The Urban Lab of Europe!

PRACTICE
EDIT 08 DECEMBER 2022

Promising practices

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Projects displaying the Promising Practices, in a Just Transitions perspective, are listed in the first table of this chapter. They summarise the 10 UIA cities and 1 URBACT city, their projects, their goals, and provides some context on them. The full case studies can be found on the website, on dedicated pages to each project.

2.1 Introduction

Projects displaying the Promising Practices, in a Just Transitions perspective, are listed in the Table 2 below. They summarise the 10 UIA cities and 1 URBACT city, their projects, their goals, and provides some context on them. The full case studies can be found here.

Table 2: Summary of the selected case studies and contextual information

UIA project	City	Population	Main objectives and actions	Target groups (according to vulnerability factors)
Climate-friendly urban planning				
RESILIO	Amsterdam, NL	821,752	To address pluvial flooding by reducing the speed of water runoff by installing blue-green roofs on a range of building types both public & private, but predominantly in social housing.	Geography: social housing. Socio-economic status: people with low educational attainment, people with language difficulties, people on lower incomes.
GBG_AS2C	Barcelona, ES	1,636,732	To help the city prepare for high temperatures by creating climate shelters in 11 school buildings in areas of the city that are most vulnerable to the heat island effect and which lack green space nearby.	Discrimination: Elderly, women, children, migrants. Socio-economic status: people suffering from energy poverty, people with health problems Exposure to shocks and risks: fewer green spaces.
PUJ	Prato, IT	192,469	To revitalise 3 districts of Prato affected by severe social, economic, and environmental problems, in a sustainable and inclusive way by creating Urban Jungles.	Discrimination: Migrants (especially Chinese, in one of the areas), low-income people. Exposure to shocks and risks: fewer green spaces.
Sustainable energy				
EPIU	Getafe, ES	180,747	To identify and address hidden energy poverty in Las Margaritas and Alhóndiga, using data analysis, support to residents, and renovation.	Discrimination: Elderly, migrants, the energy poor. Geography: Neighbourhoods built in the 1970s. Exposure to shocks and risks: Risks related to heatwaves and energy poverty.
Vilawatt	Viladecans, ES	66,707	Vilawatt's goals were to foster the energy transition by improving the energy governance at local level by setting a Public-Private-Citizen Partnership that provided key energy services. A participative housing renovation project to bring the energy transition to the low-income neighbourhood of La Montserratina in Viladecans was one of the services.	Socio-economic status: People with low-incomes, low educational attainment, micro-companies / self-employed, energy poor; Exposure to shocks and risks: Risks related to heatwaves and energy poverty.

UIA project	City	Population	Main objectives and actions	Target groups (according to vulnerability factors)
Sustainable housing				
ICCA Rus	Ghent, BE	560,522	To improve the living conditions of captive owners, i.e., homeowners unable to afford to retrofit their homes to make them safer, more energy-efficient and more adapted to evolving needs by offering them tailored support, establishing a revolving fund to enable renovation work to be financed.	Socio-economic status: Captive owners, low-income residents, low-skilled residents, people with health issues, the energy poor. Exposure to shocks and risks: Risks related to heatwaves and energy poverty.
Yes we rent!	Mataró, ES	127,000	To reactivate and energy-retrofit private vacant flats for the rental housing market and make them available at a below-market prices to households in need of affordable housing by setting-up a cooperative.	Discrimination: Migrants; Socio-economic status: Low-income households, owners of low-quality housing.
Super Circular Estate	Kerkrade, NL	45,642	To deconstruct an existing 10-storey housing block and reusing 75%-100% of its material to construct four houses in the same neighbourhood and testing a sustainable, circular model of deconstruction and reconstruction (recycling) for the social housing sector.	Socio-economic status: Social housing tenants.
Sustainable mobility				
INNOAIR	Sofia, BG	1.236 million	To connect an urban area with two peri-urban areas through on-demand green public transport tailored to user's needs, via data analysis, app design, and incentives to reduce the use of cars and promote changes in mobility behaviour.	Discrimination: Elderly, low-income residents, families Geography: two low density peri-urban areas with poor public transport, poor public services and facilitates (such as medical centres or hospitals), city outskirts.
COMMUTE	Toulouse Metropole, FR	783,353	To reduce traffic congestion to/from the aeronautics industry & airport areas by providing alternative sustainable mobility solutions to commuting employees using a collaborative urban mobility management system, a "Mobility Management Plan" and a digital platform.	Geography: Commuter employees working in the aeronautics & airport areas, in the city outskirts blighted by traffic congestion.

UIA project	City	Population	Main objectives and actions	Target groups (according to vulnerability factors)
URBACT Gender Landscape	Umeå, SE	200,000	To achieve gender equality in mobility by collecting gender-disaggregated data on transport use and perceptions and carrying out a series of gender-sensitive sustainable mobility initiatives.	Discrimination: Women and girls.

All these projects have implemented inspiring practices to achieve Just Transitions and making these transitions affordable for all. These inspiring practices have been implemented despite encountering many barriers that are briefly mentioned below:

Barriers faced by cities:

- Lack of strong vision and/or leadership
- Lack of a policy delivery mechanism
- Lack of data and/or knowledge about vulnerable groups and their main problems
- Lack of an enabling funding framework
- Lack of municipal funds
- Lack of cross-departmentalism at city level
- Lack of monitoring and evaluation of policies and actions
- A civil servant skills deficit
- Difficulty with reaching out to vulnerable groups

Barriers faced by the vulnerable people:

- Lack of knowledge of opportunities among vulnerable people
- Lack of adequate provision for vulnerable people
- Vulnerable people's inability to seize opportunities
- Lack of personal funds

Transversal barriers:

- Wicked socio-economic context
- Pre-existing urban planning context
- Intrinsic technological challenges

Section 3 of this report and Appendix 2 provide further details on each of these barriers and how these promising practices have addressed them.

Amsterdam, Barcelona, Prato, Getafe, Viladecans, Ghent, Mataró, Kerkrade, Sofia, Toulouse and Umeå, are the 11 cities and 11 projects that have implemented pilot projects in line with Just Transitions with an emphasis on accessibility and affordability.

The 11 projects display 5 types of Promising Practice, i.e., those that are in line with Just Transitions, is based on the incorporation of **environmental** (climate-friendly urban planning, suitable energy, sustainable housing, sustainable mobility) and **social dimensions** (social inclusion and monetary policies ensuring affordability and accessibility of the services). Although none of the UIA cities has an explicit Just Transitions policy, some of them addressed both social and environmental components. This chapter is therefore structured around the following

5 practices:

1. Integrating just and green strategic dimensions in local projects.
2. Identifying the needs of vulnerable groups.
3. Collective infrastructure for green transitions.
4. Tailored solutions for individual households.
5. Enabling financial models.

The discussion of these Promising Practices is guided by a series of core issues relating to making Just Transitions affordable and accessible to all:

- Policy rationales, drivers, barriers.
- How are cities/projects have got off the ground / how barriers have been overcome?
- Key policy characteristics, added value, lessons.
- The potential for replication and scaling up.

The issues addressed vary depending on the Promising Practice. A summary of the barriers addressed by the projects, their added value and key lessons is provided in the Chapter 3.

2.2 Promising Practice 1: Integrating just and green strategies in local projects

All of the UIA projects are the emanation of multiple drivers; local leadership first, and it is worth examining the role of European policy initiatives, which have often enabled cities to pursue this Promising Practice by providing enabling policy frameworks and funding. These initiatives help building on the exiting local strategies to achieve just transitions. In the following, we name a few of these local plans that are in line with the overall European objective to achieve just transitions.

Sustainable Energy Action Plan (SEAP) and/or a Sustainable Energy and Climate Action Plan (SECAPS)

The Sustainable Energy Action Plan (SEAP) and/or a Sustainable Energy and Climate Action Plan (SECAP)[6]drawn up by cities as part of their commitment to the Covenant of Mayors climate action have brought just & green issues to the forefront of the local policy agenda, effectively, creating initial inclusive green transition roadmaps (see Chapter 3 of this report). Each of the cities in Table 1, except for Kerkrade, prepared SEAPs as part of their SECAP strategy.

In line with its SEAP and SECAP plans, the city of **Viladecans**, Spain, identifies digital and green transitions and social cohesion as cross-cutting goals. The Viladecans 2030 Strategy has 1 strategic goal (out of 5) on "Ecological Transition", 17 challenges (out of 25) related to climate neutrality, and 1 mission (out of 5) on "*turning Viladecans into a climate neutral city by 2030*". To ensure a Just Transition, one challenge that stands out is to "*Minimise the risks linked to economic, health, social and environmental adversities, especially among the most vulnerable groups, by transforming the City Council into a proactive, inclusive, digital and open administration, capable of offering high quality services focused on the user.*" The city's Local urban agenda includes 59 (out of 131) actions to achieve climate neutrality and one Strategic Objective relating to social cohesion and equal opportunities.

In line with its SECAP, **Barcelona**'s 2030 Climate Emergency Action Plan addresses the heat wave risks facing vulnerable communities. The Plan includes a specific goal: "*Take care of everyone*" and targets those most vulnerable to climate change due to their socioeconomic situation, age, gender, condition, or state of health. It proposes, for example, to gather information about the different impacts the crisis is having on women and the most vulnerable in Barcelona, such as low-income people, migrants, and refugees. Barcelona's UIA 'GBG_AS2C ' project falls under in its Priority 6 - climate-based urban transformation. The latter proposes to:

- Analyse impacts on each district, identify risks and vulnerabilities (heat, presence of people vulnerable to climate change, buildings in a poor condition, lack of green spaces, etc.,) and specify what action is required, in line with existing plans, such as the 'Neighbourhood Plan' or the 'Nature Plan Barcelona'.
- Identify areas at risk and characterise this risk (extreme heat, flooding, power cuts, water availability, etc.).

- Draw up an urban planning design guide with sustainability and resilience criteria (based on workshops).
- Protect schools through environmental and road safety measures.

Barcelona's 2030 Climate Emergency Action Plan is fully consistent with current available data and the Spanish policy framework and has a robust delivery system. The city also has specific programmes that focus on the impact of climate change on vulnerable groups. This includes the Climate Shelter Network supported by the Climate Plan 2018-2030, of which the UIA's GBG_AS2C project is part. The latter combined two identified complementary needs:

- the city's Patis Oberts ('Open school playgrounds') initiative identified a need to provide leisure spaces for children, young people, and their families in their neighbourhoods, enhancing educational conditions and social interactivity by creating safe spaces
- the Climate Plan identified the need to create spaces that could act as Climate Shelters for the population in anticipation of an increase in episodes of heat waves.

The City of **Ghent** incorporates social and vulnerability components along with energy efficiency in its Social climate policy under its SEAP, which addresses energy poverty (linking it to the City's Anti-poverty Plan). This climate-energy-poverty nexus is one of the topics Ghent's UIA ICCARus project is seeking to address. With 15% of households facing energy poverty in the city, ICCARus aims to help families, organisations, institutions, and companies to cope with rising energy prices by supporting energy saving measures funded through additional financial resources for low-income families. The city has put several different mechanisms in place to implement its social climate strategy, such as the 'De Energiecentrale' office, which assists residents with the energy products and services offered by the city, including energy efficient living, energy renovation of buildings, support for social housing construction and renovation. All of which seek to improve the access of lower-income groups to more efficient and sustainable housing, etc.

Sustainable Urban Mobility Plans (SUMPs)

Since 2018, Sustainable Urban Mobility Plans (SUMPs) have also sought to focus more on vulnerable groups, and this has helped some cities to support Just Transitions in mobility. For example, the City of **Sofia**'s SUMP seeks to develop sustainable transport, which at the same time provides "*easy and safe access to workplaces, schools, public spaces, parks, services and entertainment, regardless of age, sex, health status and one's income*". The SUMP also identifies areas where little public transport is available and proposes an electronic billing system which would enable a more flexible tariff policy, all of which is addressed in Sofia's UIA INNOAIR project.

A common barrier in addressing cross-cutting or interrelated issues is the historical departmentalism in public policy, often referred to as policy silos. Yet, cross-departmental and multi-stakeholder governance is key to delivering integrated urban projects, especially when complex interconnected issues are involved - 'affordable and accessible green transitions' falls into this category. Coordination between different departments of a city administration and with local stakeholders strengthen the shared understanding and the focus of projects. An inclusive approach brings stakeholders on board and is key to smooth project delivery.

All of the UIA projects studied in this report designed specific governance mechanisms, such as committees and working groups combining stakeholders with different specialisations (public, private, academic) and expertise (social, environmental, etc.). Viladecans in their Vilawatt project set up a Public-Private-Citizen Partnership and COMMUTE set up a Local Mobility Committee, for example. Yet, the specificity of the projects studied is that they were also strongly embedded within an integrated and cross-cutting governance mechanism, which may remain after the end of UIA projects.

For example, in the City of Viladecans, the Environment Service, the Social Service, the Steering Committee of the Ecological, Economic and Urban Transition and the Vilawatt team collaborated closely. They also worked with local stakeholders in a quadruple helix approach. Other stakeholders, representing organisations, residents, and experts in climate change, were also involved via a Local Climate Emergency Board, set up under the Viladecans Climate Pact that was created with the inclusion of citizens.

In RESILIO, **Amsterdam** also created a cross-sectoral policy instrument on Climate Change Adaptation (CCA), through which different departments can collaborate:

- The Planning and Health Services departments collaborate closely on heat reduction.
- The Planning department and Waternet (the local water supplier) work closely with the Traffic and Open Space departments to coordinate works at the interface between the building and street level, and the sewer system.
- The city's Ecology Programme is also very active.

Gender Equality Policy

Changing the values of all departments for Just Transitions is a powerful way to get all departments on the same page. An example of a Just Transition policy with a gender perspective on sustainable mobility comes from the City of **Umeå**, which leads the URBACT Gendered Landscape network. The City of Umeå believes that challenging norms and behaviours, through a gender-sensitive approach, is as important as new technology, if Just Transitions is to succeed.

At the national level, Sweden has an overarching Gender equality policy, which seeks to ensure that women and men have equal power to shape society and their own lives in 6 areas (equal division of power and influence, economic equality, equal education, equal distribution of unpaid housework and provision of care, equal health, and 'men's violence against women must stop'). The city has adopted the same goals. In 2008, it signed the European Charter for Equality of Women and Men in Local Life and as a follow-up, it designed its own Strategy for gender equality work in the Municipality to take gender equality forward. The strategy supports local committees and aims to influence the City's policy goals and indicators.

In terms of an integrated approach, gender equality officers have been stationed in the urban planning department since 1989. They support the promotion of gender equality in the city's built space and cooperate with other departments to promote goals related to gender equality in the city. The goal is to grow sustainably to 200 000 people by 2050 and to ensure that this growth does not undermine social, ecological, cultural, and economic sustainability. All the decisions made by the City Council must be informed by a gender analysis and implementation is monitored. This includes for decisions related to public transport, defined in the Comprehensive Plan for Umeå Municipality (which also integrates the City's SUMP) which seeks to make the city a 'Five-kilometre City—high-density city' with corresponding sustainable mobility infrastructure. Actions on sustainable mobility therefore involve all the departments concerned with this goal (e.g., on public transport, smart solutions, climate neutrality) plus the gender equality officers. Working groups are set up for each new line of action. There is also close consultation with residents and co-creation of solutions.

Social Inclusion Strategy

Cities can use national and regional legislation and funding to help them deliver Just Transitions, with Europe acting as a catalyst and in doing so, create synergies between the national and regional policy frameworks and European funding. UIA funding helped **Getafe** to deliver its EPIU project, which harnesses opportunities offered by existing national and regional policy resources to support their residents, in an integrated way, through both social and environmental policies. In its Social Inclusion Plan, the city identified its population's welfare needs in the different areas that determine inclusion and quality of life (housing, social services, education, health) leading to actions to improve welfare. In addition, the regional government's Social Inclusion Strategy 2016-2021 includes an aid program for vulnerable families to pay their electricity and gas bills with the collaboration of the main electricity suppliers. As for the environmental component, there is a financial aid program, the Urban Regeneration and Rehabilitation Areas, to improve energy efficiency in homes. At the national level, recent regulations and a new Royal Decree 15/2018, have led to new policies to address Energy Poverty such as an energy price cap to protect vulnerable consumers, prohibiting the cutting off of energy supplies, and improving energy efficiency in homes. The UIA project EPIU has contributed to Getafe's effort to steer local policies to address energy poverty in a more sustainable way.

Furthermore, UIA projects have contributed to the EU's strategic priorities for regional and local development and with the various thematic and policy objectives of the EU's Cohesion Policy.

A few examples:

- RESILIO in Amsterdam supports 7 of 11 ERDF Thematic Objectives (TO) and 12 corresponding Investment Priorities (IP), including: strengthening research, technological development, and innovation (TO1, IP1a), Enhancing access to, and use and quality of, information and communication technologies (TO2, IP2b).
- PUJ in **Prato** contributes to **TO5 - promoting climate change adaptation, risk prevention and management** (especially IP (a) supporting investment for adaptation to climate change, including ecosystem-based approaches). It also supports **TO6 - preserving and protecting the environment and promoting resource efficiency** (in particular to IPs: c) preserving and protecting the environment and promoting resource efficiency; (e) taking action to improve the urban environment, to revitalise cities, regenerate and decontaminate brownfield sites (including conversion areas), reduce air pollution and promote noise-reduction measures; (f) promoting innovative technologies to improve environmental protection and resource efficiency in the waste sector, water sector and with regard to soil, or to reduce air pollution); and, **TO9 - promoting social inclusion, combating poverty and any discrimination** (in particular IP (b) providing support for physical, economic and social regeneration of deprived neighbourhoods).
- In PUJ, Prato, 'urban jungle' oriented investments in one of its three districts complemented previous investments under Article 7.
- Four of these 11 UIA's innovating cities are expected to be funded under Article 9 of the new ERDF regulation: Amsterdam, Barcelona, Prato, and Getafe.

Cohesion policy has enormous potential to support the Just Transitions agenda, so it is worth discussing the current relationship between the UIA and the Cohesion policies. Interviews with UIA cities and selected Managing Authorities (MA) and Intermediate Bodies (IB) indicate that there has been little mutual awareness and therefore limited collaboration between them. Some cities struggled to identify their relevant MAs, whereas one Intermediate Body struggled to identify the UIA programme and the UIA projects in its area. MAs were, however familiar with the overall process initiated at the EU level to co-develop innovative urban projects, even if indirectly in the case of UIA projects.
Moreover, MAs see the full potential of UIA projects, including supporting them but also in terms of the UIA methodology for innovative urban projects. There is therefore scope for lessons from UIA projects to inform Cohesion programmes, both in terms of strategy, operational programmes, and projectss.
In line with UIA goals and potentially learning from some of its projects, Managing Authorities' Smart Specialisation strategies could support the implementation of Cohesion Policy's first two objectives: 1 - A more competitive and smarter Europe; and 2 - A greener, low-carbon transitioning towards a net zero carbon economy - which hinges on the idea that regional economic growth can be decoupled from resource use and emissions thereby reduced (European Commission, 2020).These goals are shared by the EU's mainstream programmes and initiatives.
Finally, as an innovation-supporting programme, the UIA is ready to take on and cover the risks inherent in cities' experimental activities, in compliance with EU programme rules. While this implies risks in terms of investment, this is what is needed to develop and test bold and creative solutions. MAs could adopt this innovation methodology by including - possibly at mid-term in the current funding round - innovation requirements in their operational programmes and the UIA experience could help them with the specifics of the approach[7]. This is precisely what the UIA programme is about. It has pioneered affordable and accessible solutions to the transition that may inspire new departures in policy across Europe. The new programming period (2021-2027) offers an opportunity to mainstream these approaches.

Take-aways (including the barriers addressed) of Promising Practice 1: Integrating just and green strategies in local projects

Making the connections between issues and designing projects that seek to exploit synergies

Ensuring that all residents benefit from climate-friendly urban planning, sustainable energy, sustainable housing, or sustainable mobility addresses a range of local policies, often involving a social inclusion dimension. Most of the policies, strategies, and governance models presented above (e.g., use of SECAPs, gender officers, etc.) cover different aspects of the green transitions, but even more, stress their complementarity and inter-linkages: climate-friendly urban planning and energy, housing and energy, mobility together with housing and energy, etc. Designing targeted local policies for specific groups and/or areas can further strengthen a necessary integrated approach. Integrated approaches directly address common barriers such as a lack of cross-departmental working or integration in the administration and the difficulty of reaching out to vulnerable groups.

Putting Just Transitions on cities' agendas

The cities studied wish to exploit the strategic funding frameworks available to them, including regional, national and, through the UIA, European frameworks. They have benefitted from strong local leadership to focus on specific needs and design novel solutions working with the relevant stakeholders, from users to private companies. Cities can drive the local agenda on Just Transitions **where local policy capacity is sufficient** to harness available policy opportunities, such as the UIA programme or other EU programmes, where policymakers wish to do so.

Clear monitoring process

Addressing the complex, and indeed wicked challenge of accessibility and affordability faces numerous barriers. By engaging in UIA projects, the cities studied have been able to overcome certain common barriers such as a lack of a policy, delivery & evaluation system, policy silos, a lack of an enabling financial framework, a lack of municipal funds. One of the benefits of participating in an EU funded project is that programme procedures ensure that local policies have clear objectives, robustly designed actions, and a framework to monitor results. Feedback from monitoring is used to adjust to improve the policy framework and actions.

Replication potentials of Promising Practice 1:

Adjusting local policies to support accessible and affordable green transitions

- As the UIA projects show, cities have put social and green goals on their policy agendas. Depending on local needs, the focus or relationship between these goals may vary. In each case, there is an existing institutional architecture, so any project addressing more than one policy area must operate within this architecture - institutional change being unlikely - which may mean setting up cross-cutting stakeholder task groups, cross-departmental working, etc.
- These projects have different facets but existing policy frameworks can support a wide range of themes so a sophisticated understanding 'funding opportunities' is important and cities must ensure that any policy action they are envisioning can be planned to fit with formal policy objectives and reporting frameworks.

Governing horizontally with all relevant stakeholders

- Innovative governance models for complex projects are not necessarily 'plug & play'; time and effort may be necessary to bring in the relevant stakeholders. The bespoke organisations put in place in the UIA cities can be replicated partially or entirely with adjustments to local circumstances. Capacity-wise, larger urban areas could easily adopt the organisational models developed by the UIA city project.

2.3 Promising Practice 2: Identifying the needs of vulnerable groups

Identifying the target group

Cities need to identify the profiles and needs of groups[8] they are providing services for. Understanding how residents use and engage with public spaces, policies, and organisations is the first step in being able to address disparities and shape better green solutions. Yet cities are not always well-equipped to do this. Indeed, among the common barriers in this regard are:

- difficulty reaching out to vulnerable groups.
- a lack of data and knowledge on vulnerable groups and their main problems.a lack of monitoring and evaluation of policies and actions.
- a lack of skills among civil servants.

Some of the UIA projects started by identifying their specific target group(s), before identifying their needs and the best solutions, which they would co-design with them.

This was the case for Getafe. At the start of its EPIU project, Getafe's sustainable energy policy did not address a specific vulnerable group, rather it addressed all groups equally. It was therefore seen as crucial to identify the target group more precisely. A first sociodemographic analysis (covering parameters such as neighbourhoods, income, needs, etc) was conducted through a survey carried out in the target neighbourhoods. This received 700 respondents and was enriched with data from the Red Cross. In addition, engagement with social workers, NGOs working in the social issues and/or energy poverty fields, and NGOs from Africa and Eastern Europe also provided useful data. The result was a better identified group characterised by their energy poverty needs. This group was made up of three sub-groups:

- Women, as there is a 'feminisation' of energy poverty in the most deprived communities (because of single-parent families, shadow economy work, etc.).
- The elderly, who are severely impacted by energy poverty.
- Migrants, who often do not access public subsidies because they are below the radar of public administrations or because there are barriers (not registered as residents, language, culture, trust, knowledge, etc.).

Data analysis and projection

Investigating for relevant data and improving the quality of analysis, policy and the power to predict is an important starting point. A lack of good local data makes it a challenge for cities to design appropriate targeted policies. Collecting disaggregated data is important to be able to tailor public services to real needs. Cities such as Umeå have used disaggregated data on the socio-economic situations of specific groups to better identify their needs. The data used comes from national and municipal statistics, e.g., on residential areas, the use of public transport, work location, etc. At the local level, gender-sensitive data has been collected for decades through dedicated surveys. Recent data has revealed the following:

- 56% of women travel sustainably compared with 42% of men.
- Women have less access to private cars than men: they therefore rely more on public transport.
- Women are more likely to engage in multi-stage and multidirectional trips within cities (e.g., buying the groceries and picking up the children, for example), whereas men tend to make unidirectional trips only.
- Women are more numerous in some types of work and therefore more concentrated in some areas of the city (e.g., in hospitals, certain service sectors such as retail).

Based on this data, the City of Umeå developed solutions to help women navigate the city more safely and efficiently, especially by public transport. Importantly, the gender perspective is not only aimed at creating solutions for women, rather, it is about understanding the underlying gendered structures and how they affect

mobility (among other issues). When it comes to public transport, the numbers imply, for example that, if the city wishes to reach its goal for sustainable mobility (bus, cycling, walking), it needs to place extra focus on men's travel patterns and seek to change their behaviours.

The initial analysis carried out by Getafe for its EPIU project contributed to the design of a Predictive Energy Poverty Tool. The objective was to use machine learning to better detect situations of energy poverty, and more efficiently and proactively address these through appropriate solutions. The data gathered from analysis, surveys, and the Red Cross as well as real data from users using the municipal service, the Healthy Households Office (OHS), also fed energy poverty-related information (parameters, data) into the tool. The tool is thus constantly updated and made more relevant.

Developing intervention methods that address everyone's needs would imply individualised solutions, which is neither transferable nor practical. Therefore, the EPUI project clustered the population based on the common features characterising sub-groups to enable solutions to be designed that would be tailored to these sub-groups. NB: Technical requirements for the design of the tool, as well as data protection and GDPR related issues, were addressed via a data management strategy, which is essential for any project involving the merging of large amounts of data from the city council databases.

Context analysis based on the collected data

Cities have also carried out studies to identify the scale of the sustainable urban planning issues they are facing. In Barcelona, the GBG_AS2C project decided on its priorities after studying vulnerabilities in relation to the impact of climate change in the city's neighbourhoods. Heat maps were developed to show the areas where the heat island effect is the most extreme. Vulnerability maps looked at the age of local buildings, the heat index, the age of the population and the socio-economic characteristics of the neighbourhood (average income numbers of migrants, etc.). Based on this study, the project drew up measures to ensure residents' health, survival, and quality of life and selected the schools that would participate in the project.

To optimise its retrofit strategies, Viladecans, Spain, undertook two key studies for its Vilawatt project: a characterisation of the building stock in the project area and energy studies on the building typologies identified. To achieve a deep scanning of the energy needs of the existing building stock in the project area, the following methodology was developed:

- define the most relevant building and urban indicators.
- select and adapt data processing software (Enerhub).
- collect field data, visualise, and interpret.
- define building typologies according to survey results, urban legislation, and each building's existing energy technologies.

As a result, the building stock was grouped into 5 types[9], and the following conclusions were drawn:

- the compact and dense urban district form generates advantages (low energy losses, technically easy for façade renovations) and drawbacks (low solar gains);
- whilst most buildings have low exposed surfaces and reduced solar gain potential, great differences appear between individual buildings, so energy renovation strategies will need to adapt to each situation; and
- given the compact urban form, the influence of the surroundings might be greater than building parameters themselves (i.e., buildings with a similar geometry and thermal envelope may have very different energy needs depending on the height of neighbouring buildings).

Once the building stock had been characterised, a sample of buildings for each category underwent dynamic thermal simulation to verify their energy performance. Their thermal properties were simulated using both a comfort conditions approach (i.e., standard use) and real conditions approach (i.e., current use) and under both as-built and retrofitted conditions (identified by a set of construction and operational parameters). This enabled Vilawatt to establish work priorities.

In the case of the project Super Circular Estate, in**Kerkrade**, a study was carried out to identify the amount of material which could be reused in the building of circular social housing. The different material types from the 10-floor high 100-apartment housing block that would be deconstructed was inventoried as follows:

- Design of a materials database creating material codes to be able to track and trace materials during the deconstruction and construction phases. The database also contains information about quantities and weight of materials as well as their embodied energy and embodied CO2 and reuse options.
- Based on the material database system, it was possible to calculate the embedded energy and carbon emissions related to the harvested materials.

According to this study, an existing 10-storey high apartment block consists of 2.3E03 Giga joules embodied energy and 2.9E03 tons of embodied CO2 (Ritzen et al., 2019). This was used as a basis for the embodied energy and CO2 impact analyses of the new designs of the houses in the project.

Identifying the digitalisation's benefits and risks

In terms of the digital transition, cities are at different stages of development. The digital transition offers both benefits (efficiency, data, etc.,) but also brings risks (exacerbating the digital divide). In relation to urban development, not only can digitalisation save time and resources, but it also supports the essential cross-departmental governance needed in multi-facetted projects. As making a green city affordable and accessible covers a range of themes and departments, the digitalisation of data can help to obtain a complete and more fine-grained understanding of realities.

Some UIA cities have used digital platforms to collect, store, and share relevant data between project partners. In **Toulouse Métropole**, the COMMUTE project developed a digital platform to help partners improve their collaboration and to develop smart solutions to local mobility. Information from the solutions (e.g., apps) piloted in the project were centralised and translated into 50 mobility indicators. This enables user evaluation of the mobility services and the gathering of feedback on user experience in terms of congestion and pollution. The platform also supports collaborative decision-making and the analysis of modal shift and mobility flows. It helps to understand and measure mobility performance and to predict the impact of policy actions on mobility. The platform enables project managers to understand the impact of mobility schemes on the home-to-work journeys of participating company employees, which in turn helps managers to identify new ideas for improving mobility practices.

The work on the platform also focused on ensuring compliance with GDPR rules. As the key to data security and privacy, GDPR also makes it possible to define effective and scalable smart solutions that rely on user protection.

In the Vilawatt project in Viladecans, energy (electricity) and air quality (CO2 concentration) monitoring systems were installed to assess the added value of the collective renovation works. These were installed one year before the works to provide a baseline for assessing impacts. The data collected enabled managers to assess real-life behaviours and changes of behaviour occurring because of the monitoring solutions, thus allowing managers to introduce refinements.

Take-aways of the Promising Practice 2: Identifying the needs of vulnerable groups:

Ensures the relevance of local policies

When cities identify the needs of vulnerable groups, they can better design solutions that meet their needs and that are accessible—in practical terms—and affordable. This makes local policies relevant and ensures public money is well spent and in areas relating to energy can support the achievement of carbon neutrality goals.

Makes the vulnerability visible

Vulnerable groups may remain hidden (hidden poverty) due to a lack of political interest, lack of data, etc. This Promising Practice improves the visibility of vulnerability groups, ensuring that they are adequately taken into consideration in the design of local policies. This can be done using good data, which means developing relevant data collection and monitoring systems as well as conducting studies and research.

Promoting data unification and the digital transition in city operations

This Promising Practice implies unifying, storing, and digitalising available information in a comprehensive manner at city level. This promotes the use of unified databases which hold all the information relevant to the specific policy field, fostering cross-departmental working. This is an enabling activity which may require investment in human resources (skills development in the public sector) and partnerships with the private sector.

Replication potentials of Promising Practice 2:

Using existing tools in other fields

Methods such as surveys, housing stock analysis, or data digitalisation can be used to analyse many other fields of the green transition such as financial poverty (social services, education, health), unemployment (local economy, social services, education), climate change (environment, mobility, energy, consumption, etc.). These tools combine different types of data to provide a more complete picture based on cross-sectorial and more fine-

grained analysis of vulnerable groups' situations.

Replicating the approaches and content of Promising Practice 2 in other cities

This Promising Practice, based on data gathering and exploitation, can be replicated. Data needs may vary, are existing data sets sufficient or is there a need for new tools? what stakeholder involvement is needed, what are the technical needs/opportunities? (e.g., in terms renovation, energy efficiency solutions, etc.). Cities need to be cognisant of the human resource, cost and GDPR implications of data gathering, management and use.

Implementing existing tools at higher governance scales

The Promising Practice can be implemented at other governance levels (e.g., regional): while keeping its fine granularity, the data gathered could enable the design of macro-level policies and/or specific and targeted initiatives.

Making the data available to other sectors (e.g., from public to private)

While respecting GDPR, the data gathered about vulnerable groups and needs could be useful to other stakeholders (academic institutions with an interest in the topic, construction companies to identify energy inefficient homes and buildings, and energy suppliers to identify homes without installations or inefficient buildings) and to support the design of other public policies in the city.

2.4 Promising Practice 3: Collective infrastructure for green transitions

Infrastructures for whom?

The concept of 'collective infrastructure' covers a range of types of infrastructure. This section focuses on just two, green infrastructure for climate change adaptation and green transport infrastructure. In the UIA projects these infrastructure needs combine with accessibility and affordability issues. To do this, they have addressed a wide range of barriers:

- Existing urban planning realities
- Difficulty reaching out to vulnerable groups
- Lack of knowledge of opportunities among vulnerable people
- Lack of provision in policy addressing the needs of vulnerable people
- Vulnerable people's inability to seize opportunities
- Wicked socio-economic context
- Intrinsic technological challenges

Planning green infrastructure that benefits vulnerable groups indirectly

If it is left to the market to develop and implement green solutions, the most profitable neighbourhoods, with the highest return on investments, will be served first, possibly exclusively. Cities therefore have a role to play in ensuring the delivery of a public service available to those at risk of being left out. Several UIA projects designed solutions to reduce the impacts of climate change in deprived neighbourhoods. Although residents cannot access the newly built green infrastructures in this 'indirect' category, they will benefit from their positive impact as the following examples show.

The city of Prato's Urban Jungle project aimed to re-nature several neighbourhoods home to high rates of migrants and low-income residents by testing the creation of 'urban jungles', designed to provide 'cool islands' during heatwaves but also to improve air quality in deprived areas. The project increased the permeable and green surfaces by 14,200 m2, with the creation of urban jungles in two public pilot areas of the city by transforming yards, roofs, buildings, walls, barriers, etc into natural places. For example, a shady green roof structure was built over the covered market in the Macrolotto zero area, and a vertical garden was built in the St Giusto social housing district. The project has also transformed 4800 m2 of vacant industrial grounds / surfaces into green gardens, with the creation of a network of planted areas.

Amsterdam's RESILIO sought to reduce flooding in deprived areas. It targeted several social apartment blocks and carried out a large-scale test of the smart blue-green roofs approach designed to reduce flood waters and cool upper floors. The project prioritised neighbourhoods exhibiting the highest level of water stress, i.e., those that

are most vulnerable to flooding during heavy precipitation. This vulnerability was examined using maps that show the areas most at risk of flooding during periods of heavy rain. In total, 10,000sqm of roofs were converted into blue green roofs, which use valve technology to control the storage and release of water. They reduce the runoff in times of heavy rain in key locations and create a localised cooling effect for the upper floor apartments. They are also beneficial to biodiversity.

Planning green infrastructure that is accessible to vulnerable groups

Some UIA cities have developed solutions that are physically accessible to all, and at no cost to residents, and which they can enjoy. This is the case of GBG_AS2C in Barcelona, where the courtyards of 11 schools were transformed into 'neighbourhood climate shelters', through the installation of three main categories of measures:

- Blue measures, these are water features, such as drinking fountains, or separate areas for playing with and handling water.
- Green measures, to increase green areas, improve the vegetation in schools and create shaded areas, with green walls, more space for gardens, trees to create shaded areas and green fences and arbours.
- Grey measures, adapting school buildings to improve insulation, with roofs, awnings, façade protection, and cross ventilation.

These measures tackle the climate emergency and high temperatures by creating surroundings that provide greater thermal comfort. The shelters may also be used by the public during the summer, in the event of a heatwave. These initiatives have helped to reclaim around 1,000 m2 of natural land with plants in school playgrounds, replacing concrete surfaces, and 2,213 m2 of new shaded areas have been created with arbours and awnings. A total of 74 trees have also been planted, and 26 new water points installed.

Designing accessible public transport to all

In this study, two UIA cities and one URBACT city implemented sustainable mobility projects to provide public services that are accessible to all and at a reasonable cost:

Sofia's INNOAIR project will re-connect the suburbs and peri-urban areas with the city centre, where connection had previously been lacking. It is doing so by putting in place on-demand green public transport. This service will pick up passengers from three target neighbourhoods, from the nearest corner to a user's home in less than 5 minutes and take them to the closest bus or train station. Users can book and pay for their ride through an online application incorporated in the public transportation management system. This new public service **used artificial intelligence** to determine the optimal routes for the on-demand e-buses. It exploits data (information/data from the city, number of registered cars, presence of services—schools, hospitals, etc.) and data collected in the field through urban walks with residents and participatory processes. In July 2022, five pilot electric on demand buses, with a capacity of 20 persons, began a one-year trial. Sofia's residents can use their existing annual public transportation pass (at no additional cost) or buy a single journey for under 1 Euro.

In Toulouse Metropole, the COMMUTE project promoted carpooling, cycling, and walking as alternatives to cars, targeting employees working in the aeronautical industry & airport area—an area lacking in public transport. This was possible through the design of a common mobility strategy through a collaborative 'Mobility Management Plan' to boost the shift from private car use to public transportation, car-pooling, cycling, and walking. In addition, each of these services have been further developed:

- an inter-company carpooling scheme involving the largest stakeholders in the airport area and substantially expanded to include 40 000 employees, an efficient and user-friendly ICT application supporting the service, as well as parking areas, electric charging facilities, and carpooling spots.
- cycling services, workshops and campaigns, as well new cycling lanes and a cycling Hub.
- trials with walking.
- establishing mobility managers in companies to promote behavioural change.

Finally, the URBACT city of Umeåhas developed a gender-sensitive approach to improve access to public transport for women and girls. Umeå recognises that women and girls have different ways of using public transport compared with men. A Climate smart bus station close to a Hospital, where many women work night shifts, was transformed to make it safer but also more convenient to use for both users and buses (electric or fossil fuel with doors located in different places.) The station features personal 'pods' which hang from a giant timber roof and create a personal space to give shelter and comfort while waiting. The Lev Tunnel, which connects the city centre with the Haga neighbourhood, also undertook massive renovation to make it more accessible, practical, and safer. It is now wider and has more light, with optimised light inflow at all entrances. An additional entrance in the middle and rounded corners increase the perception of safety. This user-friendly design was enhanced by artists with recordings users can listen to and continuous sounds of nature.

Take-aways of Promising Practice 3; Collective infrastructure for green transitions:

Making the green city accessible to all

All the cities reviewed here have implemented solutions that provide useful services to their target groups giving them access to the energy and green transition or protecting them from the impacts of climate change.

Contributing to long-term urban planning

Collective green infrastructures at the scale of a housing block, block of houses or neighbourhood enhance local urban areas immediately, at low cost, and for the long term. The effects will impact the future of the location with positive spillover effects (biodiversity, health) and are likely to induce imitation.

Replication potentials of the Promising Practice 3:

Being more creative with nature-based solutions and envisaging collective infrastructures

Recent heat waves across Europe have shown the value of nature-based solutions, especially intensive tree planting, in reducing the urban heat island effect and improving air quality. Every city has the potential to increase forest cover, whether by lining streets with trees or by following Prato's urban jungle approach using dense vegetation cover in different urban settings. Every city has schools that could be adapted to provide climate shelters. Other places could be transformed into shelters: libraries, community centres, care homes, etc.

Using artificial intelligence (AI)

INNOAIR tested AI and found it useful in the development of services to peri-urban areas, such as in the design of on-demand public transport. This could be either replicated directly or further tested to involve more criteria and to test its usefulness for other green solutions.

Implementing a gender-sensitive approach

Umeå's gender sensitive approach, including its Gender Strategy, and gender sensitive transport innovations, can be applied in other areas and other urban policies, planning, and services.

2.5 Promising Practice 4: Carefully tailored outreach solutions for target publics

The concept of 'outreach' refers to effectively engaging with hard-to-reach target groups. This section focuses on how cities have gone about achieving this in their UIA projects. 'Wicked' accessibility and affordability issues and carefully crafted outreach are a clear focus in several of these projects, and to achieve results they have had to overcome a wide range of barriers, such as:

- Lack of data about vulnerable/reticent target groups, their main problems, engaging with them with tailored policies.
- Lack of knowledge, time, capacity to engage with opportunities among vulnerable people.
- Lack of personal funds preventing investment in home improvements.

Providing complementary solutions through one-stop shops

Providing clear, understandable, and accessible information about sustainable opportunities and services is key to reaching vulnerable groups. Amongst the solutions proposed by cities, was a physical presence in the heart of target neighbourhoods, where beneficiaries can access generic information as well as tailored support with existing opportunities (schemes, etc.).

In Getafe, for example, the EPUI project set up the Healthy Households Office (OHS) to provide residents with accessible support without using technical and bureaucratic language, one they could trust. The OHS provides information and advice on energy bills, as well as help with contractual issues to residents willing to take up Energy Efficiency and Renewable Energy measures. It also explains the 200 tailor-made solutions available to its visitors.

These solutions include:

- for households: energy audits, energy efficiency kits, use of smart sensors to monitor and reduce energy consumption,

supply cut management, or the installation of small and medium-scale passive solutions.
- for buildings: whole building rehabilitation, use of smart sensors to monitor and reduce energy consumption and boost efficiency, self-produced energy and upgrading of heating facilities.

Getafe will also organise an architectural competition to develop an urban initiative on cooling to improve comfort through heat-island mitigation in specific neighbourhoods.

OHS beneficiaries have mostly been people in structural poverty who are already supported by social services, as well as elderly people whose housing and economic conditions do not provide thermal comfort. Particular attention is being given to residents suffering from power supply cuts and debt issues due to the difficulties of dealing with such extreme debt situations. In addition, the service has also identified situations of hidden energy poverty in Getafe and this information feeds into the project's data analytics system.Similarly, the Vilawatt project's Information Point is a one-stop agency to help the residents of Viladecans to better understand their electricity bills and to identify possibilities for home energy improvements that are tailored to the needs of each user. It is also via this service that users can benefit from a scheme enabling the collective purchase of energy by customers as well as the Reward currency developed by the project (see link in footnote)[10].

Getting owners on board with tailored support

Building renovation is crucial for both sustainable energy consumption and sustainable houses, so owners are a key target group. In some cities, such as Ghent, in Belgium, homeownership no longer guarantees stable, high-quality housing because a homeowner who may have inherited their home or purchased it with a loan may be unable to afford to upgrade it. Such owners are known as 'captive owners' and there are around 6,000 in Ghent. Captive owners can also be in a state of vulnerability and may suffer from energy poverty. They may be unable to modernise their homes, even in their own longer-term interests. Moreover, the incentive to upgrade may be low, as any additional property value from improvements is perceived as a mid-to-long term gain. The immediate gain in thermal comfort or on bills is a low incentive if owners are not also occupiers.

To support owners with renovation, some cities have gone a step further than one-stop shops, by providing tailored assistance to individual owners for the entire renovation process. This is the case in Ghent, in the ICCARus project. On top of an attractive financial package (see 2.6 below) captive owners could either benefit from tailored support in the form of guided renovation or they could let the city renovate and rent out the flats. The project also offered temporary housing during the renovation work. For the guided renovation, social workers played a key role in facilitating the process and providing emotional support. They identified captive owners, dealt with the registration process and the practical side of the renovation, and strengthened the social support for participants by organising group gatherings and community building activities. Social workers assisted by explaining the complex regulations and work phases and by giving sufficient time to each family. A 'technical counsellor' oversaw the entire renovation process: contacting contractors, asking for tender documents, checking renovation works, etc.

Lastly, owner-participants were involved in the design and decision-making of the renovation. Such a co-design approach ensures that the renovation meets the owner's needs, and it teaches owners valuable home improvement skills. The most common renovation works were as shown in the table below.

Table 3: The most common renovation works in ICCARus by improvement category

	Safety	Living quality	Energy efficiency
Installing smoke detectors	x		
Updating the electrical system	x		
Renewing and insulating the roof		x	X
Replacing single/old double glazing		X	X

Installing central heating	X	X
Updating or renewing bathrooms	X	

In the case of Yes, We Rent!, the focus was on ensuring an optimal use of the existing building stock, which also helps to limit urban sprawl and therefore land consumption. Many of Mataró's empty dwellings are concentrated in certain peripheral areas characterised by poverty and the socio-economic dynamics of immigrant segregation. The project involves dialogue with owners to ensure a satisfactory level of energy efficiency and of overall housing standards. To support them, an architect visited 36 flats to assess their renovation needs. In addition, the project produced a booklet aimed at owners describing the statutory standards (state, region, city levels) applicable to rehabilitation works and energy efficiency.

Based on the architect's assessments, the city sent a proposal to the owners detailing any compulsory and/or recommended renovation works needed. This included information about any subsidies or other benefits the owner was eligible for, or the conditions they would be subject to under Yes, We Rent. For example, they were informed about the duration of the assignment of the flat to the 'Yes, We Rent!' housing scheme and the maximum monthly rent under the scheme. Based on the proposal, at the time of writing, 11 owners had submitted a grant application and 7 had handed over the management of their flats to the city. Four owners had started their own rehabilitation works on their empty flats with a view to letting them after the project.

The owner then had the choice between having works carried out with up to 20 000 euros of funding and/or of delegating the works to the city. 50% of the owners chose to carry out the works themselves. In addition, the project also developed a template for a rental contract between the owner and the tenant to make it easier for owners to rent the flats with legal security. The arrangement is that once renovated, the flats become part of the cooperative for at least 5 years.

Renovating collective buildings

Cities have also developed specific schemes to support the renovation of collective buildings directly, through the retrofitting carried out by the city in liaison with the building owners. This was the case in Getafe (EPIU project) and Viladecans (Vilawatt project), which, as mentioned above, promoted energy upgrading via their one-stop shop offices to explain the process to tenants and to act as an intermediary where necessary.

In Viladecans, three residential buildings (demonstrator buildings) underwent deep renovation to boost energy savings, aiming for a 70% energy saving in each of the buildings and the generation of 50% of the demand through renewable energies, organised through available suppliers. The buildings were identified based on the initial research. The social profile of the tenants and residents was very diverse - elderly and working-class people - as was the levels of energy efficiency awareness. The buildings selected were those with significant potential for energy efficiency improvement. They were modest in construction quality and were built between 1960 and 1980 at a time when energy efficiency was not a concern (facades and roofs had no insulating air chambers, nor any other kind of thermal insulation). The buildings were environmentally modelled. This included a study on the deep renovation measures needed, assessing building characteristics and calculating energy demand, and drawing up 'before and after' scenarios. The retrofit of the three demonstrator buildings included both passive and active measures, as listed below:

- Passive systems renovation
  - Insulation of facades and roofs
  - Change wooden components (window frames and doors).
  - Replacement of single glazing by double glazing
  - solar protection by means of awning installation in main facades
- Active systems
  - New conditioning systems
  - New heaters
  - New ventilation systems
  - Change to LED bulbs
  - Replacement of refrigerators by those with a triple A rating
  - installation of solar panels in building roofs (6 kw)

The subsequent renovation of 51 dwellings and 4 shops took a total of 24 months.

Participants in Spanish energy retrofit schemes are faced with fiscal burden, even if they do not engage in the process directly but merely benefit from energy efficiency improvements. In many countries, the taxation system requires that any subsidies received for home energy renovation be added to the taxable base of rent. In the case of Vilawatt and EPIU, it was essential to

evaluate the impacts of the funding for rehabilitation in advance, including the fiscal barriers and any impact on beneficiaries' tax situations. They were low-income beneficiaries and not obliged to declare their incomes as they were below the limit. One of the lessons from this project is that it would be difficult to replicate all the services as originally conceived so flexibility is needed to adapt the concept to context. The unexpected tax impact (around € 5,000 per home) turned out to be a negative impact, particularly in the cases when residents did not previously have to file income tax return because they did not reach the minimum income.
If a scheme places people into a situation of tax liability where none existed before, it creates a clear disincentive to vulnerable households' participation in energy efficiency improvement schemes. This effect needs to be taken seriously by public authorities at all levels, particularly by national fiscal authorities, if ambitious targets for the refurbishment of the housing stock are to be met. Cities are still investigating new approaches to compensate or offset the income taxes that residents must pay when in receipt of in-kind subsidies.

Take-aways of Promising Practice 4, Carefully tailored outreach solutions for target publics:

Addressing the complexity of the Just transitions for all challenge

The socio-economic phenomena cities are addressing are the result of complex and interconnected macro and micro factors and are not easy to change. For example, where energy upgrading is concerned, changing energy consumption behaviour is hampered by a variety of social, cultural, and financial barriers such as - comfort related behaviours (e.g., the comfort single-use cars or of high temperature at home in winter), - the statuses of target families (e.g., residents need specific medical equipment's/environments or large families), - the types of infrastructures in question (types of building construction, mobility network), - financial constraints (difficulty residents may have in paying bills preventing them from investing in new technologies to reduce their energy consumption), - a lack of information or trust in the process (e.g., allowing strangers to enter homes to carry out renovation), or in the system (e.g., change in tenants). A key lesson is that tailored support is better at engaging effectively with target groups and addressing many of the socio-cultural barriers in play.

Using residents' feedback in local policies

Providing direct coaching and support to vulnerable groups can generate feedback which in turn enables policymakers to better understand needs, realities, and difficulties, which can improve the design of local policies.

Developing an in-kind subsidy system

In many instances, subsidies for renovation of both private and collective housing are paid after completion of the work. Low-income owners may therefore be reluctant to use such funding, in turn undermining the overall retrofitting effort. However, when support is provided directly in the in-kind form of renovation work paid for by a city, more residents will implement the necessary works, as they do not need to advance the money.

The replication potentials of Promising Practice 4:

Establishing one-stop shops

The Vilawatt Information Point and EPIU's OHS are an outreach format that can be adjusted to support the delivery of other city policies (e.g., expanding the services in relation to energy, or linking them to social issues). They are an effective delivery mechanism for tailored services in cities or neighbourhoods of any size. They can provide information, counselling/coaching, promote services, as well as provide feedback to policymakers, which can help improve policy design.

Designing a methodology for tailor-made solutions

The methodology for EPIU's tailor-made solutions was to determine a package of measures appropriate for each population cluster. Other cities can learn from the criteria used, which link each tailor-made solution to the variables that define the demographic they target. At the same time, some measures (such as advice on energy habits or bill optimisation) are universal and can be applied independently of the specific needs of a household or building.

Carrying out in-depth legal and fiscal work

The legal and fiscal work undertaken to ensure that residents can benefit from the renovation schemes without paying additional tax, is a key lesson, both in its specific detail in the case of the Vilawatt project in Spain, but also in principle, as an essential feature of policy designed for vulnerable individuals or groups, in the case of other countries.

2.6 Promising Practice 5: Enabling financial models

This section focuses on how cities have been creative in developing enabling funding & policy delivery frameworks to overcome 'wicked' accessibility and affordability barriers - not only those faced by people lacking personal means but also the creation of novel public funding mechanisms.

Giving vulnerable groups the financial means to participate in the transition using creative funding models and subsidies

In traditional subsidies and tax-related incentives it is often the case that eligible activities must be completed and paid for before the paperwork for reimbursement can be processed. Lacking own resources, vulnerable groups, therefore, essentially have no access to such schemes. Some UIA cities trialled funding mechanism to address this problem.

In its ICCARus project, the city of**Ghent**, developed **a revolving fund** to support the renovation of private households with up to 30,000 euros per renovation. This fund is a long-term financial tool based on the principle of subsidy retention. Under this principle, recipients of the subsidy pay it back to the fund when the property is sold, let, or sublet, along with a portion of any surplus value generated. This creates a sustainable stream of resources to support further renovations while ensuring public value-capturing and mitigating speculative behaviours, which can make housing more expensive and speed-up gentrification. To guarantee this payment, a mortgage is taken out on the house, which is lifted after repayment.

The fund is available to low-income owner-occupiers based on various criteria. The work is either procured or, under certain conditions, the homeowner may perform them. The contribution may only be spent on a list of renovation works that is drawn up by the technical counsellor and agreed on by signing the renovation agreement.

In **Mataró**'s Yes We Rent! Project stakeholders sought to tackle the market under-supply of affordable (defined as no more than 40% of income) rental accommodation for the city's low-income residents. The city knew there were numerous vacant flats and that the cost renting was rising. Yes, We Rent! therefore provided **financial and organisational support** to landlords to renovate and energy retrofit their properties.

In the first instance, the city invites the owners of vacant flats to participate in the Yes, We Rent Scheme as an alternative to the payment of a vacancy tax (levied on vacant properties). For those willing to participate, it determines the renovation needs and a subsidy of up to 20 000 € per flat is available, plus a guarantee in the case of rent arrears. Once the owner joins the initiative, a tender for the renovation is organised. The city drew up model contracts for the renting of the **renovated/energy efficient** flats, at rates below the market rate. In return for participation, owners let their flats for a minimum of 5 years to the 'Yes, we rent!' housing scheme at below market rates.

A question mark remains regarding inflation and the value of the fund in the next couple of years. Inflation is an important parameter for the management of revolving funds in terms of fund value, membership, and the viability of the business model. It is especially so in a period of much higher inflation caused by the energy shock and a supply chain crisis which can quickly diminish the value of the funds. Governments can take key actions to foster de-financialisation of the housing market, in line with the principles of the right to housing.

The value of creative incentive systems and housing cooperatives in delivering affordable housing

The project included handing over the management role to a housing cooperative *Bloc Cooperatiu*. The Yes, We Rent! Housing cooperative plays an important role by taking out personal home insurance plans and intends to set up a rent guarantee fund.

The cooperative concept acknowledges a range of barriers (trust, skills, capacity, outreach) in the incentive system that would be addressed by participants themselves. The cooperative will itself provide and manage the affordable housing (and tenants for the owners) and a range of services to improve living conditions (e.g., support for personal home insurance plans) and take care of private rental flats (condition, owner-tenant relationships).

Setting up such a cooperative is challenging and requires significant local efforts and capacity building. In terms of the cooperatives internal functioning, the lower rents allow the cooperative to fund its organisation and activities.

- User members pay 100 EUR/month to the cooperative. 20% of this payment is used for a Social Fund which can be used by the cooperative to cover diverse costs such as minor repairs/needs arising.

- Moreover, renting members pay a fixed fee of 12% of the rent to support the functioning of the cooperative and the consolidation of the model. The monthly fee may be reduced according to the tasks carried out by the member within the cooperative.

Engagement within the cooperative is ensured through novel incentive systems. For example, Flats are allocated to members depending on seniority in the cooperatives and points, received for fulfilling tasks/work for the cooperative (e.g.) or for social needs (e.g., mobility problems - flats with lift or on ground floor), for a number of household members (i.e., larger apartments) or low income (i.e., flats with a rent lower than 400 EUR/month).

The cooperative has attracted residents with quite different social backgrounds, from people with a high social and cultural status attracted by the idea of a fairer relation between owners and tenants and of a new model of housing 'consumption', to others more driven by their need for affordable housing. The latter is dominant and includes people who have suffered discrimination in the rental market, which is traditionally risk averse. The project therefore supports vulnerable groups very directly.

At the time of writing, the cooperative has 67 members and more than 100 on a waiting list. It manages 25 flats, in which 32 members of the cooperative live. The long-term financial viability of the current model beyond the initial 5-year rental agreements may not be sustainable (it will be difficult to maintain lower than market rents and therefore the cooperative's financial model) and this is being addressed by local stakeholders.

Determining the costs of technical solutions for the reuse of building materials

Delivering policy solutions with a complex technological component, such as the use of recycled material in the construction of social housing, running a fleet of electric vehicles, etc. is expensive. The UIA enabled some cities to trial new approaches and develop technological solutions with the potential to roll out on a much larger scale, notwithstanding their (current) high cost for the city and price for the users.

One such a solution was to test the feasibility & cost of reusing construction materials, i.e., in a circular way, to build social housing. This was the goal of the Super Circular Estate project, in **Kerkrade**. The project built four pilot housing units with different reuse/recycle techniques using materials acquired from the circular demolition of a 10-floor high-rise social apartment building. The harvested materials were turned into resources in 24 material flows (e.g., timber was restored for reuse/recycling). Using recovered materials, a social plinth (a new collective area) was also created in a second apartment building. The second building will be renovated and transformed into 110 apartments after the completion of Super Circular Estate.

The quality of the harvested materials was tested. A coding system and a material passport were developed. Each design proposal was dependent on the judgement of the deconstruction contractor regarding their ability to recover materials with minimum damage and to characterise the properties of the existing materials. Regulative obstacles, i.e., policy and regulatory gaps related to the reuse of materials, were also addressed to find ways to overcome them.

While the project estimated that 75% [11]of construction material ordinarily required when using non-circular techniques would be saved in such a project and energy consumption reduced by 34% than standard construction, the costs would remain higher than standard construction, preventing the competitiveness of such a solution on the market as long as the carbon price is low. If the carbon price were to rise sufficiently, the financial viability of recycling may increase. Further research is therefore needed to assess the financial viability of this approach.

Take-aways of Promising Practice 5; Enabling financial models:

Making Just Transitions financially accessible

All the UIA projects discussed in this section 2.6 have found novel ways to address complex accessibility and affordability challenges.

Empowering vulnerable groups

As house prices have risen in almost all major cities, people on low incomes often spend a high proportion of their income on housing costs. Low-income residents have often little choice, and if they can buy, they are likely to buy a property whose quality does not meet required standards. Properties lack insulation and efficient heating systems. This Promising Practice 'enabling financial models' offers low-income homeowners (e.g., ICCARus) a way to increase the quality of their property and in doing so the fund aims to contribute to their health, quality of life, and reduce their environmental footprint.

Correcting market failures - Bringing the owners and occupants of rented properties into a renovation process

Owners who let their accommodation often feel disconnected from any renovation needs if they do not live in the accommodation. Bringing owners and tenants together under an incentivised renovation process can spark mutual commitment; in Yes, We Rent!, a commitment lasting for at least 5 years was created

Replication potentials of Promising Practice 5; Enabling financial models :

Addressing the technical, legal, fiscal, and economic aspects of the models

Each of the above financial models for the Just & Green Transitions, i.e., revolving funds, cooperatives & renovation incentives, or costing the circular reuse of building materials has faced a series of technical, legal, fiscal, and economic constraints and challenges. Not all of these were overcome. Other jurisdictions, national or local, may however overcome them or may decide that reforms to standards or funding is necessary to achieve certain goals, such as energy efficiency, affordable housing, etc. These are political decisions. The UIA projects identify barriers and offer grounded and creative solutions which can inform and inspire policymakers in cities and other governance jurisdictions grappling with similar challenges.

Developing new policy models (funding)

Funding is always a key challenge. The Promising Practices discussed here may not all be financially viable in the long run. Yet, they have enabled cities to try out creative solutions, which point to possible policy models for the future. Yes, We Rent! may, for example, be continued through *Bloc Cooperatiu*, it may be abandoned and/or the city may conduct new research on the cost/benefits of building of new housing.

This report has focused on affordability and accessibility as part of a Just Transitions. Much of course depends on national governments and national policy. Further research to compile examples of national policies would be useful and could interest regional and local policymakers. A brief example might be the Scottish LIFT scheme, which widens access to home ownership by supporting first-time buyers. There are also new options emerging outside of public policy in the private building sector, which may offer low-cost solutions. The 'Tiny House' approach for example is worth examining in terms of its accessibility, affordability, and environmental benefits.

In relation to funding opportunities, the reader is referred to section 1.1 and the paragraph 'The EU policy frameworks for cities relevant for Just Transitions' for a list of EU sources of funding and policy ideas. Further research is required on these new and emerging policies, which will remain beyond the scope of this report.

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[6] At the time of writing, the cities of Amsterdam, Barcelona, Prato, Sofia, and Umeå also kicked off their participation in the 100 Climate Neutral Cities programme. Further actions on Just Transitions might be undertaken within this frame as well in the next couple of years.

[7] See for example the development of the regional innovation programme "Co-create" by Innoviris in the Region of Brussels Capital.

[8] The participation and involvement of target groups and co-creation will be covered by the third strand of this Just Transition capitalisation work entitled "Democratic Transition for All".

[9] -Typology 1: buildings built before 1955 (5% of the total), Typology 2: buildings built between 1956 and 1970 (38% of the total), Typology 3: buildings built between 1971 and 1980 (26% of the total), Typology 4: buildings built between 1981 and 2010 (31% of the total), Typology 5: buildings built after 2010 - only 2 units

[10] https://www.uia-initiative.eu/en/news/vilawatt-currency

[11] In the Netherlands there is also the Villa Welpeloo house constructed by Superuse using around 60% of recycled materials but using a different method and with a focus on upcycling. See https://ellenmacarthurfoundation.org/circular-examples/finding-and-utilising-waste-materials-for-construction-purposes