Journal, 55,* pp. 291–307.

Manisalidis, I., Stavropoulou, E., Stavropoulos, A., and Bezirtzoglou, E. (2020). “Environmental and Health Impacts of Air Pollution: A Review”, *Front Public Health* 8(14), February.

Mayor, B., Toxopeus, H., McQuaid, S., Croci, E., Lucchitta, B., Reddy, S.E., Egusquiza, A., Altamirano, M.A., Trumbic, T., Tuerk, A., García, G. Feliu, E. Malandrino, C., Schante, J. (2021). “State of the Art and Latest Advances in Exploring Business Models for Nature-Based Solutions”, *Sustainability* 13, 7413. https:// doi.org/10.3390/su13137413

McQuaid, S., Kooijman, E., Rizzi, D., Andersson, T., and Schanté, J. (2022). *The Vital Role of Nature-Based Solutions in a Nature-Positive Economy*, Independent Expert Report, Network Nature.

Moosavi, S., Browne, G.R., and Bush, J. (2021). “Perceptions of nature-based solutions for urban water challenges: Insights from Australian researchers and practitioners", *Urban Forestry and Urban Greening* 57.

Möllers, T. J. (2022). “European Green Deal: Greenwashing and the Forgotten Good Corporate Citizen as an Investor”, Columbia Centre of European Studies, European Legal Studies Center Columbia University School of Law 28(2).

Nonaka., I., and Takeuchi, H. (1995). *The Knowledge Creating Company*, Oxford University Press, New York.

OECD (1998). *Technology, Productivity and Job Creation: Best Policy Practices 1998 Edition*, The OECD Jobs Strategy, OECD Publishing, Paris, https://doi.org/10.1787/9789264163416-en.

Rip, A. and Kemp, R. (1998). “Technological change.” In Rayner, S. and Malone, E. (eds.), *Human Choices and Climate Change*, Battelle, Columbus.

Rodgers, C. (2010). ”Sustainable entrepreneurship in SMEs: a case study analysis”, *Corporate Social Responsibility and Environmental Management* 17(3), pp. 125-32.

Rogers, E. M. (1962). *Diffusion of innovations*, Free Press, New York.

Schaltegger, S. and Wagner, M. (2011). “Sustainable entrepreneurship and sustainability innovation: Categories and interactions”, *Bus. Strategy Environ. 20*, pp. 222–37.

Schaltegger, S. (2002). “A framework for ecopreneurship: Leading bioneers and environmental managers to ecopreneurship”, *Greener Manag. Int.* (*38)*, pp. 45–58.

Soga, M., and K.J. Gaston (2020). “The ecology of human–nature interactions, Proceedings of the Royal Society B”, *Biological Sciences* 287.

Teece, D. (2007). “Explicating Dynamic Capabilities: the Nature and Microfoundations of (Sustainable) Enterprise Performance”, S*trategic Management Journal* (28), pp. 1319-50.

Toole, A. A. and Turvey, C. (2009). “How does initial public financing influence private incentives for follow-on investment in early-stage technologies? “, *The Journal of Technology Transfer*, 34(1), pp. 43–58.

URBiNAT (2022). Milestone 7: Market Potential of NBS and Structuring the Impact of Nature-based Enterprises, https://urbinat.eu/milestone-7-market-potential-of-nbs/

Van de Ven, A., Polley, D., Garud, S., and Venkataraman, S. (1999). *The Innovation Journey*, Oxford University Press, New York.

Vernon, R. (1966). The Product-Life Cycle, Harvard University Press, Cambridge.

West, S., L.J. Haider, S. Stålhammar, and S. Woroniecki (2020). “A relational turn for sustainability science? Relational thinking, leverage points and transformations”, *Ecosystems and People* 16, pp. 304–25.

Wijkman, A., Osdoba, T., an Heineman, S. (2020). *Circular Economy in Cities Requires a Systems Approach*, OECD, Paris.

Williams, S. and Schaefer, A. (2013). “Small and medium-sized enterprises and sustainability: Managers' values and engagement with environmental and climate change issues”, *Business Strategy and the Environment* 22(3), pp. 173-86.

Young, C. (2013). “Community management that works: How to build and sustain a thriving online health community”, *Journal of Medical Internet Research,* 15(6), p. e115.

Appendix 1:

NBE interviewed in Porto, Nantes, and Sofia, with basic information included

Name of NBE	Type of NBE	Type of NBS	Theme	Interview
Porto				
Noocity Urban Ecology	For-profit SME	Technological	Food, plants	2022-04-05
Good Food Hubs	Project	Territorial	Sustainable food	2022-04-04
Reboot	Project	Social and solidarity economy	Repair club	2022-04-04
Cidade Mais	Non-for profit	Participatory	Festival	2022-04-05
Green Roofs Association	NGO	Technological	Green infrastructure, green roofs	2022-04-05
Porto Innovation Hub	Municipal organisation	Participatory	Innovation	2022-04-05
Futuro project	Municipal	Participatory/ Territorial	Trees	2022-04-05
Nantes				
Adal	Non-for profit	Participatory	Health	2022-04-06
Le Kiosque Paysan	For profit SME	Technological	Food & logistics	2022-04-06
La Cocotte Solidaire	Hybrid model	Participatory	Food	2022-04-06
Compestible	Non-for profit	Territorial	Farming	2022-04-06
Phytolab	For profit SME	Territorial	Landscaping	2022-04-06

Moneko	Non-for profit	Participatory	Local currency	2022-04-07
Compostri	For profit SME	Territorial	Landscaping	2022-04-07
Le Solilab	Non-for profit	Participatory	Incubator	2022-04-07
Les Connexions	Non-for profit	Participatory & technological	Circular economy	2022-04-07
Sofia*				
Shit and Blossoms	For-profit SME	Technological	Compost toilet	2019-03-19
Mr. Green Walls	For-profit SME	Territorial	Vertical gardens	2019-03-06
Food, not Bombs	Voluntary based initiative	Participatory	Food education and supply for people in need	2019-06-26
Bread House Network	Non-for profit	Social and Solidarity Economy	Community bread making for homeless people	2019-06-20

*In total, 24 NBE were interviewed in Sofia, full list not included here

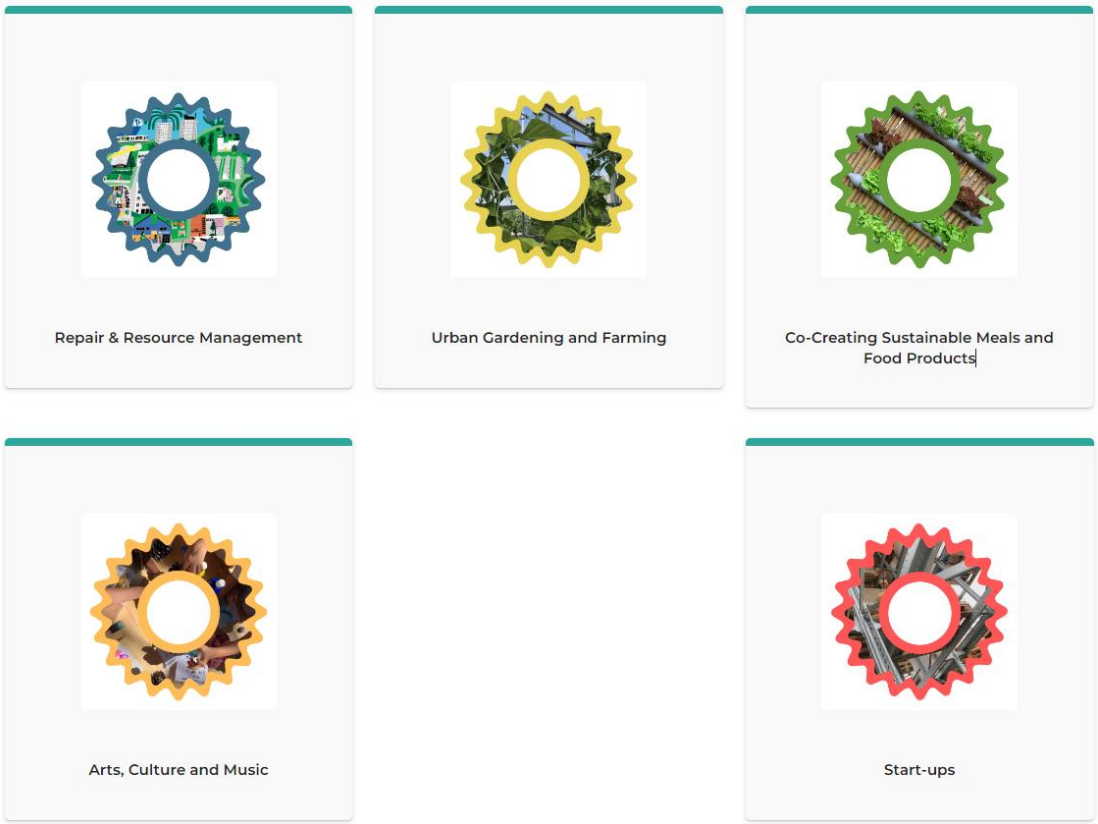
Appendix 2:

The five Communities of Interest (CoI) identified in the present report are formed with connections to NBE operating within URBiNAT cities. They can serve as glue for the exchange of best practices and mutual learning.

Each enterprise embodies innovative and nature-centric approaches, leveraging the inherent benefits of green infrastructure, biodiversity, and ecosystem services to enhance urban resilience, well-being, and sustainability. This exemplifies some NBE and related bodies playing a key role in the five CoI.

Material on the best practice NBE presented to the follower cities can be accessed on URBiNAT's website via two entry points:
https://urbinat.eu/circular-cities-cafe/ or https://urbinat.eu/milestone-7-market-potential-of-nbs/

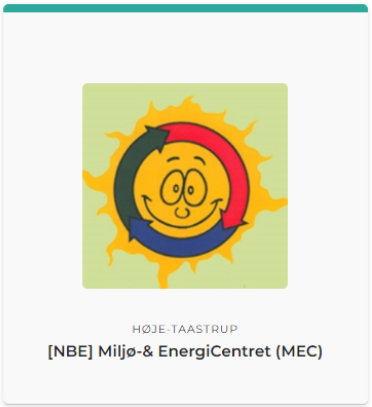
Key words: CoI, CoP, Scaling & Replication, Best practices, Business Models development, Learning between enterprises and organisations within a specific CoI,
Tools for connections and exchange: Online and Onsite: Circular Cities Café



Source: URBiNAT website

Repair and Resource Management

Selected Nature-Based Enterprises:



Source: URBiNAT website

ReBOOT (Porto) is a project to recover, repair and share computers, with the aim of saving money and natural resources, as well as sharing knowledge and promoting access to digital environments.

It is in this context that the ReBOOT project arises, organised by the Municipality of Porto, supported by Porto Digital, ERP Portugal, LIPOR and Porto Ambiente and with the support of the Faculty of Engineering of the University of Porto, the Higher Institute of Engineering of Porto, the University of Portucalense and UPTEC, in a joint effort to recover computer equipment that is no longer in use by companies, organisations and people.

With the support of Recycle Geeks, people will be able to learn how to repair their own equipment or repair equipment provided by the Municipality of Porto, which will then be delivered to organisations with social projects that have specific needs for this type of equipment.

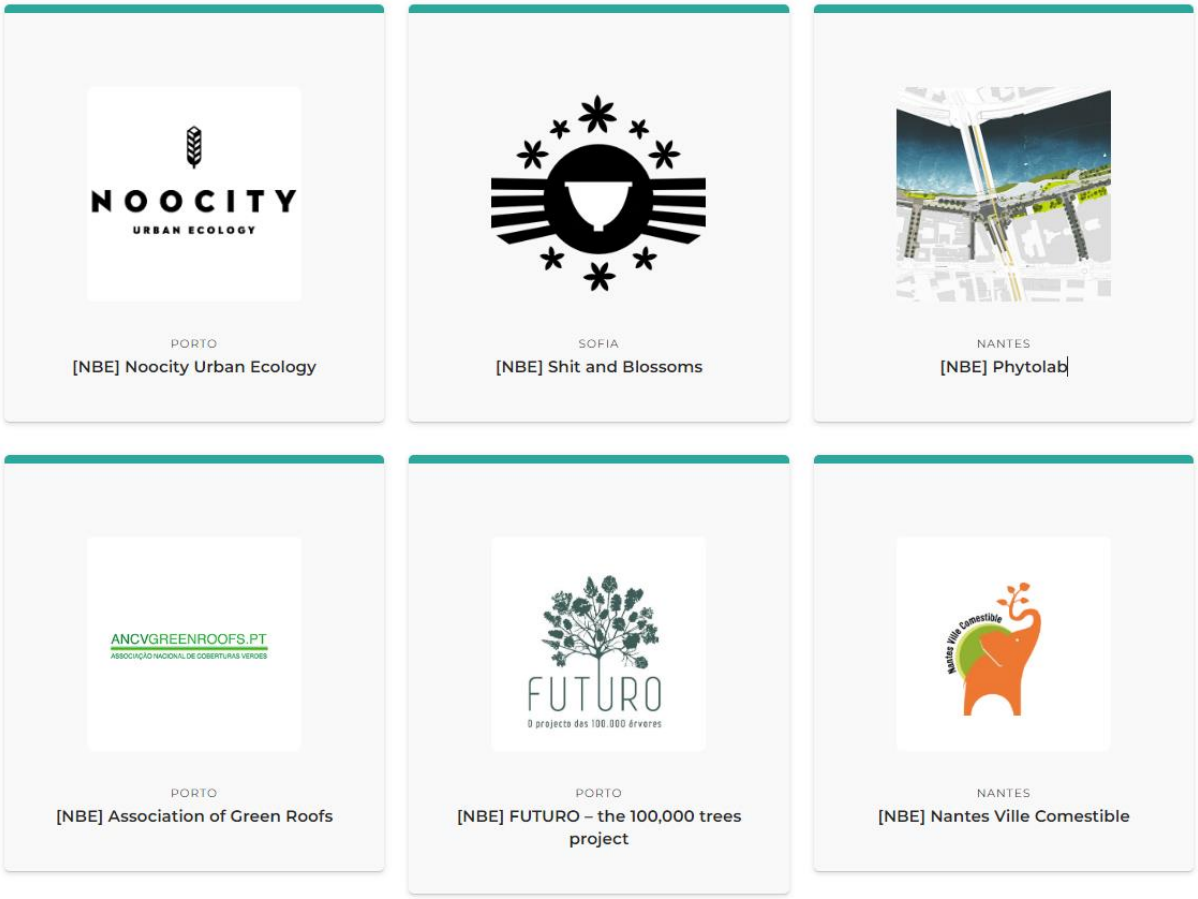
ReBOOT website: *https://reboot.porto.pt/*

Miljø- & Energicentret (MEC): The Environment & Energy Center in Høje-Taastrup (MEC) is an association which aims to strengthen sustainability on an ecologically sound basis.

MEC website: *https://mec-ht.dk/reparation/*

Urban Gardening and Farming

Selected Nature-Based Enterprises:



Source: URBiNAT website

Noocity Urban Ecology (Noocity Ecologia Urbana) is a Portuguese start-up company focused on the development of intelligent products and services for domestic and small-scale urban farming and agriculture. The NBE sells self-watering vegetable boxes to companies, private households, schools, and institutions, and provides educational services as well as team building exercises.

Noocity website: *https://www.noocity.com/*

Shit and Blossoms is a for-profit business that manufactures and sells non-plastic compost toilets, reducing costs and the ecological impact compared to regular chemical sanitation systems. Smart solutions meet with new European regulation in water savings and human waste from local communities and single dwellings is recycled, e.g., for fertilisation.

Shit and Blossoms website: *https://urineseparator.com/*

Phytolab: The vision of the company is to connect urban planning and nature in the most sustainable ways. This means a focus on landscaping whereby solely native trees and plants are selected, which in turn are suited for the soil and other local conditions. By adopting these so-called methods of biomimicry; biodiversity is enhanced, maintenance time and costs are reduced and ecosystems are maintained. Phytolab is also known for its practices of engaging relevant local stakeholders including citizens in the overall project; from planning to implementation and after-care of the landscaping.

Phytolab website: *https://www.phytolab.fr/*

Association of Green Roofs: The Portuguese National Association of Green Roofs is a NGO, which aims to promote green infrastructures in cities, especially those that can be installed in buildings (new or pre-existing) such as green roofs, highlighting their enormous importance, and the numerous contributions they can give to the possibility to create healthy, sustainable, biodiverse and resilient urban territories. In its mission, social bodies from different activities, it promotes collaboration between companies, municipalities and national and foreign research groups.

In the last decades, problems such as pollution, soil impermeabilization indexes, density and quality of buildings, energy inefficiency and loss of biodiversity, have been aggravated, at the same time that extreme (and increasingly frequent) climatic phenomena occurs, such as heat waves / drought and extreme precipitation phenomena. Rainwater retention and peak flood delay, thermal insulation, protection and increase of waterproofing life, creation of biodiversity niches, CO2 capture and oxygen production, associated with the improvement of the urban landscape and the appreciation of the buildings, are part of the set of arguments of undeniable value that make it unquestionable the need to introduce the green roofs in the cities, demonstrating the urgence to consider vegetation as a mandatory building material.

National Association of Green Roofs website: *https://www.greenroofs.pt/en*

FUTURO – the 100,000 trees project in the Porto Metropolitan Area – is a planned and coordinated effort by various organizations and citizens with the objective of creating and maintaining native urban forests in this region, which needs to enrich its biodiversity, sequester carbon, improve air quality, protect its soils and contribute to a better quality of life for people. So, it boils down to one word – FUTURE. Because there is no future without trees.

FUTURO is an initiative of CRE. Porto (Regional Center of Excellence in Education for the Sustainable Development of the Metropolitan Area of Porto), coordinated by the Metropolitan Area of Porto and the Catholic University of Portugal (Porto). Several public and private entities actively participate in FUTURO, offering institutional support and material and human resources to the project. Find out more about the role of each partner.

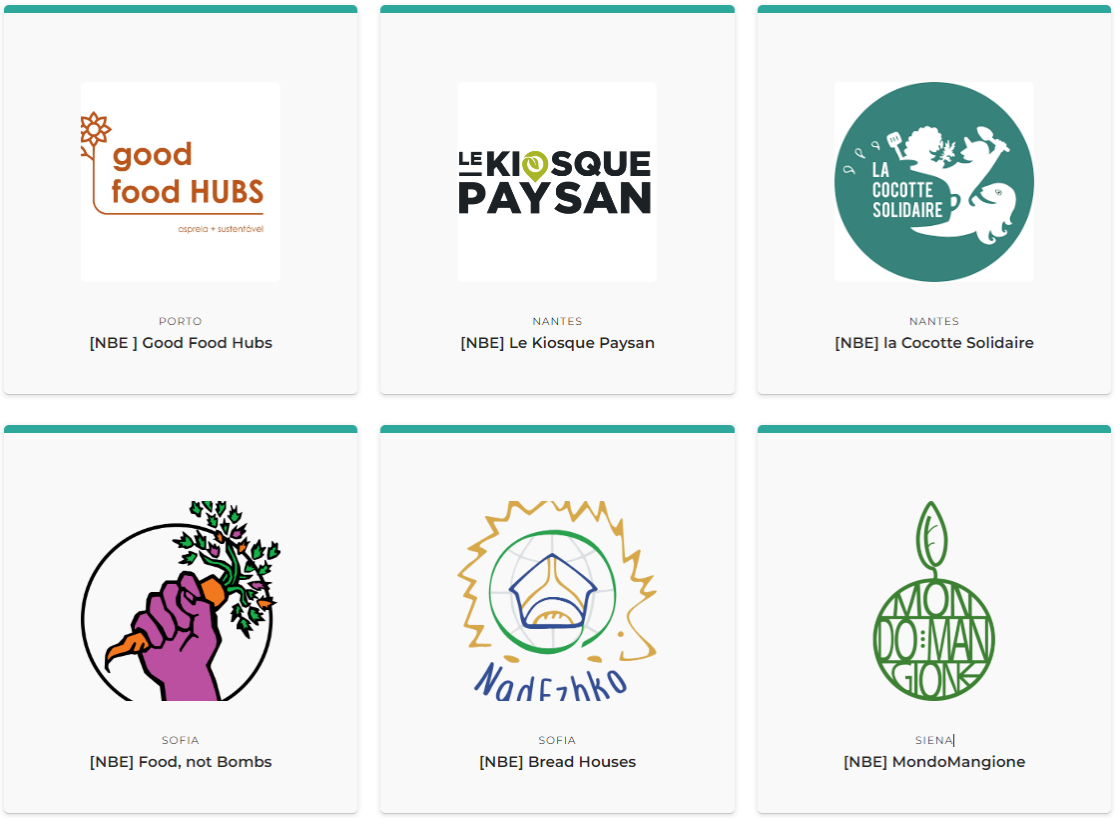
FUTURO website: *https://www.100milarvores.pt/*

Nantes Ville Comestible (Nantes) is an urban agriculture association working since 2016 to reconnect people with their territory, breeding a network of local players devoted to ecological transition and food resilience. In order to reconnect the people of the city with their territory, Nantes Ville Comestible applies various tools related to urban agriculture, practicing on-site training within three community vegetable gardens that it operates.

The association brings together local players (authorities, businesses, associations, groups of residents) involved in the ecological and food transition, with the annual highlight being the organisation of the Nantes edition of the 48h urban agriculture festival. It coordinates an ambitious collective project, part of Nantes Métropole's Territorial Food Plan: the Maison de l'Agriculture Urbaine et de l'Alimentation (House of Urban Agriculture and Food).

Co-creating Sustainable Meals and Food Products

Selected Nature-Based Enterprises:



Source: URBiNAT website

Good Food Hubs is a project that started in June 2021 with a focus on creating a food network around Asprela, an affluent, knowledge-intense area in Porto. Good Food Hubs promotes pop-up meetings, connecting producers and consumers of biological vegetables and good, sustainable food.

Good Food Hubs website: *https://goodfoodhubs.pt/*

The Kiosque Paysan is a collective and associative logistical pooling initiative serving short, local and peasant circuits in the Nantes region. Le Kiosque Paysan is an association which acts as a link between short-circuit organic farmers located within a 100 km radius of Nantes and the food industry in the same area (restaurants, retailers, caterers, etc.), in search of value and quality local supplies. The Kiosque Paysan combines a platform for showcasing local produce with a shared delivery service.

Le Kiosque Paysan website: *https://kiosquepaysan.fr/*

La Cocotte Solidaire (Nantes) is a combined restaurant/cafe and community kitchen. It is run by two private owners who are also the founders. The overriding mission of the operation is to cook and enjoy healthy food together. The management team invites anyone in the neighbourhood who is interested in cooking vegetarian dishes to participate in preparations of lunch. Six days a week lunch is prepared and then offered to lunch guests by flexible pricing method. The asked price for the lunch is 10 euros per person, however it is up to each guest to decide how much they would like to pay for the meal. This flexible pricing or free price method makes the guests of the restaurant pay anything from 0-15 euro per lunch. The citizens who participate in the cooking vary and it is not the same individuals who are engaged on a daily basis. Some citizens come to help once a week, once a month or several days depending upon time and availability. This high degree of flexibility demands extensive planning and therefore the management is running sign-up sheets in the premises and also on social media platforms. The sign-up sheets apply for all the target groups, i.e., the cookers, guests, and sourcing assistants.

Cocotte Solidaire website: *https://www.lacocottesolidaire.fr/page/1251738-accueil*

Food, not Bombs is a volunteer-based initiative that educates and advocates people on food scarcity and actively offers solutions to combat poverty.

It is a self-organized initiative where volunteers, among others:

- prepare and share vegan food and clothing with disadvantaged people,
- maintain an urban community garden,
- run a communal washing facility,
- provide a winter shelter for the homeless,
- and offer aid groups for specific problems.

The target group are all people in need, e.g., for a nutritious meal, a warm shelter, mental health advice, and social contact. The ambition of Food, not Bombs is to educate society on the urgency of effects of climate change, such as food scarcity and increased levels of poverty, and to put in place hands-on solutions that can mitigate some of these implications.

The Bread Houses Network started as part of the global network of national networks of community cultural centers called International Council for Cultural Centers (I3C), www.international3c.org, uniting more than 50 countries on 6 continents where people find

meaning through community arts and local cultural traditions (intangible cultural heritage).

The NadEzhko bakeries, developed under the company NadEzhko, are part of the Bread Houses Network and offer an innovative mix of an organic bakery with interactive bake-house and a community center, where people of all walks of life, socially excluded groups and people with disabilities mix to regularly make, bake, and break bread together. The company sells both high-quality breads and other boutique foods and unique services (Bread building team building; Theatre of Crumbs events; Bread in the Dark/BIND, led by blind people). The company's 10 unique methods of bread-making with diverse art forms are proven internationally as a new form of art therapy "bread therapy".

The NadEzhko bakeries are planned as a social franchise, with bakeries in neighbourhoods around the world serving also as the local community and social integration center. The bakeries have the mission to train and employ as bakers low-income people and orphans (bakers, team building trainers, and community organizers), as well as people with diverse special needs and potential to develop good social skills (sight-impaired, handicapped, people with Down Syndrome, etc.) to be our community workshop facilitators in the collective bread-making events. The mission of these bakeries is to serve as the community gathering points that reignite local traditions, educate about solidarity, equality in diversity, cooperation in sustainable living and nutrition, arts and creativity.

Bread Houses website: *https://www.breadhousesnetwork.org/social-enterprise/*

MondoMangione is a cooperative that has been involved in the small-scale distribution of organic, local and fair-trade food in Siena since 2004, through direct contacts with local producers and with the realities of the fair trade and participatory economy. MondoMangione has two sales outlets and a collective garden where the company also produces its own bread.

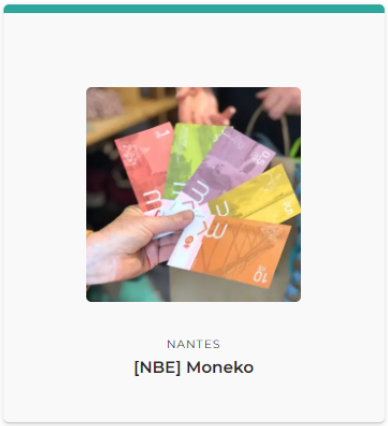
MondoMangione webiste: *https://www.mondomangione.it/*

Arts, Culture and Music

Cidade Mais (not displayed on the website) is a festival organised annually in Porto, run by an Association with employs a small time responsible for attracting exhibitors, sponsors, and participants. The festival is highly inclusive and free of charge for participants, run with the objective to increase awareness how to adhere to a more sustainable lifestyle.

Le Cidade Mais website: *https://cidademais.pt*

Start-ups



Source: URBiNAT website

Le Solilab: Located in the south-west of the Ile de Nantes, Le Solilab is a structure comprising offices and premises for associations and companies from the social and solidarity economy.

This unconventional venue also hosts professional and public events.

Near the Banana Hangar, on a former industrial site on the western tip of the Ile de Nantes, Le Solilab provides a home for associations and businesses that identify with the social and solidarity economy, a network run by the association Les Ecossolies. Nearly 135 structures are housed in the Solilab and more than 200 people work there.

Le Solilab website: *https://www.ecossolies.fr/-Le-Solilab*

Moneko is a local currency in Nantes urban area and its surroundings. This local currency started its operation in 2019, building upon experiences from other local currencies in France. Moneko promotes the consumption of locally grounded products and services. The criteria which Moneko uses for providers to be connected to the Moneko currency are based on the pillars of ethics and sustainability, and deprived city areas are of high relevance for its operations. The printing office for Moneko's physical notes located in Nantes Nord.

MONEKO website: *https://moneko.org/*