URBACT APN: ZERO CARBON CITIES

Using Science-based Targets to align cities' Sustainable Energy and Climate Action Plans to the Paris Commitment

BASELINE STUDY

"We cannot set the right priorities with the wrong compass"

Executive Summary

The Paris Agreement, reached in December 2015 at COP 21, changed the horizon of climate action. For the first time, it was agreed that, while acknowledging different levels of responsibilities in the acceleration of climate change, all continents, all countries, all players should share the same objective. For Europe, it cannot be less than reaching climate neutrality in 2050, for the 27 Member States and the UK, collectively, but also for all levels of government which should play their parts - their "fair share".

The finishing line is known: 2050. However, climate neutrality remains a 'blurry' concept. Since the Paris Agreement, the difficulties highlighted in reaching a common understanding have been much debated. We know we can reach climate neutrality; this is not questionable. The theoretical feasibility of that objective is a given. Nevertheless, many different paths are possible, depending on technological choices, the policies implemented, and negotiations around sharing the burden or responsibilities.

Many assumptions are to be discussed. Negotiations have been carried out to agree on who will have to make the efforts and bear the costs of the transition towards climate neutrality. Member States (MS) of the European Union could not agree to commit to this objective in 2019, even though it is a minimum translation of the Paris Agreement all MS signed. They will reach this agreement in 2020.

In order to put the EU on track with the climate neutrality goal, the new European Union leaders have decided that their next mandate will focus on delivering an EU Green Deal. In 2020, Member States will also submit their final National Energy and Climate Plans, a report explaining how they are planning to design their path towards, at least, a 40% GHG emissions reduction by 2030. This same objective that the European Commission's new President, Ursula Von der Leyen, already wants to make more ambitious to be in line with the target of not going beyond a 2 degrees increase in global temperatures.

In order to plan the next decade of local transformation, cities need to know what the correct objectives to be used are. Local leaders and members of the Zero Carbon Cities (ZCC) URBACT Network are already convinced about the long-term objective of climate neutrality. They do however lack tools and capacity to set science-based targets and action plans in line with the Paris Agreement, the governance and funding mechanisms to deliver them, and the systems to transparently and consistently monitor and report progress.

The ZCC URBACT network will explore the different possible ways to answer these needs and increase the capacity of municipalities to better assess and decide according to the climate neutrality objective. The cities of the ZCC URBACT network also expressed a need to improve capacity in communicating this objective and how it impacts decisions as well as the co-benefits of a climate neutral strategy in terms of local social and economic priorities. Together these actions will form the basis of individual cities' Integrated Action Plans, or in the context of this project 'Sustainable Energy and Climate Action Plans' (SECAPs). SECAPs and the associated EU Covenant of Mayors are the EU's main tools for supporting EU cities to contribute towards the EU's carbon neutral commitments and the Paris Agreement.

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SECTION 1- STATE OF THE ART

INTRODUCTION

In 2019, "Over 1,180 local governments, representing 290 million inhabitants, have recognised, acknowledged or declared a 'climate emergency' by way of a formal binding resolution (CEDEMIA, 2019). This includes major cities such as Sydney, Dublin, Paris, Milan and Prague"[1]. And the trend is not fading away, on the contrary, many national initiatives, or local ones are not reported and it is not possible to keep track of all support. In Europe, Mayors from 210 cities, representing 62 million EU citizens, have issued in May 2019, an open letter calling for the European Council to commit to a new long-term climate strategy including the achievement of net-zero emissions by 2050.

If we want to reach the overall objective of the Paris Agreement, the sub-national strategies must be aligned with these international and European climate goals. But despite local authorities' high degree of awareness concerning their role in meeting the climate and environmental challenges, the responsibility for achieving specific energy and climate targets still lies overwhelmingly on the shoulders of the local Energy and Climate Departments. Other departments and agencies, including the Financial Departments and City Treasuries, often do not feel concerned or are not aware of the contribution they can make to attain climate goals.

Equally, cities' administrations are only responsible for a very small percentage of the emissions within their administrative boundaries, but their decisions, in regulation or planning can have a tremendous impact. They also are ideally placed to mobilise all actors who are responsible for emissions.

Apart from expenditures directly attributed to climate and energy projects, most cities do not monitor the climate impacts of their expenditures and investments or the impact of their strategies; neither are they equipped to fix targets based on their locality's economic activities. In addition, developing clear science-based strategies in full alignment with the Paris Agreement, is a good opportunity to map all existing and potential local resources, inside town halls and outside. The exercise of fixing targets/budgets should also be seen as a way to evaluate the potential for local wealth creation.

Cities, especially members of the ZCC URBACT network, are keen to monitor their impact in order to ensure they are making their full contribution to the Paris Agreement, and most importantly to have a real benchmark of their actions and "keep on the right track". In addition, "tracking" tools can provide great support for cities to communicate widely with citizens in order to better explain the opportunities offered by the transition and create vibrant local communities.

The ZCC network is about cities committing to climate neutrality and finding the best tool to set up their own trajectory, their own path and track progress. Tools and approaches can be very different, depending on the starting point of each city.

[1] From the Climate chance 2019 global status report: https://www.climate-chance.org/wp-content/uploads/2019/11/en_c2_complet_def.pdf

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1.1. THE THEME: "Science-based targets for energy and climate strategies at the local level"

"Carbon budget", "Climate-proofed municipal budgets", "science-based targets" are some of many different approaches offered to cities when they want to align their short, medium and long-term policies with the Paris Agreement. These instruments, measuring and monitoring tools, can be complementary. They, in any case, need to be adapted to the local context and to the local available data. Science-based targets can support cities in defining their strategy by identifying and leveraging on their own strengths; on the most impactful actions.

1.1.1. CARBON BUDGETS

Carbon budgets emerged as a scientific concept from the IPCC's 2014 Synthesis Report on Climate Change[2] and relate to the "cumulative amount of CO_2 emissions permitted over a period of time to keep within a certain temperature threshold"[3]. Much like a financial budget, a carbon sets out how much CO_2 can be 'spent' over a fixed time period; and once it's gone, it cannot be replenished (unless new technologies are rolled out at scale to extract CO_2 from the atmosphere). This framing is used to inform local and national climate strategies using the 1.5°C or 2°C temperature targets as enshrined in international goals. Figure 1 tracks different interpretations given by different institutions.

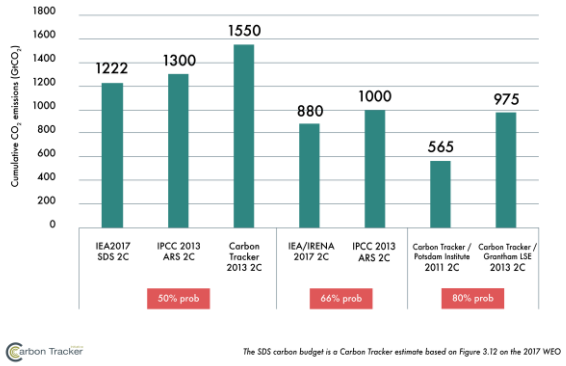

Figure 1. "A number of differences lie beneath 2°C budgets published by different institutions"[4]

At national level, there are two States who have adopted carbon budgets. One such example is France, which has determined three carbon budgets over the 2015-2028 timeframe in its Stratégie Nationale Bas-Carbone (SNBC)[5]. France's carbon budget limits the country's overall CO_2 emissions to 442 $MtCO_2e$ between 2015 and 2018, gradually reducing the budget to 399 $MtCO_2e$ between 2019 and 2023, and 358 $MtCO_2e$ between 2024 and 2028.[6] The French SNBC also sets carbon budgets for the various emitting sectors, such as transport, buildings, agriculture, the energy industry etc.

[2] Anderson et al. (2017). 'Carbon budget and pathways to a fossil-free future in Järfälla Municipality'
[3] https://www.carbontracker.org/carbon-budgets-explained/
[4] https://www.carbontracker.org/carbon-budgets-explained/
[5] https://www.ecologique-solidaire.gouv.fr/strategie-nationale-bas-carbone-snbc
[6] https://www.citepa.org/fr/air-et-climat/la-france-face-a-ses-objectifs

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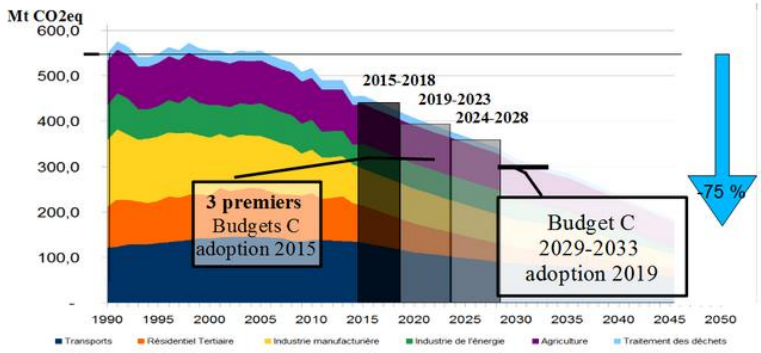

Figure 2. Overview of the French national carbon budgets[7]

Starting even earlier, the United Kingdom calculates legally binding carbon budgets every five years since the 2008 Climate Change Act.

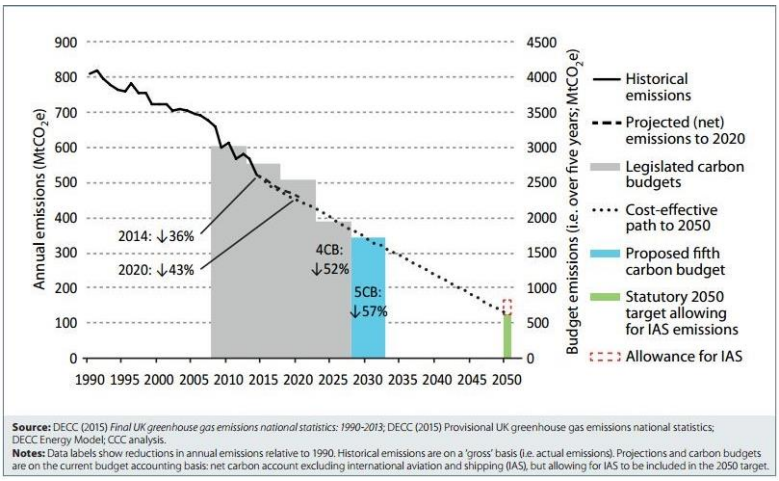

Figure 3. Past carbon budgets for the United Kingdom and the proposed fifth carbon budget by the Committee on Climate Change in 2015, adopted in 2016[8]

These two examples of carbon budgets on a national level demonstrate two major problems: Firstly, even though the carbon budgets are supposed to be "legally binding", there are no consequences when they are not respected, and the yearly cap fixed by the French carbon budget was already exceeded by 3.6% in 2016. Secondly, these carbon budgets are not necessarily in line with the Paris Agreement commitments, notably concerning the allocation of emissions between OECD and non-OECD countries on the basis of equity.

[7] https://www.ecologique-solidaire.gouv.fr/strategie-nationale-bas-carbone-snbc
[8] https://carboncredentials.com/uk-government-approves-5th-carbon-budget/

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The Tyndall Centre for Climate Change Research at the University of Manchester has criticised the fact that "UK budgets under-represent equity, which is a guiding principle of the Paris Agreement, by setting a UK path that delays annual global emissions parity until 2050, despite historic responsibility[9]".

Case study: State of California (USA)

A first tentative approach towards carbon budgets at the local level was made by the State of California in 2008, in the form of California's Senate Bill 375 which imposed GHG emission targets on regional governments, focusing on emissions from vehicle travel[10]. The targets were developed with the help of a Regional Targets Advisory Committee including city and county officials, and local authorities were required to prepare 'Sustainable Community Strategies' as part of their transportation planning, identifying a set of actions to reduce local emissions.

In the Californian case, implementation of the action plan was not mandatory. However, what is interesting are the tools which the State provided to its regional authorities: The first step that the local administrations had to take was to calculate the GHG emission inventory of their city or county. In order to transform the targets into concrete measures, emissions were forecast under a business-as-usual scenario, to see what reductions had to be made to reach the targets. The different modelling and calculation tools are still available at: https://coolcalifornia.arb.ca.gov/local-government/toolkit

While the case of California is an example of how emissions can be calculated and reduction objectives set at the local level, it does not follow the carbon budgeting approach described above. Rather than just setting local targets, a carbon budget sets comprehensive CO_2 emission boundaries which should not be exceeded inside a certain territory or administrative boundary. The carbon budget must be set in relation to the global carbon budget which is broken down first at the national and then at the sub-national level. Since that time, both carbon budgeting methodologies and cities' ambitions have evolved considerably and recently there has been a push for local carbon budgets in a number of European cities, which are often much more ambitious than national objectives.

CARBON BUDGET AT THE CITY LEVEL

There are currently still only few examples of carbon budgets broken down at the city level. Nevertheless, the idea of using carbon budgets as a local policy tool has gained support in academic circles and amongst more ambitious local authorities.

"The city carbon budgets approach would make local governments accountable for greenhouse gas emissions that are under their control — either directly through city operations or indirectly through land use and other locally held powers. Under city carbon budgets, local governments would be assigned an annual emissions 'budget' and would be required to keep local transport and buildings emissions within this budget."[11]

Researchers from the University of Uppsala in Sweden have come up with a model on how to break down Sweden's carbon budget at the municipal level.

[9] Kuriakose et al. (2018). 'Quantifying the implications of the Paris Agreement for Greater Manchester'. Tyndall Centre Manchester.
[10] Salon et al. (2010). 'City carbon budgets: A proposal to align incentives for climate-friendly communities'. *Energy Policy*, Vol. 38, pp. 2032–2041.
[11] Salon et al. (2010). 'City carbon budgets: A proposal to align incentives for climate-friendly communities'. *Energy Policy*, Vol. 38, pp. 2032–2041.

Using a similar methodology, the French branch of WWF has calculated carbon budgets for the 10 biggest French Metropolitan areas, both under a 1.5°C and a 2°C scenario, in its most recent report entitled "Cities' Climate Challenges"[12]. The report begins with a detailed analysis of the climate action plans of these 10 cities and clearly shows how their current political ambitions are far from sufficient to maintain them on the reduction trajectories proposed in line with the Paris Agreement commitments. Unless they immediately begin making radical yearly cuts in emissions, their entire carbon budget allocation until 2100 will have been used up within the next 13 years.

	1.5°C Scenario (50% probability)		**2°C Scenario (66% probability)**	
	Carbon budget (MTCO2e) 2016-2100	Number of emission years at the corresponding annual pace	Carbon budget (MTCO2e) 2016-2100	Number of emission years at the corresponding annual pace
Métropole du Grand Paris	250	3	682	9
Métropole Aix Marseille Provence	72	2	197	5
Métropole de Lyon	51	5	139	14
Métropole Européenne de Lille	47	5	128	13
Bordeaux Métropole	37	7	101	18
Toulouse Métropole	34	8	94	21
Nantes Métropole	26	7	70	20
Métropole Nice Côte d'Azur	20	6	55	16
Eurométropole de Strasbourg	19	6	53	16
Métropole Rouen Normandie	19	4	52	11
Total	**577**	**5**	**1571**	**13**

Table 1. Carbon budgets calculated by WWF France for the 10 biggest French Metropolitan areas[13] (Translated from French)

Carbon budget: the case of Manchester

Following the example of the National UK government (see above figure 3), Manchester took the decision to develop their own carbon budget.

Committing to stay below a 2° temperature increase, as stated in the Paris agreement, can be translated into a number of maximum tonnes of GHG (Carbon) to be emitted before the end of the century. This amount can be then divided into maximum tonnes of GHG for each country and further down, be split into "local carbon budgets".

[12] WWF France. (2018). 'Le défi climatique des villes'.
[13] WWF France. (2018). 'Le défi climatique des villes'. https://www.wwf.fr/sites/default/files/doc-2018-07/20180704_Etude-defi-climatique-villes.pdf

Figure 4 - The pieces of the carbon pie

The concept: The local carbon budgets correspond to the maximum GHG volumes that can be emitted by a territory. The cumulative total is the key parameter, not the zero carbon / carbon neutral end-date.

The timescale advised by the Tyndall Centre is to 2100, taking into account the persistence of CO_2 in the atmosphere and the need for a long-term perspective; once emitted CO_2 stays for many decades, adding to the cumulative total of emissions emitted beforehand.

Once the local carbon budget has been established work is then required to determine the pathway for staying within the budget: spend it all in the short-term with a view to radical and unprecedented cuts in the medium term; deep cuts in the short-term to leave budget for later years; and other scenarios may be considered. However, it is important to note that scientific consensus is not to delay action to later years in anticipation of a yet-to-be-invented technological solution; the recommended approach is to take urgent and immediate action now. In Manchester's example, figures are provided by the Tyndall Centre

The total carbon budget remaining for Manchester is 15 million tonnes for 2018-2100. If Manchester keeps its current emissions levels, it means that after 7 years of emitting at the same rate, Manchester would use all of its budget, by 2025, rather than the required 2100.

In their action plan for climate and energy, the potential impact of different actions was measured via the SCATTER tool developed by Anthesis. On that basis, Manchester has chosen to reach carbon neutrality by 2038, at the latest. They will have spent 95% of their carbon budget by then, leaving 5% for the remainder of the century. Whilst not fully carbon neutral by 2038, this is the definition adopted by the Tyndall Centre. However, as above, the key parameter is the total carbon budget – 15 million tonnes CO_2 for 2018-2100 – not the end date.

The carbon budget approach can be useful to raise awareness, but should really be an instrument that helps well-informed decision-making and urgent action, rather than providing "panic button". This can

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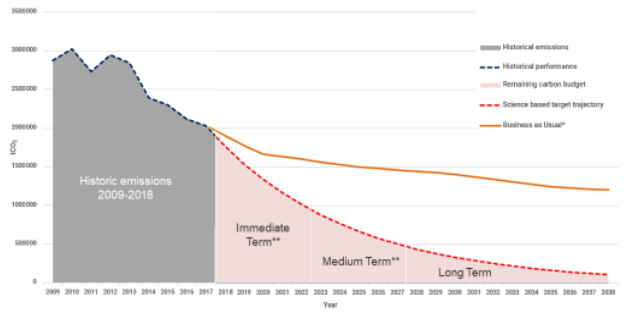
be the case, as seen with some of the French cities' carbon budgets, which have already been entirely "spent" (within the time the study was published). Nevertheless, the advantage of the approach is to clearly show the rapid change required.



Total budget (2018-2100) tCO_2	Immediate term (2018-2022) tCO_2	Medium term (2023-2027) tCO_2	Long term (2028-2037) tCO_2
15,187,610	6,928,620	3,593,560	3,046,920

* Business as usual as defined by Level Tambition thresholds within the Anthesis' SCATTER model.
** Immediate Term & Medium Term periods align with the 3rd and 4th nationally legislated carbon budget periods (respectively) under the UK Climate Change Act (2008).

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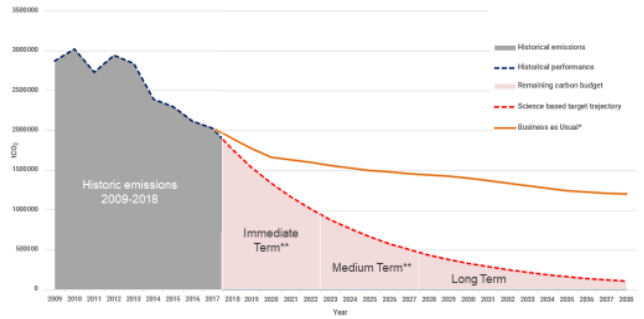

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Figure 5 - Manchester's current, medium and long term budgets

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Manchester's carbon budget requires UK aviation emissions to also stay within a limited carbon budget; the Tyndall Centre recommend a budget of 1,200 tonnes CO_2 for 2020-2100. The distribution of this budget requires UK Government to work with UK airports to develop a Paris Agreement-aligned aviation strategy for the UK. The Tyndall Centre do not recommend taking unilateral action at Manchester or any other UK airports, rather a coordinated national approach is required. However, it is possible for cities to develop a clear position on aviation based on actions that are within their local control and influence (including influencing citizens and businesses) and to make a clear commitment to work with national government. The Manchester Climate Change Framework 2020-25 and the Bristol Climate Change Strategy 2020-30 both include commitments on aviation. Barcelona city has also started a campaign to ask their port and airport to be more accountable to climate targets, assessing that together the port and the airport are emitting 4 times more than the entire city of Barcelona.[14]

As a conclusion, we can take inspiration from the "City Carbon budget challenge" of the Uppsalla University. They have proposed, with support from the Swedish government, to calculate the carbon budget of different cities or groups of stakeholders. Thus it is not only a municipal council that can start the exercise, but the carbon budget can also be a tool for civil society to pressure their council/ regional leaders.

Example of a Swedish City carbon budget challenge:

Södermanland is a county located South-West of Stockholm with a population of roughly 300 000 people. It is also one of the counties for which Uppsalla University calculated a carbon budget in 2018. In this report, the county's allocated budget was 14Mt C02, roughly 5% of Sweden's total budget. If emissions continue at 2016 levels, Södermanland will break this budget by mid next decade. Hence, Uppsalla University recommend an emissions reduction curve of 16% per year[15].

[14] https://www.elperiodico.com/es/barcelona/20200114/medidas-reducir-contaminacion-puerto-y-aeropuerto-barcelonna-7805670

[15] https://uppsala.app.box.com/v/Koldioxidbudgetar-2020-2040/file/365900065079 (in Swedish)

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1.1.2. CLIMATE- PROOFING OF MUNICIPAL BUDGETS

At State level, some countries have started another exercise which can be complementary to the carbon budgeting approach. They assess their national budget with a "climate compass". In France, a first report was attached to the finance law for the 2020 budget and it has been promised that the next budget proposal for 2021 will include climate impact information (including a wider approach on resources, not only GHG) within the proposals (not as an annex).

Measuring and following up on the evolution of the city's GHG emissions is essential to identify the most polluting sectors and the most efficient mitigation measures. This helps prioritise investments and ensures that the city's money is being spent in accordance with its commitments. Several cities have developed their own budgeting and reporting mechanisms with the objective of calculating CO_2 emissions and putting climate-related data at the centre of the city's strategic planning – aligning their investments and actions around the reduction of CO_2 emissions.

Climate budget of City of Oslo (Norway)

Oslo City Council adopted its first Climate Budget in 2016, under the motto "we'll count carbon dioxide the same way we count money"[16]. Under the responsibility of the Department of Finance and the City Council for Environment and Transport, the updated second generation of the Climate Budget provides an overview of 36 measures that the City Government is planning to implement within the period covered by its current economic plan in order to achieve Oslo's climate goals. The Climate Budget includes measures under municipal control and measures implemented or funded by the national government that have a direct impact on GHG emissions in Oslo.

One drawback of this approach that should be noted is that the emissions included in the Climate Budget only relate to Oslo's scope 1 emissions, i.e. emissions from sources under direct control of the administration, and do not include scope 2 and 3 emissions[17]. Consequently, emissions related to oil and gas extraction are not included, even though they represent a significant share of revenue for most Norwegian municipalities.

CO_2 emissions and the costs of reducing them are reported at the same time as the regular budget report, the Climate Budget "being an integral component of the overall city budget"; thus "the city's CO_2 emissions are presented and budgeted in a similar manner to the city's finances"[18].

For this reason, reports on the Climate Budget are presented during the three key steps of the budget cycle. The first report is issued in March to April between the first strategic conference and the assembling conference of the budget planning. A second report is then presented in August/September at the same time as the final budget conference and the budget proposition of the

[16] https://www.oslo.kommune.no/english/politics-and-administration/green-oslo/best-practices/climate-budget/#gref

[17] Scope 2: Emissions from electricity consumed by the organisation, though emissions may be produced elsewhere; Scope 3: Upstream emissions associated with extraction, production, transportation of products, or services used by the organisation (World Bank. (2010). 'Part III: Cities' Contribution to Climate Change' in 'Cities and Climate Change: An Urgent Agenda'. Available at: http://siteresources.worldbank.org/INTUWM/Resources/340232-1205330656272/4768406-1291309208465/PartIII.pdf

[18] http://ec.europa.eu/environment/europeangreencapital/wp-content/uploads/2018/05/Oslo_Climate_Budget.pdf

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City Council. Finally, a third report is issued at the end of the year after the budget resolution and before the strategic conference for the next cycle.

Morten Nordskag from Oslo's Department of Environment and Transport highlights that this system of reporting has the advantage of identifying gaps between the measures planned and the city's objectives. It immediately triggers a need to take action to close these gaps. Most recently Oslo has identified such a gap, realising that the measures currently comprising the Climate Budget are insufficient to attain the goals set for 2020 and 2030.

An important aspect is that the Climate Budget assigns responsibility for reaching the goals to the various departments thereby not only involving the staff of the environmental department. By specifying the costs and timeframe for all the measures, there is greater transparency on what the city is doing to achieve its objectives.

The main steps and components for setting up the Oslo's Climate Budget are the following (on the basis of the 2018 Climate Budget):

1. Set targets for CO_2 reduction
- Reduction of 50% of emissions by 2020
- Reduction of 95% of emissions by 2030
2. Quantify the amounts of CO_2 emissions that have to be reduced to attain the target
- GHG emissions from 2015 to 2020 must be reduced by approximately 460 000 tonnes CO2eq
- The City Government has set goals to reduce the city's emissions to 1 054 000 tonnes CO2eq by 2018 and 765 000 tonnes CO_2eq by 2020 (1 226 000 tonnes CO2eq in 2015)
3. Identify measures with the biggest CO_2 impact and implement measures to reduce the emissions of the sectors concerned in the long and the short terms
4. Quantify the estimated CO_2 emission reduction for each measure (and the timeframe in which they will do so) as well as the overall reduction of all measures and compare the numbers to the targets
- Measures for which CO_2 emission reductions can be estimated (12 measures with an approximate effect of 360 000 tonnes CO_2eq)
- Measures with unallocated CO_2 emission reductions, as they are not easily quantifiable (measures with an anticipated overall effect of well over 100 000 tonnes CO_2eq)
5. Specify how these measures will be financed and who will be responsible for their implementation and reporting

MEASURES	Responsibility for implementation (Responsibility for reporting in parentheses)	Estimated effect of measure, 2015-2020 (tonnes CO_2e)
Phase out the use of heating oil in municipal buildings and undertakings	Undertakings that use heating oil (KLI)	121450
Phase out the use of fossil fuel in privately owned buildings by 2020 through a combination of bans and subsidies (Climate and Energy Fund and Enova)	KLI	
Reduced emissions of landfill gas from Grønmo and Rommen	EGE and EBY	6 900
Phase out the use of fossil fuel and gas in district heating (peak load)	NOE	5 600
Increase material recycling of household waste and boost re-use	REN	4 300
Conclude documentation of nitrous oxide volumes in wastewater, with the aim of correcting figures supplied by Statistics Norway'	VAV	20 500
Introduce a new toll-ring payment system, including new toll stations, in 2019. Note that the effect assumes the implementation of the measures listed below in italics:	MOS	93 300
Installation of new charging stations for passenger and commercial vehicles, including a pilot project for car-sharing schemes	BYM	
Increase public transport capacity to cope with population growth and reduction in private vehicle traffic	Ruter	

Table 2. Measures with estimated emission-reducing effect (Oslo's Climate Budget, 2018)

Read the European Commission's factsheet on Oslo's Climate Budget here: http://ec.europa.eu/environment/europeangreencapital/wp-content/uploads/2018/05/Oslo_Climate_Budget.pdf

The links between Carbon Budget, Climate-proofed budgets and SECAPs

The first two approaches are compatible with the current commitments and can be complementary, but require new tools. The Sustainable Energy and Climate Action Plans (SECAPs), currently required when a city is committing to the Covenant of Mayors, is another approach that is less strategic as it is linked to medium-term planning of energy and climate related policies. Nevertheless, SECAPs can also be considered to be founded on a "science-based targets" approach. For their commitment to 2030 targets, cities are required to develop their 5 to 10 years' action plans in order to reach carbon neutrality in 2050, representing thus a translation of the Paris agreement into local climate strategies.

FIGURE 8

SIGNATORIES AND THEIR DELIVERABLES OF THE COVENANT OF MAYORS IN THE EUROPEAN UNION AND THE EUROPEAN FREE TRADE ASSOCIATION FROM 2015 TO 2019 - *Source: CoM Secretariat data*

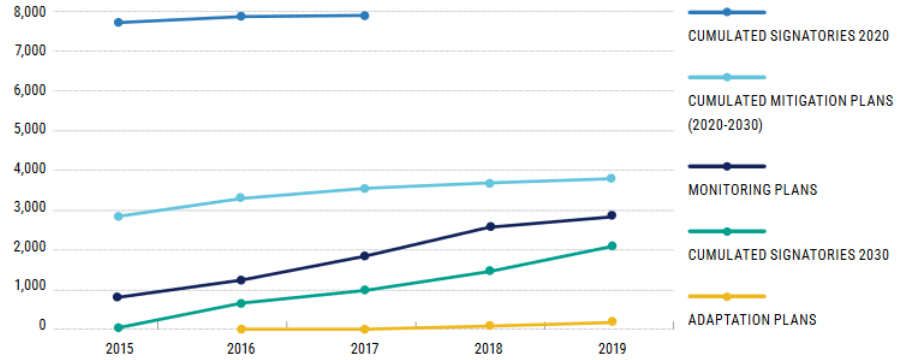

Figure 6- graph from the Climate chance 2019 global status report[19]

However, the approach is still guided by the 2030 energy and climate policy framework as the Covenant signatory cities commit to the following targets: reaching a 40% GHG reduction by 2030 (from 1990 levels), at least 32% increase in energy efficiency and 32.5% of renewable energy production. Thus the Covenant Signatories commit to increase their resilience to the impacts of climate change and provide secured access to sustainable and affordable energy by 2030. The action plans submitted to the Covenant of Mayors 2030 are divided into measures by sectors (transport, building, energy). This currently constitutes the backbone of any local energy and climate strategy. Climate neutrality will not be reached if these main sectors are not decarbonising; however, it misses the more strategic approach of embodied CO_2 emissions (for instance in the construction sector, consumption, food systems, water-energy nexus etc.). It misses the untold objective of sufficiency (we will only reach the Paris objective IF we reduce at least by half our needs) and the need to re-localise our economy. Its misses the necessary change in systems or energy transition and thus does not prepare local leaders to support it.

To conclude this chapter, and leaving the SECAP approach which is the backbone of any local strategy on which we can built on the next generation of action plans, we can summarise the two “main approaches” as follows:

[19] *https://www.climate-chance.org/wp-content/uploads/2019/11/en_c2_complet_def.pdf*

CARBON BUDGETING	CLIMATE-PROOFED BUDGETS
Translate the Paris agreement to reach a maximum of 2° increase in temperature levels into a maximum volume of GHG that can be emitted. Then break down this maximum CO_2 emissions into a local budget (maximum CO_2 to be emitted till the end of the century by the given territory)	Translate all budget lines, expenditures and resources, expressed in € into its positive or negative impact on CO_2 emissions. Implement the "climate budget" within the same process than the financial laws/budget decisions.
"place based" approach allows each place to choose its landing point and landing date. Then the trajectory will be abrupt or gradual.	"Competency based" approach; each budget line is translated when relevant. Applying both to investment and to annual spending
Because it requires actions by many stakeholders, the carbon budget approach governance can be attached to the municipal council but cannot rely only on it. Different governance models need to be invented to match the stakeholders.	Involving all departments of the city council (or any administration involved). Embedded into the process of the budget's decision. Each department is responsible for its part; clear "burden-sharing" mechanism.
Periodicity: to be determined by the body/governance in charge	Annual periodicity
Possible at all territorial levels. Already exists at national level in France, UK….	Possible at all territorial levels (e.g. already in place in Finland) An assessment of the EU budget is planned
++++ It is based on a territory, thus, it shows the efforts needed by all economic actors, and allows the involvement of civil society into a joint commitment. Very powerful to create synergies and alliances of local actors.	++++ It is a powerful instrument to share the responsibility and show to all departments and agencies of the city that they can also have an impact. It increases the transparency of the decisions and shows their impact. It is a powerful accountability tool. It can be binding.
----- Impossible to make it a binding instrument outside the administrative boundaries. The governance model has to be allocated proper resources to ensure that the mobilisation of all actors takes place in the long-run.	------ Limited in scope (cannot be used really for scope 3 emissions) Not always easy to translate every budget line into climate impact. It can also be counter-productive to embark some departments if their actions are limited. Less interesting to mobilise all stakeholders (apart to check on accountability of city's commitments)

1.2. THE POLICY CONTEXT

The large-scale climate mobilisations of these past few years have not been in vain. The European Commission has finally recognized the magnitude – and urgency - of the climate and ecological crisis. Furthermore, under the umbrella of the European Green Deal, President Ursula von der Leyen has made it the number one priority of her new mandate.

This massive plan, which includes 50 measures to get Europe on a climate-neutral trajectory for 2050, has the very valuable merit of addressing the climate issues from an integrated and holistic perspective. Indeed, virtually all sectors are tackled such as transport, mobility, industry, buildings, waste, biodiversity, international trade, air pollution and even economy and finances.

The European Green Deal has been published by the new Commission on 11 December 2019 with the aim to "Strive to be the first climate-neutral continent". It contains new EU legislation to recast the current EU legal framework in order to align all directives with the new goal of being the first carbon neutral continent[20]. The first initiative will be to **up the level of ambition for 2030 to at least reduce by 50% the GHG emissions. Another important announcement is the "green oath" for any EU policies to comply with. Basically proposing a "do not harm" criteria to any new proposal to ensure its compatibility with our resource preservation and development. Most importantly, the Commission is announcing its wish to include green budgeting for national budgets.**

This is highlighted in the text below:

"Greening national budgets and sending the right price signals

National budgets play a key role in the transition. A greater use of green budgeting tools will help to redirect public investment, consumption and taxation to green priorities and away from harmful subsidies. The Commission will work with the Member States to screen and benchmark green budgeting practices. This will make it easier to assess to what extent annual budgets and medium-term fiscal plans take environmental considerations and risks into account, and learn from best practices. The review of the European economic governance framework will include a reference to green public investment in the context of the quality of public finance. This will inform a debate on how to improve EU fiscal governance. The outcome of the debate will form the basis for any possible future steps including how to treat green investments within EU fiscal rules, while preserving safeguards against risks to debt sustainability"

European Green Deal, 11th December 2019, European Commission

The most disruptive proposal of the European Green Deal is probably the European Commission's commitment to "refocus the European Semester process of macroeconomic coordination to integrate the United Nations' sustainable development goals". This means the EU executive strongly intends to put sustainability – not just the control of public debt - "at the centre" of the European economic policy. The Commission, in addition, plans to benchmark the green budgeting practices of Member States and overall encourages them to take "environmental risks and considerations" into account in their annual budgets and fiscal plans. Another statement from the Green Deal communication mentions that this reform should be done in a way that leaves no one behind, meaning that carbon pricing measures would have to take into account vulnerable citizens.

The social justice, inclusive and fairness dimensions are highly featured on Von der Leyen Commission's narrative. The proposal, originally submitted by the European Parliament, to create a 5 billion EUR

[20] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

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"just transition" fund has been turned into a bigger mechanism (7.5 billion EUR) which would pool different EU funding sources and processes to ultimately trigger some 100 billion EUR of investments. The proposal has been detailed in a draft regulation published on the 14th of January 2020.

The Climate Pact is another landmark proposal of the European Green Deal, which could have an extraordinary impact. As mentioned in the Green Deal communication: "recent political events show that game-changing policies only work if citizens are fully involved in designing them." Indeed, the current socio-economic climate is one involving numerous arguments in favour of energy and climate policies co-designed by citizens. The ZCC URBACT network, and so many other cities and municipalities across Europe are showing remarkable creativity in doing that at their own levels. Theirs and other such examples need to be widely mainstreamed and replicated all across Europe.

Finally, the European Parliament created a special intergroup, cross-parties, to follow up the "New Green Deal for Europe" counting on more than 160 MEPs from all Member States.

The ZCC URBACT network can then contribute at the highest level to develop the right tools not only to design national green budgets, but local ones, and to raise awareness on other science-based approaches. In 2020, with the Climate Pact taking shape, the Covenant of Mayors will be renewed to be aligned with new EU targets (2030) and to call for local climate pacts. This will allow for a great potential for the ZCC network to contribute to shaping local climate commitments.

1.3. CITY EXAMPLES

How can local authorities align their finances with a 2°C scenario?

In addition to the examples used to explain the carbon budget and the climate budgeting concepts, other case studies, best practices and tools can help local authorities to align their strategies, spending and investments with the Paris Agreement objective of limiting global warming well below 2°C by fully integrating energy and climate issues into their budgetary and financial planning.

These strategies are developed around five main axes:

1. **Environmental reporting and budgeting:** there is a necessity to change the way municipal budgets are presented in order to account for climate impacts and the costs necessary to attain cities' climate goals. Combining environmental and financial reporting leads to better informed decision-making about investments and fund allocation, and engages financial staff when climate and energy data is presented in a form they are familiar with.
2. **Green public procurement:** Municipal procurement budgets represent a significant leverage for development towards sustainable and innovative market practices. City staff have to engage with the local economic actors in order to assure that its ecological standards are being met, but also to better understand what is already possible on the market today. Setting high standards triggers innovation.
3. **Fossil fuel divestment of municipal funds:** Cities may not even know what companies and projects the money they store in funds and saving accounts is being invested in. Local authorities need to be demanding towards their banks and fund managers, asking for transparency about how these financial service providers manage the city's money in terms of environmental investment criteria and climate risk.
4. **Green municipal bonds:** Not simply a source of financing for energy and climate projects, green bonds also present an opportunity for the city's administration to develop capacity building of environmental staff, cooperation between silos, as well as detailed monitoring and

reporting mechanisms, which force the city to stay on top of the climate impacts of their investment projects. The opposite is also true, meaning that cities with a sophisticated environmental reporting system, as well as high degrees of cooperation between financial and environmental departments, can access finance for energy and climate projects easier.

5. **Earmarking local revenues and other financial instruments:** Several cities have established funds for energy efficiency or sustainable transport projects financed by environmental taxes. Through such taxes or even more innovative financial tools such as carbon-offsetting, local authorities seek to raise awareness among citizens and companies to change their behaviour, but also to mobilise their resources to invest in energy and climate projects.

Two case studies below illustrate some of the tools and complement the examples already provided to climate mainstreaming the municipal budget and Carbon budgeting.

The first one is the approach used so far by the city of Paris whereby it is mainstreaming climate objectives into the normal budget procedure. The second is the approach of the City of Växjö in Sweden which is going a step further by looking not only to the GHG accounting, but also to other resources; all included into a framework strategy to reach a fossil-free city by 2029. The latter is particularly relevant to ZCC URBACT network cities of Vilvoorde, Bistrita, Zadar and Tartu as framing long term strategy on climate neutrality may be particularly challenging to communicate to the citizens because?.

Case Study: City of Paris (France) – Bleu Climat Energie

The *'Bleu Climat Energie'* is an annual report adopted by the City Council every December at the same time as the preliminary annual budget. Its objective is to follow up the various actions decided in the city's Climate and Energy Plan and to indicate budgetary, energy and emission savings that have been achieved thanks to these actions.

A similar logic to Oslo's, linking extensive environmental reporting to the budget planning phase, is used to align investment decisions with the state of advancement of climate and energy actions, as well as to account for the additional costs and savings these actions entail, while distributing responsibility across relevant sectors and actors.

A team of five members from Paris' Climate and Energy department is responsible for the reporting operations. However, all of the city's agencies and departments have coordinators who must contribute by providing data inputs about their respective activities and services.

In this sense the annual preparation of the *'Bleu Climat Energie'* is a collective responsibility involving both internal actors and external partners of the city. In order to share the financial and energy data collected by these different actors, an online dashboard has been created making it easy to upload information regarding various sectors of activity present in the city. The information is collected by the Climate and Energy department and is evaluated by a cross-sectoral team with competences in terms of climate, energy, adaptation/vulnerability and GHG emissions[21]. The dashboard is updated every three months, allowing for a realistic representation of the state of advancement of the different actions and measures carried out by the city's partners. It also ensures that extensive and up-to-date data is available when it comes to preparing the city's budget plan.

Due to the fact that so many different people are involved in the reporting, it is important to increase awareness in departments which are not directly concerned by the environmental impacts of their

[21] http://observatoire.pcet-ademe.fr/action/fiche/88/bleu-climat and https://energy-cities.eu/publication/climate-mainstreaming-municipal-budgets/

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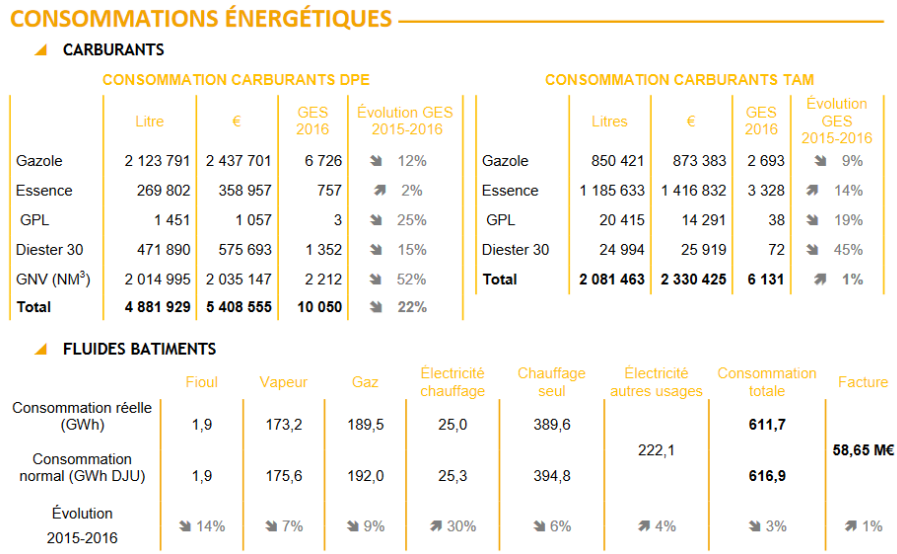
activities (construction of social housing, tertiary sector, public catering and other procurement activities) and to ensure that they collect data on energy consumption and CO_2 emissions. While this entails a great amount of work, the reporting has the positive side effect of raising awareness among staff and partners on the objectives and actions defined by the Paris Climate and Energy Plan, coordinating the city's approach to climate and energy across all fields of its activity.

The *'Bleu Climat Energie'* includes information about the city's energy consumption and costs, CO_2 emissions, the share of green public procurement, energy efficiency renovations, the share of renewable energy, air quality, use of public transportation, waste and water consumption.



CONSOMMATIONS ÉNERGÉTIQUES

CARBURANTS

CONSOMMATION CARBURANTS DPE

	Litre	€	GES 2016	Évolution GES 2015-2016
Gazole	2 123 791	2 437 701	6 726	↘ 12%
Essence	269 802	358 957	757	↗ 2%
GPL	1 451	1 057	3	↘ 25%
Diester 30	471 890	575 693	1 352	↘ 15%
GNV (NM^3)	2 014 995	2 035 147	2 212	↘ 52%
Total	**4 881 929**	**5 408 555**	**10 050**	↘ 22%

CONSOMMATION CARBURANTS TAM

	Litres	€	GES 2016	Évolution GES 2015-2016
Gazole	850 421	873 383	2 693	↘ 9%
Essence	1 185 633	1 416 832	3 328	↗ 14%
GPL	20 415	14 291	38	↘ 19%
Diester 30	24 994	25 919	72	↘ 45%
Total	**2 081 463**	**2 330 425**	**6 131**	↗ 1%

FLUIDES BATIMENTS

	Fioul	Vapeur	Gaz	Électricité chauffage	Chauffage seul	Électricité autres usages	Consommation totale	Facture
Consommation réelle (GWh)	1,9	173,2	189,5	25,0	389,6	222,1	**611,7**	**58,65 M€**
Consommation normal (GWh DJU)	1,9	175,6	192,0	25,3	394,8		**616,9**	
Évolution 2015-2016	↘ 14%	↘ 7%	↘ 9%	↗ 30%	↘ 6%	↗ 4%	↘ 3%	↗ 1%

Image 2. Overview of energy consumption, 'Bleu Climat Energie' (2017) of the City of Paris

Some categories, such as social housing or the development of public transportation, cannot be reduced to their energy dimension and in these cases, the report measures the additional costs necessary for the city to include climate and energy related considerations into projects. Activities which originate exclusively from the implementation of the Climate Plan, such as the energy refurbishments of the building stock, are evaluated in terms of their gross cost.[22]

As for Oslo's Climate budget, GHG emissions generated by the city's activities are quantified and their evolution measured in comparison to the objectives of the Paris Agreement. The information about the city's emissions is provided by the energy operators, the city's internal services in contact with the French energy companies EDF and ENGIE and by the individual departments and agencies[23].

[22] http://observatoire.pcet-ademe.fr/action/fiche/88/bleu-climat

[23] http://observatoire.pcet-ademe.fr/action/fiche/88/bleu-climat

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For every indicator used in the report –qualitative and quantitative (financial and human resources, emission reductions, etc.) – there is a set updating frequency, a target value, an initial value, as well as an indicated data source[24].

Case Study: City of Växjö (Sweden) – ecoBudget

Växjö began working on the development and implementation of the ecoBudget in 2003. It was the first time that the city had defined clear environmental targets, an initial challenge but a necessary first step in developing an environmental programme for the municipality's territory. The targets developed within the ecoBudget system were for a long-term timeframe, up to 2010 (and more recently up to 2020) and covered Växjö as both a geographical entity and a municipal organisation.

In 2006, Växjö replaced its Local Agenda 21 strategy and environmental policy with a new Environmental Programme including only measurable, long-term targets covering three areas: Living Life (focusing on consumption and waste issues), Our Nature (focusing on water and conservation issues) and Fossil Fuel Free Växjö (focusing on transportation and energy issues)[25]. EcoBudget was used to follow up and steer progress towards the programme's targets.

In the initial phase when ecoBudget was implemented, a specific Växjö ecoBudget manager was appointed, who presented a report to the City Council every six months thus allowing for the possibility to take "appropriate measures in case a target might be missed, dealing with events not budgeted for and keeping elected representatives informed about budget implementation"[26]. The annual targets were approved by the City Council at the same time as the budget and also reported simultaneously alongside the annual financial report. In 2008, the environmental and the financial budgets and reports were integrated into a single document. Symbols such as smileys and arrows were developed to monitor the progress of the ecoBudget, and soon this reporting style was expanded beyond solely ecological concerns, towards more general sustainability targets, including democracy, equality and health.

Today, Växjö has a long experience in environmental reporting and its methodology has evolved. The city identified the elements of the ecoBudget which have proved to be most relevant and useful in the context of the city's administration. Växjö is currently developing a Sustainability Programme with a 2030 horizon in order to have a common methodology for ecological, social and governance issues, instead of focusing on just one of these aspects. "In the most recent environmental budgets and reports, stronger emphasis has been laid on indicators and their development, without specifying how much they should change, but if the change is not sufficient, we clearly mark it with red symbols, and then we take action", Henrik Johannson, Växjö's former environmental coordinator explains.

For him, the main result the municipality achieved through its use of the ecoBudget was the involvement of the various departments following the target breakdown, as they had to take concrete actions to reach the CO_2 emission budget which was assigned to them. Targets for Växjö as a municipal organisation were easier to follow up on and assign to departments, unlike the geographical targets which most departments could not easily influence. Departments had to report regularly what actions they were taking to reach their individual targets. As Johannson puts it, for Växjö "ecoBudget was simply a way of following up the environmental programme – making sure that there was progress" and that all the work would not have to be done later. By reassessing the relationship between

[24] http://observatoire.pcet-ademe.fr/action/fiche/88/bleu-climat

[25] UN-HABITAT, UNEP, ICLEI. (2008). 'ecoBudget: Introduction for Mayors and Municipal Councillors'

[26] UN-HABITAT, UNEP, ICLEI. (2008). 'ecoBudget: Introduction for Mayors and Municipal Councillors'

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economic and environmental data, Växjö was able to realise how successful the city had been in decoupling CO_2 emissions from economic growth.

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1.4. TOOLS AND RESEARCH CENTRES TO TRACK CLIMATE IMPACT AND COMMUNICATE

Below is a list of tools and research centres used by ZCC cities that could be the backbone to design and support the ZCC strategies.

FUTUREPROOFED IN VILVOORDE

Futureproofed is a web-based tool for cities to track the impact in CO_2 emissions of each individual action the city is undertaking. It helps to forecast potential and to track records. It is also a tool to involve citizens and create a community around the climate strategy. Used in more than 100 cities in Belgium, it is very valuable to create a peer-practice club between cities. Currently the tool is being tested in Spain, Macedonia, Serbia with good results; therefore, it could also be tested by other cities in the URBACT ZCC network.
https://www.futureproofed.com/futureproofedcities

SCATTER IN MANCHESTER

SCATTER is a web-based tool that helps local authorities to assess, report on and reduce the amount of greenhouse gas emissions that their area produces. It is free for cities located in the UK. SCATTER generates an emissions inventory, in line with what is required to produce a SECAP. SCATTER can be used to develop a credible decarbonisation pathway for a local authority to implement in line with their emissions targets. Outputs can then be used for engagement to create a collaborative carbon reduction approach.
https://scattercities.com/

TYNDALL CENTRE IN MANCHESTER

The Tyndall Centre developed for the Manchester Climate Change Partnership the city's carbon budget and are able to refine with complementary research the need to adapt the carbon reduction path, according to newest data. The Tyndall Centre have now created a free-to-use online tool to enable UK local authorities to calculate a science-based carbon budget, five-year carbon budgets, a pathway for staying within the budget and average annual reduction targets.
https://carbonbudget.manchester.ac.uk/reports/
Other tools and research centres mentioned in the case studies presented in this chapter:

CICERO

This Norwegian research institute is focussing on climate budgeting approaches and on assessing climate municipal bonds. They have followed the Swedish climate budget challenges and are working with municipal banks.
https://cicero.oslo.no/en/cicero-climate-finance

OURCITY OURENERGY

A special application developed by a Spanish NGO to help municipalities visualise their impact on energy efficiency measures and their carbon footprint. The advantage of the tool is that it is directed to increase transparency and involve citizens by giving access to simple data. It is the basis for involving schools in more than 50 Spanish towns and cities. It also shows the co-benefits in euros of the energy savings.
http://ourcityourenergy.com/en/

1.5. INVOLVING CITIZENS, BUILDING LOCAL ACTION GROUPS, COMMUNICATING IMPACT

One important deliverable of URBACT projects are the URBACT Local Groups. A number of good practices exist, the first one being implemented by the lead partner with the Manchester Climate Change Partnership. The Partnership is made up of 60 organisations from across 10 sectors. They have direct responsibility for approximately 20% of Manchester's direct CO_2 emissions and the ability to engage, support and influence some of the remaining 80% through their networks, partnerships, supply chains, and customers. This includes football fans at Manchester City Football Club, theatre and gallery visitors to the city's arts and culture venues, the tenants of the 15 social housing companies in the Manchester Housing Providers Partnership, 75,000 students and 30,000 staff at the two universities and the staff and patients in Manchester's health system.

Methods to involve citizens are highly variable. There are some examples when it comes to full energy transition planning, but for the moment it is very rare to find examples linked to a long term Zero Carbon objective.

We can recommend the Nantes' energy transition methods to involve not only the 'usual suspects' but all districts.

The most comprehensive exercise, in addition to the example of Manchester which should be the backbone of the ZCC exchange, is the Leuven2030 partnership.

More examples can be found in Energy Cities' publication (in FR only so far): https://energy-cities.eu/fr/publication/fabrique-de-transition-democratique/

CONCLUSIONS

In order to plan the next decade of local transformation, cities need to know what the correct objectives to be used are. Local leaders and members of the ZCC URBACT Network are already convinced about the long-term objective of climate neutrality. They do however lack tools to ensure that local commitments are in line with the Paris Agreement, that progress can be monitored and that innovative models for local governance and delivery are put in place.

A carbon budget-based approach to setting local targets will typically result in the setting of more ambitious targets than following current EU or national level commitments. For some political leaders this may be daunting. However, this project will ensure that politicians, policy-makers and wider stakeholders are supported to understand the approach, its strength and the challenges. The most compelling argument for adopting this approach is the message from the streets: "listen to the science". A carbon budget-based approach provides an honest and transparent way of responding to this call.

The application of this approach in practice will require sensitivity to the local context and political situation, ensuring that it can gain traction and be positively embraced, rather than seen as the imposition of another major challenge for local government to respond to. The presentation of the wider case for action, focused on the socio-economic benefits of ambitious climate action, will likely be a key ingredient in the decision-making processes in our seven cities and the project's wider networks.

The ZCC URBACT network is about cities committing to climate neutrality and finding the best tool to set up their own trajectory, their own path and track progress. Tools and approaches can be very different, depending on the starting point of each city.

The cities of the ZCC URBACT network have also expressed a need to improve capacity in communicating the zero carbon objective and how it impacts decisions as well as the co-benefit of a climate neutral strategy on community wealth and wellbeing.

The ZCC URBACT network will explore the different possible ways to answer these needs and increase the capacity of municipalities to better assess and decide according to the climate neutrality objective.

Cities, especially members of the ZCC URBACT network, are keen to monitor their impact in order to be ambitious enough, and most importantly to have a real benchmark of their actions and "keep on the right track". In addition, "tracking" tools can provide great support for cities to communicate internally as well as externally with the stakeholders and citizens in order to better explain the opportunities offered by the transition and create vibrant local communities. Any new monitoring system will need to be designed to align with the system in place for reporting to the Covenant of Mayors.

SECTION 2: PARTNER PROFILES

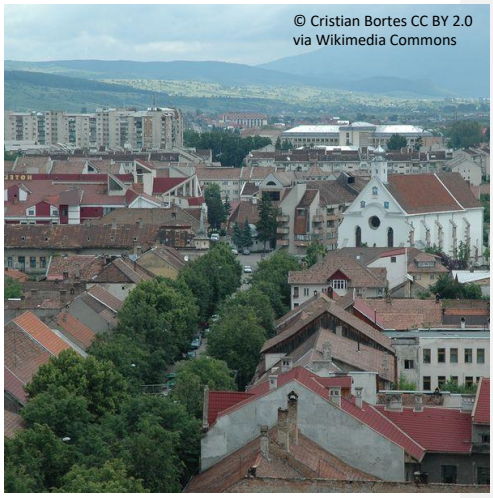
BISTRITA

City baseline

Population: Bistrita has currently 75 000 inhabitants (2011 census); however in the 2015 city file based on inhabitants counted by domicile, the population of Bistrita was of 92 063 inhabitants.

Municipiul Bistrita

Bistrita is the centre of the province and therefore, has suburbs, a university, good train connections and attracts a wider population for employment. Historically part of the Austrian-Hungarian empire, the historic monuments and the medieval centre are still the witness of a rich past.



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Location: Bistrița is the capital city of Bistrița-Năsăud County, in northern Transylvania, Romania, with an area of 14 547 ha. It is situated on the Bistrița River. It is on the touristic road of "Dracula" castle and mountains. Most importantly, it is one of the entry doors to Europe from Ukraine; not too far from Slovakian, Hungarian and Polish borders.

Economic indicators: There is low unemployment, on the contrary, one of the obstacles to the transition, in particular when it comes to housing refurbishment is the lack of skilled workers. In comparison with south Romania, Bistrita's citizens have an above average income. Bistrita has a university and therefore a young population during the week and winter time. Citizens have strong links with the rural areas next to the city, whether for gardening and food production or for recreational activities in the mountains.

Energy and Climate: Unlike most of EU cities, Bistrita's climate footprint two decades ago was of less than 2 tons of CO_2 per inhabitant; thus, it only could increase since then. Likewise, Romania and Bulgaria are the only countries which were authorised to increase their GHG emissions between 2010 and 2020 under the so called *"Burden-sharing"* directives which divided the effort of EU countries to include fairness between the less and the most developed regions. Nevertheless, Bistrita committed to decrease by 20% its GHG emissions between 2008 and 2020.

General context

Bistrita developed a 2050 energy vision with supporting strategic documents, such as the Action Plan for Climate and Energy 2030 and the Local Development City Strategy 2010-2030.

In 2014, the average carbon footprint in Bistrita was of 1.5t CO_2 per inhabitant per year (not including the local industries though), Bistrita being thus compatible with the Paris Agreement before the COP21. However, rapid urban sprawl and economic growth have worsened a lot this carbon footprint.

Bistrita did a very good prioritisation of Structural Funds in their fight against energy waste: they refurbished 30% of the housing stock older than 1990, reaching the best renovation rate in Romania. Bistrita managed to mobilise condominiums, however the driver for change was comfort, not climate change fight. A lot of planning was required to reach such a level of massive refurbishment, so the city is well prepared for large scale planning programmes.

The residential area of Bistrita is divided into two areas:

- *The Urban Area* with individual and collective dwellings neighbourhoods (apartment buildings built between 1960 and 1990), with a high density of buildings in the centre.
- *The new residential areas* were built after 1990, at the city limits, mainly in the North, South and West. They mostly include individual dwellings, with ground floor and one or two stories. The new residential areas do not have complex functional characteristics, i.e. they do not have schools, kindergartens, churches or cultural centres. Another major problem faced by these neighbourhoods is the absence or the low quality of streets network and the public utilities network (water supply-sewerage-gas supply).
- The rural area of the municipality – is made up by over 883 hectares of built-up area (34.5% of the total built-up area). In addition to the private real estate investments, the authorities made some public investments in the rural area of the municipality, that fostered its development: nine social apartment buildings of 180 apartments built by Bistrita City Hall.

Bistrita is currently starting to use the ERDF for mobility issues: 45 km of bike lanes are planned to be constructed until 2023.

The Green Line is a pilot project under preparation, establishing a new local public transport line that crosses Bistrița city through the historical centre (so it also has a tourist character), using a dedicated priority lane for electric buses. The use of this lane will be free of charge during 5 years, ensuring a real modal shift from the private car to the public transport. It represents a single solution that responds to several challenges: reduction of greenhouse gas emissions, urban mobility and tourist accessibility.

In 2020, Bistrita will develop a strategy for the city's heating and cooling system, on medium and long term. Since 95% of the fuel used to heat buildings in Bistrita is natural gas and most houses have individual boilers, it is necessary to consider the transition to renewable individual heating systems. Although cooling was not a problem for Bistrita, the last summers' high temperatures are raising more and more questions related to the need for cooling systems, in particular for non-residential buildings.

Bistrita is active on citizen engagement. In 2004, the municipality set up the Green School, an Ecological Education and Information Centre for pre-schoolers and schoolchildren. The centre is also focusing on sustainable energy and climate change. All primary schools have at least 3 awareness sessions a year. In 2012, Bistrita was also offered the Earth Hour Award by the WWF (World Wide Fund for Nature) Association. Indeed, each year the municipality turns off the public lighting for an hour to raise the awareness about the exaggerated consumption of energy produced from non-renewable resources, producing GHG emissions.

Institutional context

The City Hall of Bistrita is led by the Mayor, 2 Vice Mayors, the City Secretary, directors, department and office chiefs.

There is no local energy utility the whole district heating system was closed decades ago to have individual gas boilers.

There is a local environment protection agency, producing an annual report on the main polluters at local level.

On energy and climate policies

- **Local**

The climate change fight is not yet an issue for local politics nor for local newspaper. The adaptation is not an issue either, as the city is not subject to major risks (winters are milder and unlike in the south of the country, summer is hotter, but still not too hot), therefore no air conditioning is being installed. For the moment the changes are not visible for the local agriculture either.

Local public authorities (municipalities) can implement local projects / actions / policies that derive and do not exceed the national legislation in the field of energy and climate change. These can be examples of good practice at regional and national level, but they influence to a very small extent the specific national legislation in the area of climate change.

- **Regional**

The region has borders with non-EU countries (Moldova, Ukraine) and a lot of trade comes into the city through a single main road.

The national legislation is applied at local and regional level by decentralized national authorities that are subordinated to the national government and that have local representation - the Environmental Protection Agency, the Water Management Service etc.

- **National**

After Bulgaria, where no reduction of GHG is required in the non ETS sector between 2005 and 2030, Romania is the second EU country with the lowest target for GHG emission reductions (-2%) for 2030 (2005/ Directive for the effort sharing mechanism including all national emissions not covered by the ETS sector (energy and industry)). The reason for this lower share of the reduction is due to the current energy mix and energy intensity which is much lower than in industrial countries such as the UK where the reduction shall be of -37% for the same period.

Therefore, it is difficult to foster the development of Renewables even though renewable energy potential might be quite high, but seems completely untapped. Large electricity production is coming from coal power plant, which is at national level one of the main challenges (as with the ETS directive, Romania should phase out coal).

Important aspects of climate and energy planning

The SECAP 2030 with the commitment of 40% CO_2 reduction was approved by the City Council in December 2019.

Bistrița also has a Sustainable Urban Mobility Plan (SUMP) for 2015-2030.

The local Integrated Strategy for Urban Development (ISUD), Sustainable Energy and Climate Action Plan (SECAP) and Sustainable Urban Mobility Plan (SUMP) are usually updated every 2 years

Past projects to build on

Bistrita benefitted of over EUR 92 million of EU projects/ Funds.

- It is possible to build on the IMAGINE INTERREG project which finished in 2014 with a roadmap towards 2050 for a "low carbon city with high quality of life"
- Bistrita is currently partner of the HotMaps project (H2020) to identify the heat wasted and draft a local heating and cooling strategy by 2020. Bistrita is using the Hotmaps tool to understand better a large part of their energy demand and to develop future scenarios.
- The chamber of Commerce is involved in an INTERREG funded project focusing on circular economy.
- Two URBACT projects focusing on retaining retail market in the city centre and on active citizens.

The URBACT Local Group

The Chamber of Commerce, the County Council, the University, the Environmental Protection Agency are core partners for the URBACT local group and already well informed about the project.

In addition, during the phase 1 city visits, Bistrita identified the following local stakeholders to be involved in the second phase: activist NGOs, faith community, schools, potential polluters, a cluster of enterprises called the Environmental Cluster.

Local media and cultural centres are not specifically relevant given the climate focus.

In the URBACT ZCC Phase 2, Bistrita will start with individual interviews of these groups to shape the planning processes.

Initial SWOT

Strengths	**Weaknesses**
Good experience on large scale condominium refurbishment Green school Citizen involvement and awareness raising programmes	Although Bistrita has a very high rate of housing refurbishment, there is no upgrade of the workforce and high demand of skills unmet Lack of knowledge/ culture on the energy mix: renewable potential, energy largely absent of the debates. Most of the housing are connected to gas, individual boilers, or heat from burning wood
Opportunities	**Threats**
Alternative Mobility: fostering cycling culture: the appetite might need some help to flourish and it could be a good driver for mobilisation; the driver for change would be more about sports, family comfort (easier to drop kids by bike then using the car) Clear potential to use the current education/ public awareness programmes to reinforce them, expand them (University, Chamber of Commerce, Green school) Work on the food culture Build upon the other URBACT networks which Bistrita is/was engaged, especially for local groups.	Decoupling growth: A need to rethink the growth of population and link to growth of infrastructure, congestion (e.g. municipality plans a transport belt far away from the city to allow the expansion of the city, which might be questioned)

How Bistrita wants to use the ZCC project?

In Bistrita the "zero carbon" concept is very far from the reality of the citizens, of the current economic situation of the city; therefore, a "resources protection" approach or an approach around "quality of life" could be better understood and valued by the local stakeholders.

Before being able to transpose the carbon budget approach, some steps on educating on carbon literacy are needed. In phase 2, Bistrita could work specifically on integrating climate issues in the budget process with the resources tracker which can be developed by experts.

A zero carbon city image could be good to retain and attract young professionals, which is very important for the dynamism of the city.

In Bistrita there is a 2.5% of unemployment. It is a very active region with a great potential for *"slow-tourism"*, for which a clear zero carbon identity could help.

Sources:

Interviews with:

External Working Session

- Mrs. Monica Mureșan, General Secretary, Chamber of Commerce and Industry Bistrița-Năsăud
- Mrs. Adina Rațiu, Head of Environmental Department, Comelf SA (industry sector)
- Mrs. Joanitta Câmpeanu, Commissioner, Environment National Guard – Bistrița -Năsăud Commissariat
- Mrs. Oana Ștețco, Head of the Monitoring and Laboratories Service, Bistrița-Năsăud Environmental Protection Agency
- Mrs. Angela Cordoș, Counselor at the Monitoring and Laboratories Service, Bistrița-Năsăud Environmental Protection Agency
- Mr. Ioan Bîca, Resercher, Babeș-Bolyai University - Bistrița branch
- Mrs. Iulia Strugariu, Counselor - Environment Office, Bistrița – Năsăud County Council
- Mrs. Lavinia Lăpușan, Counselor - Environment Office, Bistrița – Năsăud County Council

Internal Working Session - Bistrița Municipality

- Mrs. Liliana Coceșiu, Executive Director, European Integration Department
- Mrs. Iulia Popârțac, Inspector, Project Management Service (European Integration Department)
- Mrs. Corina Șimon, Specialist, Project Management Service
- Mr. Marius Mărincean, Inspector, Project Management Service
- Mrs. Daniela Zanca, Counselor, Project Management Service
- Mrs. Simona Mic, Counselor, Environmental Protection Compartment
- Mrs. Cristina Andreieș, Legal Adviser, Legal Public Administration Department
- Mr. Ioan Papoi, Counselor, Technical Department
- Mr. Ion Bradea, Counselor, Communication Department
- Mrs. Sorina Roman, Counselor, responsible for the "Green School" - Ecological education and Information Center

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FRANKFURT AM MAIN
City baseline

Facts and figures

Population and history: Frankfurt am Main is Germany's fifth largest city, gathering approximately 750 000 inhabitants with a current population growth of approx. 10 000 inhabitants/year.

L**ocation**: The city is at the heart of the Frankfurt Rhine-Main Metropolitan region which is Germany's second largest metropolitan region with 5.5 million inhabitants.

Economic indicators: The region is home to 365,000 companies and a workforce of 2.88 million, and has an annual GDP of EUR 200 billion.

At the local level, EUR 2 billion from the local budget is coming from company taxes (banks, financial organisations, airport, industrial parks etc).

Energy and Climate: Climate protection has been on the agenda for a long time based on the Climate Protection Plan 2008, comprising concrete actions till 2020. The plan was officially adopted by the City Council and City Council Assembly which in 2012 also adopted the goal to supply Frankfurt with 100 % renewable energies the latest by 2050. In 2015, the City Council Assembly acknowledged the *"Masterplan 100 % Climate Protection"* study as a guiding instrument.

General context

Frankfurt 2030+ is the Integrated Urban Development Concept setting the local framework for the coming years. It defines six goals and development strategies: Frankfurt for everyone, Dynamic business metropolis, More Frankfurt, Environmental and climate-friendly Frankfurt, The region is the city, Urban development as a joint task.

Energy and climate issues are an integral part of the urban development concept. Nevertheless, a number of strategic development topics have dedicated independent "masterplans" that are part of the overall urban development concept. Energy and climate issues are directly addressed through the "Masterplan 100% Climate Protection".

In Frankfurt am Main 8.75 million tons of CO_2 were emitted in 2017 corresponding to:

- 7.90 million tons divided as follows: 33% from the tertiary sector, 29% from the industry, 21% from traffic and 17% from the households.

- 0.85 million tons emitted by the airport and the flight movements (up to 3 000 feet). The total emissions caused by the airport and flight movements are shared among three different municipalities as the airport is not uniquely situated on Frankfurt am Main's territory.

Frankfurt am Main is the capital of commuters in Germany as in no other city more people commute to the City in comparison to the total number of the population: 370 000 people come to the city everyday by car, public transport and airplane. Approximately 60% are commuting by car, meaning a minimum of approx. additional 100 000 cars during the normal working day, causing several obvious problems in terms of congestion and air quality.

In Frankfurt am Main, the real estate values are dramatically increasing and 65% of the inhabitants rent their homes. Rents are high with approximately an average of 10 euros/m^2. There are 80 000 buildings in Frankfurt am Main and 80% of them will still exist in 2050, but currently, the renovation rate in the private sector is very low. There is currently a missing gap of approx. 90 000 housing units in Frankfurt am Main. The city offers almost as many jobs as it has inhabitants. Thus all these factors will lead to even more commuters. Indeed, the municipal urban department is faced with the fact that social aspects are counteracting environmental aspects: as there is no more land available within the city's internal boundaries, new housing will be developed on the outskirts, impacting further the emissions due to commuting. The city council has decided that they need to comply with passive house standards, but there are barriers as this decision is not legally binding. It is only a guidance requiring systematically negotiations with the private investors.

The Transition Town Movement is active in Frankfurt am Main and several neighbourhood projects were set up in this context. The municipality has currently a support programme in place which contributes about EUR 1 000-2 000 to small scale community projects as a start-up capital for climate mitigation actions.

The Fridays for Future is a strong movement in Frankfurt am Main, demonstrating weekly and putting pressure on the city council's Environmental Committee. Among other impacts that resulted in a decision on an extended coalition plan on how to speed up the city's climate protection actions. This plan, the Frankfurt Climate Alliance, has been agreed on by the city's council assembly at the end of 2019.

In Frankfurt am Main, small businesses with less than 15 employees, represent 95% of the local businesses. However, their individual impact on the local emissions is not that big, being comparable to the one of a household. Locally, they are accompanied by *Lust auf besser leben GmbH* to help them act on climate change with specific actions that they could set up. However, this is difficult, since most of them have limited resources and availability. *Lust auf besser leben GmbH* was set up 5 years ago and is funded via non for profit projects (partly financed by the Municipal Energy Agency) and for profit consulting activities.

Frankfurt am Main has three major industrial parks. The biggest one is the Industrial Park Höchst, operated by Infraserv and gathering 1 900 employees. The whole industrial park covers 460 hectares by 90 companies and 22 000 employees. The customers of the industrial park are chemical and pharmaceutical businesses (e.g. Sanofi and BASF). Since 2000, the total investments into the park mount up to EUR 7.32 billion. The industrial park is in close cooperation with the municipality and is striving for emissions reductions via the production of steam and electricity and thus avoid 1 million tons of CO_2/year also by shutting down the coal boilers by 2022 and replacing them by COGEN boilers.

Despite limited land available in the inner city and the presence of large industrial parks, 52% of the city area is green, covered by parks and water. However, currently there are some controversial

projects being implemented as they are using land that is allocated for allotments for gardening, that will now become built land. This is the case of the Innovation Quarter: a high density district that is planning for a green corridor and connection for pedestrians, bikes. Innovations are foreseen related to rainwater, energy consumption, production via solar panels, passive house standards, limited parking to 0.5 parking places per household.

In 2014, Frankfurt am Main was among the finalists of the European Green Capital award, a European Commission initiative.

Institutional context

Approximately 13 000 persons are working for the municipality out of which the core administration represents approximately 10 000 employees covering 62 different departments, public companies and agencies

The City Council
In Frankfurt am Main there are 10 vice mayors and 1 lord mayor whose role is to represent and support the residents and businesses in comparison to the vice mayors who own the decision making power. The 10 vice mayors represent 10 independent municipal departments.

The City Assembly
It is the most powerful organisation where elected representatives take the key decisions.

The Environmental Committee

It is constituted of specialist elected representatives, however the final political decisions are not taken here, but are proposals are elaborated and submitted to the City Council to be adopted.

The Frankfurt am Main Climate Alliance
It is constituted of all relevant deputy mayors. They met on 22nd November 2019 to agree on additional priority actions to be implemented related to carbon reduction and climate adaptation. This agreement has been adopted by the Frankfurt am Main City Assembly. Currently, the responsibilities are allocated to the relevant departments who will be committed to specific targets and measures, evaluate the impact of the actions and develop a business case for each action.

As the Frankfurt am Main Climate Alliance does not cover private businesses yet, there still are relevant gaps which have to be filled in the near future.

In Frankfurt am Main local elections will take place in 2021.

The Magistrat
The Magistrat is an administrative and executive body, taking decisions on ongoing administrative matters, preparing resolutions for the city council and executing them. The Magistrat is supported by the city administration, with all its departments and municipal companies. With the exception of the lord mayor, the Magistrat is elected by the City Council. The member of the Magistrat cannot be a member of the city assembly at the same time and vice versa. The 10 full-time Magistrat members are responsible for their own business areas via the respective Dezernat (department). The Magistrat takes part in the City Council meetings where it is usually represented by the responsible department heads. The Magistrat members have the right to speak, however they are not allowed to vote.

On energy and climate policies

- **Local**

In 2008, the City Council of Frankfurt am Main adopted an energy and climate action plan comprising a set of 50 concrete measures to reduce GHG emissions. Central elements aimed at decreasing heat and energy demand by rewarding electricity savings in private households, public awareness raising campaigns, modernising residential buildings and promoting energy efficiency in businesses. Subsequently to its early climate mitigation concept, Frankfurt am Main developed a so-called *"Master Plan for 100% Climate Protection"*, envisioned that the city's energy consumption would be covered by 100 % local and regional renewable energy sources until 2050.

120 measures were extracted from the Action Plan and 80 are the responsibility of the Energy Agency. Currently a local company in Frankfurt am Main is doing an economic and ecologic evaluation of actions implemented to evaluate their impact on the local emissions. Thereafter, these actions will be prioritised and combined with a budget and broken down per department. It is important that the Energy Agency is seen as a best practice case by other departments. It is also relevant to show that the Energy Agency is responsible for a relatively small amount of emissions and that several other departments have a responsibility that they need to address.

In addition to the "Master Plan for 100% Climate Mitigation" having its targets, there are a series of other relevant master plans such as the one on mobility which is currently being updated. These masterplans are not integrated, showing that the different municipal departments are rather working in silos as they are fully decentralised and independent.

The Energy Agency is responsible to produce a CO_2 inventory report every five years which serves mostly internal purposes at the moment. Currently the report mainly contains the contribution from the Energy Agency and very few other departments give inputs. In addition, every two years a report on the implemented actions is also produced by the Energy Agency.

- **National**

In November 2019, the German parliament approved the climate protection plan, aiming to cut Germany's greenhouse gas emissions to 55% of the 1990 levels by 2030. The climate protection law fixed an initial carbon price of EUR 10 per ton of CO_2 as of 2021, which is set to rise to EUR 35 by 2025. Thereafter, the pricing will be left to the market. Experts from the Potsdam Institute for Climate Impact Research, which had advised the Climate Cabinet on this issue, note that the proposed carbon price path is significantly too low to meet the country's 2030 targets, nor to trigger a profound and systemic change in the energy system. They had demanded a starting price of EUR 50 per ton of CO_2, which would then have increased to EUR 130 by 2030. One positive aspects of the climate protection law concern the ban on the installation of new oil heating as of 2026. In order to reduce energy poverty, households covered by social aid programs will get 10% more subsidies to pay their heating bill. In addition to this, a reduced VAT on train tickets (from 19% to 7%) will be implemented to incentivize citizens to shift to clean public transport in their travels[27].

As Germany is a decentralised country, the national CO_2 inventory is not broken down to the municipal level, therefore each municipality does it on its own as there is no legal obligation on climate mitigation at local level. However, there is a German standard for CO_2 and city inventories: an online tool that is in line with the CDP and open for each city to use as municipal climate and energy action plans are compulsory.

[27] https://energy-cities.eu/germany-fails-to-regain-climate-leadership/

Important aspects of climate and energy planning

Frankfurt am Main has key instruments to tackle energy and climate issues. One of the most important ones is the Energy Agency of the City of Frankfurt am Main – known locally as the Energiereferat. It was founded in 1990 and is responsible for the development and implementation of Frankfurt's climate protection policy, working closely with a wide range of local partners, including businesses, investors, planners, households and non-profit-organisations, to support the achievement of the city's greenhouse gas emission goals.

The agency provides services and programmes in the following areas:

- Electricity saving in households and business sector
- Reduction of energy consumption and use of renewable energies in commercial and office buildings
- Energy planning and combined heat and power supply
- Strategic Planning to achieve the city's goal of shifting to 100% renewable energy

The City of Frankfurt am Main is a member of several European organisations and initiatives, including Climate Alliance, EUROCITIES and Energy Cities. Frankfurt am Main is also a Covenant of Mayors Signatory.

Currently 16 persons are working in the Energy Agency which has a budget of EUR 1.7 million (excluding staff costs).

While the Municipal Energy Agency is focusing on climate mitigation, the Environmental Agency is working on climate adaptation issues. The Energy Agency is independent, not being part of the Environmental Agency, meaning it has easily access to the political level, making it easier to plan and set up projects. The Energy Agency and the Environment Agency are part of the Environmental Department. Similar to the Energy Agency (Energiereferat), there are other municipal agencies focusing on different topics (e.g. children, multicultural aspects etc). These agencies are all characterised by the fact that they are independent from the other departments.

Local utilities

The local energy provider is the Mainova AG, owned to75% by the municipality and employing about 2 900 persons. They operate about 200 decentralised CHP systems, primarily gas based.

ABG Frankfurt is the largest public housing company in Frankfurt am Main, maintaining more than 52,500 apartments in Frankfurt am Main, a fifth of the population living in these houses. They refurbish more than 1 000 housing buildings/year, the funding coming from the cash flow.

ABG Nova is a company owned by ABG Frankfurt and Mainova, both of them being owned by the municipality. ABG Nova links the demand and the supply side.

Main achievements in past SEAPs

Frankfurt am Main joined the Covenant of Mayors in 2008 with the ambitious target of reducing its CO_2 emissions by 40% by 2030. The city's Sustainable Energy Action Plan (SEAP) gives priority to three areas of action to decrease greenhouse gas emissions: transport, buildings and local energy production.

Since 2006, ABG build nearly zero energy buildings with an achievement of 3 500 NZEB so far. They also have energy plus buildings. In 2020, ABG Nova need to build another 10 000 dwellings in Frankfurt

am Main and are currently reflecting on how to do it climate neutral by focusing on heat from waste and water management. Currently they are leading in selling photovoltaic on the roof for tenants.

The URBACT Local Group

In Frankfurt am Main it is important to focus both on the creation of an internal ULG as well as an external one. The Energy Agency will act to ensure joint working between the two.

Internal URBACT Local Group

In Frankfurt am Main, an improved cross-departmental cooperation is a crucial aspect of the organisational behaviour of the administrational body to manage and to negotiate the different climate mitigation actions which have to be taken to realise the goals of the Masterplan 100% Climate Protection. In addition to the activities within ZCC, the Environmental Department just recently gained the political mandate to set up a new cross-organisational cooperation structure between the departments of the City Council to manage and to monitor the newly formed Climate Alliance in Frankfurt am Main. In this sense the Alliance is Frankfurt answer to the climate emergency state, which has been announced by many European cities during the last couple of months.

The idea behind the Climate Alliance is to establish a stronger responsibility between the different departments of the City Council. The Mayor for Environmental Affairs is responsible for the coordination and the management of the process. The Energy Agency will play a strong roll to set up and manage the underlying process with all topics which will relate to climate mitigation.

Furthermore, the Climate Alliance also involves actions to foster the Climate Adaption strategy of the City Council. Both processes will involve closer cooperation with all departments. At the very same time the cooperation and the several working groups which will be in place to coordinate the different topics and themes will be a part of the Internal URBACT Local Group in Frankfurt am Main.

External URBACT Local Group

Previously, local stakeholders were involved in the preparation of the Climate Protection Concept as well as the Masterplan 100% Climate Protection. To support the impact of the climate mitigation concepts, the Environmental Department established an external advisory group, the Climate Mitigation Council, which consists of 30 appointed members, covering different areas and perspectives throughout the urban society. However, the cooperation was not active enough as there was no governance structure and management in place. Furthermore, it is necessary to cover other areas of the society as well as not involving only experts. It is the plan to involve stakeholders who are directly responsible for the CO_2 emissions in the different sectors in the city (e.g. businesses).

To extend the impact of the Climate Mitigation Council, the Environmental Department is planning to develop the concept of the group further and to establish the Frankfurt Climate Partnership. This concept is very much inspired by the example of the Manchester Climate Partnership, which proved to be an effective instrument to share responsibilities throughout a wider range of stakeholder in the city. Potential actors to be involved in Frankfurt am Main in the ULG: local utilities (Mainova, ABG Frankfurt), Lust auf besser leben gGmbH (representing 55 small businesses), Industrial Park Höchst and its operator Infraserv. Over time, more and more stakeholders who are responsible for CO_2 emissions are supposed to be involved. Based on the cross-departmental process and setting up a Climate Partnership, the Environmental Department will be able to set up an integrated approach to manage the Climate Mitigation plan for Frankfurt am Main.

The ULG would also interlink the existing active parallel networks by gathering their respective representatives (e. g. the Climate Adaptation Group and the Forum on environmental topics initiated 20 years ago by a representative from the city council focusing on the ISO certification).

Initial SWOT

Strengths	Weaknesses
• The Municipal Energy Agency (Energiereferat) is independent, not being part of the Environmental Agency, meaning it has direct access to the Magistrat, making it easier to plan and set up projects. • Local utilities owned by the municipality are engaged in the energy transition and climate protection • ABG needs to build another 10 000 dwellings in Frankfurt am Main and is currently reflecting on how to do it climate neutral by focusing on heat from waste and other ways of climate friendly energy supply. Currently ABG is strongly engaged in the developments of PV-projects on their buildings in cooperation with the Mainova AG • The Transition Town Movement is active in Frankfurt am Main and there are many community projects.	• Working in silos on the preparation and implementation of the different masterplans, each department being decentralised and fully independent370 000 commuters/day out of which approx. 60% are commuting by car causing several problems in terms of congestion and air quality. Urban planning and transportation planning needs to be much better coordinated • There are lots of sectoral policies, in Frankfurt am Main strategic planning was mostly project related since the 80s. Many things happen already at building level, but not so much at neighbourhood and city spatial level strategically. • One priority is the transport sector. The city divides transport into tiny chunks instead of a global strategy. • Real estate values are dramatically increasing and 65% of the inhabitants rent their homes. Rents are high with approximately 10 euros/m2. • There are 80 000 buildings in Frankfurt am Main and 80% of them will still exist in 2050, but currently, the renovation rate in the private sector is very low.
Opportunities	**Threats**
• Pressure from independent groups like “Fridays for Future”, creating momentum as well as political pressure on the decision making process • Businesses have their own climate protection agendas and to some degree ask for actions on energy and climate • There are several parallel stakeholder cooperation networks, but they are not always interlinked and sometimes quite specific	• At the moment the city does not have any control possibilities to channel the increasing number of data centres (currently about 40 bigger ones) covering an area of approx. 600 000 m2 • In some cases, there are no housing areas around these data centres or they are too far away, so there are limitations to utilise the available waste heat. • There is a missing gap of approx. 90 000 housing units in Frankfurt am Main

How Frankfurt am Main wants to use the ZCC project?

Frankfurt am Main wants to set up a local carbon budget to support the development of a more integrated inter-departmental cooperation process in the area of climate mitigation and climate adaptation. This would serve at the political level to the 10 vice mayors to attribute responsibility for

CO_2 emissions to the different departments and see their influence in the different sectors throughout the city.

As the *Frankfurt Climate Alliance* does not cover private business yet, there will still be gaps on this issue. Beside the establishment of an integrated cooperation approach between the different departments, the Energy Agency wants to extend the current "Climate Alliance" approach to involve also other, non-pub sector related stakeholders.

As an additional element, the Energy Agency of the City of Frankfurt am Main currently explores the possibility to set up a local Climate Fond. Such a financial instrument could be used to offer an alternative for compensation projects and which could make sure to direct investments to locally relevant developments.

Sources:

- Interviews with:
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  - Mr Peter Kreisl, Frankfurt am Main City Council, Agency of Urban Planning, Head of Urban Development Department
  - Dieter Jobb, Head of Energy Management, Infraserv GmbH & Co. Höchst KG
  - Prof. Dr. Hannes Utikal, Director of the Center of Industry and Sustainability, Provadis School of International Management and Technology AGs
  - Mr Florian Unger, Head of Energy Efficiency, Energy Agency (Energiereferat)
  - Ms Hanna Jaritz, Project Manager Climate Fond, Energy Agency (Energiereferat)
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MANCHESTER

City baseline

Facts and figures

Population and history: With a population of 547 000, as a former textile capital, the city of Manchester played a key role in the industrial revolution in the 19th century. Today, Manchester is one of the frontrunners in the energy revolution with the aim to become a zero carbon city by 2038, at the latest.

L**ocation**: Manchester is a major city in Greater Manchester, in the north west of England. It is the fastest growing city in the UK outside of London, with high density housing development especially in the city centre. Manchester is the third most visited city in the UK, after London and Edinburgh. As Manchester is situated in the middle of a green belt region, this reduces urban sprawl, prevents nearby communities from merging and preserves the countryside.

Economic indicators: Manchester is one of ten local authorities which make up the Greater Manchester conurbation. Greater Manchester is the second largest economy in the UK. In 2017 Manchester's Gross Value Added (measure of the value of goods and service produced by an area) was £19.7million. Between 2016 and 2017, Manchester's overall GVA grew by 4.3%, compared to 3.6% for the UK, and is the third-highest growth of all the UK Core Cities. In March 2019 there were 22 630 enterprises in Manchester[28].

Energy and Climate: The city has a long history of flooding. Surface water flooding has increased tenfold between 1945 and 2008, and is predicted to increase further with climate change. In its vision, Manchester has the ambition to become a fully climate resilient zero carbon city. Manchester signed the Covenant of Mayor in 2009.

[28] https://secure.manchester.gov.uk/info/200088/statistics_and_intelligence/2162/economy

General context

In 2016 Manchester committed to 'play its full part in limiting the impacts of climate change'. In 2018 this was defined as emitting only 15 million tonnes CO_2 during 2108-2100, Manchester's science-based 'carbon budget'. The budget was developed by the Tyndall Centre for Climate Change Research and was formally adopted by Manchester City Council in November 2018, on behalf of the city.

Manchester's climate change objectives and targets have been reviewed in late-2019/early-2020 by the Tyndall Centre and Manchester Climate Change Agency. This work has been used to inform the development of the Manchester Climate Change Framework 2020-25, the city's high-level strategy.

The Framework was published by Manchester Climate Change Agency and Partnership on 28th February 2020. The Framework is scheduled to be formally endorsed by Manchester City Council on 11th March 2020, on behalf of the city.

The Framework sets out the aim that 'Manchester will play its full part in limiting the impacts of climate change and create a healthy, green, socially just city where everyone can thrive.'

The Framework has four objectives:

- Staying within our carbon budgets
- Climate adaptation and resilience
- Health and wellbeing
- Inclusive, zero carbon and climate resilient economy

The carbon budget objective covers three sub-objectives:

- Direct CO_2 emissions: from homes, workplaces and ground transport; 15 million tonne carbon budget 2018-2100; five-year carbon budgets for 2018-22 and 2023-27 (aligned with the timescales or the UK carbon budgets); 13% year-on-year emissions reductions; 50% emissions reduction 2020-25
- Aviation CO_2 emissions: a formal recognition that flights from Manchester and all UK airports need to stay within a limited carbon budget for UK aviation, as part of a wider international budget; for Manchester Airport and Manchester City Council to work with UK Government on a Paris Agreement-aligned aviation strategy for the UK
- Indirect / consumption-based CO_2 emissions: a formal recognition that Manchester has a responsibility for emissions from the products and services consumed in the city; a commitment to better understand these emissions and to take action to tackle them; indirect emissions are estimated to be 60% higher than the city's direct emissions.

To meet the objectives there are six headline areas of activity plus cross-cutting enabling actions:

1. Buildings (existing and new)
2. Renewable energy
3. Transport and flying
4. Food
5. The things we buy and throw away
6. Green infrastructure and nature-based solutions
7. Supporting and enabling residents and organisations to act

Governance and Partnerships

Manchester has established a devolved, partnership-based approach to meet its climate change commitments. It is built on two key components:

- Engaging and empowering Manchester residents and organisations to take action, using the Manchester Climate Change Partnership and its networks as the key engagement mechanism, and

- Joint working between Manchester City Council, Manchester's strategic partners, Greater Manchester Combined Authority, UK Government, and their agencies to provide the support, incentives, standards and infrastructure residents and organisations need

The Manchester Climate Change Partnership is the city's main mechanism for engaging and inspiring organisations and residents to act. The Partnership currently has 60 members, across 10 sectors, with responsibility for 20% of Manchester's direct CO_2 emissions. Its members also have reach into the remaining 80% through their staff, students, customers, tenants, football fans, theatre-goers, worshippers, and others. By working with their supply chains members are also starting to take a make an impact on the city's consumption-based CO_2 emissions.

The concept of a 'framework', rather than a traditional council-led 'strategy' is to create structure that enables households, communities, businesses, schools, and public sector organisations to 'plug in' their own commitments and plans to contribute towards the implementation of the Framework.

Each of the 10 sectors is putting in place a sub-group in place for the development of bespoke action plans and knowledge sharing. For example, the Our Faith Our Planet group (faith sector), the Manchester Arts Sustainability team (arts and culture sector), Manchester Housing Providers Partnership Zero Carbon Group (social housing sector) and the Oxford Road Corridor Zero Carbon Group, which brings together Manchester City Council, the two universities, Central Manchester Hospital and Bruntwood (private property company).

Reporting Progress

As well as setting a clear climate action trajectory for this century (2018-2100), Manchester's carbon budget also allows for calculating the city´s contribution towards achieving the UK's carbon reduction targets (i.e. locally determined contribution), and thus represents a valuable, measurable and trackable tool for demonstrating the important role of cities in national climate policy.

The city has been producing an annual progress report since 2013, published by Manchester Climate Change Agency. Independent monitoring groups are currently being established to monitor progress against the Framework's objectives.

As a member of the Covenant of Mayors Manchester reports progress to the CDP-ICLEI Unified Reporting System. Copies of the reports are available from www.cdp.net/en/responses.

Institutional context

Reaching these ambitious targets requires the necessary governance structures.

Externally, the relevant stakeholders are engaged via the *Manchester Climate Change Partnership* composed of public, private, community and academic partners from the faith sector, local property

companies, the Manchester City football club, the two local universities, the social housing sector, the climate change youth board (16-25-year-old residents), the culture sector etc. The Climate Change Partnership was set up in its current format in February 2018.

Internally, Manchester City Council set up the *Manchester City Council Zero Carbon Coordination Group* chaired by the deputy chief executive. The kick off was in September 2019. This group involves different municipal departments via the directors/heads of the respective departments: Planning, Strategic development, Neighbourhoods team (community focused), Legal, Finance, Communications, Housing, Human Resources, Policy, Building estates (municipal buildings).

The *Climate Change Partnership* is part of the *Our Manchester Forum*, a local governance structure that goes beyond climate change and covers all sectors, responsible for championing and overseeing the delivery of the Our Manchester Strategy 2016-25. The Chair of the Manchester Climate Change Partnership is a member of the Forum. This enables the Partnership and Agency to work with strategic partners to help embed climate change as part of their core activities.
The Manchester Climate Change Agency was established in September 2015. The Agency and Partnership are jointly responsible for championing, coordinating and facilitating the implementation of the Framework. Their activities are focused on working with partners on the following headline objectives:

1) Helping our city to set the right objectives and targets, in line with the Paris Agreement and the latest science

2) Helping our city to establish the strategy, governance and partnerships needed to meet the targets

3) Helping our city to take action

4) Helping our city to understand its progress

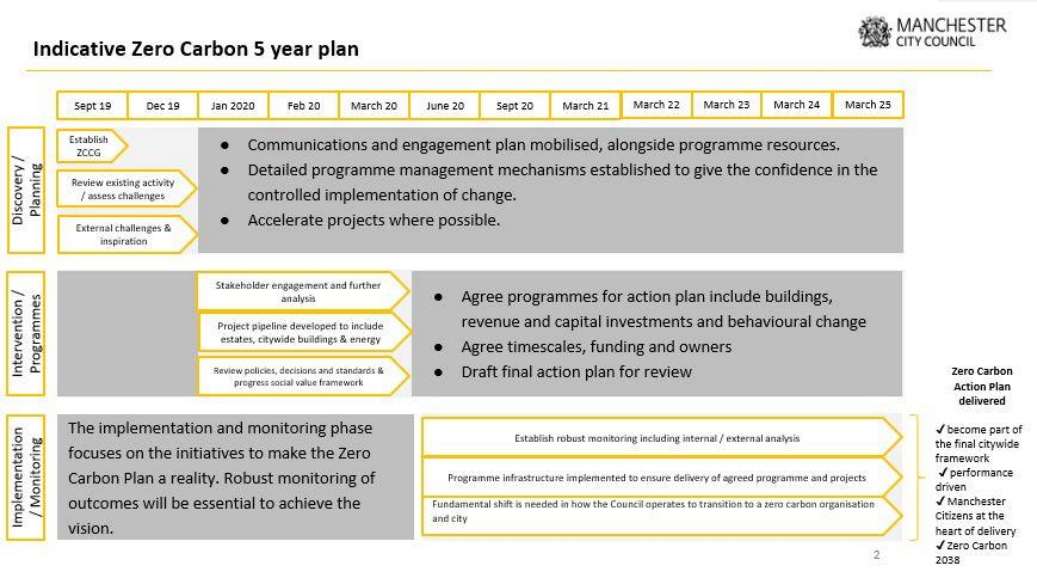
On energy and climate policies

- **Local**

The Manchester Climate Change Framework 2020-25 is Manchester's high-level strategy, with further details set out in sector and organisation-specific action plans that 'plug in' to the Framework. The Framework is scheduled to be formally adopted by Manchester City Council on 11th March 2020.
Manchester City Council's Climate Change Action Plan 2020-25 sets out how they will contribute to the implementation of the Framework

- Internal direct emissions
- External influence / policy
- Quantifiable carbon savings
- 50% reduction target in 4 - 5 years

The aim is to attract the necessary funding to deliver Manchester's ambitious agenda and to contribute to the overall vision: Our Manchester. A key focus is also maximising influence over external partners and stakeholders at a local, sub-regional and national level including government.



Local Projects

The Greater Manchester Community Renewables project started in 2015, as a first phase with 7 schools from Greater Manchester. Citizens want to make bigger actions and there is a real demand to upscale the investment of the community into real energy production. Tapping in this investment potential is an absolute priority (4% return is offered). Installing PV on schools is also a way to involve the entire community. The project started with the schools having higher energy consumption and the best orientation of the roof, in order to develop an efficient "business oriented" project.

Manchester University has implemented diverse carbon literacy schemes. With the increased internationalisation of the university and increased travelling needs, the offsetting is done via funding carbon literacy projects. Students are given all tools to understand and act on climate change. The University did a bottom up carbon literacy course where for 108 senior staff were trained by the students.

- **National**

The national Government has committed to UK to 'reach Net Zero by 2050 with investment in clean energy solutions and green infrastructure to reduce carbon emissions and pollution'. Manchester is currently considering the potential presented by COP 26 in Glasgow in November 2020 to build a collaborative partnership and programme with UK Government. This work will need to be developed Greater Manchester and the other UK Core Cities.

The Carbon literacy project is currently being funded by the UK government, 6 local authorities are testing a special training course (3 of Greater Manchester, Midlands England, Bristol, Leicester). This tool is used by the Manchester Climate Change Partnership members to deliver their commitment to a zero carbon city, it is an educational tool that can be used to change the culture around climate change. It also helps individuals to understand the impact of their lifestyles as well as organisations through a peer to peer learning process of all actors involved.

Important aspects of climate and energy planning

Main achievements in past SEAPs

In 2018/19 Manchester City Council achieved their current Climate Change Action Plan 2016/20 targets to reduce emissions by 41% (based on a 2009/10 baseline) by achieving a 48.1% reduction.

Projects to build on

In the framework of the European H2020 funded GrowGreen project (http://growgreenproject.eu/), Manchester will refresh its current Manchester Green and Blue Infrastructure Strategy, to take on board the learning from GrowGreen and its partner cities. Manchester has a long history of flooding and nature-based solutions developed in GrowGreen will help tackle this problem via a demonstration project in the West Gorton neighbourhood, a priority area for housing development. The project will deliver detailed green infrastructure masterplan for the neighbourhood (green spaces, community food growing, green roofs, attenuation ponds and drainage channels).

The TRIANGULUM project (www.triangulum-project.eu) focusing on the Oxford Road Corridor to become one of the largest knowledge driven low carbon districts in Europe. The aim is to decouple the link between a reduction in carbon emissions whilst at the same time increasing economic activity.

The URBACT Local Group

In Manchester, the ULG will be based on the already existing and very dynamic Manchester Climate Change Partnership described above. The Partnership is planning to review its membership and structures during 2020, including identifying sectors and organisations not currently represented, for example, Manchester Airport, the hotels sector, the retail sector, food and drink sector, and others.

Initial SWOT

Strengths	**Weaknesses**
Designing long-term roadmaps has shifted away from being purely a dialogue among experts to a real public debate involving all citizens. Ownership and long-term dedication of different stakeholder groups. Stronger and more diverse partnerships with all actors of society via the Manchester Climate Change Partnership. Setting up of a high-level strategy for 2020-25. Setting up an internal Manchester City Council Zero Carbon Coordination Group.	There are no financial institutions in the Climate Change Partnership. Small businesses and particularly the retail sector are not involved in the Climate Change Partnership.
Opportunities	**Threats**
Designing long-term roadmaps has shifted away from being purely a dialogue among experts to a real public debate involving all citizens. Working with the different sub-group of the Manchester Climate Change Partnership in order to develop specific zero carbon roadmaps and specific action plans with a timeline for implementation. Setting up active exchange networks for the different sub-groups on the model of C-Change that is focusing on the culture sector.	The carbon budget approach will only be successful if it is embedded in the daily decision making process of Manchester City Council and organisations across the city. Risk of failure if on a yearly basis the carbon budgets are exceeded and major action is needed to get on track. .

Enlarging the focus of the zero carbon approach from direct emissions to indirect/ embedded/ 'consumption-based emissions. Increase carbon literacy of the local councillors (so far only 50% are carbon literate). Decrease the aviation footprint – setting up a sustainable transition fund for instance by applying a tax/flight.	

How Manchester wants to use the ZCC project?

Manchester's Climate Change Framework 2020-25 (Version 1.0) was published on 28th February 2020 and is scheduled to be endorsed by Manchester City Council on 11th March 2020. The document sets out the city's four objectives and targets and the high-level strategy for meeting them. However, the Framework acknowledges that further details are required. For example, it sets out that Manchester needs 100% of its energy to be from renewable sources but doesn't set out how much by 2025 and the projects needed to achieve it. It also sets out a high-level objective on consumption-based CO_2 emissions but states that further work is needed to understand Manchester's consumption-based footprint in further detail. ZCC will enable Manchester to address these current gaps in the Framework and support the development of Version 2.0. The 'Keeping Our Targets and Framework Up to Date' already commits to the need for the document to be further developed.

Manchester will work with the different subgroups involved in the Manchester Climate Change Partnership. The MCCP meets regularly and will form the URBACT Local Group for Manchester. We will work with the partnership to identify which sub-groups have priority actions that can be supported through the implementation of a small scale action. As the prioritisation and development of the action will come out of the ULG in Phase 2, we are not wanting to pre-empt what it will be at this stage. However, some of the potential areas are to focus on the faith sector and/or the community and voluntary sector, as these are diverse sectors with relatively limited resource, and where the impact of the small scale action can add value and help leverage other funds and activities

The objective is to develop a sector based zero carbon action plan or shared activities similar to the example of the culture sector.

In the local ULG meetings, these subgroups will be actively involved and encouraged to develop a local project to bring their sector to zero carbon and share knowledge, expertise and best practice among using the example of how MAST (Manchester Arts Sustainability Team) has worked on behalf of the cultural sector, which is at the best practice example shared through the URBACT Knowledge Transfer Network C-Change (https://urbact.eu/c-change).

Manchester could enlarge the local Climate Change Partnership to other sub-groups that are currently not represented such as the financial sector (e.g. Pension Funds), small businesses and particularly the retail sector.

It is important for Manchester's Climate Change Framework to and the the Zero Carbon Cities project more widely to incorporate actions on nature-based solutions, Manchester's Green and Blue Infrastructure Strategy and the learning from the GrowGreen project.

Sources:

Interviews with:

- Claire Stocks, Extinction Rebellion Manchester

- Mark Burton, Steady State Manchester
- Rogers Govender, Dean, Manchester Cathedral
- Director of the art Centre? Dave Moutrey, CEO, HOME?
- Sophie West, Bruntwood Sustainability Officer
- Ali Abbas, Campaigner, Manchester Friends of the Earth
- Professor Liz Price, Head of School of Science and the Environment, Manchester Metropolitan University
- Helena Tinker, Head of Environmental Strategy, Manchester Metropolitan University
- Ash Farrah, Manchester Climate Change Youth Board
- Professor Nalin, Vice President for Social Responsibility, University of Manchester
- Dave Coleman, Director, Cooler Projects
- Dr Paul Tobin, University of Manchester (for links to new city climate governance project)
- Jonny Sadler, Manchester Climate Change Agency
- David Houlistan, Strategic Lead Policy and Partnerships, Manchester City Council
- Mark Duncan, Strategic Lead Resource and Programmes, Manchester City Council

MODENA

City baseline

Comune di Modena

Facts and figures

Population and history: 181. 000 inhabitants

Location: Modena is situated in the Po Valley, in the Emilia-Romagna region, in northern Italy.

Economic indicators:

Energy and Climate: Modena, as well as the entire Italy, is characterised by an increase of extreme meteorological events such as heat waves and drought periods alternating with enhanced precipitations and floods.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General context

Modena is a university and an industrial city, well known for its automotive industry (e.g. Ferrari, Maserati, etc), but also intense farming.

The most critical aspect for Modena is the air quality that is mainly affected by:

- emissions from traffic due to the presence of two highway axes as well as an important use of the private car for local trips, in spite of a dense public transport network;
- emissions form the industry as Modena is one of the areas with the highest industrial concentration in Europe;
- the city's location that favours concentration of pollutants due to poor ventilation, high levels of humidity and low air exchange. This is also the case of other cities in the Po Valley.

Based on data from 2015, the major greenhouse gas emissions are represented by:

- 37,5% from energy production and heating of private buildings
- 36,4% from private transport
- 24% from tertiary/service sector

In the past years, Modena focused on primarily tackling transport emissions. In Modena the modal split of cycling is above 10%. There are several cycling services, such as: bike sharing, bike storage and parking facilities, technological innovation (WeCity app, wi-fi counting sensors), bike promotion initiatives (bicycle registration, incentives for e-bikes, Bici&bus, etc.).

Four years ago there was a strategic transition in the city centre of Modena towards a more sustainable and healthy city, ensuring a better air quality and less noise pollution, guaranteeing an increased quality of life. The limited traffic zone has increased by 7%, and the pedestrian areas by 6% through specific measures implemented:

- the pedestrianisation of part of the city centre (example of Piazza Roma that became a completely pedestrian area in 2016 after being used as a parking area previously);
- 0,69 km2 of Limited Traffic Zone, inside the old city walls' area;
- the Limited Traffic Zone is monitored by checking the authorisation of incoming vehicles through an electronic system;

- more than 37.000 m2 of pedestrian area in all the main squares and narrow streets;
- all streets in the old town centre (19km) have a 30km/h speed limit.

Currently, there are 86 km of roads with limited speed zones to 30 km/h, representing 17% of the urban roads.

In terms of refurbishment of the public buildings (schools, sport centres, etc), there are more than EUR 7 million invested. Modena is also focusing on refurbishment of private homes and there are several incentives in place, such as tax reductions. However, there is a problem of mentality and focus need to be set on changing resident's mindsets to convince them to give priority to investments in refurbishment works, instead of the private car. This is an important challenge in Modena, home to important car industry.

As far as residential buildings renovation and energy retrofitting actions are concerned, the National Government set up a Renovation Bonus, Ecobonus and Furniture Bonus with a 50% tax deduction in 10 years and a maximum of EUR 96 000 spent per households.

At National level, the National revolving fund for Energy Efficiency guarantees loans for public authorities and ESCOs that support investment in energy efficiency.

At the Regional level, the Emilia Romagna Region supports private companies to implement energy efficiency measures via the Energy Fund, a revolving fund with a green and low interest rate loan.

Furthermore, in 2016 the "Conto Termico 2.0" was established as a subsidy to increase the energy efficiency of existing buildings and the production of thermal energy from renewable sources and high-efficiency systems. The beneficiaries are public administrations, businesses and private individuals.

In 2015 Modena municipality issued a tender for facility management and heat, electricity and air conditioning supply for around 200 municipal buildings, mainly schools and sports facilities. The service was contracted, through a European tender for 9 years: in addition to the ordinary management, the contract provides EUR 7 million for investments in energy efficiency. The minimum savings foreseen are -10% compared to consumption in 2014 (approximately 2,867 MWh).

The heating system in Modena is mostly individual with the exception of 3 small district heating systems covering about 10% of the needs.

The City government political priorities and key issues for the time frame 2019-2024 are oriented towards a *"sustainable and moving city"* and include:

- education for sustainability within an integrated and universal framework, considering UN Agenda 2030 for Sustainable Development;
- urban green areas, forestation and connection between rural and urbanised areas through a contiguous and continuous green infrastructure;
- social agriculture in urban and peri-urban areas;
- waste management;
- energy efficiency;
- cross-cutting actions targeted at climate protection, resilience and air quality through European funded projects;
- sustainable Urban Mobility Plan and Parking Plan that promote soft, sustainable and shared mobility; urban cycle lanes and special routes based on home-school and home-work journeys and competitiveness of local public transport.

Institutional context

The internal decision-making takes place at political level via the City Mayor, 9 City Executives and a City Council. Energy and Climate issues are in the hand of the City Executive for Environment, Agriculture and Sustainable Mobility.

After the local elections in 2019, the objectives for 2019-2024 were presented by the Mayor to the City council, they were adopted and translated also at administrative and operational levels.

On energy and climate policies

- **Local**

The local public administration is only responsible for the energy retrofit of public buildings, whereas it has no control of private interventions (on residential, commercial or industrial estates) which remain a responsibility of private owners according to the Regional legislation.

- **Regional**

In Italy, the decision-making process on energy and climate issues is based on regional directives in line with national and EU guidelines.

The Emilia-Romagna Region committed to reduce its GHG emissions by 80% until 2050. It finances local PAESC (Climate and Sustainable Energy Action Plan) via a specific call targeted to municipalities.

A Regional Energy Observatory was established in 2015 to gather information on infrastructures and power plants, energy consumption, existing regulatory framework, regional planning instruments and policies and sources of financing and to elaborate/collect data to support local administrations.

Furthermore, the Emilia-Romagna Region recently established that all the regional municipalities with more than 30.000 inhabitants have to identify an Energy Manager in line with the National Law 10/1991.

- **National**

Climate risk receives little attention at the National level, the focus being set on mitigation actions. Currently, the National climate adaptation plan lacks financial backing and clear guidance to support regions and municipalities in integrating climate risk into development planning or disaster risk reduction efforts[29]. Therefore, the Emilia-Romagna region developed on a voluntary basis its integrated climate mitigation and adaptation strategy up to 2050, going far beyond national plans.

Important aspects of climate and energy planning

Long term vision

In 2015, the City council adopted the "Local Roadmap 2050", a policy document for the promotion of sustainable development with a low environmental impact, developed with the EU INTERREG IV C project *"IMAGINE - Low Energy Cities"*.

Covenant of Mayors and Sustainable Energy Action Plan

In February 2019, the City Council voted to sign the new "Covenant of Mayor for Climate and Energy" that supports the implementation of the EU 40% greenhouse gas-reduction target by 2030 and the adoption of a joint approach to tackling mitigation and adaptation to climate change. Modena is

[29] https://www.minambiente.it/sites/default/files/archivio_immagini/adattamenti_climatici/documento_pnacc_luglio_2017.pdf

currently developing its sustainable Energy and Climate Action Plan (SECAP) to go beyond its Sustainable Energy Action (SEAP) that was adopted in 2011.

Sustainable Urban Mobility Plan

The new SUMP of Modena will cover the period 2020-2030 focusing on a sustainable transport system with less environmental and social impacts. The Cycling Mobility Plan is aiming to increase the use of bicycles, public transport and walking rather than the use of cars.

The Mobility Plan for home-work trips is addressed to the civil servants of the City of Modena, in order to offer them different mobility options rather than the use of private vehicles and, at the same time, to increase their awareness of individual and collective benefits in terms of health, wellness and savings. The Plan was elaborated in the frame of the MOVECIT EU project.

Local urban development Plan

Modena is working on the next city Plan (strategy for urban environmental quality) that should be adopted in 2021, but this deadline will most probably be extended. It is a demand from the Emilia-Romagna Region to work on a strategy on urban quality and environment quality, including energy and climate issues. There are top-down standards fixed at the national level, however they are not well translated and do not correspond to the reality on the ground.

Regional Integrated Air Plan

The City of Modena is involved in the implementation of the "PAIR 2020", the Regional Integrated Air Plan adopted in 2017 by the Emilia-Romagna Region, that foresees 94 measures for the air quality improvement, with the aim of reducing pollutants in the regional territory and being in line with the maximum limits fixed by the Directive 2008/50/EC on ambient air quality and cleaner air for Europe 2008/50/EC Directive and by the Italian Law.

Key organisations

Within the city administration there are two particularly important departments that need to engage with the ZCC project:

- The "Environment, Civil Protection, Asset and Territorial Safety" Department, mainly in charge of: coordination of communication, dissemination and training on environmental themes; collaboration and support to the department elaborating the general urban tools related to environmental aspects; coordination of environmental projects; promotion of renewables; implementation of SEAP; management and control of service contracts on waste collection and treatment, implementation of procedures on dangerous waste management and on environmental protection; the management of procedures on air pollution; air quality monitoring; management of procedures on environmental noise and electro-magnetic pollution; implementation of procedures on water management; contribution to the management of protected areas and urban forestation areas

The "Urban Planning and Sustainability" Department, mainly in charge of: external coordination of the preparation of the new Urban General Plan; promotion of urban regeneration; coordination of the activities in the field of environmental planning. The Mobility, Traffic and Urban development Office is part of this department. This office is working on new infrastructure planning, sustainable mobility. The office was responsible for the elaboration of the Cycling Mobility Plan and is currently elaborating the SUMP. AESS (Energy and Sustainable Development Agency of Modena) was founded in 1999 as a non for profit association, primarily involved in the promotion of renewable energy sources, energy efficiency and reduction of energy consumption among local authorities, SMEs, schools and consumers. Its major area of interest is the province of Modena, but operates also at regional and national level, gathering approximately 70 members.

Main achievements in past SEAPs

The SEAP implementation, as certificated in the monitoring report of AESS (Energy and Sustainable Development Agency of Modena) led to 11,9% CO_2 reduction in 6 years (since 2009 up to 2015), in line with the objective of a 20% reduction by 2020. It needs to be noted that the industry sector is not included in the SEAP and that there was less focus on actions in tertiary and residential sector, the focus being primarily on mobility actions.

Past projects to build on

IMAGINE (INTERREG IVC) helped Modena to set up a long term vision for 2050, focusing on increased quality of life with a low carbon impact.

In the framework of the GrowGreen project Modena will develop a local Nature Based Solution strategy in 2022, incorporating it in its hydraulic risk management plan and integrating it with the city's spatial plan.

The URBACT Local Group

In Modena, it is important to focus both on the creation of an internal ULG as well as an external one. The municipality will ensure that the external group feeds into the internal one.

Internal URBACT Local Group

During the city visit an internal workshop was organised, involving several municipal departments who expressed the need of inter-departmental collaboration in the future compared to the current work they are doing rather in silos. This is crucial for establishing long-term objectives and assign responsibilities to the different departments in terms of climate impact of their respective work.

The following departments expressed interest at this stage: Communication Office, "Urban Planning and Sustainability" Department, "Environment Private Building and Productive Activities" Department, "Service for Environment". The participants also expressed the need of involving the Mobility, Economic and Culture departments.

External URBACT Local Group

During the URBACT city visit two 2 hours' workshops were organised with the key stakeholders in Modena to plant the seeds for the future ULG. The following stakeholders participated in the workshop and expressed their interest to join the ULG:

Associations

- Fridays for Future, local branch of the students' movement inspired by Greta Thunberg;
- Local ISDE (International Society of Doctors for the Environment) working on health issues and diets that have a positive impact on the environment, but also on health. The main purpose of ISDE is environmental protection, both locally and globally, prevention of numerous illnesses and improvement of the quality of life. ISDE was established as a tool for educating and physicians and the general public, and stimulating awareness and initiatives by public and private bodies, in particular governmental agencies;
- Legambiente (Environmental Association of Italy), the most widespread environmental organisation in Italy, with 20 regional branches and supported by more than 115 000 members' donors and by projects and businesses that are in line with the organization's principles. Among its activities: raise awareness on environment and refurbishment of condominiums; plant trees as an action for forestation.

- FIAB (Italian Environment and Bicycles Federation) is an environmental organisation. Its aim is to spread bicycle use as a sustainable transportation means. At national level it gathers more than 140 local independent associations aiming at promoting cycling both as a daily commuting means and as leisure activity.

Agencies

- ARPAE - Environmental Agency of Emilia-Romagna Region - whose main objective is to promote sustainability in the field of environment, health and territory;
- Modena Agency for Mobility (AMO) in charge of planning, organising and promoting the local public transport;
- AESS, Energy and Sustainable Development Agency of Modena, primarily involved in the promotion of renewable energy sources, energy efficiency and reduction of energy consumption among local authorities, SMEs, schools and consumers.

Businesses representatives

- Confindustria Emilia Area Centro is an association gathering 3 500 enterprises from the mechanics, textile and food industry;
- Confesercenti Modena (Business Association), the major association gathering 4 000 small and medium local enterprises from the commerce, tourism and handicraft sector;
- CNA - the National Confederation of Crafts and Small and Medium Enterprises (SMEs) is an association of businesses and entrepreneurs that are politically, culturally and economically independent. In the Province of Modena, it gathers 12 000 enterprises, out of which 2 000 in Modena ranging from commercial to very little enterprises.

Public service providers and multi-utilities

- SETA, the Local Transport Company in the Province of Modena and also in other two provinces of the Emilia-Romagna Region (Reggio Emilia and Piacenza). It also manages the sale of tickets and subscriptions;
- Hera Group (Multi-utility company) has concession in Modena for the management of waste, water, distribution of energy, power and gas. Their budget is of EUR 6 million/year out of which 50% is public cofinancing. They manage several power plants, one third from their energy production comes from renewable energy sources (RES), mainly geothermal and photovoltaic. 12% of the energy provided by Hera Group comes from RES. In 2018 they made the commitment to 100% RES, but in practice it is too expensive. Hera Group is using waste from Modena and other municipalities to produce biogas.

University and academic institute

- University of Studies of Modena and Reggio Emilia. The university has a sustainability coordinator and monitors commuting practices of students and employees. The university does its own emission inventory, trains students and high schools on topics related to the environment. Currently the sustainable energy plan of the university is being drafted. The university can support the municipality with the monitoring of its emissions.

Other stakeholders:

- BPER (Bank Group) of Modena is a strong entity of five banks, all autonomous and well-established in their areas of operation. In addition to the banks, the Group includes numerous product companies (asset management, personal loans, etc.) and special purpose vehicles;
- Public General Hospital of Modena – University Hospital Organisation of Modena

The City of Modena will try to enlarge this group of stakeholders, including other potential territorial actors.

Initial SWOT

Strengths	Weaknesses
Motivated local stakeholders Modena is located in the dynamic region of Emilia Romagna committed to 2050 CO_2 reduction targets AESS is supporting the municipality with the development of the SECAP	The main challenges in terms of private mobility are: high traffic flows during peak hours, excessive use of the private car, safety issues, noise and air pollution, low use of park and ride facilities. In some cases, there is a lack of coordination and inter-departmental collaboration
Opportunities	**Threats**
There is a good urban transport system, however its attractiveness needs to be improved, as well as the road-rail interchange.	Modena does not have a local plan on air quality, but needs to apply the regional plan which is linked to climate change; however sometimes actions that are estimated to have a positive impact on climate change are not necessarily positive for air quality improvement. Today the working groups on these issues are not interacting. Example: the main air pollution sources are traffic and heating from wood pellets as their use increased due to incentives in order to phase out natural gas.

How Modena wants to use the ZCC project?

In Modena the ZCC project will be used to:

- strengthen inter-departmental cooperation and integrate better the different sectorial objectives. The carbon budget approach will be useful to give clear responsibility to each department in terms of CO_2 emissions.
- develop and communicate the socio-economic aspects, both internally at the political decision making level, but also externally with the key local stakeholders. Therefore, at a first stage an internal training will be needed on the socio-economic aspects of climate change and on how to communicate this to the external stakeholders.
- engage with the industry sector and expand the SECAP also to the industry sector
- create a local brand and logo for the engaged stakeholders with specific actions towards CO_2 emission reduction; companies could use this logo to communicate and show they are actively contributing to fight climate change.
- focus on the citizen engagement and changing of mindsets and lifestyles, now based on the intensive use of the private car
- focus on energy consumption in the public sector and in the residential sector.

In Modena it is important to link the Zero Carbon Cities project and integrated action plan to be developed in 2022, with other projects such as GrowGreen where a nature-based-solutions action plan will also be developed in 2022. The first monitoring of the SUMP will also take place in 2022.

Sources:

- One internal workshop involving representatives of different departments
- Two external workshops with the local stakeholders mentioned above
- Documentation from ULG members' websites

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TARTU

City baseline

Facts and figures

Population and history: around 100.000 inhabitants, Tartu is the second largest city in Estonia and education capital of Estonia. Tartu is the third political power in Estonia with the state being first and city of Tallinn being the second.

Tartu is a very young city as it is called the *"university town of Estonia"*. Back in the XVII century, the University was created and played a great role in Tartu's development.

Tartu can count on a vibrant cultural life, embedded in the city and including the population (not an elite culture); it has 20 museums and one national museum. Tartu just won the race to be the European Capital of Culture in 2024 with the theme: "the art of survival".

L**ocation**: the biggest and only urban centre of the south east Estonia, Tartu is lying at 80 km from the Russian border but not connected with this country either. In a land of forest and lake, nature is vibrant and also plays a great role in the image of the city and its quality of life.

Economic indicators: very low unemployment rate, the economy of Tartu is twofold: in education and services sector, retail sector and mainly tertiary activities: the city has 15 higher education institutions including Tartu University with its buildings and University Hospital. Half of the city's annual budget is dedicated to education.

Energy and Climate: As in other cities in Eastern Europe, the carbon footprint has worsened a lot in the last decades, starting with 1990 when more than a third of transport was done by walking to around 21% today. One of the main issue is the national energy mix, with electricity production coming from own Estonian energy source: 70% of the energy consumed in the country comes from oil shale. The advantage of Tartu is that they can count on a very large recently modernised district heating system and that Structural Funds were used to set up large scale refurbishment programmes for housing cooperatives.

Climate issues are only mentioned in the note of natural disasters and coping with the effects. Environmental protection and climate is only mentioned in the form of maintaining and creating a natural and nature-like living environment in the city.


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General context

For Tartu's population, the education to environment and nature is well embedded into the culture, as it is in most part of the country. Tartu city has founded an Environmental Education Centre and 10 years ago constructed a Nature House to accommodate all its activities. The house is based on an initiative that started in 1947 during the communist era. It has a greenhouse and an energy neutral building (2012), a B energy class building designed as a lighthouse on climate friendly buildings.

In 2024, Tartu will be European Capital of Culture. "The three main themes are the Arts of Survival: *"Tartu with Earth: Ecology Before Economy", "Tartu with Humanity; Forward to the Roots", "Tartu with Europe: Greater Smaller Cities".*

There is a tradition for Neighbourhoods' parties (flea markets) and Tartu is the birth place of the Estonian tradition of song festivals since 1869 with tens of thousands of people participating and singing and diaspora coming back to their roots. The theme of "Arts of survival" is also linked to the big transformation the city witnessed in the last 30 years after the fall of the soviet regime. The population is aware of how fast changes might occur and what resiliency means.

The strong community cohesion is also highlighted via the participatory budgets implemented by the municipality since 2013. In this framework, 200 000 Euros of the municipal budget is allocated to citizen imagination. The call for ideas is open to everyone and 15-20 are chosen by a group of experts as being realistic and beneficial to all citizens. Thereafter, only registered Tartu citizens can vote online and two of the ideas with most votes will be implemented during next budget year. This initiative could be used further to develop and implement a Zero Carbon Strategy for Tartu.

Citizen involvement has been in the municipality's focus for a long time. Citizens are involved through a number of means be it digital channels or good old fashioned city hall meetings. For example, citizens were involved in the light traffic problem mapping where Tartu GIS system was used to map out problematic spots in pedestrian and/or cycling roads in Tartu. Citizens were able to mark difficult or dangerous places but also suggest new routs or solutions on which the municipality is now basing the upcoming roadworks and light traffic investments. As an introductory measure for new bus lines a comparison tool was presented. It enabled to compare routes between new and old bus lines and give feedback in the same tool. But digital tools have not substituted face to face meetings.

In terms of climate and energy policies, Tartu joined The Covenant of Mayors in 2014 and the City Council approved the Sustainable Energy Action Plan for 2020 (SEAP) in 2015. Furthermore, energy and climate issues are dealt with in:

- Tartu city masterplan including district heating zones, gas supply, electricity supply, solar energy zones, ground heating zones, light traffic scheme etc
- Tartu air quality action plan (2019) that includes measures for heating and traffic. Tartu has air quality issues due to certain historic and heritage protection regions using wood for heating.
- Tartu strategic action plan of bicycle transport 2020-2024 focusing on the reduction of individual car use to 20% and have combined cycling and walking for 60% of all travels.

Tartu's Sustainable Energy and Climate Action Plan (SECAP) for 2030 titled "Tartu Energy 2030" will be approved by the city council in April 2020.

In terms of transport, Tartu is a round city with short walking distances. However, during the last 20 years the share of private car use in Tartu's modal split has doubled. Private car share increased from 20% in 2002 to 40% in 2018. It mainly increased on account of walking as public transportation has been in minimal decline but has roughly maintained its share. Walking and cycling represented 45% in 2003 and in 2018 it represented only 29,5%. Main pressure to private car use is coming from urban sprawl as poor planning and invisible border make it difficult to connect the developing areas to the city's bus routes.

In terms of housing, the buildings are mostly from the soviet era. They are thermally inefficient and indoor climate is under standards. The city's district heating is mostly renewable. Renovation of apartment buildings remarkably reduces heating energy consumption but raises electricity consumption (mostly due to installation of mechanic ventilation). Renovation of housing creates a situation where reaching indoor climate norms is objectively energy efficient, however CO_2 emissions have risen due to the energy mix and the fact that indoor climate quality consumes more energy.

Concerning the public buildings, as they are well insulated heating is not an issue, however cooling is a significant consumer of energy even in Estonian climate. In 2016 Tartu started the first district cooling network in the Baltic States. It uses the coolness of the river water to provide cooling to the city's public buildings. Statistics show that district cooling is 40% more energy efficient than on-site solutions.

Since the municipality is not a major land owner, it is difficult to act on land use locally.

Tartu has no major manufacturing impacting city's energy consumption or CO_2 emissions. Main drivers of energy consumption and emissions are public sector in terms of Tartu University and service sector represented by new SPA-s and shopping centres.

Tartu has minimal electricity production.

Institutional context

The political situation in the city is stable, the coalition has always agreed on the Climate goals, but mobility and land use are controversial issues, dividing car and bicycle lovers and only small step by step actions are possible at this stage (e.g. closing streets to car one by one, dedicating less space to the car and more for bicycles). However, climate change is broadly understood in the city council being one step ahead of the population's expectations. The local demands of the young generation (Fridays for Future – 50 members) are mainly concerning stopping the use of oil shale at national level.

Local elections will take place in March 2021

On energy and climate policies

- **Local**

Having a *"Climate Neutral"* Tartu is a shared objective (also part of the candidacy for Capital of culture and of the current SmartEnCity project funded under the EU's H2020 programme).

Since the city signed the Covenant of Mayors, the deep renovation of schools has been the priority of the city. So far, 4 schools out of 25 were refurbished at an average cost of EUR 8 million/school. This programme is the city's priority. Cooperation with the national government has been essential with inclusion of the ERDF funding.

The municipality is providing land for community gardening (often run by NGOs) as in Tartu it is quite popular to have your own or shared garden. It is a priority for Tartu to expand the possibilities around the city.

The city council cannot really mitigate the city's electricity mix. One possibility is to buy green electricity via public procurement, but the electricity consumed locally will still be 'brown' because of the national energy mix. So far the city consumes around 33% of renewable electricity.

Since 2010, Tartu has launched an international call for projects to attract architects and ensure that lighthouse public spaces and buildings are visible in Tartu both from an architectural and sustainable perspectives. This strategy to invest in the public space by using every urban redevelopment as lighthouse aims at increasing the sense of belonging, the sense of the common space and preservation of the resources. In this framework, the municipality is also trying to attract more retail shops to the city centre in order to stop the development of big shopping malls on the outskirts of the city. It also included the revitalisation of the old military airport of the Soviet Union into a national museum.

- **National**

The national government is carrying out research on climate neutrality in 2050. The main issue here is the electricity production based on oil shale as mountains of ashes are produced when burning it and it represents the main waste of the entire country: 80%! Oil and gas coming from Russia is also an issue, but last summer the power plants could be closed because the renewables were producing enough. The electricity grids are not disconnected from Russia yet, but this is planned in the next 3 years.

Estonian economy is very closely tied to Nordic economies. Swedish banks of Swedbank and SEB are the biggest banks in Estonia, Nordic companies have branches and production in Estonia. Estonian module building companies' main export markets are Norway and Sweden. Swedish and Finnish companies are confident to invest in Estonia explaining why climate change is high on the economic agenda since these companies are very concerned by their green image. A benefit of being connected to Nordic markets is the environmental and quality standards Estonian companies have abided by in order to do business in the Nordics.

Energy policy is mainly decided by the energy industry, owned by big international company, being quite climate neutral and a good driver.

Important aspects of climate and energy planning

Tartu Regional Energy Agency (TREA) is a great tool carrying out the monitoring, planning and pilots linked to energy and climate issues. They employ 10 qualified experts. TREA is involved and consulted by politicians and city officials in all energy and climate related issues. Tartu is also cooperating with

Baltic Environmental Forum and Stockholm Institute of Environment on climate and sustainability issues.

Main achievements in past SEAP and SUMP

The statistics between 2010 and 2017 show a 23% increase in energy consumption and 17% increase in GHG emissions (business retails, services, shopping malls). It also shows a huge private car traffic increase. All other sectors reached the goal. In addition, there were an increase of 34% of renewables in the energy mix.

The 2030 SECAP will be approved in May 2020 with a 40% CO_2 reduction objective.

80% of the Tartu building stock is obligatorily connected to the district heating network, therefore one main axis to reach the goal is the 100% REN of the district heating (already achieved). Another important milestone is that public transport is running on biogas from the 1st January 2020.

Nevertheless; as already mentioned, nothing can be done on the overall electricity production as this is done at national level.

Car use is rising 1% annually, walking decreasing by 1.5% (since 2003 till 2015). Walking and cycling represented 45% in 2003 and in 2018 it represented only 29,5%.

Currently, cycling is starting to rise. An electric bike sharing system was set up in June 2019, the first one in the Baltic countries, and it has been a major success: 750 bikes, including 500 e-bikes, 1 million rides in 4 months. It was initially budgeted at EUR 500.000 for the first year, but due to the very intensive use it will cost most probably EUR 800.000. Luckily, the city could save money with a new procurement for the bus services, so the entire budget for urban transport, remains stable.

The city department is doing an intensive and comprehensive use of mobility data to understand mobility needed and to adapt the bus plan. In the design of the mobility plan citizens are included via public consultation.

Every 5 years the city conducts a survey: “Tartu city and its citizens”. The mobility section of the 2018 survey showed that citizens would prefer the bicycle as the main transportation means. Inhabitants of neighbouring municipalities stated public transportation as their preferred transportation means. Accordingly, the lack of safe and clear infrastructure was stated as the main obstacle for cycling. Lack of quick and frequent connection was stated as the main obstacle for switching from individual car to public transportation in neighbouring municipalities.

Past projects to build on

Tartu has been very active in the digital area with several projects linked to digitalisation.

The SmartEnCity project is focusing on innovation in the refurbishment of the condominiums from the communist era. The housing association had to reach the C class, by using the national refurbishment funding. However, with the SmartEnCity project, the municipality provided additional funding for associations that were willing to push the energy efficiency to A class.

Furthermore, Tartu is active in an URBACT project focusing on green spaces.

The URBACT Local Group

Some of local stakeholders are involved in every day work. There is cooperation with Tartu University, Tartu Science Park, Tartu Regional Energy Agency, Fortum Tartu (heat supplier) etc. Other stakeholders are usually included through planning processes.

- The regional energy agency and the Nature house, together with the municipal energy company are three major stakeholders, as they can gather a wider number of actors on board
- Cultural and educational institutions are crucial given the high branding of the city around these two sectors
- Involving businesses, especially the retail sector will be a challenge, but it is an important need

Initial SWOT

Strengths	**Weaknesses**
Culture, identity, innovation Urban-rural links inside the city; river Resiliency (being a former Russian State) 100% renewable heat; 100% REN public transport	Congestion and heavy traffic The city council cannot really mitigate the electricity mix. The only possibility is to buy green electricity via public procurement, but the electricity consumed locally will still be 'brown' because of the national energy mix.
Opportunities	**Threats**
ESCOs models are win-win and the energy agency is doing a solar academy. 50 Mw of solar farm will be installed by private sector > more than the city's consumption in the direct rural area, but this production will not be used locally. Involvement of retail businesses, strong development in the late year and representing a huge part of the energy demand Enterprises are not considering energy production at all, neither in the residential sector – this is seen as a potential even though the payback without support is 9 years.	The biggest shopping mall is consuming the same amount of electricity than the entire city's lighting system, but the municipality does not know how to involve them and has no information on the way the shopping mall is considering environmental objectives.

How Tartu wants to use the ZCC project?

Manchester's Zero Carbon approach is not transferable to Tartu as the Estonian target for 2030 in the non-ETS sector is of -13%, but the main reason is that the carbon is emitted by the national electricity mix.

ZCC will be mainly about the branding of the city: as the sense of common belonging is strong, the climate neutrality has to be embedded in the culture of the city to consider the economic development of the area while taking into account the main climate goals.

Definitely, the fact that Tartu will be European Capital of Culture in 2024 is a great "hook" for the ZCC, in preparing the ground and embedding the Zero Carbon approach into the local culture. Involvement of the culture sector in the Climate Change Partnership in Manchester as well as the URBACT project MAST (lead by Manchester) focusing on cultural centres can provide further knowledge to Tartu.

The new city strategy for 2040 is currently under preparation and Tartu wishes to use ZCC tools on carbon impact to support and inform this process.

Tartu would like to go through a refurbishment process by providing the architect with the goal of minimising the life-cycle emissions. Therefore, Tartu wishes to use the knowledge from ZCC. The results of the pilot would serve as input to planning the new Jaamamõisa neighbourhood.

Tartu would like to focus on the socio-economic impact of climate change and include it in the public procurement and/or local decision making processes.

In 2020, the city will start a pilot district project to focus on the life-cycle approach of the construction of a neighbourhood on a land owned by the municipality. In this project, the nearly zero building definition will include the embedded emissions of the construction process.

The participatory budgets implemented by the municipality since 2013 can be a good tool to leverage on to develop a Zero Carbon strategy.

The Manchester Climate Change Partnership is an inspiring example for the Tartu Energy Agency to mobilise the private sector.

Sources:

Interviews with:

- Raimond Tamm, Deputy Mayor
- Tonis Arjus, Tartu City Architect
- Kaspar Alev, Analyst
- Jaanus Tamm, Project manager
- Martin Kikas, Head of Tartu Regional Energy Agency
- Marek Muiste, Senior Expert of Tartu REgional Energy Agency
- Margus Raud, Head of Fortum Annelinna Heating
- Margo Külaots, Head of Fortum Estonia

VILVOORDE
City baseline

Facts and figures

Population: currently 45.000 inhabitants, 12% increase of the population planned between 2016-2025.

Location: ideally situated at the crossroads of the Belgium biggest airport and between the two main economic centres of the country (Antwerpen and Brussels); it is both an advantage and a weakness as it is a territory with heavy traffic.

Economic indicators: There is a low unemployment rate, but a lower income per person (around EUR 17.000) compared to the Flemish Region (an average of EUR 20.000). 54% of the population is not Belgian, representing one of the highest diversity in the country. The population is also in average younger than in the region. The city has a heavy industry history and some of them are still running.

General context

The city has a local long-term vision called “Our Vilvoorde Tomorrow” and energy and climate aspects are integrated in it. This future plan consists of 4 storylines that the city of Vilvoorde wants to develop and realise together with its inhabitants in the future:

Vilvoorde is a 'city in the landscape' that uses greenery and space in a sustainable way. Nature provides food, more oxygen and absorbs rainwater. These are all natural advantages that we can enjoy if we reserve enough space for them.

Vilvoorde remains a 'inhabited city' where everyone can live in a pleasant way. Because Vilvoorde is a city that is growing, we are investing in new sustainable homes in well-situated locations and with attention to public facilities in the neighbourhood.

Vilvoorde is a 'connected city' in which everyone can live and work in easily accessible places. We strive for a balance between accessibility and quality of life in our city.

As an ‘active city', Vilvoorde remains an attractive place for numerous companies and organisations. By offering opportunities to high-tech, creative and sustainable businesses, we contribute to the creation of local jobs for the low- and high-skilled.

In the next years, the challenge for Vilvoorde is to translate this vision into realistic action plans as a guideline for future developments.

Vilvoorde is currently working on the follow up of the Sustainable Energy Action Plan (SEAP) 2020 via the Sustainable Energy and Climate Action Plan (ECAP 2030. Vilvoorde is also developing a City Climate Plan 2025 in line with the needed climate goals for 2030. This is important to have calculated goals in Vilvoorde for the current city council (legislation until 2025).

The local CO_2 emissions can be broken down to the different sectors as follows: households 35%, businesses 29% and mobility 20%. It needs to be mentioned that these emissions do not take into account the highways that cross Vilvoorde: the ring around Brussels and the E19 (Brussels-Antwerp). If the highways are considered, then the break down would be as follows: mobility 46%, households 24% and businesses 20%.

In terms of housing, the housing stock is mainly constituted of semi-detached one-family houses and 4% of the housing stock is unhealthy and needs urgent renovation.

In Vilvoorde, 9% of the housing is social housing consisting of mainly private single family homes, of which approximately 10% do not have central heating, but gas convectors.

In Vilvoorde there is 32% rental out of 17.000 housing units. In Flanders, there is an obligation for owners to install double glazing and roof insulation if they want to rent an apartment. It is the municipal housing department that needs to check if this obligation is met, however in Vilvoorde they do not have the required human resources to do so.

In terms of citizen participation, involving the different communities is a real challenge, especially on the climate change issue as it is not a priority for many households. A new city official will be appointed in 2020 to be in charge of participation.

The overall main issue faced by Vilvoorde is that as the city is attached to Brussels, it faces the same problems as a big city, however with a considerably lower municipal budget. In order to be on track with its transition path Vilvoorde would need EUR 1000/inhabitant/year30 and since the city only has a fraction of that budget they are facing problems with reaching their ambitions.

Institutional context

The advantage of being a rather small administration is that it is possible to have a closer contact with the political level than in bigger cities which enabled Vilvoorde to have a creative and structured approach on climate issues. With the SEAP, Vilvoorde tried to involve all departments, however in terms of energy transition the decision making lies more in the hands of higher authorities.

On energy and climate policies

- **Local**

Vilvoorde is currently considering whether to use the Covenant of Mayors “linear approach” with the goal of 40% CO_2 reduction in 2030 or the backcasting approach towards 2050 climate neutrality.

- **Regional**

Because of its geographical location, Vilvoorde is very impacted by decisions taken in the Brussels region, especially in terms of transport, but cannot influence them much. Energy and climate policies are a regional competency in Belgium and recently the regional Government in Flanders has cut a number of subsidies to energy advice, decentralised energy production and energy efficiency measures.

[30] Source: Futureproofed

- **National**

The energy mix in Belgium is of 1/3 of nuclear; 20% of gas; 17% of imported electricity from neighbourhood countries and the rest is renewables. Climate issues are not high on the agenda and the negotiations of a new government at this point are not helping. The provinces are currently trying to bring the cities together and get a group dynamic in place.

Important aspects of climate and energy planning

In 2017 Vilvoorde started a learning network with the Futureproofed Cities. Initially there were 6 cities and currently the network is counting 132 members.

Signing the Covenant of Mayors is not enough for Vilvoorde as reaching -40% in 2030 would not be in line with reaching carbon neutrality in 2050. In addition, a shorter term action plan and budget by 2025 is proposed by Futureproofed who calculated the impact of Vilvoorde for the next 6 years based on de demanded budgets and it is possible to reduce approximately 0,85% of CO_2 emissions. With the inevitable budget cuts still to decide it's fair to say that the impact will be marginal in 2030.

The climate action plan 2025 will be budgeted for the next legislature.

Main achievements in past SEAPs

Vilvoorde submitted its SEAP in 2015. Currently, Futureproofed is doing the monitoring report. It seems like Vilvoorde will reach maximum 17% of CO_2 reduction in 2020 instead of 20% in the case all measures planned are delivered which is quite unlikely. Vilvoorde will not reach the energy efficiency, nor the renewables targets.

Projects to build on

In the province there is a renovation programme running in cooperation with the intercommunal organisation 3Wplus. It consists of mobile offices that are touring across the province. In Vilvoorde they financed a mobile office exclusively for the city. This bus (WOON+bus) has been touring in all the communities of Vilvoorde for the past 3 years.

In this framework, in Vilvoorde, this "housing renovation bus" (mobile office) has been key to convince people in the first stage (in front of school doors or on visible public spaces). The renovation manager on board helps citizens with all questions concerning renovation, discounts, public grants, makes energy audits of the houses and provides advice to the inhabitants. Citizens can consult in the bus the city's thermographic picture including all roofs. In winter, citizens can benefit of a visit with the thermos camera for free.

This bus will be upgraded into the "energy house" bus to go beyond the hard renovation and include also renewable energy and advice on energy efficiency.

The same project is also used in the city's urban block renovation where a whole neighbourhood was activated to join in a renovation project involving social policy departments and organisations. In addition, the province has also a project that consists in a grant of EUR 30.000 per house; open to low income households. The focus is set on better houses and low energy bills and climate change is not issue that is communicated on in this framework. However, for each house, the needs for renovation are almost of EUR 60 000.

The Climatekid is an educational project involving schools. The Climatekid returns from the near future 2050 to tell his story of climate change and what children have to do to help the planet. At the end of the school year there was a theatre play about climate change where all the schools could present the work they did for the Climate kid.

New urban development

A whole new city district is developing on the formal industrial sites along the canal. The city has an intensive public private partnership with the developer to create a sustainable new part of the city. "4 Fontains" is mostly a residential neighbourhood that is future proofed and car free as the environmental impact is as low as possible. The city's officials have well seized the opportunity to rethink with the developers the use of these brown fields and even engaged an external expert on sustainable urban development as an adviser for the city.

A second development "Groenloo" on the border with Brussels is also being supervised by the chamber of quality and sustainability. The goal is to have a new housing development where sustainability is key with a focus on nature, water and energy.

The city bought a former military area (ASIAT) to refurbish into a possible recreational, sustainable and cultural neighbourhood. This project has a lot of potential as it includes also a community garden and a lot of collective spaces to be re-invested. Also the energy supply has to be renewed and an energy research will be carried out with a number of stakeholders of the broader area to study possible sustainable and innovative energy solutions and engage possible partnerships.

The URBACT Local Group

The impact of the municipality on climate change mitigation is very low. Although the municipality gives a good example by renovating its own buildings and buying electric cars, the biggest challenge will be to get all key stakeholders and citizens involved.

The municipality launched a communication campaign called Vilvoorde Climate-Active to promote all climate actions. The SEAP 2020 was the first plan that was realised with the participation of different stakeholders. Vilvoorde then used a similar process to create the long term vision "Our Vilvoorde Tomorrow".

In the URBACT local group, Vilvoorde could consider including the Club of entrepreneurs, representatives of the different advice commissions of the city, the local shop owners, commercial centres, cultural organisations etc.

The city has a very good collaboration with the Province of Vlaams-Brabant which is one of the most active regions on Energy and Climate programmes. The energy agency of the province is an important actor to mobilise in the Urbact Local Group.

Initial SWOT

Strengths	Weaknesses
Part of the Futureproofed network Woon+ bus "Chamber of quality and sustainability" for two urban developments (4 Fontains and Groenloo) New urban development to foster "alternative culture" and youth participation: the Asiat project Having a special energy local agency to do the one-stop-shop for renovations	2 important highways are crossing the city Climate change is one of the priorities of the new city's government but has not been translated into the work programme (ambition/ action gap) More knowledge about water management and adaptation measures is needed as Vilvoorde is surrounded by water (river and canal) but the competency on these major axis for transport/ nature are not at the city but at the Canal authorities level or the Brussels region level

Opportunities	Threats
The municipal councillor for economic development is convinced of the need to include the fight against climate change into the local policy; especially, to renew small retail shops in the city centre as the city is surrounded by huge commercial centres.	Big commercial centres on the outskirts of the city Vilvoorde is attached to Brussels and facing big city problems, with low local budget

How Vilvoorde wants to use the ZCC project?

Zero Carbon can become a shared objective as the overall landscape in Belgium is open for long-term objectives with a very vibrant youth for climate movement. However, in Vilvoorde a carbon budget approach might be difficult to apply as the city is both a transport hub and an old industrial place, which most probably will give as a result that they already overshot their carbon budget. The Futureprooded approach, with which they have started to work looks more adequate, both because they are a trusted partner with the relevant expertise and knowledge of the local context and because it identifies clear "first priority" actions. They propose a multi-annual action plan drawn from a 2050 climate neutrality objective. It can develop climate impact measurement for actions which are not under the direct competency of the city but which are necessary to include.

Vilvoorde could benefit from the ZCC project to:

- Reshape the internal governance of the city's departments/actions: first with the energy, social and health departments.
- Communicate basic facts/projects on climate change
- Involvement of civil society and citizens into municipal decisions. This is not in the culture of the city as the population is so diverse and rather socially deprived. It would also be difficult to build on educational institutions as they are all in the neighbourhood cities. A new city official will be appointed in 2020 to be in charge of participation, so participation tools from ZCC would be a great opportunity to be used.
- Set up a policy to integrate climate in all departments and actions.
- Set up a "carbon literacy unit" in the city administration, with the mission to explain the consequences of the climate change and how to take decisions on it. Here, the carbon literacy programme of Manchester can be transferred as well as Futureproofed tools. it could be proposed to the Chamber of Commerce, to the local schools and sports centres.
- To organise an "urban village" culture as a new concept for community centres as a place to meet, connect urban and rural aspects, set up fab labs etc
- To consider "urban mining" and linking to the local resources (example of Brussels where a community started to fabric lime stone each time there is a new building site and that the building company is extracting soil). Urban Mining in old industrial cities can be a great economic development path and should be further investigated.

Sources:

Interviews with:

- Pascal Moons – Sustainable expert of Vilvoorde
- Annelies Van Der Donckt – Head of Strategic projects and city development
- Tim Romeyns – Head of the housing department
- Steven van Praet – Consultant Futureproofed
- Klaas Meesters – Project manager 4 Fonteinen and Groenloo
- Luc Eeckhout – Consultant sustainability in the chamber of quality and sustainability
- Tine Paredis – Municipal councillor for sustainability, tourism, digital development and Housing
- Barbara De Bakker – Municipal councillor for urban planning, mobility and environment
- Didier Cortois – Municipal councillor for local economy and citizen engagement
- Fatima Lamarti – Municipal councillor of social policy and equal opportunities

ZADAR

City baseline

Facts and figures

Population and history: Zadar has a population of 75 000, being the 5th largest city in Croatia.

L**ocation**: In the middle of the Dalmatian cost, the city has a very rich past and is full of historical monuments. It is the urban pole of the region and well connected with Italy and on the cruise roads in the Mediterranean.

Economic indicators: Zadar has a 7.2% unemployment rate, being one of the lowest in Croatia; this is depending on the season as the economy is based on tourism, construction and fishing (mainly for export: fishing farms and fishing culture, fishing transformation industry). Zadar has been for long one of the cities with the highest economic growth in Croatia.

Energy and Climate: The impact of climate change is becoming visible in Zadar, making the city vulnerable as the sea level rises and as in the last years the city faced severe drought, floods, forest fires and heat waves.

General context

Zadar is constituted by a small old city centre, a modern city in the main land and 7 islands that represent 57% of the area of the city but only 2.1% of the population. Approximately 1 000 inhabitants are living in the islands where electricity is generated by oil and heating by wood. Especially in the islands, Zadar is facing problems with water supply and waste water collection that cannot be treated on the islands.

The city is mainly focussed on tourism and in the last years a new port was built in order to connect the cruise ships directly to the highway and avoid pollution and congestion right in the old city centre. However, the biggest cruises are also a source of pollution. Due to the blooming tourism sector, there are many small retail shops in Zadar; there are also two big shopping malls.

In general, the touristic period is hugely demanding in terms of electricity consumption due to air-conditioning, but also because hot water is mostly not produced with solar energy, but with electricity.

The fastest growing sector is the construction one. Currently, for the first time in history, workers are coming from other countries such as Nepal. Zadar is the third most expensive city concerning residential market (both for tourism and for local residents).

Zadar signed the Covenant of Mayors in 2012 and the Sustainable Energy Action Plan was developed in 2014. According to the monitoring report done in 2018 Zadar reached 19% reduction, based on data from 2017. Zadar is currently preparing its 2030 Sustainable Energy and Climate Action Plan (SECAP) that should be completed by September 2020.

In 2010, the most carbon intensive sectors were: the building sector with 57%, the transport sector with 42% and the public lighting with only 1%. In 2017, the local CO_2 emissions were summing up to 200.000 tons, showing an 19% reduction (47 300 tons CO_2) between 2010 and 2017. This was mainly due to switching energy supply in buildings from fuel oil to gas and to the use of new more energy efficient cars.

Between 2010 and 2019, Zadar refurbished 131 housing units, reducing the total CO_2 emissions by 825 tons. The total co-financing summed up to EUR 400 000 out of which EUR 250 000 was supported by the municipality and EUR 150 000 from the national Environmental Protection and Energy Efficiency Fund. There are more demands than grants available: approx. 4 applications for 1 funded project. Zadar was also offering co-financed energy audits and energy refurbishment projects for residential buildings; however, the demand was low. The energy refurbishment of residential buildings (audits, projects, construction works, etc.) are now linked to co-funding for energy efficient refurbishment via the Structural Funds.

In terms of transport, the municipal transport company is owned by Zadar municipality (58%) as well as other smaller municipalities in the area. In 2019 the city bought 28 new buses and has currently 4 charging points for electric cars, 6 bike-sharing points (electric and non-electric) and 4 e-scooters-sharing stations. The national Environmental Protection and Energy Efficiency Fund is co-financing the charging point installation and grants EUR 10 000 per households for buying an electric car. Currently only 6 electric car owners are registered in Zadar. The municipality is actively encouraging citizens and is providing information to households to obtain the grants for electric cars, bikes and scooters.

The city is also responsible for some of the big cultural facilities (concert hall). The education sector is very attractive and continuously growing with 5 500 students currently. The University is independent and has no link to Zadar Municipality.

Zadar is now focusing on learning from the mistakes of other cities on the Dalmatian coast and avoid being overloaded by massive tourism.

Institutional context

Currently at the city council there is no elected representative responsible for climate change issues. There is an elected representative in charge of the Administrative Department for Physical Planning and Construction. Energy efficiency is included in the Administrative Department for Physical Planning and Construction. The environmental protection is under the Department of Utilities and Environmental Protection, represented by the Head of Administrative Department.

Each department is doing its forecast; the finance department is coordinating all needs, makes choices and proposes them to the city council for decision. The entire budget process is monetary based.

The political commitment to the Covenant of Mayors is not an issue, but the challenge is to embed it into the governance of the city council, of the different programmes and into the municipal budget. Also, the finance department has never been involved with climate issues. More information on savings achieved with the energy efficiency refurbishment should be done, as a first step.

On energy and climate policies

- **Local**

Climate change can be experienced in Zadar: heavy rains, hotter summers, rise of the sea level and bigger waves. Citizens and local stakeholders don't link these changes though to any changes needed in their current lifestyles.

Prevention to risks and risks assessment is the responsibility of the environmental protection department; however, the responses to risks are dealt with by the economic department. Most of the city's budget is used to comply with compulsory environmental protection measures in order to avoid a fine.

Zadar's nature-based solution strategy was drafted at the beginning of 2019 and put on line on the city's website for comments and consultation; however only one NGO reacted to it.

The Programme for the air protection is dealt with by the Environmental protection department who needs to liaise with the Transport department.

Energy efficiency in private housing has been supported by the municipality for more than a decade now, being one of its main programmes on energy mitigation. This was initiated via a national programme of grants and since 2015 it is exclusively financed by the municipality. Structural Funds are used for deep renovation of schools to A energy class; the foreseen energy savings on heating represent 89%!

The existing local landfill will be closed in 2022. The waste management of the big cruises will be dealt by a new plant financed by the national government and the EU. This will allow for waste separation and the waste collected will be sold.

Currently there is no local energy production, in spite of some studies showing sea energy (energy from the sea currents) potential in the islands.

Energy poverty is an important issue and more than 10% of an average income in Croatia can be dedicated to cover energy supply needs. In Zadar, the municipality supports low income households via its social department. They are covering the costs of 300 households in terms of energy, water, wood. This represents EUR 135.000,00 per year out of a total municipal budget of 720.000.000,00 million Kuna.

- **National**

At national level there are many subsidies and programmes dedicated to resource protection and climate change.

The national Electricity Company is deploying a fast-charging network on highways for electric vehicles.

Important aspects of climate and energy planning

Main achievements in past SEAPs

In 2017, the local CO_2 emissions were summing up to 200.000 tons, showing an 19% reduction (47 300 tons CO_2) between 2010 and 2017. This was mainly due to switching energy supply in buildings from fuel oil to gas and to the use of new more energy efficient cars.

Projects to build on

The current Compete4SECAPs project will support the preparation of Zadar's SECAP in 2020.
The INTENSIFY INTERREG project is focusing on carbon reduction through intense community engagement. This project is currently running and should be linked to the implementation of the URBACT ZCC project.

The EmpowerMed project is concentrating on the mapping of the local energy poverty situation and on empowering vulnerable households, specifically women.

Traffic Master Plan

In 2018, a traffic masterplan was developed for the functional region of North Dalmatia. Its purpose was to enable efficient and sustainable transport development of the region in accordance with European and national strategies and plans. The transport masterplan is the basic strategic document for the long-term development of transport and will define future interventions in transport and transport infrastructure in the functional region of North Dalmatia, and increase the level of preparedness and the possibility of financing projects from EU funds in the field of transport. The study includes a plan of measures by 2040 which is essential for the development of SUMP.

The URBACT Local Group

The potential local stakeholders to be part of Zadar's URBACT local group are:

- Local schools (two schools are part of a green school programme)
- The university (it has an ecology department)
- EKOZADAR EKOZADAR (an environmental NGO aiming at ecological education, delivering services for the municipalities on information campaigns. In Zadar, it ensures the waste management complaints hotline. It has 4 full time employees.)
- The municipal transport company
- The municipal waste company
- The water supply municipal company
- The gas and electricity companies (they operate at national level though)
- The two local shopping malls
- The Port Authority (they are not under the authority of the city)
- The Hospital (it recently connected to gas, thus reducing its CO_2 emissions by 35%)
- The local medical centre
- The Chamber of Commerce

In a past project titled EU Cities Adapt, Zadar set up a stakeholder group in 2013. This group is not active anymore, however, it was constituted of relevant stakeholders on which the URBACT ZCC project could build on.

Initial SWOT

Strengths	Weaknesses
Local organic food fair organised twice a year Refurbishment of 131 housing units EkoZadar as an active local NGO	There is no local energy production. Lack of knowledge on the transport needs, and use but public transport is owned by a municipal company, which can be activated. The energy and climate policies are too project focused and there is no global communication on the overall city policy. There are no bike lanes.
Opportunities	**Threats**
The fastest growing sector in Zadar is the construction sector. It is a crucial opportunity to apply the EU directive on EPBD and NZEB (nearly zero carbon building) criteria needs to be included into the building code. The political commitment to the Covenant of Mayors is not an issue, but the challenge is to embed it into the governance of the city council, of the different programmes and into the municipal budget.	Risk related to climate change (heavy rains, hotter summers, rise of the sea level and bigger waves); though citizens and local stakeholders don't link these changes though to any changes needed in their current lifestyles.

The finance department has never been involved with climate issues, but it could provide more information on savings achieved via the energy efficiency refurbishment. Some studies have shown sea energy potential in the islands; though investment was never done.	

How Zadar wants to use the ZCC project?

- As the current Compete4SECAPs project will support the preparation of Zadar's SECAPs in 2020, there is potential to use the URBACT ZCC project to activate consultation and debate with the local stakeholder groups and citizens.
- Focus on carbon literacy:
  - especially linked to the very successful organic local food fair twice a year that could be used as an opportunity to communicate on the climate footprint.
  - Develop a carbon tracker (small pilot) as a tool for citizens to be able to track their climate impact/footprint potentially via an app.
- Finding a way to show what has been achieved as a community (analyse the various projects that decreased GHG emissions and communicate better around them as a whole, and not as individual projects which do not show the overall picture of the transformation of the territories.
- Making the co-benefits of acting against climate change visible by focusing on attractivity, health, local economy, employment, quality of life.
- The political commitment to the Covenant of Mayors is not an issue, but the challenge is to embed it into the governance of the city council, of the different programmes and into the municipal budget. Therefore, the involvement of all departments is key, and in particular of the finance department which has never been involved with climate issues, but it could provide more information on savings achieved via the energy efficiency refurbishment.
- The development strategy of Zadar for 2013-2020 should be revised: include the Zero Carbon or climate neutrality concept into the discussions.
- Focus on a "low carbon tourism approach" with the involvement of the Chamber of Commerce.
- Many programmes on environment protection, air protection, sea protection, climate and adaptation exist and the potential to link them to a ZCC strategy is high if the timing is appropriate.
- Focus on green spaces via a moratorium on cutting trees could be a commitment from the city council as there are only few parks and the citizens are keen on preserving the trees in the urban area.
- Investigate on a future ERASMUS + project as an outcome of the current URBACT ZCC project in order to continue exchange between the local groups of the different cities.

Sources:

Interviews with:

- Ms Ana Bajlo, Administrative Department for Physical Planning and Construction, Head of Section for Energy Efficiency
- Ms Žana Klarić, Administrative Department of Utilities and Environmental Protection, Head of section for Environmental protection
- Nives Rogoznica, Vice president, NGO for promotion of organic farming, environmental protection and sustainable development "Eko-Zadar"

SECTION 3: SYNTHESIS AND METHODOLOGY

3.1 Introduction

This section is a summary of the seven ZCC cities' needs in terms of capacity building, thematic focus, local ULG set up and priority focus, ULG challenges and the focus of the Integrated Action Plan, the expected changes and results in terms of local policies. This section details also the small scale actions in each city and the networking methodology to be implemented during the next two years.

3.2 Analysis, Synthesis and Proposals for Phase 2

KEY OBJECTIVES

As can be seen from the State of the Art (Section 1), there are a range of different approaches to science-based targets and carbon budgets, that have a shared aim, namely to support cities in the transition to carbon neutrality in order to align with the Paris targets and EU objectives.

The commitment of each city is similar in that they want to be able to make the changes to be leaders in the approach to carbon neutrality, but have to take into account the political and policy decisions already in place in their city, region, country and across Europe.

The development of the activities in Phase 2 of the Action Planning Network is to capacity build the cities to better understand how to use science-based targets in a local context and support them in developing meaningful actions, leading to the Integrated Action Plan.

External expertise will be provided through the lead and ad hoc experts, and through other expertise brought in at a network and a local city level.

The focus on capacity building will be supported through a masterclass early in the project, and through focusing on 4 sub-themes (identified below following the Phase 1 study visits) which are priorities for a number of the cities in the network.

Together this capacity building, knowledge sharing, transnational meetings (both in person and online) will develop the building blocks of a final product to disseminate more widely, based on the practical examples of the cities in the network.

LOCAL ULG:

The table below presents an overview of the URBACT Local Groups in each city. For more detailed information, please refer to the city profiles in Section 2 of this document.

Partner	Local ULG
Bistrita	The Chamber of Commerce, the County Council, the University, the Environmental Protection Agency are core partners for the URBACT local group and already well informed about the project. In addition, during the phase 1 city visits, Bistrita identified the following local stakeholders to be involved in the second phase: activist NGOs, faith community, schools, potential polluters, a cluster of enterprises called the Environmental Cluster. Local media and cultural centres are not specifically relevant given the climate focus. In the URBACT ZCC Phase 2, Bistrita will start with individual interviews of these groups to shape the planning processes.

Frankfurt	Internal URBACT Local Group In Frankfurt am Main, an improved cross-departmental cooperation is a crucial aspect of the organisational behaviour of the administrational body to manage and to negotiate the different climate mitigation actions which have to be taken to realise the goals of the Masterplan 100% Climate Protection. In addition to the activities within ZCC, the Environmental Department just recently gained the political mandate to set up a new cross-organisational cooperation structure between the departments of the City Council to manage and to monitor the newly formed Climate Alliance in Frankfurt am Main. The idea behind the Climate Alliance is to establish a stronger responsibility between the different departments of the City Council. The Mayor for Environmental Affairs is responsible for the coordination and the management of the process. The Energy Agency will play a strong roll to set up and manage the underlying process with all topics which will relate to climate mitigation. External URBACT Local Group The Environmental Department established an external advisory group, the Climate Mitigation Council. However, the cooperation was not active enough as there was no governance structure and management in place. Furthermore, it is necessary to cover other areas of the society as well as not involving only experts. It is the plan to involve stakeholders who are directly responsible for the CO_2 emissions in the different sectors in the city (e.g. businesses). To extend the impact of the Climate Mitigation Council, the Environmental Department is planning to develop the concept of the group further and to establish the Frankfurt Climate Partnership. This concept is very much inspired by the example of the Manchester Climate Partnership. Potential actors to be involved in Frankfurt am Main in the ULG: local utilities (Mainova, ABG Frankfurt), Lust auf besser leben gGmbH (representing 55 small businesses), Industrial Park Höchst and its operator Infraserv. Over time, more and more stakeholders who are responsible for CO_2 emissions are supposed to be involved. The ULG would also interlink the existing active parallel networks by gathering their respective representatives (e. g. the Climate Adaptation Group and the Forum on environmental topics initiated 20 years ago by a representative from the city council focusing on the ISO certification).
Manchester	The Manchester ULG will be the existing Manchester Climate Change Partnership, which currently consists of 60 organisations across 10 sectors, with collective responsibility for 20% of the city's direct CO2 emissions. The ZCC project will support the existing members of the Partnership to further develop and deliver their bespoke action plans. ZCC will also help Manchester to identify gaps in the current membership and secure the involvement of new sectors. Prospective new partners include Manchester Airport, the hotels sector, food and drink sector, and the retail sector.
Modena	Internal URBACT Local Group Several municipal departments expressed the need of inter-departmental collaboration in the future compared to the current work they are doing rather in silos. This is crucial for establishing long-term objectives and assign responsibilities to the different departments in terms of climate impact of their respective work. The following departments expressed interest at this stage: Communication Office, "Urban Planning and Sustainability" Department, "Environment Private Building and Productive Activities" Department, "Service for Environment". The Mobility, Economic and Culture departments should also be involved. External URBACT Local Group The following stakeholders expressed their interest to join the ULG: **Associations (**Fridays for Future, local ISDE - International Society of Doctors for the Environment, Legambiente - Environmental Association of Italy, FIAB - Italian Environment and Bicycles Federation); **Agencies (**ARPAE - Environmental Agency of Emilia-Romagna Region, Modena Agency for Mobility, AESS - Energy and Sustainable Development Agency of Modena); **Businesses representatives**

	(Confindustria Emilia Area Centro - association gathering 3 500 enterprises from the mechanics, textile and food industry; Confesercenti Modena gathering 4 000 small and medium local enterprises from the commerce, tourism and handicraft sector; CNA - the National Confederation of Crafts and Small and Medium Enterprises (SMEs) gathering 2 000 commercial to very little enterprises in Modena); **Public service providers and multi-utilities (**SETA, the Local Transport Company in the Province of Modena, Hera Group - Multi-utility company having concession in Modena for the management of waste, water, distribution of energy, power and gas); **University and academic institute** (University of Studies of Modena and Reggio Emilia); **Other stakeholders** (BPER Bank Group of Modena, a strong entity of five banks, Public General Hospital of Modena – University Hospital Organisation of Modena).
Tartu	Tartu University, Tartu Science Park, Tartu Regional Energy Agency, Fortum Tartu (heat supplier). The regional energy agency and the Nature house, together with the municipal energy company are three major stakeholders, as they can gather a wider number of actors on board. Cultural and educational institutions are crucial given the high branding of the city around these two sectors. Involving businesses, especially the retail sector will be a challenge, but it is an important need.
Vilvoorde	The municipality launched a communication campaign called Vilvoorde Climate-Active to promote all climate actions. The SEAP 2020 was the first plan that was realised with the participation of different stakeholders. Vilvoorde then used a similar process to create the long term vision *"Our Vilvoorde Tomorrow"*. In the URBACT local group, Vilvoorde could consider including the Club of entrepreneurs, representatives of the different advice commissions of the city, the local shop owners, commercial centres, cultural organisations etc. Other important actors that will be included: the Province of Vlaams-Brabant, the energy agency of the province.
Zadar	Local schools, the university, EKOZADAR EKOZADAR (an environmental NGO aiming at ecological education, delivering services for the municipalities on information campaigns), the municipal transport company, the municipal waste company, the water supply municipal company, the gas and electricity companies (they operating at national level), the two local shopping malls, the Port Authority (they are not under the authority of the city), the Hospital, the local medical centre, the Chamber of Commerce. Zadar set up a stakeholder group in 2013 which is not active anymore, however, it was constituted of relevant stakeholders on which the URBACT ZCC project could build on.

ULG CHALLENGE AND INTEGRATED ACTION PLAN (IAP) FOCUS

Partner	Main policy challenge to be addressed in ULG	Existing plans/strategies	Potential focus of IAP	Expected changes/results
Bistrita	Alternative Mobility: fostering cycling culture Engaging with private enterprises	SECAP adopted in Dec 2019 Integrated Strategy for Urban Development 2030 SUMP 2015-2030	Based on the SECAP, the IAP will be used to detail specific actions, how to finance and implement them.	Investment plan for key actions in SECAP
Frankfurt	Private businesses are not tackled by the *Frankfurt Climate Alliance* Inter-departmental cooperation	*"Master Plan for 100% Climate Protection" Frankfurt 2030+* Integrated Urban Development Concept	Industry sector and retail businesses	Development of the CO_2 inventory report in collaboration with several departments Enlarging the coverage of the *Frankfurt Climate Alliance* to businesses
Manchester	Direct emissions: supporting development and delivery of detailed plans at city, sector	Manchester Climate Change Framework 2020-25 (Version 1.0)	The IAP will focus on the development of Version 2.0 of the Framework:	More detailed strategy (Framework) and understanding of what Manchester needs to achieve to meet its

Mis en forme : Anglais (Royaume-Uni)

	and project level to achieve 50% reduction during 2020-25 Consumption based emissions: developing a better understanding at city and sector level and supporting the development and delivery of new plans and projects		- Direct emissions: more detailed plans and project development - Consumption-based emissions: more detailed understanding - Development of Manchester Climate Change Partnership	objectives for 2025 (and beyond) Increased knowledge, understanding and capacity to meet the 2025 objectives Detailed sector and project-level plans developed
Modena	Tackle emissions from the industry sector Citizen engagement	SECAP adopted in Dec 2019 SUMP 2020-2030 Cycling Mobility Plan	The IAP will be used to include the industry sector in the SECAP as this is not the case currently.	Contribution to the local urban development plan (in 2021) and the nature based solutions strategy (in May 2022)
Tartu	Minimising the life-cycle emissions of the refurbishment project Involvement of private businesses, especially from the retail sector	SECAP will be adopted in April 2020 Tartu 2030+ development strategy	Based on the SECAP, the IAP will be used to detail specific actions, how to finance and implement them	Tartu 2030 SECAP quality assessment Contribute to the new city strategy for 2040, currently under preparation Investment plan for key actions in SECAP
Vilvoorde	Include climate actions in all existing policies and actions within the different departments	SEAP Currently working on the SECAP City climate plan 2025	Based on the SECAP, the IAP will be used to detail specific actions, how to finance and implement them	Investment plan for key actions in SECAP
Zadar	Activate consultation and debate with the local stakeholder groups and citizens around the SECAP Embed the political commitment to the Covenant of Mayors into the governance of the city council, of the different	SEAP, The SECAP will be prepared in 2020	The IAP will be used to specifically focus on a “low carbon tourism approach”, on green spaces	Updated development strategy of Zadar as the current one covers 2013-2020 and should be revised: include the Zero Carbon or climate neutrality concept into the discussions

	programmes and into the municipal budget			

NEEDS AND POTENTIAL CONTRIBUTIONS

Partner city	Potential contribution: experience	Potential contribution: good practice	Learning needs	Capacity building needs
Bistrita	Organisation of public events dedicated to citizens	Setting up green policies and education programmes in primary schools The Green School - Ecological Education and Information Center for pre-schoolers and schoolchildren, opened in 2004	Carbon literacy training	How to work with the industry and local retail
Frankfurt	Transition Town Movement and community start up projects Nearly zero energy buildings and positive energy buildings (via ABG Nova)	*"Ideas Competition"* for climate action, supporting the development of sustainable business models within the city territory *Lust auf besser Leben* – involving the retail sector	How to cope with the implementation of the Paris agreement at local level	How to develop a local carbon budget How to involve actively different municipal departments in the energy and climate issues via the carbon budget How to work with the industry and local retail
Manchester	Manchester Climate Change Partnership Carbon literacy	Carbon budgeting MAST – involving the cultural sector in climate change aspects	Detailed plan and capacity for reducing direct emissions Improved understanding and capacity to reduce consumption based emissions	How to use the carbon budget approach in the local decision making process
Modena	Organisation of public events on mobility and healthy lifestyle issues	Develop innovative and sustainable services combining air quality, weather conditions, and traffic flows data (TRAFAIR project)	Socio-economic impact of climate change Citizen engagement	How to work with the industry and local retail How to develop a local carbon budget create a local brand and logo for the engaged stakeholders with specific actions towards CO_2 emission reduction; companies could use this logo to communicate and show they are actively contributing to fight climate change.
Tartu		Participatory budget Light traffic problem mapping – GIS system – involving citizens District heating policy	Socio-economic impact of climate change	How to work with the industry and local retail How to work with the culture sector (Tartu capital of culture in 2024)

		Greening of the city Retrofit of condominium (engaging with the multi-owner)	Refurbishment with minimised life-cycle emissions	How to set up a real time tool of city's carbon emissions
Vilvoorde		Housing: Woon+ bus Education project: Climatekid	Urban mining for building construction materials Future proofed (for monitoring and engagement of the different department) internal governance	How to work with the industry and local retail How to set up a carbon literacy unit in the city administration
Zadar		Empowermed (energy poverty project)	Slow tourism Involvement of port authorities and major polluters.	Carbon literacy Ecological food fair Carbon Tracker

RECOMMENDED THEMES FOR TRANSNATIONAL ACTIVITIES

As the Zero Carbon Cities is covering a vast area, according to partners needs and challenges, several parallel working clusters could be identified:

Internal governance	Frankfurt - Modena - Vilvoorde
Industry sector and foster sustainable retail market sector	Modena - Frankfurt - Vilvoorde – Bistrita – Tartu - Manchester
Culture sector	Tartu - Zadar
Setting up local carbon budgets	Modena - Frankfurt
Socio-economic study on what are the benefits of a Zero carbon city	Modena – Tartu - Zadar
Citizen engagement	Modena – Tartu – Bistrita – Vilvoorde - Zadar
Carbon literacy/education	Bistrita – Vilvoorde – Zadar - Manchester
Transport	Modena – Tartu – Frankfurt - Manchester
Renovating private households	Modena (transfer example from Vilvoorde)
Urban village culture	Vilvoorde – Tartu – Bistrita - Zadar
Slow tourism	Bistrita - Zadar

At the final URBACT Phase 1 meeting in Manchester on the 22nd of January 2020 these themes were presented to the cities. A couple of new themes were added and each theme was explained in order to ensure a common understanding of the themes.

The following 13 themes were chosen by the cities and each city voted for the four themes that were of highest priority for them.

Theme	Vote and the city priority in brackets
1.Internal governance	Frankfurt (1) Manchester (4)
2.Retail market sector and SMEs	Tartu (2) Modena (2) Frankfurt (3)
3.Culture sector	Tartu (3) Vilvoorde (4)
4.Adaptation versus mitigation	
5.Socio-economic study on what are the benefits of a Zero carbon city	Tartu (1) Zadar (4) Modena (4) Manchester (3)
6.improving the council's communication on climate impact	Zadar (3) Modena (3) Frankfurt (2)
7.Education and capacity building (for a range of potential audiences, to be defined) tools/ schools/ carbon literacy	Zadar (2) Bistrita (1) Manchester (2)
8.Local energy production	Vilvoorde (1) Bistrita (3)
9.Renovating private households/ condominium	
10.Urban village urban development	
11.Changing transport behaviours of citizens	Zadar (1) Vilvoorde (3) Bistrita (2) Modena (1)
12. Slow tourism	Bistrita (4)
13. Engaging and empowering citizens to take action and participate in local polic-making	Vilvoorde (2) Tartu (4) Frankfurt (4) Manchester (1)

Four sub-themes were prioritised during a co-creation exercise undertaken by the cities in the 2nd Phase 1 transnational meeting.

- **Engaging and empowering citizens** (Vilvoorde, Modena, Frankfurt, Manchester)
- **Changing transport culture of citizens** (Vilvoorde, Modena, Zadar, Bistrita)
- **Socio-economic study on what are the benefits of a Zero Carbon City** (Modena, Tartu, Zadar, Manchester, Frankfurt, Bistrita)
- **Education / tools/ schools/ carbon literacy** (Vilvoorde, Zadar, Tartu, Manchester, Bistrita, Frankfurt)

STUDIES AND SHORT PUBLICATIONS:

The lead expert will prepare studies, short publications and cities' best practice on the following:

- Study on the socio-economic aspects of climate change
- Examples of local carbon literacy projects

- Citizen participation and empowerment related to climate change policies and specific actions and best practices
- Best practices of European cities on internal governance leading to integrated and shared work on climate policies
- Study on carbon literacy, tools for education and awareness raising

SMALL SCALE ACTIONS

The following small scale actions were defined at this stage. These will be adapted and might evolve after the ULGs are set up as small scale actions will be presented in ULG meetings and adapted according to needs and discussions with the local stakeholders. (See **Appendix A** for more detail.)

- **Bistrita:** Set up a sustainable mobility campaign *"Bistrita towards zero carbon city target".*
- **Frankfurt am Main:** Set up a comprehensive online tool to enable the interested actors to register their possible contribution to achieve the City-wide Climate Mitigation Targets. A monitoring platform will be established to have a transparent insight on who is involved in the Climate Alliance respectively Climate Partnerships as well as how much CO_2 each contributor will be in charge of.
- **Manchester:** Develop a zero carbon action plan for one/two of the subgroups of the Manchester Climate Change Partnership (the faith sector and/or community and voluntary sector have been identified as potential options).
- **Modena:** Test energy transition and zero carbon at district level via various actions.
- Tartu: Calculate the life cycle GHG emissions of upcoming construction and/or renovation processes. Find an existing methodology, adjust it to Estonian conditions and find the optimal level of detail.
- **Vilvoorde:** Investigate and set up a local stakeholder group focusing on sustainable energy issues. Set up a co-creative process with several local actors to investigate energy opportunities on its territory.
- **Zadar:** Set up a sensor air quality measurement to provide a baseline ("zero" CO_2 emissions) and indicative air quality data for the City of Zadar.

3.3 Network Methodology

The ZCC project will organise and participate in:

- 5 transnational meetings

- 5 capacity building events (coupled with the transnational meetings)

- 8 webinars (2 webinars for each of the 4 thematic focus points of the project) + at least 1 webinar supporting the Masterclass on setting up carbon budgets and science based targets

- URBACT summer school

- URBACT City festival

Transnational meetings and collaboration. Capacity building events

Please note that all project partners will participate in the transnational meetings. In the capacity building events, partners will participate according to their field of interest related to the 4 focus topics that were described in the previous section.

During the project lifetime the following meetings will take place:

Transnational meeting 1: Phase 2 kick-off meeting and capacity building on stakeholder and citizen engagement

- Location and date: Frankfurt am Main in June 2020
- Participants: city partners and lead expert, other cities to share best practice for the capacity building
- Objective:
    - Day 1: Presentation and understanding of the project goals by each partners, common understanding of deliverables, presentation of the small scale actions, update on the ULG kick-offs and members, introduce the 4 sub-themes, the IAP Roadmaps.
    - Day 2: Capacity building on stakeholder and citizen involvement organised by the lead expert with a focus on how to set up the ULGs, coaching session from Manchester on the step-by-step approach that was implemented to set up the Climate Change Partnership. Study visit: examples of stakeholder and citizen involvement in Frankfurt am Main.

Transnational meeting 2: Zero Carbon Cities Winter University - Manchester's masterclass on science based targets and carbon budgets

- Location and date: Vilvoorde/Brussels (Belgium) in November 2020 (2 days)
- Participants: city partners, local energy agencies and universities, local planners, scientists
- Objective: Training on the science based targets and carbon budgets: what are really science based targets, usefulness, how to set it up, how to use it on decisional level

Transnational meeting 3: Mid-term reflection meeting (1 day) and capacity building thematic focus: MOBILITY and CITIZEN ENGAGEMENT (1 day)

- Location and date: Modena (Italy) in May 2021 (2 days)
- Participants: city partners
- Objective: Focus on progress assessment of IAP production (1 day) and thematic focus on two topics in parallel: MOBILITY and CITIZEN ENGAGEMENT (1 day) + study visit linked to the themes

Transnational meeting 4: IAP Progress and Capacity building Thematic focus: CARBON LITERACY and SOCIO-ECONOMIC BENEFITS OF ZCC (2 days)

- Location and date: Manchester (UK) in October 2021 (2 days)
- Participants: city partners
- Objective: Focus on progress assessment of IAP production (1 day) and thematic focus on two topics in parallel: CARBON LITERACY and SOCIO-ECONOMIC BENEFITS OF ZCC (1 day)

Transnational meeting 5: Final IAP meeting + Final Event (linked to EU Parliament events) (2 days)

- Location and date: Brussels and Vilvoorde in March 2022 (2 days)
- Participants: city partners
- Objective: Final IAP event and sharing of results + site visit to Vilvoorde (1 day) + Usefulness of carbon budgets and local experience from ZCC, IRBACT ZCC toolkit launch – EU Parliament event (1 day)

Participation and collaboration in URBACT events

URBACT summer school (3 days)

- Location and date: Dubrovnik (Croatia) on 7-10 July 2020
- Participants: possibility of 2 representatives/partner

URBACT City Festival

- Location and date: Location TBC in May 2022
- Participants: city partners

Thematic exchange webinars

A series of thematic webinars will be organised linked to the four exchange themes.

- 2 webinars per theme: an introduction in 2020 (September-November) and a lessons learnt in Autumn in 2021
- 1 or more webinars will be organised to support the Masterclass *"Understanding carbon budgets*

Speakers: 1 or 2 internal ZCC cities + 1 external city or expert

Overview table

Transnational Meeting

URBACT Events

Local Meeting

Deliverable

Action

Event Date	Host City	Key themes and sub topics	Main questions	Capacity building actions	Methodology / Site visits
May-June 2020	Appoint a ULG coordinator Setting up the ULG				
Deliverable: Communication Plan by end May 2020 (at project level)					
4-5 June 2020 (organised by URBACT Secretariat)	Paris	Kick off meeting and Communication training for LP and LE held by URBACT secretariat	-	-	-
June 2020		Meeting of the local ULG			
September 2020		Webinar on carbon budget and science based targets to	-	-	-

		prepare the Winter University- Manchester's Master class			
June 2020	Contact National URBACT point in each country: share the schedule, invite to local project events				
June 2020	Frankfurt am Main	Transnational meeting 1: Phase 2 kick-off meeting and capacity building on stakeholder and citizen engagement	Presentation and understanding of the project goals by each partners, common understanding of deliverables, presentation of the small scale actions, update on the ULG kick-offs and members, introduce the 4 sub-themes, the IAP Roadmaps.	stakeholder and citizen involvement	Study visit: examples of stakeholder and citizen involvement in Frankfurt am Main
7-10 July (3 days URBACT event) Potentially 2 representatives/partner	Dubrovnik	URBACT Summer University	Peer review of IAP Roadmaps, finalised small scale actions, update on the ULG kick-offs and members	-	-
End September 2020	Deliverable: IAP Roadmap by end September 2020 The ULG is set up in each city 2 ULG meetings / city (one in June and one in September to discuss the IAP Roadmap)				
November 2020	Vilvoorde /Brussels	Transnational meeting 2: Zero Carbon Cities Winter University - Manchester's masterclass on science based targets and carbon budgets	Usefulness of local carbon budgets, how to set it up, how to use it on decisional level	Training on the carbon budgets	-
May 2021	Draft IAP				
May 2021	Modena	Transnational meeting 3: Mid-term reflection meeting (1 day) and capacity building thematic focus: MOBILITY and CITIZEN	Focus on progress assessment of IAP production	CITIZEN ENGAGEMENT and MOBILITY	Local site visit linked to the themes

		ENGAGEMENT (1 day)			
Sept 2021	Reviewed draft IAP ready for the planning phase by each partner Article with summary of year 1 activities by Lead expert State of Actions report submitted by Lead expert Progress report submitted by lead partner				
Sept 2021	Location TBC	Training session for LP and LE and exchange on Mid-term reflection process			
October 2021	Location: Manchester	Transnational meeting 4: IAP Progress and Capacity building Thematic focus: CARBON LITERACY and SOCIO-ECONOMIC BENEFITS OF ZCC (2 days)	IAP Progress	Thematic focus: CARBON LITERACY and SOCIO-ECONOMIC BENEFITS OF ZCC	Local site visit linked to the themes
January 2022		ULG meetings locally to finalise the IAP			
February 2022	Final IAP submitted by each partner Final summary IAP report submitted by Lead Expert Final network product (publication e.g. guidelines or other such as online platform) targeted to wide audience				
February 2022	Final report by lead partner				
March 2022	Brussels	Transnational meeting 5: Final IAP meeting + Final Event (linked to EU Parliament events) (2 days)	Final IAP event and sharing of results; Usefulness of carbon budgets and local experience from ZCC	URBACT ZCC toolkit launch	Site visit to Volvoorde
May 2022		URBACT City festival			

Please note that:

- only main ULG meetings were included in this table. During the lifetime of the project additionally 4 to 5 ULG meetings will be organised in each city
- webinars are not included in the table and an optional peer learning workshop may be scheduled in summer 2021 around one or more of the sub-themes.

APPENDIX A

Detailed Description of the small scale actions in the seven city partners of the URBACT ZCC project:

BISTRITA

Setting up a sustainable mobility campaign *"Bistrita towards zero carbon city target"* in order to encourage citizens to choose sustainable mobility alternatives and to raise awareness on these alternatives and their benefits.

The main objective is to promote sustainable mobility as an essential component of the ZCC concept. The purpose is to accustom the local community with the main municipal projects that are now under implementation: the GREEN LINE, BICYCLE LANES, INTERMODAL TRANSPORT CENTER, etc. and to change citizens' mentality regarding mobility - showing them the benefits of using sustainable means of transport.

The campaign will take place between April 2021 and March 2022.

The main activities suggested:

- Cross / mini-relay race / cycling tour / walks along the Green Line route and bike lanes route.
- Group hikes (road trips) in the city, on bike lanes route and the Green Line route with the "inventory" of natural/tourist/cultural/anthropological/interesting objectives etc.
- Opinion surveys regarding the transportation habits - at work, school, during vacations and what we would be willing to do - each one of us – in order to contribute to reaching Zero Carbon City target.
- Mini workshops with discussions/exhibitions of the group hikes (road trips) experiences, organised on the priority lane of the Green Line electric buses.
- Awarding the most successful hikes (road trips), the jury will be formed by ULG members; the number of likes on FB can also be one of the criteria.
- The most successful pictures from the hikes (city road trips) will be included in the ZCC IAP Plan developed by Bistrița in the framework of this project and also in the tourist promotional leaflets of the city.
- The most successful hike (road trip) will be awarded with a professional clip, locally promoted.
- City cycling tour on the route of "the most successful hike".
- Conference / debates regarding the mobility paradigm.
- Street actions with the implication of the children from the Green School (ex. flash mob).

INVOLVEMENT: pupils and pre-schoolers from educational establishments, students, NGOs, bicycle clubs, local youth council, economic agents, public institutions, ULG members.

AWARDS: bicycles, hiking objects, sports vouchers, public transport tickets, etc.

FRANKFURT AM MAIN

In Frankfurt am Main, an improved cross-departmental cooperation is a crucial aspect to be able to set up a CO_2 budget which shall cover not only the CO_2 emissions by the City Council itself but also involves all emissions which are due to the economic and non-economic activities in the private sector such as businesses, households as well as all activities in the traffic sector.

In order to extend the impact of the Frankfurt Climate Alliance the City Council will set up a concept of what can be considered the Frankfurt Climate Partnership. The potential actors to be involved in the

partnership shall cover all relevant aspects of the City society who have an actual impact on CO_2 emissions respectively are responsible for direct emission within the City territory.

This Frankfurt Climate Partnership will be extended by more and more stakeholders who are responsible for CO_2 emissions over time. To set up such a system the City Council wants to provide a methodology which can be applied to every actor who plans to join the Partnership. Because it will not be possible to negotiate the contribution of each single actor directly or on personal level, of course in dependency of the size of each contribution, the City Council intends to set up a comprehensive online tool which shall enable the interested actors to register their possible contribution to achieve the City-wide Climate Mitigation Targets.

Besides setting up an upload function, the online tool will also serve as an important interface to communicate the status of the Climate Alliance in Frankfurt am Main. Therefore, it is planned to establish a monitoring platform which will be able to offer a transparent insight on who is involved in the Climate Alliance respectively Climate Partnerships as well as how much CO_2 each contributor will be in charge of. It is planned to create a direct link between this bottom-up tool with the regular CO_2 inventory done by the City of Frankfurt am Main.

MANCHESTER

Manchester will work with the different subgroups involved in the Manchester Climate Change Partnership. The MCCP meets regularly and will form the URBACT Local Group for Manchester. We will work with the partnership to identify which sub-groups have priority actions that can be supported through the implementation of a small scale action. As the prioritisation and development of the action will come out of the ULG in Phase 2, we are not wanting to pre-empt what it will be at this stage. However, the faith sector and/or the community and voluntary sector have been identified as sectors that benefit from additional resources, and where the impact of the small scale action can add value and help leverage other funds and activities

The objective is to develop a sector based zero carbon action plan or shared activities similar to the example of the the culture sector.

In the local ULG meetings, these subgroups will be actively involved and encouraged to develop a local project to bring their sector to zero carbon and share knowledge, expertise and best practice among using the example of how MAST (Manchester Arts Sustainability Team) has worked on behalf of the cultural sector, which is at the best practice example shared through the URBACT Knowledge Transfer Network C-Change(https://urbact.eu/c-change)

MODENA

The local pilot action of the City Modena would focus on a light-industrial site of the city, with the intention to implement a district approach to accelerate mitigation and adaptation investments in the city, while addressing major sustainability challenges.

The action would foster a bottom-up approach to speed up the city transition and to demonstrate that a district/neighbourhood approach is able to support cities in making investments in environmental mitigation and compensation projects.

In particular, the pilot action will consist of:

- involving the community and stakeholders (private companies and start-ups, public/private associations, citizens) with participatory processes such as workshops, questionnaires, interviews, site visits, etc;

- promoting the use of innovative and smart technologies for monitoring energy and CO_2 consumption;
- supporting the design and co-creation of climate mitigation and adaptation solutions in the neighbourhood;
- defining the criteria for selecting bankable projects according to the financial instruments available on the market;
- informing local stakeholders of funding opportunities (subsidies, loans/mortgages, crowdfunding, mini bonds, green bonds, energy-providing products and services) and stimulating dialogue between investors and stakeholders, possibly creating tools ad-hoc financial statements;
- encouraging the implementation of pilot projects and supporting the application of financial instruments.

TARTU

The local small scale activity will focus on calculating the life cycle GHG emissions of upcoming construction and/or renovation processes.

The goals for the pilot are to find an existing methodology, adjust it to Estonian conditions and find the optimal level of detail. It will then be tested in the design and engineering phase of a construction project. Tartu is planning to refurbish 3 kindergartners during the next 4 years.

Timetable:
- May - December 2020: Methodology research and adjustment
- January - June 2021: Piloting in a design and engineering process
- June - December 2021: Monitoring of construction process and evaluation of pilot
- December 2021 - April 2022: Dissemination of results.

Tartu will involve several stakeholders as the Tartu Regional Energy Agency, Stockholm Environment Institute Tallinn Centre, Tartu University of Life Sciences.

VILVOORDE

Within its small scale activity, Vilvoorde would like to focus on a co-creative process with several local actors to investigate energy opportunities on its territory.
Vilvoorde is currently running a workshop focusing on sustainable energy solutions.
- A co-creative process between the municipality, VITO (Flemish Institute for Technological Research), Cargovil+ (stakeholder group of companies) and other stakeholders.
- The goal is to do research on the energy opportunities that might be available in the area and that may be usefull for the city development of the Asiat site (for more information please consult Section 2, the Vilvoorde city profile)), the industrial area Cargovil+ and for the bigger city area.
- Vilvoorde would like to engage as many stakeholders as possible both on a research level and concrete level in terms of cooperations and partnership.

As at the moment, the municipality has little contact with companies on its territory, Vilvoorde wishes to start a stakeholder network around sustainable energy.
- It can be the start of a new stakeholder group and it can result in further development of energy systems in the city.
- As a small city who does not possess the expertise and the necessary budget to fully investigate partnership opportunities, this would be a very first step in terms of partnership with different stakeholders on energy issues.

- This will provide the ideas for their small scale action

ZADAR

There have been no systematic air quality tests in Zadar since 2008. According to the Environmental Programme of the City of Zadar from 2016, traffic is recognized as the greatest possible problem impacting quality of life in Zadar. Increased concentration of motor-powered vehicles can adversely affect urban air quality by increasing levels of carbon monoxide (CO), carbon dioxide (CO_2), sulfur dioxide (SO2), nitrogen oxides (NO and NO2) and particulate matter (PM1, PM2.5 and PM10). With the exception of road and ship traffic, which is of higher intensity in the summer months, the combustion of wood and petroleum products in domestic furnaces has an important impact during the winter period in Zadar.

The objectives of air protection, the ozone layer and climate change mitigation are set out in the City of Zadar Air Protection Programme. Therefore, it is important to establishing a complete air quality management and air quality monitoring system. However, this is a pilot project and sensor air quality measurement cannot be considered equivalent to validated and accredited air quality monitoring stations. This would provide though a baseline ("zero" CO_2 emissions) and indicative air quality data for the City of Zadar. The data obtained from these measurements can be used in many different areas (protection and preservation of human health, improvement of quality of life, transport planning and construction of roads, urban public green space design, development and use of more acceptable modes of transport, heating / cooling in households and business premises, adaptation to climate change, increasing the level of preparedness for extreme weather conditions, tourism promotion, etc.).

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