



CATOLICA
CATÓLICA PORTO
BUSINESS SCHOOL

PORTO

Climate action plans in Porto Atlantic Front municipalities: A comparison with the best municipal international practices

Alexandra Leitão, Leonardo Costa, & Conceição Silva

Universidade Católica Portuguesa, Católica Porto Business School, Research Centre in Management and Economics, Portugal
Financial support from the Fundação para a Ciência e Tecnologia (through project UIDB/00731/2020) is gratefully acknowledged

Leonardo Costa (corresponding author): lcosta@ucp.pt

X AERNA Conference, 1-3 Set, Universitat de Barcelona, Barcelona, Spain

Summary

Motivation, objective and research questions	Climate action plans and practices of the Porto Atlantic Front municipalities	
Literature review	Best international city practices Climate action policy governance	
Method	Case study research	
Results	Main results from Porto (for now)	
Conclusion	Concluding remarks	

Motivation, objective and research questions

- Climate neutrality is on top of the European Union political agenda
- Urban areas constitute a major source of climate threat: 60%-80% of global energy use; \cong 70% of global GHG emissions
- European cities not on track to reach the Paris Agreement: they need to roughly double their ambitions and effort
- Impacts of climate change consequences are one of the most prominent risks that cities are facing, although they are spatially highly differentiated
- Strong incentives for climate action plans on a multi-scale basis: global, national, and subnational/local (regional and municipal) levels
- The research addresses mitigation at the subnational municipal level of action

Motivation, objective and research questions

- Climate neutrality is on top of the European Union political agenda
- Urban areas constitute a major source of climate threat: 60%-80% of global energy use; \cong 70% of global GHG emissions
- European cities not on track to reach the Paris Agreement: they need to roughly double their ambitions and effort
- Impacts of climate change consequences are one of the most prominent risks that cities are facing, although they are spatially highly differentiated
- Strong incentives for climate action plans on a multi-scale basis: global, national, and subnational/local (regional and municipal) levels
- The research addresses mitigation at the subnational municipal level of action

Motivation, objective and research questions

- The objective is to identify and discuss the main advances and shortcomings of climate action plans and practices in the municipalities of the Atlantic Front of Porto - Porto, Matosinhos and Vila Nova de Gaia:
 - How do the climate action mitigation plans and practices of the Porto Atlantic Front municipalities compare with each other and with the best international municipal practices?
 - To what extent are these municipal climate action plans and practices influenced by horizontal and vertical relationships, within a multilevel territorial governance perspective?
- The focus is on mitigation actions (mobility and buildings)

Literature review

- Pinpoints the most ambitious and best performing cities regarding climate issues. A list of 56 cities around the world, mostly from Europe, were analysed in detail. These cities are pioneers in local climate action plans.
- The literature refers financial, political, and institutional barriers to the full realization of climate action policies at the local level. The lack of coordination between national and subnational authorities is one of the barriers mentioned by the literature.

Literature review

What does the literature say specifically about Portugal?

- Recent topic on the political agenda
- Studies on climate change action are still marginal
- Low level of adaptive capacity in the country
- Little integration and coordination of policies across governance levels and scales

Literature review

What does the literature say about Portugal?

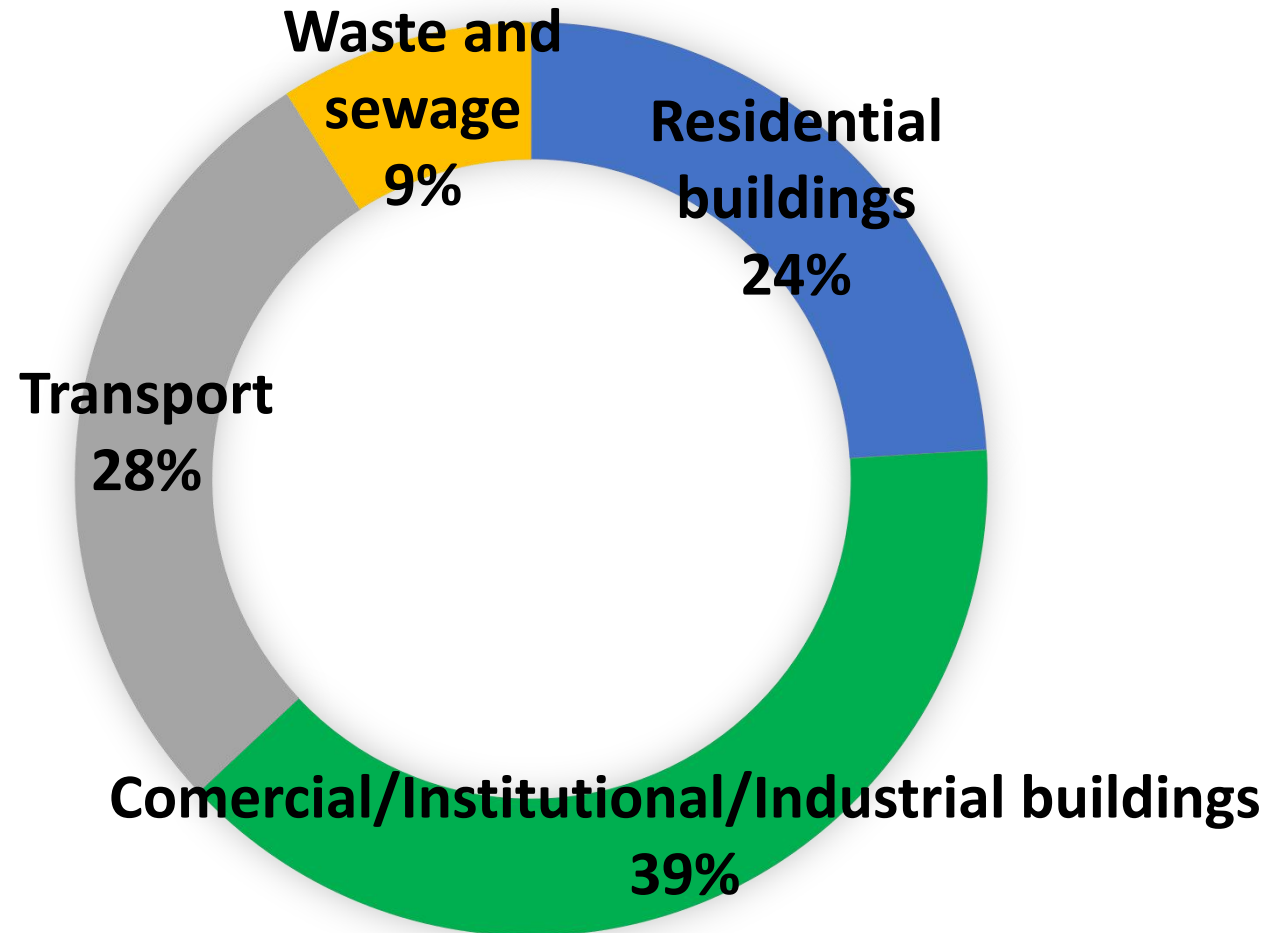
- 2017: First national questionnaire survey of Portuguese municipalities about the subject:
 - (i) Climate mitigation and adaptation actions are still little or not important in local policies
 - (ii) Local policies are not adequately involved or guided by national and European climate action strategies:
 - The coordination of climate action policies in Portugal has traditionally been carried out by ministries and government agencies, with little involvement of other stakeholders, leaving little room for the construction of social capital, and effective and fair strategies in the long term

Method

- Case study research method (Yin, 2018)
- Collection of documents and in-depth interviews (semi-structured) with main political actors in the three municipalities of Porto Atlantic Front

Results (cities' GHG emissions)

Share of GHG emissions in cities by sectors (average of sixty C40 cities, 2018)



Source: German Federal Ministry for Economic Cooperation and Development (BMZ), 2021

Results (general vision and initiatives of Porto)

- Porto city local government has been very active regarding climate action and has been working in both mitigation and adaptation
 - 2009, signed the European Union Covenant of Mayors and a Sustainable Energy Action Plan in Porto municipality followed in 2010
 - 2016 and 2018, was involved in developing, respectively, municipal and metropolitan adaption strategic plans
 - 2019, signed the Covenant of Mayors for Climate & Energy and an updated Sustainable Energy Action Plan followed in 2021
 - 2020, joined the European Union initiative Green City Accord
 - 2022, launched Porto Climate Covenant and (with Lisbon and Guimarães) integrates the European Union mission: to deliver '100 climate neutral and smart cities' by 2030

Results (general vision and initiatives of Porto)

	Goal GHG emissions reduction (baseline 2004)	Effective
Covenant of Mayors (2009)	45% by 2020	46% reduction by 2019
Covenant of Mayors for Climate & Energy (2019)	50% by 2030	52%-54% reduction by 2022
EU Mission Cities (2022)	Climate neutrality by 2030 85% reduction + 15% offset	

Results (general vision and initiatives of Porto)

- Very successful results benefiting from
 - Great cooperation between different municipal bodies, within the municipality. All share common goals. This extends to municipal companies (Metro, STCP, Housing, etc). Multidisciplinary teams are required because of the complexity of environmental problems
 - Political change in Europe and Portugal regarding decarbonization. National government invested in renewable energy, changing the national energy production system mix

Results (general vision and initiatives of Porto)

- Work in progress to be developed in the short, medium and long run beyond the political cycle
- Actions have an incremental and collaborative logic
- Porto participates in networks of cities that are international (eg. Eurocities) and national (eg. partnerships of urban agendas for the circular economy and for climate change adaptation):
 - To learn from and help other cities
 - To gain scale and power to influence the European Union and the Portuguese central government agendas
- Porto participates in initiatives with the other Porto Atlantic Front municipalities for relevant problem solving

Results (general vision and initiatives of Porto)

- At the municipal territorial level, the Portuguese central government has many non-articulated bodies with which municipalities need to cooperate
- At the supra municipal level, municipalities involve the metropolitan area to talk to the Portuguese central government
- But an intermedium elected administrative level is missing in Portugal. Without it, it is very difficult for a city to be listened. Even for a city like Porto

Results (general vision and initiatives of Porto)

- The 85% reduction target to achieve neutrality, requires strong action in buildings (about 50% of the footprint of the city) and mobility (about 40% of the footprint of the city)). Only 6% of emissions are directly affected by the municipality
- The Porto Climate Covenant (2022) intends to involve the civil society of the city, to meet the target
- Leadership by example is very important at local, national and European level. The municipality wants to be an example to be followed by civil society

Results (general vision and initiatives of Porto)

- The 15% offset is very hard to reach on the city's territory. The municipality will do as much as it can with green spaces on the city's territory
- Afforestation Plan (over 10,000 new trees in the city) is being developed by a multidisciplinary team
- The municipality has given incentives to the private sector to install green roofs and walls. Again, leading by example: the municipality is installing green roofs in the city (e.g. multimodal terminal of Campanhã, municipal buildings, public schools)
- Still, trees alone or green spaces only in the city's territory are not enough. It has to be extended to neighbouring municipalities (ex. the 100,000 trees project in the Porto Metropolitan Area)

Results (key areas and best practices - mobility)

Key areas and best municipal international practices



Best municipal international practices	Porto
<ul style="list-style-type: none">• Reduction of traffic and/or restrictions on the use of private transportation	<ul style="list-style-type: none">• Commitment to public transportation (quality and sustainable)• Commitment to traffic reduction (ex. VCI)• Increased areas with restricted access to cars• Parking time limitations• Car parks at low price• Parking reduction in the streets and public space requalification

Results (key areas and best practices - mobility)



Best municipal international practices	Porto
<ul style="list-style-type: none">Balanced mobility redistribution between car, public transport, and smooth mobility: priority to public transport, pedestrians, and cyclists	<ul style="list-style-type: none">Bet on public transportationExpansion of shared scooters and bicycles with strict rules – 25% use growth from 2020 to 2021 (the alleviation of Covid-19 restrictions influences these numbers)Smooth mobility helps surpassing the quotas (ex. Guindais lift, Miragaia escalator, where people can take bikes; electric bicycles)Need to adapt the speed in some subterritories of the city to the presence of these means of transportationIncrease in the bike lanes of the city. Segregated circulation attracts more peopleExpansion of bike lanes will continue in 2023 (more 7.5 km, linking Porto to Matosinhos and Gondomar)Recovery of public space to pedestrians
<ul style="list-style-type: none">Provision of sharing systems	
<ul style="list-style-type: none">Safe bicycle network	
<ul style="list-style-type: none">Safe mobility of pedestrians. Creation of walkable, compact, and mixed-use neighbourhoods	

Results (key areas and best practices -



Key areas and best municipal international practices

Best municipal international practices	Porto
<ul style="list-style-type: none">• Provision and development of public transport. Intra-municipality and inter-municipalities optimization (coordination and harmonisation at the metropolitan level)	<ul style="list-style-type: none">• Investments in efficient public transportation system including new metro lanes• Competitive public transportation (time and cost)• Development of new forms of public transportation, with high quality buses and corridors
<ul style="list-style-type: none">• Intelligent traffic management	<ul style="list-style-type: none">• High quality bus corridors with digital help (ex. no need to stop at traffic lights)• Real time information in bus stops
<ul style="list-style-type: none">• Tendency to free public transport	<ul style="list-style-type: none">• Ticket price reduction to travel in all public transportation - double-digits increase in 1st year of tariff reduction• Cartão Porto Ponto (Free transportation extended to people under 18; elderly population; free use of elevators and escalators)

Results (key areas and best practices -



mobility)

Key areas and best municipal international practices

Best municipal international practices	Porto
<ul style="list-style-type: none">Multimodal transport	<ul style="list-style-type: none">Investment in intermodal terminals in the city (Campanhã, Campo 24 de Agosto, São João, Camélias)
<ul style="list-style-type: none">Citizen engagement with public transport and other ways of mobility	<ul style="list-style-type: none">Promotion of adequate infrastructures to attract the population

Results (key areas and best practices - mobility)



Best municipal international practices	Porto
<ul style="list-style-type: none">Promotion of efficient and electric vehicles. Provision of the infrastructure that supports them	<ul style="list-style-type: none">Municipal fleet electrification (today: 75%)Bus fleet electrification (today: 20 electric buses; 2030: goal 40%)Hydrogen buses (12)The municipality has been active financing the purchase of electric vehicles from non-profit civil society organizations, offering them to the national police, etcAdequate structure to support electric vehicles still far from stressed (20 fast chargers; many more non public chargers in parking lots). It can be expanded at any time, if the market so requiresBut, big problem caused by central government: high tariffs for charging in public stations

Results (key areas and best practices – buildings)



Best municipal international practices – Public buildings	Porto
<ul style="list-style-type: none">• Resource efficient (re-)construction and operation of buildings (e.g. sustainable building materials and design, strict green building standards, efficiency in cooling and heating, appliances and lighting)• Decentralised and renewable energy supply (e.g. distributed solar photovoltaics, self-sufficient buildings or even surplus producers, heating from renewable energy like solar panels or biomass heating systems)	<ul style="list-style-type: none">• Energy efficiency of buildings and supply of renewable energy in buildings (proximity energy) are great concerns• In recent years, the municipality invested > 150 million € in the renovation of social neighbourhoods with a 45% increase in the energy efficiency of buildings

Results (key areas and best practices – buildings)



Best municipal international practices – Public buildings (cont.)	Porto
<ul style="list-style-type: none">• Resource efficient (re-)construction and operation of buildings (e.g. sustainable building materials and design, strict green building standards, efficiency in cooling and heating, appliances and lighting)• Decentralised and renewable energy supply (e.g. distributed solar photovoltaics, self-sufficient buildings or even surplus producers, heating from renewable energy like solar panels or biomass heating systems)	<ul style="list-style-type: none">• Production of energy for self-consumption in roofs. Ongoing installation +1MW of energy production in 29 municipal buildings (25 schools). Additional 1400 MWh/year and <100 tons CO₂• Self-charging of the municipal fleet• Ongoing implementation of Communities of Renewable Energy in social neighbourhoods (12% of the city's buildings) (+6 MW of photovoltaic energy in the near future). Also helps citizens with their energy bill• All the energy used by the municipality comes from RE for the last 2 years

Results (key areas and best practices – buildings)



Best municipal international practices – Private buildings	Porto
<ul style="list-style-type: none">• Resource efficient (re-)construction and operation of buildings (e.g. sustainable building materials and design, strict green building standards, efficiency in cooling and heating, appliances and lighting)• Decentralised and renewable energy supply (e.g. distributed solar photovoltaics, self-sufficient buildings or even surplus producers, heating from renewable energy like solar panels or biomass heating systems)	<ul style="list-style-type: none">• According to estimates of building renovation and acquisition for new equipment, energy efficiency of buildings has been increasing• All renovations must comply with stricter energy efficiency standards• Increase the use of solar energy<ul style="list-style-type: none">• Decentralised photovoltaic production (goal by 2030: +10MW)• Thermal energy for heating water (goal by 2030: 20,000 solar thermal panels in the city; all new constructions must have them)• Great expectations with the Porto Climate Covenant

Results (key areas and best practices – buildings)



Best municipal international practices	Porto
<ul style="list-style-type: none">• Green roofing and façades	<ul style="list-style-type: none">• Green roofs and façades are part of the municipal strategy• Municipality leading by example in municipal buildings• Very much valued in new projects
<ul style="list-style-type: none">• Improve public awareness	<ul style="list-style-type: none">• Implementation of a municipal office to advise people on what they can do to produce Renewable Energy and increase energy efficiency and look for funding solutions – in progress

Results (key areas and best practices – buildings)



Best municipal international practices	Porto
<ul style="list-style-type: none">• Financial support to the rehabilitation of privately owned buildings	<ul style="list-style-type: none">• An environmental index is being studied by a multidisciplinary team. Idea: to provide territorial-based incentives for the private sector to adopt everything that is important in a given space or sub-territory of the city (bioclimatic comfort, energy efficiency, nature based solutions, green roofs, sponge city, etc). The index gives points according to adequate practices in sub territories of the city Innovation to be ready in the beginning of 2023• Tax incentives for self energy production are being studied
<ul style="list-style-type: none">• Financial support to households and firms to boost generation and use of renewable energy and improve energy efficiency	

Conclusions

- How do the climate action mitigation plans and practices of the Porto Atlantic Front municipalities compare with each other and with the best international municipal practices?

In the case of Porto, they compare well with the best international practices.

- To what extent are these municipal climate action plans and practices influenced by horizontal and vertical relationships, within a multilevel territorial governance perspective?

They are, and the country is limiting itself by having only two levels of government.