

LOCAL CLIMATE AND ENERGY PLANS IN THE BASQUE COUNTRY

GUIDE FOR DRAWING UP MUNICIPAL AND REGIONAL PLANS FOR MITIGATING AND ADAPTING TO CLIMATE CHANGE



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01

PRESENTATION AND STRUCTURE OF THE GUIDE

Basque municipalities have a long history in the field of climate change, initially more focused on aspects related to mitigation. However, thanks to advances in knowledge generation in recent years and the resources developed within the framework of the **Udalsarea 2030 Basque Network of Sustainable Municipalities** to facilitate analysis, planning and monitoring of integrated action on climate change, local action on adapting to climate change has also been addressed.

All of this is aimed at moving towards more resilient municipalities, with a greater capacity to adapt to the impacts arising from the main climate threats and promote the decarbonisation of the towns and cities of the Basque Country.

The Climate Change Strategy of the Basque Country, Klima 2050, which is aimed at mitigation and adaptation, and **Law 4/2019 on the Energy Sustainability of the Basque Country**, which sets specific obligations in the field of energy, have set the course to be followed in order to make progress in terms of climate action. The **future regional law on Energy Transition and Climate Change** will complete the political and regulatory framework that will guide the municipalities of the Basque Country in their climate change policies.

Another benchmark instrument is the **Institutional Declaration on the Climate Emergency**,

approved on July 30, 2019, through which the Council of the Basque Government set the goal of achieving a carbon neutral territory, as soon as a fair transition allows it and, in any event, no later than 2050, and achieving a more resilient territory and society in the face of the climate emergency.

***Mitigation** refers to human intervention to reduce emissions and enhance greenhouse gas sinks, while **adaptation** seeks to moderate damage and exploit the beneficial opportunities arising from changes.*

On a broader level, the **2030 Agenda** and the **Paris Agreement** constitute the benchmark strategic framework for the next decade in terms of local sustainability and climate action. This is a framework for action which will have greater legislative backing through a range of laws, such as the European Climate Law, the Climate Change and Energy Transition Act backed by the Spanish government and the Law on Energy Transition and Climate Change in the Basque Country which is currently being processed at the time of writing.

Objectives and target entities

In this context, this guide aims to provide a clear and concise methodological framework that facilitates the drafting of local climate and energy plans in accordance with the current regulatory framework, making the most of the resources and tools available.

The guide is aimed at city and town councils and regional entities, with varying degrees of experience in planning in the field of climate change. In short, it is a resource that can be useful for any municipality or region, regardless of its starting point and the pro-

gress it has made in terms of adaptation and mitigation.

Similarly, municipalities adhering to the Covenant of Mayors for Climate and Energy can use the methodology presented here to respond to the corresponding planning and reporting requirements.

Structure of the guide

The guide is structured in four chapters and a number of appendices, the contents of which are summarised below:

CHAPTER 1: PRESENTATION AND STRUCTURE OF THE GUIDE	Introduction to the Guide, detailing its objectives and the profile of the people at whom it is aimed .
CHAPTER 2: THE INITIAL POLITICAL AND REGULATORY FRAMEWORK	It explains the European, national and regional strategic and regulatory framework of reference to be considered when drawing up a local climate and energy plan. It includes a specific section which explains the relationship between Law 4/2019 on Energy Sustainability in the Basque Country and local climate and energy plans.
CHAPTER 3: APPROACH AND METHODOLOGICAL KEYS	It details the issues related to the approach and methodological keys that will guide the process of drawing up a local climate and energy plan. It answers two fundamental questions that are essential to understanding and approaching the process correctly: What is a local climate and energy plan and what does a local climate and energy plan include?
CHAPTER 4: HOW TO DRAW UP A LOCAL CLIMATE AND ENERGY PLAN	It provides guidelines and resources on how to approach drawing up a local climate and energy plan in 5 steps, detailing the scope and tasks to be carried out in each step. Each step includes a section with recommendations and, in some cases, practical resources to include citizen participation throughout the process. It also includes a map of the tools available to municipalities and regions in the Basque Country for tackling local climate and energy plans, the use of which, in the majority of cases, is quite widespread and primarily partnered with the planning and management of local sustainability policies. Finally, it provides “methodological notes” to clarify concepts and issues that require explanation beyond the tasks themselves.
APPENDICES	The Guide has a final section of appendices which includes additional resources intended to provide complementary information and help with certain tasks in the process, mainly associated with the diagnostic and planning phases.

It should be noted that the approach and contents of the guide have been checked against a representative sample of town councils and regional bodies in the Basque Country, with the aim of adapting and adjusting the methodology to different local realities and contexts.

The Guide was put together within the framework of the European Life IP Urban Klima 2050 project, specifically within Action C8.3, which aims to create tools and training for local administrations.

02

THE INITIAL POLITICAL AND REGULATORY FRAMEWORK

2.1

Aligning local climate and energy plans with the Paris Agreement and 2030 Agenda

In 2015, the **Paris Agreement** was adopted, the first universal and legally binding agreement for countries that have signed it, committing them to combat climate change and adapt to its effects.

The core objective of the Paris Agreement is to keep the global average temperature increase well below 2°C above pre-industrial levels, pursue efforts to further limit the temperature increase to 1.5°C and build up the capacity of societies to cope with the consequences of climate change.

Furthermore, the Agreement recognises the importance of cities, regions and local administrations (as well as civil society, the private sector, etc.) and invites them to: (i) intensify their efforts and support measures to reduce emissions, (ii) increase resilience and reduce vulnerability to the adverse effects of climate change, and (iii) maintain and foster further regional and international cooperation.

Also in 2015, all UN Member States adopted the **2030 Agenda** and 17 Sustainable Development Goals (hereinafter referred to as SDGs), making a universal call to action to end poverty, improve people's lives and protect the planet.

The integral relationship between the 2030 Agenda and the Paris Agreement provides a holistic framework and strengthens the fit between local climate and energy plans and local sustainability policies.

The 2030 Agenda refers to the Paris Agreement, emphasising that its implementation is essential if the Sustainable Development Goals are to be achieved, as it provides a roadmap for climate actions that will reduce emissions and build the climate resilience the world needs.

In short, these are the two major milestones that will shape the political agenda for the next decade and on which the **European Green Deal** hinges. It should be noted that this is a favourable context and represents an opportunity to deploy and implement the local climate and energy plans promoted in this Guide.

In the Basque Country, the 2030 Agenda is being adopted by all levels of government and by other economic and social actors. At a local level, the transition from Local Agenda 21 to Local 2030 Agenda is being channelled through the Basque Network of Sustainable Municipalities, Udalsarea 2030.

In short, it could be said that, by its very nature, the 2030 Agenda is fostering a new model of multilevel governance that facilitates cross-cutting policies, such as local climate and energy plans.

The *LOCAL 2030 Agenda* guide. *How to approach the Sustainable Development Goals at a local level* (Ihobe, 2019)¹ identifies the SDGs to which mitigation plans (SDGs 3, 7, 11, and 13) and climate change adaptation plans (SDGs 1, 3, 6, 9, 11, 13, 14, and 15) contribute. Furthermore, given the nature of local climate and energy plans, which require good internal

coordination and the establishment of mechanisms for accountability and citizen participation, and their role in promoting climate action partnerships, they are also seen as contributing to SDGs 16 and 17.

However, the contribution of local climate and energy plans is mainly focused on three SDGs: 7, 11 and 13. In addition, these plans are also partially linked to other SDGs, which include targets with explicit references to the resilience and adaptive capacity of human and economic systems and ecosystems.

2.2

Strategic and regulatory framework of reference for local climate and energy plans

The methodological approach proposed by this Guide has taken the main strategies and plans for mitigation and adaptation into consideration, together with the legislative framework (in force or in the process of being processed) associated with climate action at the different territorial scales, including the European, national and regional scales (**Figure 1**).

However, it should be borne in mind that this framework is changeable and that the targets set are being revised upwards. This is why the figure does not attempt to comprehensively detail the key elements and objectives of each of the strategies and frameworks, but rather to structure and position the key elements of climate change policy for the next decade and the path towards climate neutrality and territorial resilience by 2050.







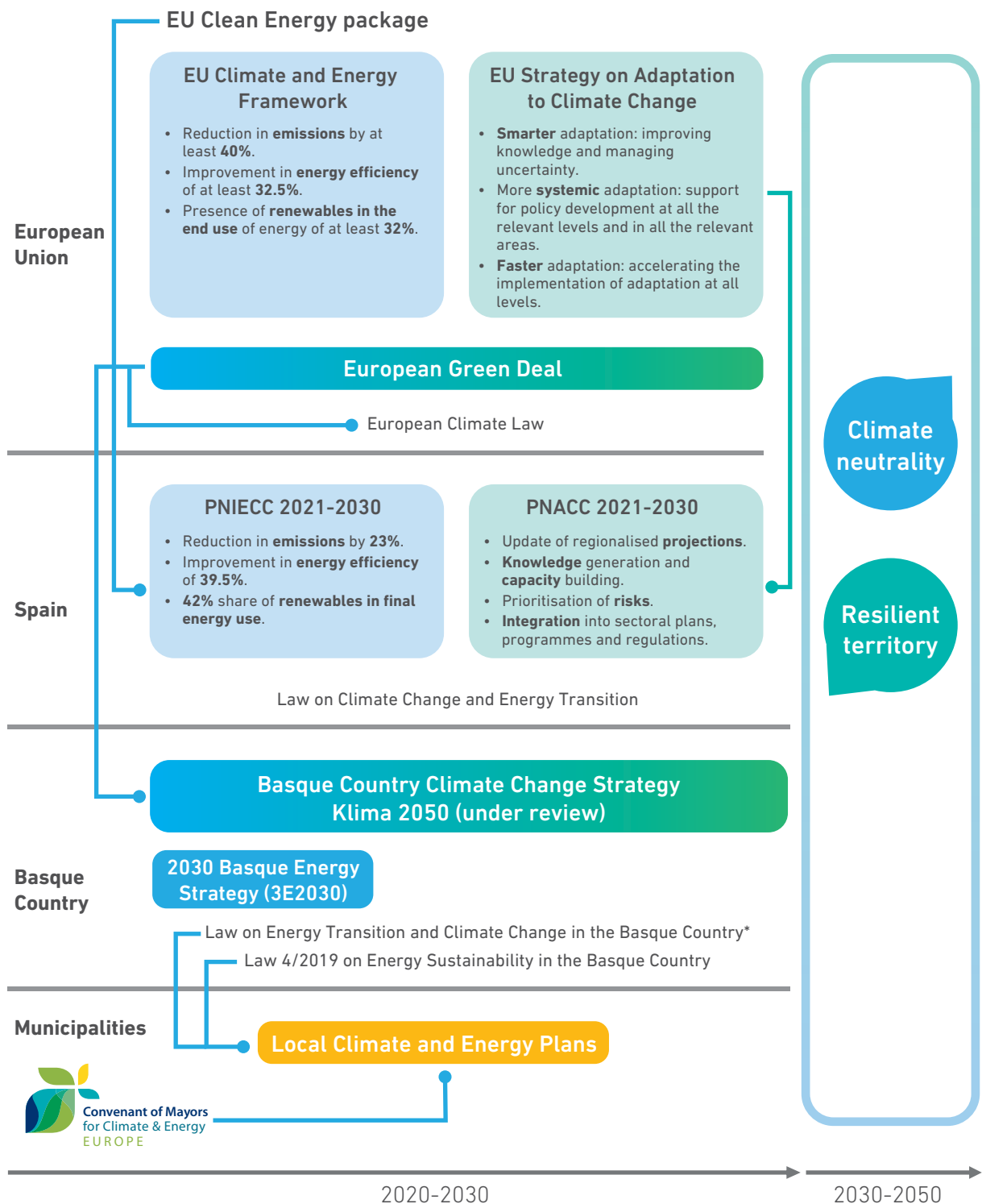
TARGETS OF THE SDGs LINKED TO LOCAL CLIMATE AND ENERGY PLANS			
DIRECT LINK		PARTIAL LINK	
 7 ENERGÍA ASEQUIBLE Y NO CONTAMINANTE	7.1	 1 FIN DE LA POBREZA	1.5
	7.2		
	7.3		
 11 CIUDADES Y COMUNIDADES SOSTENIBLES	11.5	 2 HAMBRE CERO	2.4
	11.b		
 13 ACCIÓN POR EL CLIMA	13.1	 15 VIDA DE ECOSISTEMAS TERRESTRES	15.3
	13.2		
	13.3		

Table 1. *Targets of the SDGs linked to local climate and energy plans.*

1. <http://www.udalsarea21.net/Publicaciones/Ficha.aspx?IdMenu=892e375d-03bd-44a5-a281-f37a7cbf95dc&Cod=da84a23e-22c2-40ce-bc52-308ed11a34bc&Idioma=es-ES>



* Laws being processed at the time of writing the guide.

Figure 1. Strategic and regulatory framework of reference for local climate and energy plans.
 Source: Compiled by the author.

The following is a summary of the key points and interrelationships between the different regulatory and planning instruments presented:

At a European level

At a European level, the reference framework for mitigation is made up of the 2030 **Framework on Climate and Energy**² and the **Clean Energy Package**³, also known as the “winter package”, a set of directives to promote the use of renewable energy and energy efficiency that were adopted in 2019.

Meanwhile, in the field of adaptation, the **European Strategy on Adaptation to Climate Change**⁴ (revised and approved in February 2021) will set out the priority lines of action to be adopted by national governments in the deployment of measures to tackle the impacts of climate change and to improve the resilience of the European Union as a whole.

It should also be noted that climate action is at the heart of the **European Green Deal**⁵, the roadmap that aims to provide the European Union with a sustainable economy through a **fair and inclusive transition**.

The climate action initiatives of the European Green Deal include the following:

- **The European Climate Law**⁶, which provides legal backing for the goal of climate neutrality by 2050.

- **The Europe Climate Pact**⁷, which aims to engage citizens and all parts of society in climate action.
- The **2030 Climate Target Plan**⁸ with a view to further reducing net greenhouse gas emissions by at least 55% by 2030.

In addition, work is being done on mechanisms for a **fair transition**, which is essential to ensure that the move to a climate-neutral economy is done in an equitable way and leaves no one behind.

At a national level

At a **national** level, the climate action promoted by the government for the next decade is based on two reference planning frameworks: the **Integrated National Energy and Climate Plan**⁹ (PNIEC 2021-2030) and the **National Climate Change Adaptation Plan**¹⁰ (PNACC 2021-2030). Their objectives and key points are derived from the European framework, namely the Clean Energy Package for the European Union in the case of the PNIEC and the European Strategy on Adaptation to Climate Change in the case of the PNACC.

Likewise, in May 2021, Law 7/2021 on **Climate Change and Energy Transition**¹¹ was approved, a state regulation that aims to ensure compliance with the objectives of the Paris Agreement. At a municipal level, the new law will call on municipalities to contribute with mitigation and adaptation policies in different areas.

2. https://ec.europa.eu/clima/policies/strategies/2030_en

3. https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_es

4. https://ec.europa.eu/clima/eu-action/adaptation-climate-change/eu-adaptation-strategy_en

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

6. https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-law_en

7. https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-pact_en

8. https://ec.europa.eu/clima/eu-action/european-green-deal/2030-climate-target-plan_en

9. https://www.miteco.gob.es/images/es/pniecCompleto_tcm30-508410.pdf

10. https://www.miteco.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/pnacc-2021-2030_tcm30-512163.pdf

11. <https://www.boe.es/boe/dias/2021/05/21/pdfs/BOE-A-2021-8447.pdf> (ley cambio climático y transición energética).

At a regional level

In the **Basque Country**, the **Klima 2050 Climate Change Strategy**¹² is the strategic framework of reference, both in the field of mitigation and adaptation. After an initial planning cycle (2015-2020), the strategy is being reviewed at the time of writing this guide, focusing among other things, on revising the climate commitments upwards, in line with the agreement reached within the European Union to **raise the GHG emission reduction target to at least 55% by 2030**.

The adoption of a more ambitious commitment also responds to the **Institutional Declaration on the Climate Emergency** approved in July 2019 by the Council of the Basque Government, in which “urgent and ambitious actions” were announced to achieve a carbon neutral Basque Country by 2050.

Furthermore, there is a specific framework of reference on energy matters defined by the **2030 Basque Energy Strategy (3E2020)**¹³, which outlines the objectives and basic lines of action in the field of energy policy in the Basque Country for the period 2016-2030.

Moreover, at the time of writing this guide, work is being carried out on the **Law on Energy Transition and Climate Change in the Basque Country**, which will provide an additional impetus to climate action and energy transition at all levels of the Basque public administration and complement what has already been provided by **Law 4/2019 on Energy Sustainability in the Basque Country**¹⁴ (which is detailed in Section 2.3).

At a local level

This is the territorial level of **local climate and energy plans**. In this context, the approach of the plans promoted by this guide aims, on the one hand, to respond to the requirements of **Law 4/2019** and, on the other, to anticipate the spirit of the future **Law on Energy Transition and Climate Change in the Basque Country**. In short, it is a methodological approach that makes it possible to draw up plans that comprehensively tackle the mitigation of and adaptation to climate change and are aligned with European and national policies in this area, which also makes it possible to respond to the requirements of the European **Covenant of Mayors for Climate and Energy** initiative.

Interrelationship between Law 4/2019 on Energy Sustainability in the Basque Country and local climate and energy plans

Basque municipalities are subject to the specific obligations laid down by Law 4/2019 on Energy Sustainability in the Basque Country with regard to local government, which is directly related to local climate and energy plans.

Therefore, the approach to drawing up the local climate and energy plans proposed in this guide takes the requirements of Law 4/2019 and the establishment of a bidirectional methodological framework into particular consideration, in such a way that certain actions arising from complying with the Law can be resources for drawing up and implementing the plans, and conversely, that the drawing up and implementation of the plans can contribute to complying with the requirements of the Law.

This interrelationship is shown in detail by article in **Table 2**.

12. https://www.euskadi.eus/contenidos/documentacion/klima2050/es_def/adjuntos/KLIMA2050_es.pdf

13. <https://www.eve.eus/EveWeb/media/EVE/pdf/3E2030/EVE-3E2030-castellano.pdf>

14. <https://www.boe.es/buscar/pdf/2019/BOE-A-2019-3705-consolidado.pdf>

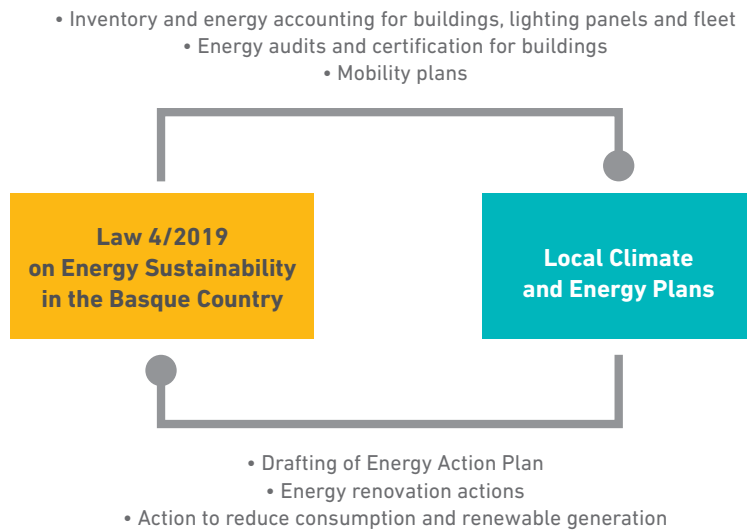


Figure 2. Feedback factors between Law 4/2019 and local climate and energy plans.

Source: Compiled by the author.

Article	Contribution of the Law to implementing the PLCE	Contribution of the PLCE to complying with the Law
<p>Article 11. – Inventory Carrying out inventories of buildings, vehicle fleets and lighting installations including an inventory of their energy consumption.</p>	Basic information for diagnosing and planning for city and town councils.	
<p>Article 12. – Consumption control Equipment and systems for the centralised collection, transmission and provision of hourly consumption data. Monthly consumption and expenditure control system for all buildings and energy sources.</p>	Basic information for diagnosing and planning for city and town councils. Information for calculating savings of resources and detailed monitoring of PLCE by buildings and tables.	
<p>Article 13. – Energy audits Carrying out energy audits on public administration buildings with a thermal output of more than 70 kW.</p>	Integration of audit measures into the Plan.	
<p>Article 14. – Energy action plans Drawing up a multi-year Energy Action Plan, taking the objectives of reducing consumption and promoting renewables in Articles 16 and 17 into consideration.</p>		The mitigation measures for city and town councils in the PLCE may constitute the Energy Action Plan.

Article	Contribution of the Law to implementing the PLCE	Contribution of the PLCE to complying with the Law
<p>Article 19.- Energy rating of existing buildings Ensure that all buildings have energy certification. 40% of existing buildings with an energy rating below level B will be required to upgrade their energy rating to level B.</p>		<p>Integration in the PLCE of the measures required for the energy renovation of buildings in order to achieve energy rating improvement targets.</p>
<p>Article 21. – Use of alternative fuels in privately-owned vehicles From 2020, 100% of vehicles purchased will have to use alternative fuels. Newly constructed buildings will be required to have electric vehicle charging points and areas to facilitate the use and parking of bicycles.</p>		<p>Integration in the PLCE of the measures required to purchase alternative fuel vehicles and electric vehicle charging points in order to achieve fleet targets.</p>
<p>Article 24. – Mobility plans Within two years of the entry into force of this law, municipalities with more than 5,000 inhabitants must have an urban mobility plan.</p>	<p>A resource to be able to reference and/or integrate in the PLCE and specify sufficient measures to reduce the climate impact of the principal GHG emitting sector of municipalities.</p>	
<p>Article 26. – Publicity on measures Publication of a report on: (1) energy consumption per building and energy sources used; (2) audits carried out and their results; (3) measures taken; (4) degree of compliance with the Law.</p>		<p>The same communication action on energy measures will serve both to communicate progress made in implementing the PLCE to the public, and fulfil the requirement as such to publicise the measures.</p>

Table 2. *Interrelation between the obligations for Basque town and city councils in the field of energy stemming from Law 04/2019 on Energy Sustainability in the Basque Country and the local climate and energy plans (PLCE). Source: Compiled by the author.*

APPROACH AND KEY METHODOLOGIES

3.1

What is a local climate and energy plan?

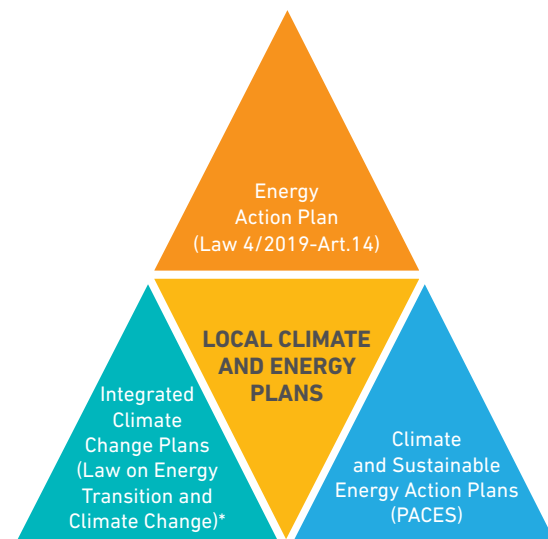
Concept

A local climate and energy plan is a **long-term local planning** instrument that simultaneously targets action to **mitigate and adapt to climate change** with an **overall vision** for the municipality.



The local climate and energy plans promoted in this guide constitute the **framework instrument of reference for planning action** on climate and energy in the **city and town councils and regions in the Basque Country**. Consequently, they have an approach, methodology and tools that are specific to the context of Basque municipalities.

Under the same methodological framework, these plans **provide a simultaneous response to the various requirements and objectives of Basque legislation**. They are also aligned with, **include and extend the requirements of the Climate and Sustainable Energy Action Plans (PACES)**, and can be aligned with them



(*): Refers to the future Law on Energy Transition and Climate Change in the Basque Country, which is being drawn up at the time of writing this guide.

Figure 3. Compliance and alignment of local climate and energy plans with regulations and policies. Source: Compiled by the author.

in cases where city and town councils choose to adhere to the Covenant of Mayors.

Consequently, the scope and intensity of the measures considered in the local climate and energy plans in accordance with this publication will be those required to **comply with the quantitative objectives** set out in the **regulations and policies of reference** on climate and energy in the Basque Country:

OBJECTIVES	GOAL	REFERENCE
Reduction of city and town council energy consumption (2030).	35%	Law 4/2019 on Energy Sustainability in the Basque Country.
Renewable generation in terms of electricity and heat consumption in local government (2030).	32%	Law 4/2019 on Energy Sustainability in the Basque Country.
Reduction of GHG emissions by municipalities (2030).	40%	Covenant of Mayors for Climate and Energy.
Ensure the resilience of the region to climate change.	–	KLIMA 2050 Climate Change Strategy for the Basque Country.
Adoption of a common approach to promoting mitigation of and adaptation to climate change.	–	Covenant of Mayors for Climate and Energy.

Table 3. Objectives of the Local Climate and Energy Plans in the Basque Country.

Objectives

The overall objective of a Climate and Energy Plan is to contribute to mitigating and adapting to climate change in the municipality, and includes the following **specific objectives**:

1. To identify a **vision and strategic objectives** in relation to **climate action** and a **fair energy transition** within the municipality, taking care to involve its citizens.
2. To comply with the **regulatory obligations** of Law 4/2019 and the future Law on Energy Transition and Climate Change in the Basque Country.
3. To **formulate** and rigorously **prioritise** the **actions** to be carried out in the coming years with a global perspective.
4. To facilitate and promote **more cross-cutting work** between departments/areas of city and town councils.
5. To stimulate and drive **citizen action** on climate and energy transition.

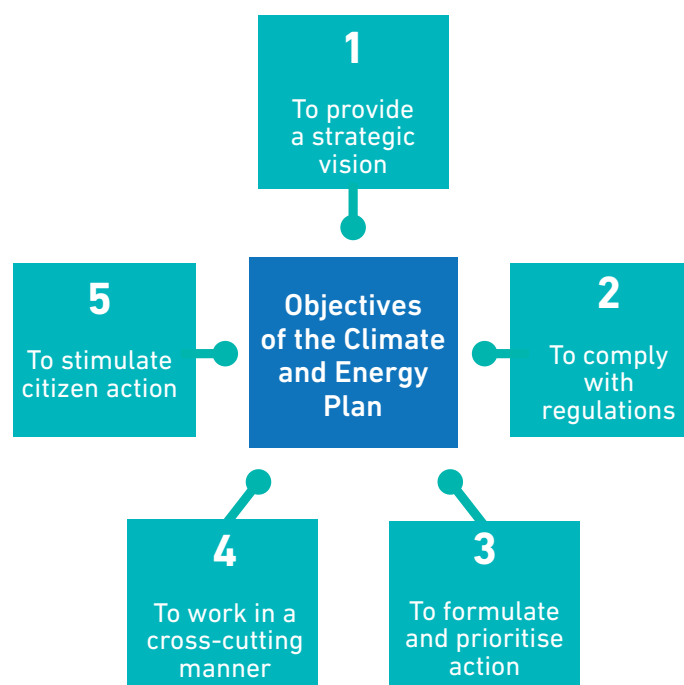


Figure 4. Objectives of local climate and energy plans. Source: Compiled by the author.

These plans can also contribute to increasing the availability of resources and reducing costs in 3 ways:

- By facilitating **access to funding and aid** in the field of ecological transition.
- By contributing to **reducing** energy supply **costs**.
- By contributing to **reducing the costs of in-action** on adaptation.

Alignment with the 2030 Agenda and sectoral plans

Local climate and energy plans are fully **aligned with the 2030 Agenda** by directly contributing to achieving the following Sustainable Development Goals (SDGs) and associated goals:

- **SDG 7:** Affordable and clean energy.
- **SDG 11:** Sustainable cities and communities.
- **SDG 13:** Climate action.

Likewise, local climate and energy plans are intended to **complement and be fully aligned with the sectoral plans** of city and town councils or at a regional level and which may have an impact on the consumption and emissions of municipalities, their capacity to adapt to climate change, and reducing energy poverty.

This alignment means that local climate and energy plans can:

- 1) Identify criteria and areas of intervention in future sectoral plans to achieve the climate objectives set.
- 2) Reference measures already contained in existing sectoral plans and add the contribution they can make to climate objectives.
- 3) Make adjustments to or update the contents of existing sectoral plans in specific cases where this is deemed appropriate.

The *Methodological Guide to Reviewing Action Plans - Local Agenda 21 (IHOBE, 2011)*¹⁵ describes the phases for carrying out a review

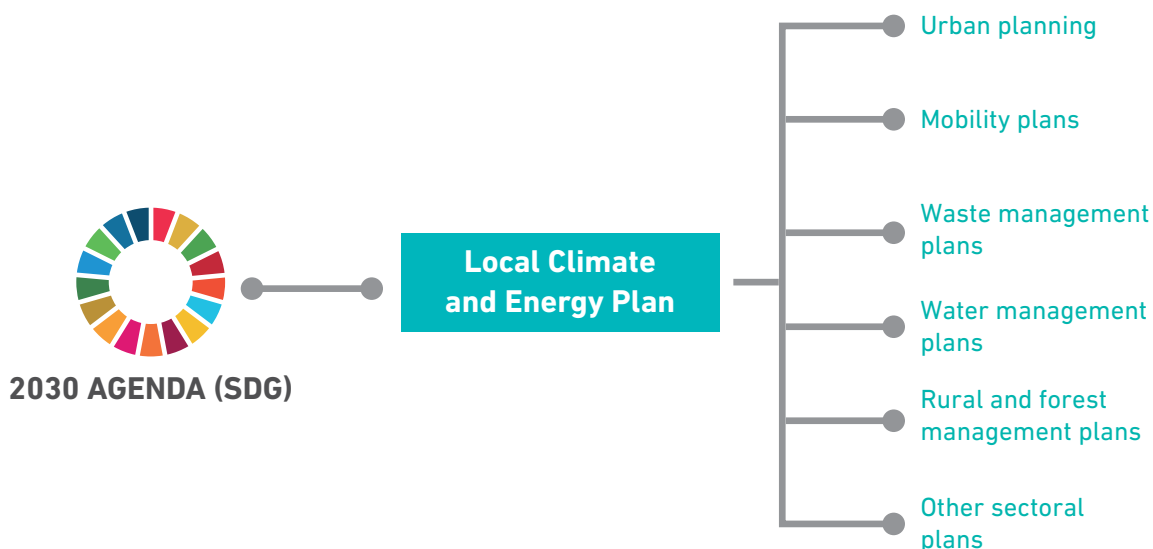


Figure 5. Alignment of local climate and energy plans with the 2030 Agenda and sectoral plans. Source: Compiled by the author.

15. <http://www.udalsarea21.net/Publicaciones/Ficha.aspx?IdMenu=892e375d-03bd-44a5-a281-f37a7cbf95dc&Cod=c99961b2-a3fc-4e60-b8c5-085eae837e1d&Idioma=es-ES>

of Action Plans-Local Agenda 21. *Section 2.4 Mechanisms for coordinating and incorporating other plans and participation processes in the Local Action Plans* details guidelines for aligning and integrating plans that may overlap in the same areas of action within municipalities, the application of which may be analogous in the case of local climate and energy plans due to their cross-cutting nature.

Alignment of Local Climate and Energy Plans (PLCEs) and Climate and Sustainable Energy Action Plans (PACES)

Municipalities that opt to join the Covenant of Mayors for Climate and Energy can directly align the PLCE to the PACES required by the Covenant, as the PLCE fulfils and extends the minimum requirements of the PACES.

As part of the commitments arising from the Covenant, municipalities wishing to align their PLCE to the PACES will need to:

- Fill in the form on the Covenant website with the contents of the GHG inventory and the actions of the plan.
- Carry out a periodic calculation of the GHG inventory and degree of implementation of the plan.

In any event, this last point is also covered by the monitoring that is provided for in the local climate and energy plans under this publication, even if they are not participating in the Covenant.

Therefore, committing to a local climate and energy plan in line with this guide will facilitate adherence to the Covenant by avoiding duplication of efforts and resources.

Quality and applicability of local climate and energy plans

Local climate and energy plans are intended to be applicable and usable as an effective action-oriented management tool. To this end, care must be taken to make sure that the drafting process provides the human, technical and financial resources to ensure that it is of sufficient quality to achieve its purpose.

It is considered essential for the following execution quality criteria, among others, to be incorporated into the drafting of the plans:

- **Rigorous formulation and prioritisation of measures** based on the diagnosis and specific reality of the municipality and an analysis of technical and economic feasibility based on objective parameters (potential for savings or renewable generation, pay-back periods, etc.).
- **Precise definition and characterisation of measures** to avoid generic formulations that are not contextualised to the reality of the municipality.
- **Robust and rigorous quantification of costs for each measure, and estimates of energy savings, economic savings and GHG emission reductions for mitigation measures.** This criterion should be applied to measures for city and town councils in particular, for which the information required to make the calculation needs to be available.
- An assurance that all of the **measures** in the plan are technically, economically and legally **feasible** and **deliverable**.
- Definitions of the measures should be sufficiently precise and unambiguous so that their **execution can be assessed** clearly in the implementation phase of the plan.

3.2

What is included in a local climate and energy plan?

As a minimum, the drafting of a local climate and energy plan shall include the following components:

- Diagnosis of mitigation and adaptation with an overview of all sectors and areas of the municipality.
- Strategic formulation with objectives and goals to be achieved.
- Detailed planning and characterisation of climate change mitigation and adaptation measures.
- Model for monitoring the implementation of measures and achievement of improvement targets.

Likewise, the drafting process should consider communication and participation activities internally within the city or town council and externally with citizens, entities and companies.

Local climate and energy plans are flexible tools and should be adapted to the needs of each municipality, with the possibility to adjust them on a case-by-case basis:

- Scope of sectors and areas of action included in the plan.
- Depth of analysis and planning applied.
- Scope of participation and communication activities.

The potential scope that may be envisaged and the prioritisation criteria on the basis of which each municipality chooses a particular scope and approach in each sector or thematic area are set out below.

Scope and areas of mitigation-related actions

As far as climate change mitigation is concerned, the following sectors may be considered, which include the areas of action shown below:

SECTORS	AREA
Councils	<ul style="list-style-type: none"> • Energy savings and efficiency • Renewables • Fleet of vehicles
Housing	<ul style="list-style-type: none"> • Energy savings and efficiency • Renewables • Energy poverty and vulnerability
Services	<ul style="list-style-type: none"> • Energy savings and efficiency • Renewables • Green economy
Mobility and transport	<ul style="list-style-type: none"> • Mobility of residents and economic activity in the municipality (<i>excluding through traffic on supra-municipal infrastructures</i>)
Waste	<ul style="list-style-type: none"> • Urban waste management
Water	<ul style="list-style-type: none"> • Water supply and sanitation
Industry	<ul style="list-style-type: none"> • Energy savings and efficiency • Renewables (<i>excluding industries affected by the European industrial emissions control and trading system</i>)
Primary sector	<ul style="list-style-type: none"> • Forestry management • Agricultural and livestock practices • Local consumption

Table 4. Sectors and areas of action in local climate and energy plans.

Regarding the **diagnosis** and inventory of energy consumption and GHG emissions, all sectors will be considered, as they are already included in the Udalsarea 2030 inventory calculation tool, which is available to all town and city councils in the Basque Country.

However, **at the planning stage**, each city or town council will be able to adapt the scope of its plan to its specific needs and available resources, and may choose to address all or only some of the sectors concerned.

Table 5 shows general criteria for prioritising sectors in which to take action, which may vary in some cases depending on the reality of each municipality. The municipal energy and GHG emissions inventory and analysis of the specific capacity for action of the city or town council in question can be used for this purpose.

Another aspect to consider when assessing the importance to give to each sector in every municipality is to evaluate the level of action already achieved by the municipality in each sector, and the availability or not of other planning instruments. As a result, those sectors that do not have specific sectoral plans and

for which no action has been taken will have a greater need for planning, and vice versa.

Figure 6 shows a general synthesis of the priority of each sector, defined on the basis of the criteria presented above, cross-referenced with the need for planning in each sector. This assessment shows the usual pattern in Basque municipalities at the present time, which, once contextualised for each particular municipality, could facilitate the approach and scope with which to tackle the drafting of the local climate and energy plan in terms of mitigation.

It is generally recommended that local climate and energy plans should aim to incorporate all or most of the high and medium priority sectors. By contrast, it is recommended that low priority sectors be incorporated only in those municipalities where they may have a specific relevance and where there is a

SECTORS	Relevance in terms of GHG emissions	Council's capacity for action	Consideration of Law 4/2019 on energy sustainability in the Basque Country	Consideration of the Covenant of Mayors for Climate and Energy*	Overall priority for action
City/town council (building and lighting efficiency, renewables and vehicle fleet)	LOW	VERY HIGH	COMPULSORY	KEY	VERY HIGH
Housing	MEDIUM	MEDIUM	-	KEY	MEDIUM/HIGH
Services	MEDIUM	LOW	-	KEY	MEDIUM
Mobility and transport	HIGH	MEDIUM	**	KEY	HIGH
Waste	LOW	HIGH	-	-	MEDIUM
Water	VERY LOW	LOW	-	-	LOW
Industry	VARIABLE	VERY LOW	-	-	LOW
Primary	VARIABLE	LOW	-	-	LOW

(*): The methodology for the Covenant of Mayors for Climate and Energy states that a Climate and Sustainable Energy Action Plan should contain measures in at least 2 key sectors.

(**): Law 4/2019 on Energy Sustainability in the Basque Country calls on municipalities (with more than 5,000 inhabitants) to draw up a specific mobility plan (Article 24) separate from the Energy Action Plan (Article 14).

Table 5. Prioritisation of the treatment of the various sectors in the plans based on various criteria.
Source: Compiled by the author from various sources.

NEED FOR PLANNING	HIGH		Services Housing	Councils (Renewables) Councils (Buildings) Councils (Lighting) Councils (Vehicles)
	MEDIUM	Industry	Waste	Mobility and transport
	LOW	Water Primary sector		
		LOW	MEDIUM	HIGH
OVERALL PRIORITY FOR MITIGATION ACTION				

Figure 6. Analysis of prioritisation and approach to integrating sectors in local climate and energy plans in the field of mitigation. Source: Compiled by the author.

willingness to take action (e.g. the industrial sector in municipalities where industrial activity is prevalent or the primary sector in very rural municipalities).

In relation to the scope and depth of planning, focusing efforts on the highest priority sectors that have no planning whatsoever (e.g. renewables in city and town councils) is recommended. In these cases, it will be essential for planned measures to be defined more thoroughly and in greater detail for their subsequent implementation, as the local climate and energy plan will be the operational instrument of reference for defining them.

By contrast, in those sectors which already have or are expected to have specific sectoral plans (e.g. a mobility plan required by Law 4/2019), despite being priority sectors, the scope of

the local climate and energy plan does not need to be as detailed in the characterisation of its measures. Consequently, they can be limited to indicating the criteria and objectives for action in future sectoral plans, or refer to the measures in the existing ones, while incorporating a quantification of the reduction in consumption and emissions that will be included in the impact of the local climate and energy plan.

Scope and areas of adaptation-related action





With regard to adapting to climate change, the following sectors and areas will be considered, as defined in the context of the Basque Country and aligned with the sectors covered by the Covenant of Mayors for Climate and Energy:

SECTORS	AREA
Natural environment	<ul style="list-style-type: none"> • Water resources • Terrestrial and coastal ecosystems • Soil
Urban environment and infrastructures	<ul style="list-style-type: none"> • Critical infrastructures • Linear infrastructures • Regional and urban planning • Urban environment • Buildings
Activity	<ul style="list-style-type: none"> • Agriculture, forestry, livestock and fisheries • Industry • Tourism • Finance-Insurance
Health and civil protection	<ul style="list-style-type: none"> • Health • Civil protection and emergencies
Others	<ul style="list-style-type: none"> • Other sectors not covered and cross-cutting actions

Table 6. Sectors and areas of action in local climate and energy plans (adaptation).

Source: Compiled by the author.

At a **diagnostic level**, as a minimum, the impact chains for which Ihobe has carried out a vulnerability and risk analysis for all the municipalities in the Basque Country (2018) will be considered, the results of which are set out in a data sheet for each municipality (see **Figure 9**):

	Heat waves on human health
	River flooding on the urban environment
	Increase in droughts on economic activities
	Floods due to rising sea levels on the urban environment

In addition, supplementing the diagnosis with complementary analyses of other threats or expected impacts that are relevant to the municipality is recommended (see Diagnosis of adaptation in Section 4.3).

Based on the conclusions of the diagnosis, three levels of gradual action are proposed for **planning adaptation actions** based on the results of the analysis of current and future risks for each of the impact chains:

- **LEVEL OF ACTION: URGENT (I)**: urges action both on those impact chains currently at high risk and expected to increase or remain at high risk in the future, and on those currently at medium risk but at risk of increasing in the period 2011-2040 (RCP 8.5).
- **LEVEL OF ACTION: MINIMUM RECOMMENDED (I+II)**: in addition to insisting on urgent action, this level calls for additional action on those impact chains currently at high risk but expected to decrease, on chains currently at low risk but showing a trend of increased risk in the future, and on chains currently at medium risk that have remained so over time.
- **LEVEL OF ACTION: COMPLETE (I+II+III)**: includes action on all impact chains (includes the two previous levels of action).

In addition, it is advisable to consider the **combined effect** of the impact chains of **river flooding** and **rising sea levels on the urban environment**, as both are interrelated and the effect of one on the other may exacerbate the risk of the impacts

Looking at the **interaction between sectors** is also advisable, as one sector at risk may have consequences for others. To this end, using the guidelines provided in the guide *How to Improve Resilience to Climate Change in the Municipalities of the Basque Country. The case of Donostia/San Sebastian and Tolosa*¹⁶ (Ihobe, 2020) as a reference is suggested.

16. *Ihobe - Publicaciones - Cómo mejorar la resiliencia al cambio climático en los municipios del País Vasco. El caso de Donostia/San Sebastián y Tolosa. (How to Improve Resilience to Climate Change In the Municipalities of the Basque Country. The case of Donostia/San Sebastian and Tolosa),*

CURRENT RISK	FUTURE RISK (RCP 8.5 scenario and period 2011-2040)		
	INCREASE	NO CHANGE	DECREASE
HIGH	I	I	II
MEDIUM	I	II	III
LOW	II	III	III

Table 7. Proposed levels of action based on the results of the current and future risk analysis.
Source: Compiled by the author.

Energy vulnerability and poverty

Energy vulnerability and poverty have their place in local climate and energy plans, and it is no coincidence that the new Covenant of Mayors for Climate and Energy calls on municipalities to address this issue within the framework of the PACES and to include appropriate measures to alleviate this situation.

The focus of the local climate and energy plans promoted by this guide, which comprehensively deal with mitigation and adaptation, encompasses actions to minimise energy vulnerability and poverty. Therefore, it is not considered necessary to include a specific line to address this issue, but including measures aimed at mitigating this situation, either from a mitigation or adaptation approach or from a holistic approach, is suggested at an action level.

Given that this is a relatively new issue in the field of local planning, analysing how the relevant organisations and bodies are approaching this issue and identifying actions and/or success stories carried out in other municipalities, and monitoring indicators that may be inspiring, is recommended¹⁷.

3.3

Regional approach to local climate and energy plans

When to draw up a regional climate and energy plan?

One of the options that can be considered is that of drawing up local climate and energy plans of a regional nature. This option will be recommended for those regional contexts where the following factors converge to a greater extent:

- Presence of **small municipalities** (< 5,000 inhabitants) **and**, in particular, **very small municipalities** (< 2,000 inhabitants) with few technical and economic resources.
- Existence of a **regional entity** with technical and institutional leadership capacities that already plays an important role in the field of climate and energy.
- The existence of **shared and common sectors and areas of action** whose joint management could provide greater efficiency and effectiveness.

17. European Energy Poverty Observatory: <https://www.energypoverty.eu>
<http://pobrezaenergetica.info/>
<https://www.pactodelosalcaldes.eu/apoyo/pobreza-energ%C3%A9tica.html>

In terms of mitigation, **Article 14** of Law 4/2019 on Energy Sustainability in the Basque Country, which refers to drawing up Energy Action Plans, already contemplates the possibility that those municipalities with populations of less than 5,000 inhabitants may opt to join a regional plan if they deem it appropriate.

Furthermore, the regional approach to adaptation is particularly important when dealing with regional risks, such as those associated with river flooding, which require an approach that focuses on the river basin beyond the boundaries of individual municipalities.

An assessment of the vulnerability and risk of Basque municipalities to climate change (Ihobe, 2018)¹⁸ has already considered this issue and the data sheet with the results for each municipality shows the values of all the indices for the municipality, the region and the Basque Country as a whole for each of the impact chains. In addition to making it possible

to compare results, having region-wide results makes it easier to make decisions on whether certain measures need to be undertaken jointly.

Each regional entity and municipality will have to assess which regional and/or municipal approach it considers most appropriate for drawing up and implementing local climate and energy plans.

Table 8 provides general guidelines as general recommendations that can facilitate this assessment.

In general, opting exclusively for a regional climate and energy plan, without drawing up municipal plans, is highly recommended in areas with very small municipalities with a population of less than 2,000 inhabitants. The measures contained in the plan will be mainly joint, common measures headed by the regional authority, with participation required by

Potential territorial scope of a regional plan	Size of municipality (inhabitants)	Regional plan	Municipal plan
Region made up of a range of municipalities from very small to medium/large municipalities (regional townships)	< 2,000	Highly recommended	Optional
	Between 2,000 and 5,000	Recommended	Recommended
	> 5,000	Optional	Highly recommended (*) compulsory

(*): In the specific area of mitigation for city and town councils, planning for municipalities with more than 5,000 inhabitants will be compulsory due to the requirements of Article 14 of Law 4/2019 on Energy Action Plans.

Table 8. Approach in relation to drawing up regional and/or municipal climate and energy plans.

Source: Compiled by the author.

18. <https://www.ihobe.eus/publicaciones/evaluacion-vulnerabilidad-y-riesgo-municipios-vascos-ante-cambio-climatico-2>

the local councils to implement some of the measures.

In the case of those regions that feature municipalities with populations of up to 5,000 inhabitants, including municipalities with more than 2,000 inhabitants in the regional plan along with the other municipalities would be recommended. However, it is recommended that municipalities with more than 2,000 inhabitants should have their own plan. This plan may be drawn up by the municipality itself, or as a result of the process of drawing up the regional plan, from which measures of a specific nature can be extracted for each municipality.

Finally, in regions that also include municipalities with more than 5,000 inhabitants, it is highly recommended that these municipalities have their own municipal plan, in addition to the existence of a regional plan that

affects the other municipalities. In fact, with regard to mitigation for city and town councils, the provision of a plan in municipalities with more than 5,000 inhabitants will be compulsory in accordance with the provisions of Law 4/2019. However, this circumstance does not exclude the possibility that the regional entity may have a relevant role to play in the energy planning initiative, not only in the regional plan, but also in drawing up plans for municipalities. In this sense, it should be possible to incorporate the drafting of the regional plan and the municipal plans into the same energy planning initiative

What kind of measures should be incorporated in a regional climate and energy plan?

In a regional context, the measures to be incorporated into the plans could be classified into the following categories:

Category of measures	Definition	Examples
Global	Those measures whose most appropriate and effective scale of analysis, conception and execution is at a regional level, as their solution requires a global vision and action.	<ul style="list-style-type: none"> • Flood prevention in the regional river basin. • Inter-municipal mobility actions (inter-urban public transport, inter-urban cycle paths, etc.).
Common	Those measures whose scale of analysis and execution may be strictly municipal, but the joint implementation of which may optimise the technical and economic resources dedicated to them, as they are common to all municipalities.	<ul style="list-style-type: none"> • Regional waste management plan. • Draw up a protocol for preventive action in the event of heat waves.
Specific	Those measures that affect specific aspects of a particular municipality, the treatment of which at a regional level does not provide better action or save resources.	<ul style="list-style-type: none"> • Construction of cycle lanes for internal mobility within municipalities. • Increase in the green and permeable surface area of squares, public spaces and buildings in the municipality.

In regional climate and energy plans, particular attention will be paid to measures of a global and common nature, as the regional scale is ideal for dealing with these types of measures.

However, where smaller municipalities are affected by the plan, the planning process should also include the specific measures for

each municipality, as they will generally not have their own plan.

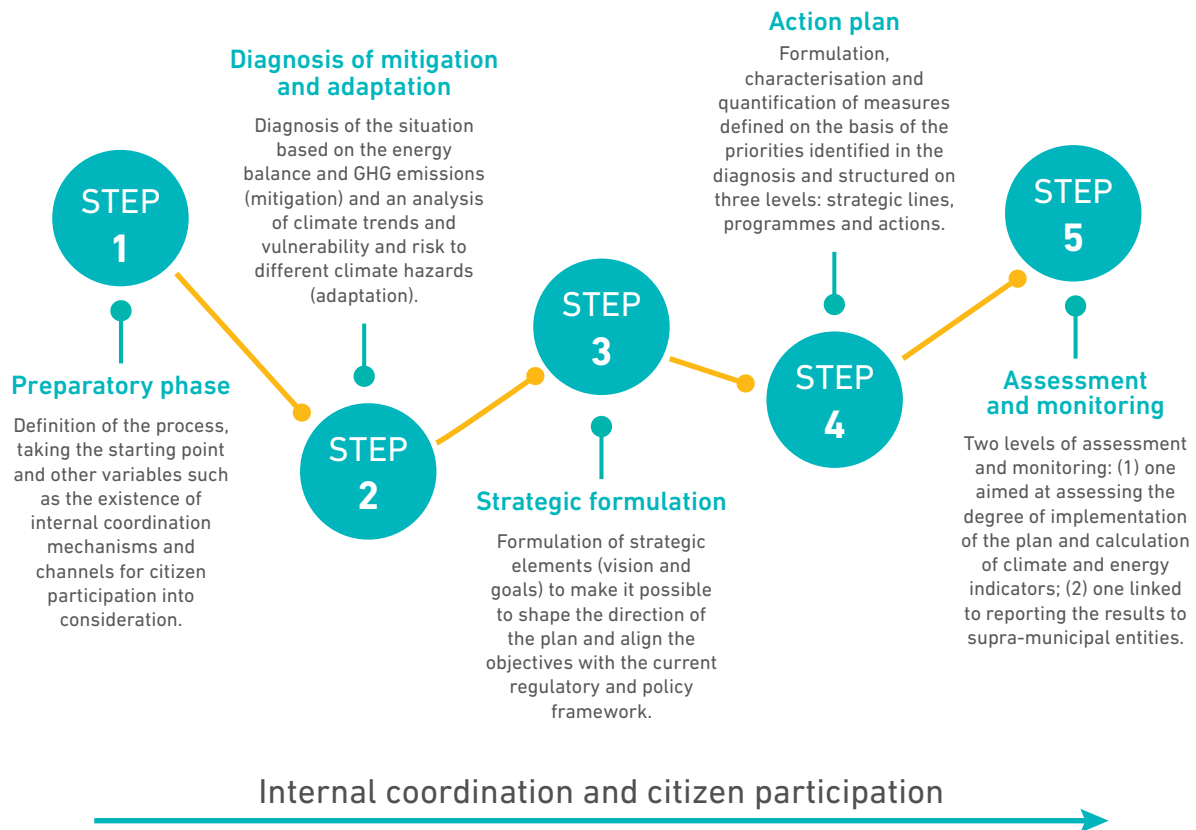
By contrast, as municipalities become larger, specific measures would be more appropriately dealt with within the framework of plans of a strictly municipal nature.

HOW TO DRAW UP A LOCAL CLIMATE AND ENERGY PLAN

4.1

Outline of work phases

The drafting of a local climate and energy plan is structured in the five steps shown in the diagram below, in which issues related to internal coordination and citizen participation have been incorporated as a cross-cutting element inherent to the whole process.



The outline of tasks to be carried out at each step can be found in Appendix 5.1.

The tools shown in **Table 9** can be used for each of these steps.

4.2

Map of tools available

The municipalities and regions of the Basque Country have tools specifically designed to tackle the different tasks associated with the process of drawing up local climate and energy plans which are part of the shared resources of the Udalsarea 2030 Network:

→ e-mugi

Computer application that facilitates the integrated management and monitoring of local sustainability plans and the Local 2030 Agenda of municipalities in the Basque Country in accordance with a proprietary methodology that includes the following tasks: assessing the degree of implementation of the plans, programming actions and calculating municipal sustainable development indicators.

→ Municipal and regional GHG inventory

An Excel tool used to calculate the GHG emissions of all sectors in the municipality or region with data provided centrally by Udalsarea 2030, including the following sectors: transport, housing, services, waste, livestock, agriculture and industry.

→ Carbon Footprint of Councils

An Excel tool used to calculate a council's or local authority's GHG emissions associated with the energy consumption of municipal buildings, public lighting and the fuel consumption of the municipal fleet.

→ Climate Change Scenario Viewer

A web application that contains information on the current climate and climate change scenarios under the RCP 8.5 scenario for the periods 2011-2040; 2041-2070 and 2071-2100 for the Basque Country.

→ Municipal Vulnerability and Risk Data Sheet

Data sheet of the results from analysing the vulnerability and risk of municipalities in the Basque Country based on four impact chains:

- Heat waves on human health
- River flooding on the urban environment
- Increase in droughts on economic activities
- Floods due to rising sea levels on the urban environment.

→ e-adapta

Tool that provides municipalities with an integrated model for climate change adaptation aligned with the management model for local sustainability policies. The tool is linked to the data sheet showing the results of the vulnerability and risk analysis and, based on this information, it makes it easier to interpret the results, plan, assess and monitor the adaptation plan based on specific indicators.

Other tools whose use is widespread among municipalities in the Basque Country but which are not part of the common resources generated within the framework of Udalsarea 2030:

→ Accounting and energy management tools

Accounting and energy supply management web applications which provide monthly energy and emissions accounting for each building, lighting panel and fleet vehicle, based on the automated upload of electricity, gas and fuel invoices for each supply point.

→ **Covenant of Mayors for Climate and Energy Form (only for member municipalities)**

Web form where the energy accounting and GHG inventory for the municipality is uploaded, together with a summary of the mitigation and adaptation measures included in the PACES. It must be completed for those municipalities that are members of the Covenant at the time the plan is finalised, and it must be updated periodically to monitor the implementation of the plan and evolution of inventories.

Table 9 shows the phase of the local climate and energy plan drafting process when each of the tools presented would be applied:

4.3

Detailed description of the tasks to be performed

STEP 1. PREPARATORY PHASE

The preparatory phase involves a number of essential preliminary tasks in order to approach the process correctly, both in terms of technical tasks and issues related to mainstreaming the process internally at a local authority level and to citizen participation.

FUNCTIONALITY OF THE TOOLS IN THE LOCAL CLIMATE AND ENERGY PLAN DRAFTING PROCESS

	DIAGNOSIS OF MITIGATION		DIAGNOSIS OF ADAPTATION		ACTION PLAN	MONITORING OF PLAN AND COMMUNICATION OF RESULTS (internal and external)			
	Municipal energy balance and GHG inventory	Energy balance and carbon footprint of councils	Analysis of historical trends and climate projections	Vulnerability and risk analysis	Mitigation and adaptation action planning	Assessing the degree of implementation of the plan	Calculation of indicators	Communication of results	PACES report*
e-mugi_ASSESSMENT	Yes	Yes			Yes				
e-mugi_INDICATORS							Yes	Yes	
Municipal and Regional GHG Inventory	Yes						Yes		Yes
Carbon Footprint of Councils		Yes					Yes		Yes
Climate Change Scenario Viewer			Yes						
Vulnerability and Risk Data Sheet				Yes					
e-Adapta				Yes					
Accounting and energy management tools		Yes			Yes		Yes	Yes	Yes
Covenant of Mayors for Climate and Energy Form									Yes

* Only for member municipalities of the Covenant of Mayors for Climate and Energy.

Table 9. Map of tools and application by drafting phase of local climate and energy plans.

Tasks

1. Definition of the starting point

It is essential to be clear about the starting point prior to drawing up a local climate and energy plan so as to optimise the process and not duplicate tasks that have already been carried out. The table below shows which of the 5 steps should be addressed depending on the starting point of the process. In some cases, it is understood that some of the tasks included in this step have already been carried out and, therefore, they have been marked with the label “partial”, while the tasks to be carried out have been detailed (the references shown here are only a sample representing different case studies of municipalities in the Basque Country) (see **Table 10**).

The time frames mentioned under the different starting points need to be clarified in order to make them easier to interpret:

- Plans with **2030 targets**: plans with measures to be implemented up to 2030 by means of which the targets set for that year are expected to be achieved.
- Plans with **targets prior to 2030**: plans with actions that do not cover the whole period up to 2030 and do not meet the level of effort required to achieve the targets for that year.

2. Identifying sources of information and compiling documentation

The first step will be to **identify and compile the main plans and studies** available in the **areas covered** by the local climate and energy plan. The following is a list of background information to be compiled:

PLANS, STUDIES AND OTHER DOCUMENTATION TO BE COMPILED

MITIGATION

- Inventory of council buildings, lighting, pumps and vehicle fleet and energy consumption associated with the council.
- Existing energy audits and studies.
- Energy studies on the potential for renewable energies.
- Initiatives to incorporate electric vehicles into the municipal fleet.
- Carbon footprint of the council for the baseline year and beyond.
- Housing regeneration and/or neighbourhood redevelopment and regeneration plans.
- Existing plans and set of actions contained therein which can be integrated into the PLCE (already implemented or pending implementation).
- Plans and studies for all sectors considered in the local climate and energy plan (mobility plans, plans to promote cycling, waste management plans, etc.).
- Studies and/or reports on fuel poverty (at a local or regional level).

ADAPTATION

- Municipal vulnerability and risk data sheet.
- Climate scenarios.
- Record of extreme events.
- Flood risk mapping (river and coastal).
- General Urban Development Plan, Special Plans, etc.
- Master Plan for Use and Management (PRUG) of protected sites
- Emergency Plans and flood response protocols.
- Preventive action protocols for heatwave events.
- List of infrastructures or actions planned in urban areas.
- Supply/sanitation infrastructure management plans.
- Local or regional plans for eradicating invasive species.
- Social and economic development policies.

STARTING POINT	STEP 1 PREPARATORY PHASE	STEP 2 DIAGNOSIS OF MITIGATION AND ADAPTATION	STEP 3 STRATEGIC FORMULATION	STEP 4 ACTION PLAN	STEP 5 ASSESSMENT AND MONITORING
No current planning framework for either mitigation or adaptation	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
Mitigation plan with targets prior to 2030 and no adaptation plan	■ ■ (review and adjustment of internal coordination and citizen participation mechanisms)	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
Mitigation plan with targets prior to 2030 with a current adaptation plan	■ ■ (revisión y review and adjustment of internal coordination and citizen participation mechanisms)	■ ■ (update diagnosis of mitigation)	■ ■ (review and update vision and goals)	■ ■ (plan mitigation actions)	– (this will depend on the assessment and monitoring system available to date)
Current mitigation plan (with 2030 targets) and no adaptation plan	■ ■ (review and adjustment of internal coordination and citizen participation mechanisms)	■ ■ (carry out a diagnosis of adaptation)	■ ■ (review vision and goals and incorporate adaptation)	■ ■ (plan adaptation actions)	– (this will depend on the assessment and monitoring system available to date)
Current mitigation plan but only for city and town councils, with targets prior to 2030 and no adaptation plan	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■ (appraise council measures still in force)	– (this will depend on the assessment and monitoring system available to date)
Current adaptation plan and no mitigation plan	■ ■ (review and adjustment of internal coordination and citizen participation mechanisms)	■ ■ (carry out a diagnosis of mitigation)	■ ■ ■ (review vision and adaptation goals, where they exist, and incorporate mitigation)	■ ■ (plan mitigation actions)	– (this will depend on the assessment and monitoring system available to date)

■ ■ ■ All tasks need to be carried out.

■ ■ Some tasks have already been carried out, others have not (those that need to be carried out are listed).

Table 10. Tasks to be completed in order to draw up a local climate and energy plan based on the starting point.

3. Setting up an internal working group or commission involving all areas linked to the process

In this preparatory phase, it is advisable to set up a working team with technical and political personnel in which all municipal and/or regional areas whose activity is related to the areas of work in the local climate and energy plan are represented.

In this regard, Article 9 of Law 4/2019 establishes that public administrations must set up **energy sustainability commissions** and confers specific functions associated with improving the inventory, monitoring compliance with the law and the progress of the energy action plan.

It is considered that this Commission could be the working team responsible for tackling the process of drawing up a local climate and energy plan. In any event, it should include personnel who are more closely associated with the area of climate change adaptation and whose participation is considered necessary, for example, social services.

The following is a generic list of municipal areas or departments, and regional entities that, a priori, could form part of this working group:

→ Municipal departments

- Environment (manager).
- Urban development / town planning.
- Mobility.
- Maintenance.
- Works.
- Social services.
- Civil protection.
- Citizen participation.

→ Regional entities

- Local Development Agency.
- Rural Development Association.
- Community Association for Waste.

This proposal for configuring an internal coordination mechanism was made with a medium/large sized municipality in mind. Small municipalities, and mainly those that will approach the process from a regional perspective, should rely on their supra-municipal structures of reference to address the areas of work in the local climate and energy plan.

4. Design of an internal and external communication plan

Highlight the most important communication milestones, target audiences and channels to be used.

It is also advisable to design a communication plan in which the main internal and external communication milestones associated with each of the phases of the project are recorded from the start of the process, detailing the following information:

- Communications actions to be carried out.
- Objective and target audience.
- Coordinator.
- Date.
- Channel.
- Other useful information.



How can you incorporate citizen participation into the preparatory phase?

In this phase, putting together an initial outline of the participatory actions planned throughout the process is suggested, which may be of a different nature depending on the objectives pursued during each phase (perception surveys, group interviews, open sessions, sessions with specific sectors, etc.).

The main aim of citizen participation in the preparatory phase of the project is primarily informative, to raise awareness of the process and the objectives to be achieved. To this end, it is advisable to rely on the participation channels that city and town councils already have and to assess the need to open additional channels (on-line modality) to enable other actors to take part, or whose use is necessary in circumstances that prevent face-to-face activities from being carried out.

During this phase, it is also advisable to draw up an initial map of key actors, which can be adjusted and added to during the different phases.

Mapping of key actors and definition of levels of involvement

By way of example, the table below shows the different actors that can be called upon to take part in the process of drawing up a local climate and energy plan and the different levels of participation that can be defined for each of them at the outset of the planning process specific to each municipality:

		LEVEL OF PARTICIPATION			
		ON AN INFORMATIVE LEVEL	SPECIFIC ENQUIRIES	DEBATE AND SHARED REFLECTION	CO-DESIGN OF ACTIONS
ACTORS CALLED UPON TO PLAY A ROLE	Neighbourhood associations				
	Retailers				
	Environmental associations				
	Education centres				
	Research centres				
	Osakidetza (Basque health service) (corresponding Basque Integrated Healthcare Organisation)				
	Companies and business associations				
	General public				
	Youth and senior citizens' associations				

STEP 2. DIAGNOSIS OF MITIGATION AND ADAPTATION

Contextualisation of municipalities in the area of climate change

Compiling relevant information on the physical and geographical context of the municipality, and on demographic and socio-economic variables (those elements that condition or may condition local climate and energy action) is recommended to make it easier to subsequently interpret the results of the inventories and the vulnerability and risk analysis and target measures correctly.

Tasks

Compiling and analysing information

In particular, compiling and analysing information on the following aspects is suggested:

Territorial aspects:

- Geographical location.
- Land use.
- Existing urban plans (general urban land-use plans [PGOU], special plans).
- Building structure.
- Mobility plans.
- Basic characterisation of mobility.

Social and economic aspects:

- Demographics
- Existence of vulnerable groups
- Relative contribution of the different economic sectors.

Environmental aspects (waste and water):

- Waste management system
- Supply and sanitation system.

Diagnosis of mitigation

The diagnosis of mitigation will be based on the GHG emission inventories of the municipality and the city or town council (or regional tools, in the case of regional approach processes) and on the specific energy accounting of buildings and lighting panels. This will help to identify those sectors with the greatest impact on consumption and emissions and that show a more negative trend.

Scope

The diagnosis can be carried out in greater or lesser depth, including an analysis only for the municipal sectors covered by the GHG inventories, or by adding a more in-depth analysis for city and town councils. For this sector, a specific level of analysis of the energy consumption and characteristics of individual buildings can be considered.

Tasks

1. Energy balance and GHG inventory of the municipality's sectors



GHG inventory

The Udalsarea 2030 inventory tool will be used to produce the energy balance and GHG emissions inventory.

The following sub-tasks will be considered:

- Calculating the energy balance of municipal sectors
- Calculating the emissions inventory of municipal sectors
- Interpreting the results
- Establishing a baseline.

Whenever possible, it is advisable to work with a sufficiently long time series of data to visualise long-term trends (e.g. since 2010).

It will also be advisable to have energy consumption and GHG inventory data from the most recent calendar year possible in order to be able to subsequently diagnose and quantify the plan's measures as accurately as possible.

Once the historical series of GHG emission inventories has been calculated, the results will be interpreted based on their evolution and distribution by sectors and sources, both in terms of energy consumption and GHG emissions.

Based on the inventory calculated, it will be possible to **establish the baseline** against which the consumption and emission reduction targets to be achieved by 2030 can then be defined.

Guidelines for defining the baseline are provided in the section on calculating scenarios in Appendix 5.3.

2. Energy balance, GHG inventory and carbon footprint of councils



Carbon footprint of Councils

The carbon footprint tool will be used to produce the GHG balance and inventory of each council.

The following sub-tasks will be considered:

- Calculating the energy balance of councils.
- Calculating the carbon footprint of councils.
- Interpreting the results.
- Establishing a baseline.

As in the case of the inventory of all municipal sectors, whenever possible, it will be advisable to work with a sufficiently long time series of data to visualise long-term trends and with data from the most recent calendar year possible.

Similarly, once the historical series of GHG emission inventories has been calculated and integrated, the results will be interpreted based on their evolution and distribution by sub-sectors of the city or town council (buildings, lighting and municipal fleet) and by sources, both in terms of energy consumption and GHG emissions.

3. Energy analysis of municipal facilities

The following sub-tasks will be considered:

- Energy accounting of the municipal building stock, lighting and fleet.
- Compilation of energy information.
- Calculation of energy efficiency indicators and benchmarking.
- Identification of potential energy savings and renewable generation.

It will be essential to carry out **specific energy accounting** for the most recent calendar year, so that the formulation and calculations of energy and economic savings associated with the measures and repayment of these measures are as accurate as possible.

Accounting will be carried out **for each building, including all energy sources** used, even self-consumption. The only way to be able to formulate measures with a certain degree of rigour in terms of calculating costs, savings and repayment is by providing accounting for each building.

Energy accounting should be carried out by compiling information on energy bills for all energy sources (electricity, gas and other fuels) and then adding them together using Excel spreadsheets or specific energy accounting

tools. This task can build on the work already carried out by the council to comply with Article 11 of Law 4/2019 on energy inventories. In those cases where the municipality has not yet produced the inventories, it may be possible to produce these inventories when drawing up the plan itself in order to comply with the aforementioned article in Law 4/2019.

In addition to energy accounting, compiling information on the municipal building stock, public lighting and fleet will be essential. This information should be compiled by requesting it from municipal decision-makers, by collecting data from existing studies and energy audits, or in some cases, resources permitting, by physically visiting some of the most important buildings.

In the case of buildings, Law 4/2019 expressly requires energy audits to be carried out in buildings with more than 70 kW of installed thermal energy and public lighting. To this end, a significant part of the energy analysis and subsequent measures to be proposed can be obtained directly from the audits already carried out. However, part of the building stock will not be audited, either because audits are not compulsory for these buildings, or because not all audits have been completed at the time of the start of the plan, or because audits are no longer considered to be in force. This situation may also sometimes apply to public lighting. Therefore, it may be necessary to carry out energy compilation and analysis tasks in addition to the information that may be provided by existing audits.

In the case of buildings, the information to be compiled will be: physical characteristics (floor areas, building envelope...), equipment and installations (lighting, heating, cooling, domestic hot water and electrical equipment), renewable generation (photovoltaic, solar thermal or other sources) and type of use and management.

Efficiency ratios and potential energy savings will be calculated based on the energy consumption and energy information of the buildings, and then used to prioritise the buildings on which to act and the most cost-effective specific measures to be implemented.

In the case of public lighting, it will be necessary to identify the lighting technology available in the municipality and quantify the relative contribution of each in terms of overall consumption. It will also be necessary to understand the regulatory and management systems in order to identify areas that can be further improved.

In the case of the municipal fleet, it would be advisable to have the current distribution of consumption by energy sources and an inventory of the vehicle fleet by fuel type. Based on this information, it will be possible to define and determine the scale of measures for renewing the vehicle fleet in order to achieve the full transition to alternative sources other than fossil fuels by 2030.

Diagnosis of adaptation

The diagnosis of adaptation will be based on a **climate risk analysis** of the municipality that will make it possible to identify the most critical climate threats and the sectors on which the principal impacts will be felt.

The risk assessment methodology for municipalities in the Basque Country is in line with the conceptual framework set out in the **fifth Intergovernmental Panel on Climate Change (IPCC) Report on Impacts, Adaptation and Vulnerability** (IPCC, 2014) which views risk as a combination of **threat, exposure and vulnerability**, the latter being analysed through variables associated with **sensitivity** and **adaptive capacity**.

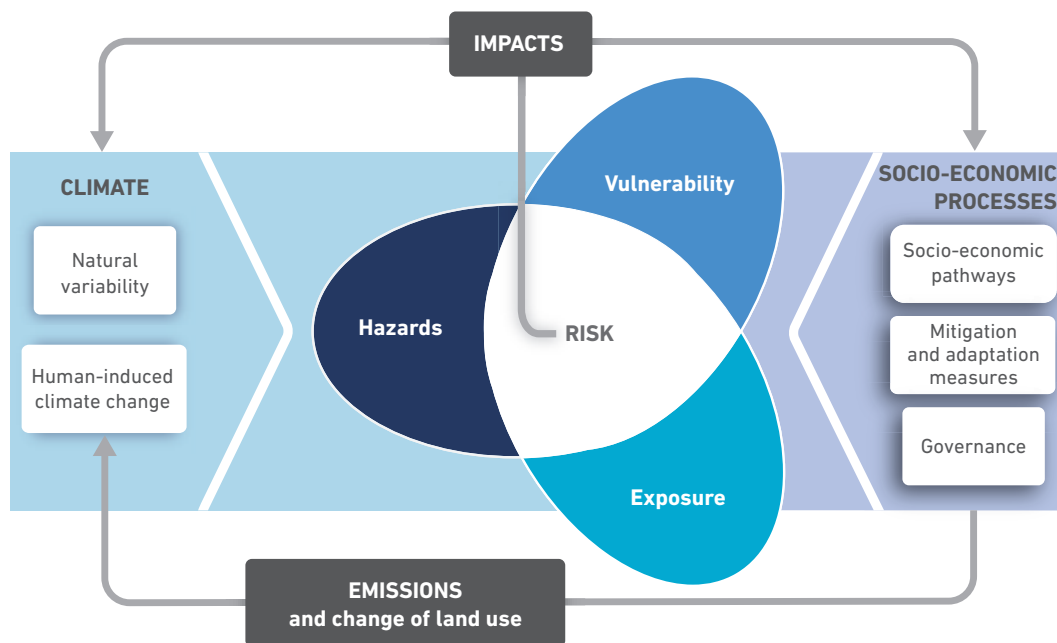


Figure 7. Conceptual framework of reference for the methodology for assessing the vulnerability and risk of municipalities in the Basque Country to climate change. Source: IPCC, 2014.

The definitions of each of the components of this conceptual framework for analysing the vulnerability and risk of municipalities are presented below:

● Threat

The potential occurrence of a natural or human-induced physical event or trend, or a physical impact, that may cause loss of life, injury or other negative health effects, and damage and loss to property, infrastructures, livelihoods, service provision, ecosystems and environmental resources.

● Exposure

The presence of people, livelihoods, species or ecosystems, environmental functions, services and resources, infrastructure, or economic, social or cultural assets in places and environments that could be affected.

● Sensitivity

The degree of adverse or beneficial effects of climate variability or change on a system or species. The effect may be direct (e.g. a change in crop yield in response to a change in average temperature, or the range or variability of temperature) or indirect (e.g. damage caused by an increase in the frequency of coastal flooding due to rising sea levels).

● Adaptive capacity

The capacity (combination of available strengths, attributes and resources) of systems, institutions, humans and other organisms to prepare for and take action to adapt to potential damage, take advantage of opportunities and respond to consequences.

● Vulnerability

The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to respond and adapt.

● Risk

The potential for consequences when an element of value is at stake and both the occurrence and degree of an outcome are uncertain. Risk results from the interaction of vulnerability (of the system affected), its exposure over time (to the hazard/threat), and the hazard/threat (climate-related) and the likelihood of it occurring.

The **methodological notes** below detail an analytical sequence that is intended to facilitate the understanding of each of the components of vulnerability and risk analysis described above.

Scope

The diagnosis can be carried out in greater or lesser depth, based exclusively on a multi-criteria analysis of indicators or by accompanying it with spatial modelling to obtain detailed spatial information that can be very useful in the planning phase, which is particularly recommended for medium/large municipalities.

This approach is consistent with the methodological guidelines provided by the Covenant

of Mayors for Climate and Energy, which distinguishes between these two approaches to tackle vulnerability and risk analysis based on the size of the municipality.

Furthermore, with regard to the climate threats and impacts to be analysed, it should be noted that all municipalities in the Basque Country have the same starting point, which are the results of the vulnerability and risk analysis carried out for four impact chains (see Section 3.2). Nevertheless, it is recommended that those municipalities where, a priori, it is expected that there may be risks associated with other impacts that have not been analysed, should carry out additional analyses to complete the diagnosis of adaptation.

METHODOLOGICAL NOTES - DIAGNOSIS

Risk assessment analytical sequence (adapted to the OECC-Spanish Climate Change Office's Guide for Preparing Local Climate Change Adaptation Plans, 2016¹⁹)

How may the climate change?

A change in the patterns of extreme events (heatwaves, torrential rain, flooding, etc.) is envisaged, as well as in the climate conditions and their associated variables (maximum, minimum and average temperatures, precipitation regime, etc.). This change in climate patterns, expressed in terms of probability of occurrence, is what is known as the **threat**.

How may a certain territory or system (natural, urban, human, etc.) be affected?

A threat in itself does not necessarily lead to an adverse event. It will depend on the exposure, in other words, on the existence of recipients (people, livelihoods, ecosystems, environmental resources and services, cultural, social and economic infrastructures and assets) that may be affected. The effects of a specific threat (or several threats) on a recipient would be the **impacts** in this case.

What is the susceptibility of the exposed territory or system? It is prepared to respond to the damage?

The magnitude of the impact is going to depend, in turn, on the vulnerability. That refers to the predisposition of the territory, its systems or sectors and elements or species of to being affected by a climate threat.

Vulnerability is explained by two components: the **sensitivity** or susceptibility to the damage (for example, a high percentage of older people in a neighbourhood) and the adaptive **capacity** or ability to face and overcome the effects (continuing with the above example, the existence of a good social care network in charge of monitoring and looking after vulnerable people).

What is the likelihood of being affected? To what extent can the impacts and effects be critical?

By combining all the factors, the **risk** is defined as a function of the probability of occurrence of an event and its impact, according to the vulnerability of the system in question.

19 https://www.adaptecca.es/sites/default/files/documentos/guia_local_para_adaptacion_cambio_climatico_en_municipios_espanoles_vol1.pdf

Tasks

1. Analysis of historical trends and climate projections

The following sub-tasks will be considered:

- Analysis of historical trends and extremes.
- Analysis of future climate projections.



Scenario viewer

In order to analyse historical trends and climate projections for a municipality, using the information provided by the Climate Change Scenarios and Data Series Viewer for the Basque Country, developed by Ihobe²⁰ is recommended.

The viewer is fed by the high spatial resolution (1km x 1km) climate atlas generated for the whole of the Basque Country based on the results of calculating *high-resolution climate change scenarios for the Basque Country*.

The following information can be accessed via the viewer:

- **HISTORICAL TRENDS:** climate variables for precipitation and temperature for the period 1971-2015.
- **CLIMATE PROJECTIONS:** climate projections for the 21st century, for the same climate variables, generated for the RCP4.5 and 8.5 scenarios for three time periods: i) 2011-2040, ii) 2041-2070 and iii) 2071-2100.

We propose analysing the information for the **RCP 8.5 scenario** and for the following time periods:

- Reference period (observed data): 1971-2000
- Current-short term (projections): 2011-2040
- Future-medium term (projections): 2041-2070
- End of century (projections): 2071-2100.

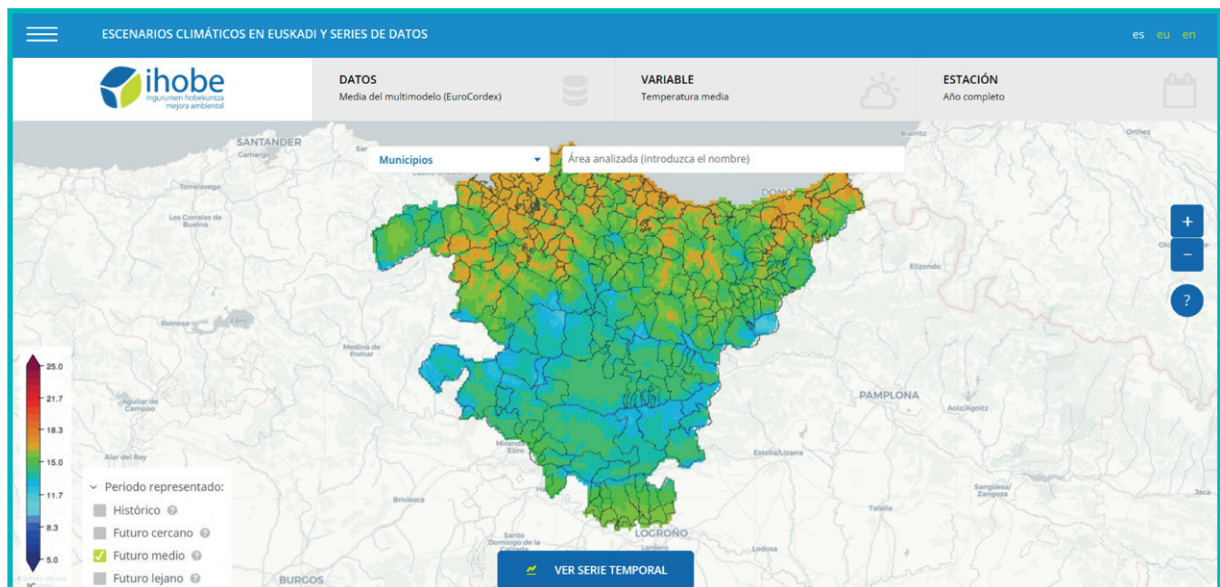


Figure 8. Image of the Climate Change Scenario Viewer and Data Series for the Basque Country.

20 http://escenariosklima.ihobe.eus/#&model=multimodel&variable=tas&scenari=rcp85&temporalFilter=YEAR&layer=s=MUNICIPALITIES&period=MEDIUM_FUTURE&anomaly=RAW_VALUE

The table below shows a selection of variables that would make it possible to analyse temperature and precipitation, considering both trend values and extremes for the 4 time periods:

2. Assessing vulnerability and risk to climate change

The following sub-tasks will be considered:

- Characterisation of current vulnerability and risk.
- Characterisation of future vulnerability and risk.
- Interpreting the results
- Identification of priority areas for action.



Vulnerability and risk data

In the absence of a specific study, using the **data sheet** prepared by Ihobe which summarises each municipality is suggested as a starting point for assessing vulnerability and risk (see **Figure 9**).

The objective of this analysis is to characterise **current and future risk**, which will make it possible to identify priority areas for action in the planning phase. To this end, the **changes expected** in each of the impact chains will be analysed **for each of the RCP scenarios** and the **four time frames**.



e-adapta

The e-adapta tool could prove useful in performing this analysis and viewing the results on the expected change in risk in the short term (2011-2041), which fits in with the period for which the local climate and energy plans will be prepared.

It is also advisable to complete the vulnerability and risk analysis with additional analyses to make it possible to approximate current vulnerability and risk to other climate threats and potential impacts on key sectors of the municipality.

Below is an example of a list of indicators for the analytical sequence for analysing vulnerability (sensitivity and adaptive capacity) and

TREND	EXTREMES
TEMPERATURE	
<ul style="list-style-type: none"> • Maximum temperature • Minimum temperature • Average temperature 	<ul style="list-style-type: none"> • Tropical nights ($T_{min} > 20^{\circ}\text{C}$). • Heat waves, frequency, duration and intensity. • Number of warm/hot days. • Days with frost/ice ($T_{max} < 0^{\circ}\text{C}$).
PRECIPITATION	
<ul style="list-style-type: none"> • Daily precipitation • Days with rain $Pr \geq 1\text{mm}$ 	<ul style="list-style-type: none"> • Days with very intense precipitation $Pr \geq 20\text{ mm}$. • Days with intense precipitation $Pr \geq 10\text{ mm}$. • Maximum mean precipitation for $T=10$ years. • Maximum precipitation accumulated over 5 days. • Maximum mean precipitation for $T=50$ years. • Days of drought (maximum no. of consecutive dry days ($Pr < 1\text{mm}$)).

Cuadro resumen de vulnerabilidad y riesgo del municipio ante el cambio climático

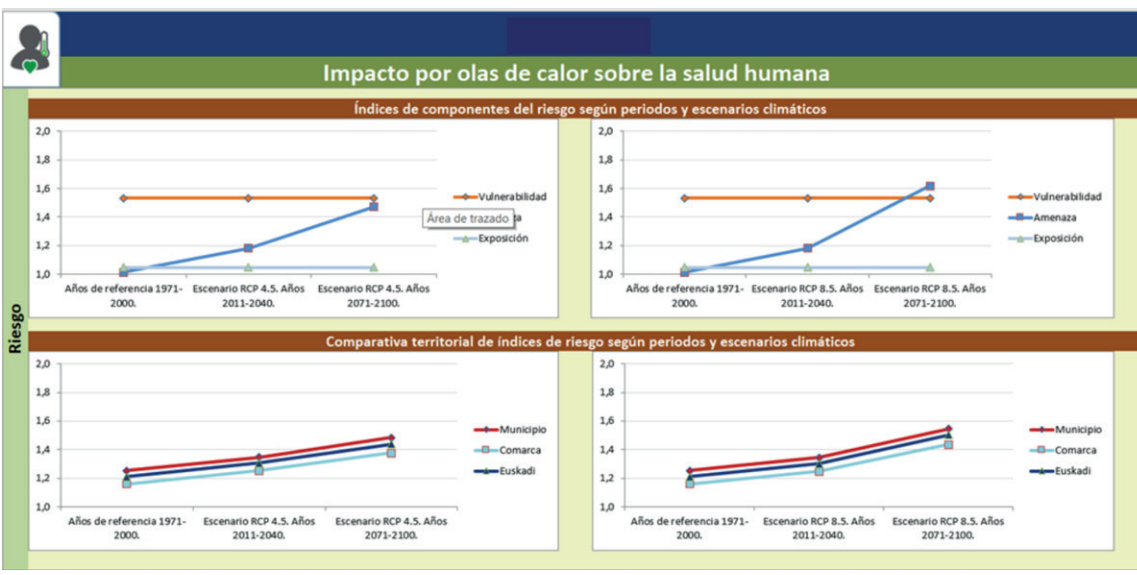
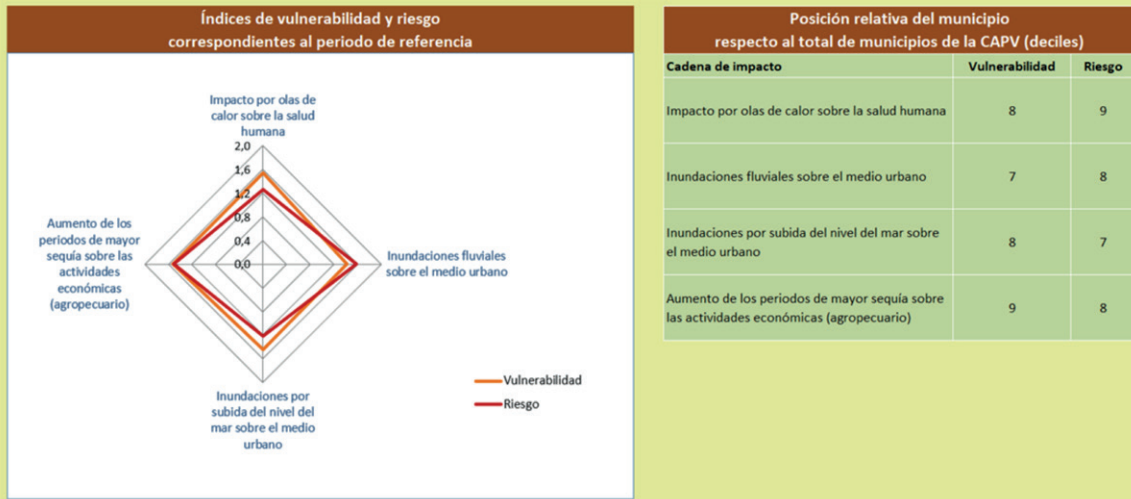


Figure 9. Extract of a data sheet summarising the vulnerability and risk of a municipality in the Basque Country.

Current relative position of the municipality in relation to all municipalities in the Basque Country (deciles)			Projected change in risk (RCP 4.5, 2011-2040) Best climate scenario	Projected change in risk (RCP 8.5, 2011-2040) Worst possible climate scenario
Impact chain	Vulnerability	Risk		
Impact of heat waves on human health	1	10	Increase	Increase
River flooding on the urban environment	8	10	No change	No change
Floods due to rising sea levels on the urban environment	2	4	Increase	Increase
Increase in periods of severe drought on economic activities (agriculture and livestock)	2	1	No change	Increase

Table 11. Table of results for the analysis of the current and future risk of a municipality extracted from the results report using the e-adapta tool.

THREAT: Landslides due to torrential rain

IMPACT	EXPOSURE			
	INDICATOR	RESPONSE OPTIONS	ASSESSMENT	
	Are there any infrastructures located on slopes (roads, power lines, telecommunications) or at the base of a slope?	Yes, a lot		
		Yes, some		
No				
VULNERABILITY	SENSITIVITY			
	INDICATOR	RESPONSE OPTIONS	ASSESSMENT	
	Are there roads in the municipality with slopes steeper than 15%?	Most of them		
		Half of them		
		Not many		
	ADAPTIVE CAPACITY			
	INDICATOR	RESPONSE OPTIONS	ASSESSMENT	
	Has a water channelling system been installed on hillsides or slopes?	Yes		
		Yes, in part		
		No		

THREAT: Fires

		EXPOSURE			
IMPACT	INDICATOR	RESPONSE OPTIONS	ASSESSMENT		
	Are there buildings close to wooded areas?	Yes, a lot			High
		Yes, some			Medium
		No			Low
SENSITIVITY					
VULNERABILITY	INDICATOR	RESPONSE OPTIONS	ASSESSMENT		
	Are there power lines running through forests?	Yes, more than 2			High
		Yes, less than 2			Medium
		No			Low
ADAPTIVE CAPACITY					
VULNERABILITY	INDICATOR	RESPONSE OPTIONS	ASSESSMENT		
	How well have roads and tracks been maintained?	Properly and on a regular basis			Low
		Partially			Medium
		Not carried out			High

risk to threats of **landslides associated with torrential rains and fires**²¹ (the complete analytical sequences with all the indicators needed to assess the risks associated with these two threats can be found in Appendix 1). The answer to most of the questions in the analytical sequence will be based on

expert knowledge, although there are some questions that require a search for available data or referral to other sources. It would be interesting for this exercise to be carried out by a commission or working group with representatives from different municipal areas or departments.

21. <https://fundacion-biodiversidad.es/es/cambio-climatico-y-calidad-ambiental/proyectos-convocatoria-ayudas/proyecto-hadas-pact>



How can you incorporate citizen participation into the diagnosis phase?

Citizen participation in this phase of the project is essential as it facilitates shared reflection and the interpretation of data and variables that require it based on expert and citizen criteria. This becomes even more important in the field of adaptation due to the nature of the issues to be analysed.

In this sense, it is advisable to invite people of reference in the municipality, either because they have specific knowledge that can add value and be of interest, or because of their ability to reach other people and contribute to disseminating the work.

Example of an analytical sequence for shared reflection on the vulnerability and risk of the municipality to two climate threats²²

HOW IS CLIMATE CHANGE AFFECTING US?			
Threat	Exposure	Vulnerability	
		Sensitivity	Adaptive Capacity
Rising temperatures and heat waves	Identification of people and elements exposed to this threat.	<p>Are some people particularly vulnerable? (ageing population, children, etc.).</p> <p>Are there specific areas where the lack of trees or green spaces accentuates the effect of high temperatures?</p>	<p>Is there enough shade?</p> <p>Are there sufficient sources of drinking water?</p> <p>Are the playgrounds where children play protected?</p>
Increase in torrential rainfall events	Identification of people and elements exposed to this threat.	<p>Are there areas of the municipality that are particularly vulnerable?</p> <p>Is there housing in these areas?</p> <p>Are the people who live in these areas more vulnerable?</p> <p>Are there any economic activities that may be affected?</p>	<p>Are there warning systems in place to detect the threat of the river flooding?</p> <p>Have any actions been taken to reduce the impact of flooding?</p>

22. http://www.navarra.es/home_es/Temas/Medio+Ambiente/Sostenibilidad/Red+NELS.htm

STEP 3. STRATEGIC FORMULATION

The strategic nature of local climate and energy plans means that, once the diagnosis has been carried out, a period of reflection is advisable. prior to drawing up the action plan. The aim of this reflection is to **agree on the course of action and goals to be achieved by implementing the actions**, and to provide the plan with elements to tie it into other municipal policies and plans.

In this regard, the Local 2030 Agenda is particularly relevant as an integrating framework for local action on climate and energy, which Country is being promoted in the Basque through the Udalsarea 2030 Network. For this reason, the following guidelines and recommendations for approaching the strategic formulation of the plan are based on the *Local 2030 Agenda. How to address Sustainable Development Goals from local level*²³.

Tasks

1. Formulating the vision

The vision is a synthetic statement by means of which the intended course of action is defined in order to progress towards achieving the plan's objectives.

- **Time horizon:** the time horizon of the plan would be up to 2030 as this is the reference year for both climate and energy policies and for achieving the Sustainable Development Goals in the framework of the 2030 Agenda. Nevertheless, it would be advisable for the vision to be formulated with a view to 2050 and, therefore, accommodate concepts such as climate neutrality.
- **List of keywords:** it would also be advisable for the vision to incorporate keywords and concepts associated with climate and energy policies and for these to be in line with

the terminology used in the 2030 Agenda. The following are suggested words to consider:

- Planet.
- Mitigation.
- Adaptation.
- Vulnerability.
- Climate risk.
- Resilience.
- Fair ecological/energy transition.
- Affordable and clean energy
- Climate action.
- Climate neutrality.
- People.
- Energy vulnerability.
- Self-consumption/personal use.

In addition, it is important for the vision to include other concepts and elements that are unique to the municipality, thereby making it possible to represent a specific reality and differentiate it from plans for other municipalities.

- **Other issues:** it is advisable to articulate an integrated narrative, i.e. one that reflects a coordinated and complementary response in terms of mitigation and adaptation.

2. Formulating goals

Goals are usually set in the form of quantitative objectives, although in cases where quantification is not possible, qualitative goals can also be set.

In this regard, a distinction should be made between mitigation and adaptation goals:

- Goals associated with **mitigation** will be based on the policy and regulatory framework currently in force or expected to be

23. <http://www.udalsarea21.net/Publicaciones/Ficha.aspx?IdMenu=892e375d-03bd-44a5-a281-f37a7cbf95dc&Cod=da84a23e-22c2-40ce-bc52-308ed11a34bc&Idioma=en-GB&Tipo=>

approved in the short term, which has already set specific targets to be achieved in terms of greenhouse gas emission reductions, energy efficiency and the incorporation of renewables:

- A reduction of at least **40%** in greenhouse gas emissions.
 - Renewable generation in local government of **32%** of its electricity and heat consumption.
 - A reduction of at least **35%** in energy consumption by city and town councils.
- Goals linked to adaptation will also be based on the political and regulatory framework currently in force, primarily defined by the **Basque Country's Climate Change Strategy, Klima2050**, although the objectives in this area are not easily quantifiable:
 - Improve the resilience of the region.
 - Increase the resilience of the natural environment.
 - Increase the resilience of the primary sector and reduce its emissions.
 - Anticipate the risks.
 - Promote innovation, improvement and knowledge transfer.

How can you incorporate citizen participation into strategic formulation?



Participation could be incorporated in this phase of the project, either through face-to-face activities or by incorporating inputs gathered in the diagnosis phase, from which words and concepts can be extracted to provide a uniqueness to the vision and allow citizens to become more involved in the plan.

STEP 4. ACTION PLAN

Scope

The Action Plan will be based on the conclusions of the diagnosis, focusing action on those areas identified as priorities. Based on this consideration, and always ensuring traceability with the conclusions of the diagnosis, the result could be a balanced plan or, conversely, a plan that gives greater weight to the area of mitigation or adaptation.

The criteria for prioritising and defining the specific scope by sector and thematic area and the effort to be made in each of them are described in Section 3.2.

Tasks

1. Drawing up the outline of the action plan



e-mugi (assessment)

Articulating the plan according to the structure of the action plans for sustainability (strategic line-programme-action) is recommended).

STRATEGIC LINE



As a step prior to formulating actions in the plan, existing actions in other planning frameworks that fulfil the objectives of the climate and energy plan will be identified. Good practices and success stories from other municipalities with similar characteristics will also be analysed, which, depending on the case, could be directly replicated or serve as a source of inspiration.

For the area of adaptation, if there has been no previous planning framework in this area, it is very likely that there is no plan in place

containing specific adaptation actions. However, it may be the case that actions have been planned with other objectives or from other approaches but with a clear impact on the municipality's adaptation to climate change. These are the so-called "adaptation assets", the identification and incorporation of which into the outline of the plan is recommended.

2. Characterisation of actions

When it comes to characterising actions, filling in common and specific characterisation fields is recommended, depending on whether the action contributes to mitigation or adaptation. Based on this consideration, a record sheet is presented below with the fields that it is recommended should be filled in as a minimum:

Code:		Title of the action:	
STRATEGIC LINE:			
PROGRAMME:			
Description			
Primary Decision-Maker		Secondary Decision-Maker	
Start year	End year	Priority (High/Medium/Low)	
Cost		Funding	
SDG to which it contributes		Continued (yes or no)	
Origin of the action			
Comments			
SPECIFIC PART - ACTIONS MITIGATION			
Sector			
Area of action*			
Policy instrument*		Contributes to adaptation (yes or no)	
Energy saving (kWh)		Renewable energy production (kWh)	
Emissions avoided (tCO ₂)		Cost/tCO ₂	
Estimated economic saving		Simple Rate of Return	
SPECIFIC PART - ACTIONS ADAPTATION			
Sector*:			
Type:			
Contributes to mitigation (yes or no):			
Impact chain affected:			
Target population groups:			

(*): To be incorporated only in the event that the local climate and energy plan is intended to be aligned with PACES in the framework of the Covenant of Mayors for Climate and Energy to which the council has signed up.

3. Calculation of the overall impact of the Plan

Calculations on the reduction of consumption, an increase in the council's generation of renewables and a reduction in GHG emissions will be required, as well as further calibration of the scope and intensity of the measures until the improvement targets for 2030 are reached.

As far as mitigation is concerned, the scope and intensity of measures included in the local climate and energy plan should be sufficient to achieve the target of a 40% reduction in GHG emissions across all sectors of the municipality by 2030 compared to the baseline year. In addition, it should consider sufficient measures to achieve a 35% reduction in energy consumption by the council by 2030 and renewable generation in municipal facilities equivalent to 32% of the local administration's energy consumption.

In order to do so, it will first be necessary to calculate the amount of reductions in energy consumption and emissions that the implementation of the plan should deliver, as well as the additional amount of renewable generation that it should promote.

This calculation will be based on consumption and emissions in the baseline year, current consumption and emissions, and the forecast evolution of these up to 2030 if the plan is not implemented. Appendix 5.3 sets out the methodology to implement it in detail.

Based on the calculated volume of reduction in consumption, emissions and increase in renewables to be contributed by the plan, the plan should include as many measures and their intensity as necessary to achieve this.

Therefore, once the quantification of the impact of the first version of the measures to be incorporated in the plan is available, it should be compared against the volume of reduction in consumption, emissions and increase in renewables to be provided by the local climate and energy plan. If the impact of the plan is below the required target impact, it will be necessary to iteratively increase the number of measures and their intensity until the target impact is reached.

METHODOLOGICAL NOTES - PLANNING

Alignment with the scope and focus of the Energy Action Plans resulting from Law 4/2019

The following action types which have been proposed for inclusion in the Energy Action Plans (see Technical Guide to Law 4/2019 on Energy Sustainability of the Basque Country²⁴) should be taken into consideration when drawing up the local climate and energy plan, with regard to the local council sector:

- Control and evolution of energy consumption.
- Renewal of installations, equipment, fleets and vehicles.
- Sustainable mobility.
- Energy rating of existing buildings
- Energy rating of new buildings and existing buildings undergoing major refurbishment.
- Energy audits of buildings and installations.
- Training plans.
- Awareness-raising plans.

24. <https://www.euskadi.eus/sostenibilidad-energetica-de-la-comunidad-autonoma-vasca/web01-a2energi/es/>



How can you incorporate citizen participation into the formulation phase of the action plan?

Citizen participation during this phase of the project is intended to achieve the involvement of social and economic actors and the general public in the co-design of certain actions which, due to their nature and taking into account who the final beneficiaries will be, will require citizen involvement from the conceptualisation and design phase.

Co-design of actions based on benefits, barriers and actors who will be involved

SOCIAL BENEFITS	ECONOMIC BENEFITS	ENVIRONMENTAL BENEFITS
<ul style="list-style-type: none">• Easier to meet people and build social relationships.• Increase in recreational/leisure space.• Education on the environment and the values of citizenship.• Greater safety for people.• Benefits to health.	<ul style="list-style-type: none">• Creation of employment and opportunities for local businesses.• Attraction of tourism.• Increase in land and property values.	<ul style="list-style-type: none">• Lower energy consumption.• Improvement in air quality (lower pollution levels).• Improvement in soil quality, stability and reduction of erosion.• Improvement in acoustic quality (lower noise levels).• Improvement in water quality.• Increased carbon storage (emission offsets).• Improvement in biodiversity.
BARRIERS TO IMPLEMENTATION		
<ul style="list-style-type: none">• Economic cost of actions.• Social disputes.• Technical barriers.• Lack of technological maturity.• ...		
ACTORS WHO WILL BE INVOLVED		
<ul style="list-style-type: none">• Citizenship.• Local companies.• Research centres.• Educational community.• ...		

STEP 5. ASSESSMENT AND MONITORING

Scope

The assessment and monitoring of local climate and energy plans may respond to different needs depending on the commitments made by the municipality and regulatory requirements.

In any event, there is a first level common to all municipalities associated with managing public plans and policies. This first level of plan management provides information on the status of actions and the results obtained, as well as resources for accountability and galvanising internal coordination and citizen participation mechanisms.

Based on this consideration, the assessment and monitoring of local climate and energy plans can be carried out at two levels: basic and complementary.

- **BASIC LEVEL OF MANAGEMENT:** management of local climate and energy plans based on the Udalsarea 2030 model of assessing and monitoring local sustainability plans.
- **COMPLEMENTARY LEVEL OF MANAGEMENT:** complementary tasks linked to the need to report progress and results.

It is recommended that local climate and energy plans are managed in accordance with the assessment and monitoring model developed for local sustainability plans in the Basque Country in order to be able to use a consolidated methodological framework and make use of the tools designed for this purpose.

This model includes the following **tasks** and has the following tools:

Tasks

1. Assessing the degree of implementation of the plan



e-mugi (assessment)

Assessment of the degree of annual implementation of the plan in accordance with a standardised and common methodology for all Udalsarea 2030 municipalities that facilitates a global and partial reading of the results, and an analysis of the contribution to SDGs.

2. Indicator-based performance monitoring



e-mugi (indicators)

Annual calculation of the Municipal Indicators of Sustainable Development, analysis of their evolution and comparison with average values for the Basque Country.

3. Calculating the municipality's GHG inventory



GHG inventory

Annual calculation of greenhouse gas emissions associated with the following sectors: mobility, housing, services (including councils), waste and primary waste.

4. Calculating the council's carbon footprint



Carbon footprint

Annual calculation of the greenhouse gas emissions associated with the council's activity, specifically the energy consumption of buildings and public lighting and the fuel consumption of the municipal fleet.

5. Reporting results and accountability

It is recommended that the results of the evaluation and monitoring process of the local climate and energy plan be made known and shared through an annual (or biannual) report summarising the progress of the plan and the results of the main monitoring indicators.



Accounting and energy management tools

In addition, Law 4/2019 requires annual reporting on the progress of its implementation and, therefore, on the execution of the measures included in the local climate and energy plan considered as an Energy Action Plan (Article 14).

6. Report on progress and results of PACES (COMPLEMENTARY MANAGEMENT LEVEL - only for municipalities that are members of the Covenant).



Covenant of mayors form

Municipalities that are members of the Covenant of Mayors for Climate and Energy and that align their local climate and energy plan with PACES must complete the Covenant's online monitoring form including GHG inventory data and the degree of implementation of the various measures considered on a biennial basis.

How can you incorporate citizen participation into the monitoring phase?



The incorporation of citizen participation into the implementation and monitoring phase of the plan, i.e. once the planning process has been completed, will depend, to a large extent, on the participatory culture and dynamics of the municipality. However, maintaining an open channel that makes it possible to make progress on collaborative lines of work between the administration and citizens and thus facilitate the **joint implementation** of certain actions is recommended.

Furthermore, **accountability and reporting the progress** made in implementing the measures are of particular importance in this phase. Annual or biannual reporting is recommended, based on the results of the assessment of the degree of implementation and the calculation of indicators, as well as the council's GHG inventory and carbon footprint.

05

APPENDICES

5.1

Detailed outline of the process

The outline of tasks associated with the five steps for formulating a local climate and energy plan is presented below:

STEP 1: PREPARATORY PHASE	1. Definition of the starting point
	2. Identifying sources of information and compiling documentation
	3. Setting up an internal working groups or commission
	4. Design of an internal and external communication plan
	<i>Tasks associated with citizen participation in the preparatory phase</i>
STEP 2: DIAGNOSIS OF MITIGATION AND ADAPTATION	Contextualisation of municipalities in the area of climate change
	Compiling and analysing information
	Diagnosis of mitigation
	1. Energy balance and GHG inventory of the municipality's sectors
	2. Energy balance, GHG inventory and carbon footprint of councils
	3. Energy analysis of municipal facilities
	Diagnosis of adaptation
	1. Analysis of historical trends and climate projections
2. Assessing vulnerability and risk to climate change	
<i>Tasks associated with citizen participation in the diagnosis phase</i>	
STEP 3: STRATEGIC FORMULATION	1. Formulating the vision
	2. Formulating goals
	<i>Tasks associated with citizen participation in the strategic formulation phase</i>
STEP 4: ACTION PLAN	1. Drawing up the outline of the action plan
	2. Characterisation of actions
	3. Calculation of the overall impact of the Plan
	<i>Tasks associated with citizen participation in the action plan formulation phase</i>
STEP 5: ASSESSMENT AND MONITORING	1. Assessing the degree of implementation of the plan
	2. Indicator-based performance monitoring
	3. Calculating the municipality's GHG inventory
	4. Calculating the carbon footprint of councils
	5. Reporting results and accountability
	6. Report on progress and results (complementary task)
	<i>Tasks associated with citizen participation in the assessment and monitoring phase</i>

5.2

Diagnostic resources

A) Analytical sequences for vulnerability and risk analysis

→ THREAT: Slipping

EXPOSURE		
INDICATOR	RESPONSE OPTIONS	ASSESSMENT
Is the municipality on a slope or surrounded by natural or man-made slopes of considerable height that could result in landslides or rock slides?	Yes	High
	No	Low
Are there any infrastructures located on slopes (roads, power lines, telecommunications) or at the base of a slope?	Yes, a lot	High
	Yes, some	Medium
	No	Low
Are there any economic activities that could be affected by landslides?	Yes, a lot	High
	Yes, some	Medium
	No	Low
Do climate projections predict an increase in maximum daily rainfall in the municipality?	Yes	High
	No	Low
SENSITIVITY		
INDICATOR	RESPONSE OPTIONS	ASSESSMENT
Are there roads in the municipality with slopes steeper than 15%?	Most of them	High
	Half of them	Medium
	Not many	Low
Do the slopes have a low tree density (are they deforested)?	Most of them	High
	Half of them	Medium
	Not many	Low

Does the municipality have a hillside or slope where landslides have occurred in the past?	Yes	Orange
	No	Green
Are there any buildings in the municipality with slopes steeper than 15%?	A large number	Orange
	Quite a few	Yellow
	Not many or none	Green
Is the soil on which the district or its surroundings are located silty-clay?	Most of them	Orange
	Half of them	Yellow
	Not many	Green

ADAPTIVE CAPACITY

INDICATOR	RESPONSE OPTIONS	ASSESSMENT
Has a water channelling system been installed on hillsides or slopes?	Yes	Green
	Yes, in part	Yellow
	No	Orange
Have studies been carried out to determine the stability of the slopes?	Yes	Green
	No	Orange
Have soil containment, soil stabilisation or other preventive measures been carried out?	Yes	Green
	In some cases	Yellow
	No	Orange
Are actions carried out to restore areas that have been burnt down?	Always	Green
	Sometimes	Yellow
	Not often or never	Orange
	No	Green

→ **THREAT:Fires**

EXPOSURE		
INDICATOR	RESPONSE OPTIONS	ASSESSMENT
Public-private forestry plan for the municipality (management, maintenance, cleaning)	Mostly correct	Green
	Partially correct	Yellow
	Not carried out	Orange
Maintenance of roads	Properly and on a regular basis	Green
	Partially	Yellow
	Not carried out	Orange
Alternative evacuation routes	2 or more	Green
	1	Yellow
	None	Orange
GDP per capita (€)	Up to 18,000	Orange
	Between 18,001 and 25,000	Yellow
	Over 25,000	Green
SENSITIVITY		
INDICATOR	RESPONSE OPTIONS	ASSESSMENT
Are there power lines running through forests?	Yes, more than 2	Orange
	Yes, less than 2	Yellow
	No	Green
Housing close to wooded areas	A large number	Orange
	Quite a few	Yellow
	Not many or none	Green

Does the municipality have wooded areas?	A large number	Orange
	Quite a few	Yellow
	Not many or none	Green
Heritage and cultural assets or natural areas of special interest potentially affected by fires	A large number	Orange
	Quite a few	Yellow
	Not many or none	Green
Number of pyrophytic plantations (e.g. conifers and eucalyptus)	Most of them	Orange
	Half of them	Yellow
	Not many	Green

ADAPTIVE CAPACITY

INDICATOR	RESPONSE OPTIONS	ASSESSMENT
Has a water channelling system been installed on hillsides or slopes?	Yes	Green
	Yes, in part	Yellow
	No	Orange
Have studies been carried out to determine the stability of the slopes?	Yes	Green
	No	Orange
Have soil containment, soil stabilisation or other preventive measures been carried out?	Yes	Green
	In some cases	Yellow
	No	Orange
Are actions carried out to restore areas that have been burnt down?	Always	Green
	Sometimes	Yellow
	Not often or never	Orange
	No	Green

5.3

Resources for planning

Typical mitigation measures

The following is a list of typical mitigation measures grouped by thematic areas that could potentially be integrated into a local climate and energy plan:

→ Public buildings

AREA	TITLE
HEATING	Replacement of boilers with more efficient low-temperature or condensing boilers.
	Replacement of oil or LPG boilers with high efficiency gas boilers.
	Installation of thermostatic valves on radiators.
	Installation of heating system control units.
	Zoning of heating circuits
	Improved insulation of the heating production system and heating system pipes.
AIR CONDITIONING	Replacement of cooling/heating production equipment with air conditioning systems.
	Improved insulation of the air conditioning production system and air conditioning system pipes.
	Installation of set-point temperature control thermostats.
	Implementation of ventilation protocols to promote free cooling.
DOMESTIC HOT WATER (DHW)	Replacement of DHW production equipment with more efficient systems using natural gas boiler or heat pump technology.
	Improved insulation of the DHW production system and DHW system pipes.
LIGHTING	Replacement of inefficient lamps and light fittings with maximum efficiency equipment using LED technology.
	Installation of presence detectors and photosensitive cells.
	Installation of stepping switches for centralised lighting control in large buildings.
	Creating sectors with lines of lighting.
	Regulating outdoor and/or ornamental lighting.
ELECTRICAL EQUIPMENT	Replacing old equipment and appliances with more efficient Class A equipment.
	Configuration of energy saving software for office equipment.

AREA	TITLE
BUILDING ENVELOPE	Replacement of single glazed windows with double glazing.
	Implementation of green roofs and vertical gardens.
	Reduction of air infiltration by using passive systems.
	Improvement in the thermal insulation of buildings by means of External Thermal Insulation Composite Systems (ETICS) or ventilated façade systems.
	Install internal and/or external sunscreens.
ENERGY MANAGEMENT	Implementation of a web application for accounting for and managing energy supplies.
	Implementation of monitoring and remote management systems.
	Installation of a building management system (BMS) to centrally control operating hours, lighting levels, set point temperatures and machine status.
	Continuous training of buildings' technical staff on the efficient use and management of the installations.
RENEWABLE GENERATION	Installation of electricity production systems using photovoltaic solar energy for self-consumption.
	Installation of systems for using solar thermal energy for domestic hot water and air-conditioning support.
	Installation of geothermal heating and cooling systems.
	Replacement of the boiler with a biomass boiler.

→ Public Lighting

AREA	TITLE
LIGHTING	Replacement of lamps and lighting fixtures with LED technology in public lighting and traffic lights.
REGULATION AND MANAGEMENT	Incorporation of advanced regulation and control systems.
	Centralised management systems.

→ Fleet of vehicles

AREA	TITLE
FLEET OF VEHICLES	Renewal of the municipal vehicle fleet with electric/plug-in hybrid vehicles.
	Renewal of the municipal vehicle fleet with alternative fuel vehicles (biofuels, LNG, LPG).
MANAGEMENT	Include vehicle charging points.

→ Housing and services

AREA	TITLE
TOWN PLANNING AND BUILDING	Incorporation of high energy efficiency criteria in new urban developments.
	Incorporation of high energy efficiency criteria in the construction of new public housing.
	Sustainable building ordinance.
	Reduction in the cost of building permits for energy renovation.
	Incorporation of criteria to include electric vehicle charging in new buildings.
COMMUNICATION AND AWARENESS-RAISING	Awareness-raising activities aimed at citizens.
	Awareness-raising activities in schools.
	50-50 projects in schools.
	Training activities on energy saving and efficiency.
	Energy audits in shops.
	Creation and stimulation of an energy office.
	Home energy management applications.
	Access to consumption data digital meters.
RENEWABLES AND SELF-CONSUMPTION	Reduction in Property Tax (IBI) for installing renewable energies.
	Reduction in cost of building permits for installing renewable energies.
	Facilitating the processing of photovoltaic installations on roofs by means of prior notification.
	Promotion of shared self-consumption in buildings.
	Promotion of local renewable energy communities.
	Promotion of a biomass heat network.
ENERGY VULNERABILITY	Advice on electricity bill savings.
	Energy audits of vulnerable households.
	Savings actions in vulnerable households.

→ **Waste**

AREA	TITLE
REDUCTION, REUSE AND RECYCLING IN PUBLIC ADMINISTRATIONS	Integration of environmental criteria into public procurement and the contracting of goods and services.
	Raising the awareness of municipal staff on the prevention of waste generation and its selective collection at municipal facilities.
	Promoting the reuse of materials in schools.
	Waste prevention and recycling protocol for public events.
REDUCTION, REUSE AND RECYCLING AT HOME	Campaigns and initiatives to promote responsible food purchasing and consumption.
	Continuous promotion of public involvement in minimising waste and selective waste collection.
	Continuous improvement of collection systems for different household waste fractions.
REDUCTION, REUSE AND RECYCLING IN ECONOMIC SECTORS	Raising the awareness of the service sector on minimising waste and sorting waste at source.
	Increasing control over industrial waste generated and promoting its minimisation.
	Promoting the proper management of agricultural waste.
	Promoting the proper management of construction waste.
	Continuous improvement of waste management systems in the various sectors of activity.

→ Mobility and transport

AREA	TITLE
PLANNING AND MANAGEMENT	Drafting of sustainable urban mobility plans.
	Traffic and parking management aimed at minimising traffic in town centres.
	Drafting of sustainable mobility plans for workplaces.
PUBLIC TRANSPORT	Increasing the provision of collective public transport services.
	Improving collective transport information through digitisation.
	Implementation of fare policies that facilitate the use of public transport.
	Adaptation of the public transport service to the needs of isolated areas.
PEDESTRIANS AND CYCLING	Urbanisation of public space to make it safe, pleasant and attractive for pedestrians and cyclists.
	Increase in the number of streets with priority for pedestrians and traffic calming zones.
	Increase in the network of cycle lanes to access different neighbourhoods and urban mobility centres of interest
	Increase in the provision of inter-urban cycle lanes.
VEHICLE FLEET	Tax incentives and subsidies for renewing vehicle fleets with electric vehicles.
	Restrictions on access to more polluting vehicles.
	Discount on public parking fees for electric vehicles.
	Promotion of electric vehicle charging points.
AWARENESS RAISING AND COMMUNICATION	Awareness-raising activities on sustainable mobility.
	Promotion of efficient driving courses.
	Safe school roads initiatives.

→ Water

AREA	TITLE
INFRASTRUCTURE	Incorporation of technologies to improve energy efficiency in wastewater treatment and sanitation processes.
	Preventive maintenance programme for the supply and sanitation network.
	Implementation of leakage detection systems and control of consumption not accounted for.
PUBLIC ADMINISTRATION SAVINGS	Implementation of systems to control and account for water consumption at municipal facilities.
	Installation of water-saving systems to increase the efficiency of water consumption and municipal facilities.
	Use of untreated water for irrigation or street cleaning.
SAVINGS IN SECTORS OF THE MUNICIPALITY	Information campaigns on good practices aimed at reducing water consumption in the domestic and services sector.
	Reuse of treated and rainwater for agricultural use.

→ Industry





AREA	TITLE
ENERGY PLANNING AND MANAGEMENT	Support for drawing up energy improvement plans.
	Promotion of voluntary energy audits.
	Provision of shared ICT energy management services and applications for energy management for groups of companies and industrial parks.
	Promotion of the implementation of energy management systems through ISO50001 certification.
ENERGY SAVINGS AND EFFICIENCY	Tax allowances and subsidies for investment in energy saving and energy efficiency.
	Reduction in cost of building permits for installing renewable energies.
RENEWABLES AND SELF-CONSUMPTION	Tax allowances for installing renewable energies.
	Reduction in cost of building permits for installing renewable energies.
	Facilitating the processing of photovoltaic installations on roofs by means of prior notification.
	Promotion of shared self-consumption at Industrial parks.
	Promotion of local renewable energy communities in industrial parks.





→ Primary sector





AREA	TITLE
MANAGEMENT OF PRIMARY ACTIVITIES	Dissemination and promotion of agricultural practices aimed at minimising GHG emissions.
	Dissemination and promotion of sustainable forest management practices aimed at maximising CO ₂ absorption.
ECONOMIC PROMOTION AND LOCAL CONSUMPTION	Initiatives to stimulate and support local commercialisation of agricultural and livestock production.
	Initiatives to stimulate and support the commercialisation of biomass for energy generation.





Typical adaptation measures

Measures included in the publication *Assessment of the Vulnerability and Risk of Basque Municipalities to Climate Change* (Ihobe, 2019).

MEASURES	 Impact of heat waves on human health	 Impact of river flooding on the urban environment	 Impact of floods due to rising sea levels on the urban environment	 Impact of the increase in droughts on economic activities	SECTOR	TYPE
01. Increase the green and permeable surface area of squares, public spaces and buildings in the municipality	X	X			Urban environment and infrastructure - Territorial planning and urban planning	NBS
02. Carry out refurbishment work to improve the energy efficiency of public buildings	X				Urban environment and infrastructures - Buildings	Structural
03. Create a network of local ecological connectivity to maintain biodiversity in the urban ecosystem	X	X	X	X	Natural environment - Terrestrial and coastal ecosystems	NBS
04. Promote the greening of rooftops and balconies of buildings, along with common spaces and courtyards	X				Urban environment and infrastructures - Buildings	NBS
05. Draw up a preventive action protocol for heat wave events involving municipal actors, including early warnings, advice and recommendations for the vulnerable population	X				Health and civil protection - Health	Warning systems
06. Identify, adapt and maintain urban cooling zones as a resource for the vulnerable population during heat waves (shaded squares and promenades, fountains...)	X				Health and civil protection - Health	NBS
07. Promote awareness and raise public awareness of the possible effects of climate change on the municipality	X	X	X	X	Others - Other sectors not covered and cross-cutting actions	Awareness raising and training measures
08. Conduct an analysis of existing water resources and demand under future climate conditions (anticipate the need to increase water storage capacity in advance)	X				Natural environment - Water resources	Knowledge generation and decision-making support
09. Regularly update civil protection emergency plans incorporating anticipated climate risks	X	X	X	X	Health and civil protection - Civil protection and emergencies	Preventive
10. Drawing up protocols for action in a participatory manner together with neighbours who may be affected by specific impacts on a regular basis	X	X	X		Health and civil protection - Civil protection and emergencies	Preventive

MEASURES	 Impact of heat waves on human health	 Impact of river flooding on the urban environment	 Impact of floods due to rising sea levels on the urban environment	 Impact of the increase in droughts on economic activities	SECTOR	TYPE
11. Draw up a list of homes for the elderly, nursery schools and other centres where the presence of people vulnerable to high temperatures can be expected	X				Health and civil protection - Health	Awareness raising and training measures
12. Install shallow, rain-fed urban swimming pools to counteract the "heat island" effect	X				Urban environment and infrastructures - Urban environment	Structural
13. Equip the homes of the most vulnerable people with measures that help to improve comfort and thermal control inside the home in periods of high temperatures: thermometers, fans, awnings, etc.	X				Urban environment and infrastructures - Buildings	Preventive
14. Re-naturalise riverbeds in areas exposed to and vulnerable to river flooding		X			Natural environment - Water resources	NBS
15. Implementing sustainable urban drainage systems (SUDs)		X			Natural environment - Water resources	Structural
16. Make sure that municipal planning regulations for new building work take the increased risk of flooding (coastal and river) and increased risk of drought into account		X	X		Urban environment and infrastructures - Buildings	Plans and programmes, regulations, governance and management
17. Restrict new building work in flood-prone areas (even those not currently at high risk of flooding)		X	X		Urban environment and infrastructure - Territorial planning and urban planning	Plans and programmes, regulations, governance and management
18. Check the insurance policies taken out by the council and make sure that they cover the risks associated with climate change		X	X		Activity - Finance-Insurance	Plans and programmes, regulations, governance and management
19. Coordinate management and/or action in flood-prone areas with the relevant, competent public actors		X			Urban environment and infrastructure - Territorial planning and urban planning	Plans and programmes, regulations, governance and management
20. Analyse the capacity of the municipal sanitation network under climate change scenarios		X			Natural environment - Water resources	Structural

MEASURES	 Impact of heat waves on human health	 Impact of river flooding on the urban environment	 Impact of floods due to rising sea levels on the urban environment	 Impact of the increase in droughts on economic activities	SECTOR	TYPE
21. Install "rain gardens". Rain gardens consist of depressed areas in the landscape with specific vegetation (indigenous long-rooted plants and grasses) to absorb rainwater, which are filled during rainfall events and the water percolates into the ground instead of being sent to the mains		X			Natural environment - Water resources	NBS
22. Change of location of flood-prone public facilities		X	X		Urban environment and infrastructures - Territorial planning and urban planning	Preventive
23. Build storm tanks in order to increase rainfall drainage capacity and thereby reduce flood risks		X			Urban environment and infrastructures - Urban environment	Structural
24. Establish a procedure for checking and maintaining the municipality's infrastructures that are exposed to rising sea levels and/or strong waves.			X		Urban environment and infrastructures - Urban environment	Plans and programmes, regulations, governance and management
25. Study the effect of waves and rising sea levels on currents and beaches in the municipality			X		Natural environment - Terrestrial and coastal ecosystems	Knowledge generation and decision-making support
26. Slow the advance of the coastline through different types of action (dune restoration, beach regeneration, marsh and wetland regeneration, etc.)			X		NATURAL ENVIRONMENT - Terrestrial and coastal ecosystems	NBS
27. Build dikes that aim to reduce the risk from events associated with rising sea levels			X		Urban environment and infrastructures - Urban environment	Structural
28. Adapt sanitation networks to the possibility of overflows and floods, especially where rivers discharge into the sea			X		Urban environment and infrastructures - Critical infrastructures	Structural
29. Monitor the shoreline for inflows of solids from rivers and other coastal areas in order to stabilise the shoreline. This measure must be implemented in coordination with other municipalities and public administrations			X		Natural environment - Terrestrial and coastal ecosystems	Preventive
30. Implement early warning systems for forest fires				X	Health and civil protection - Civil protection and emergencies	Warning systems

MEASURES	 Impact of heat waves on human health	 Impact of river flooding on the urban environment	 Impact of floods due to rising sea levels on the urban environment	 Impact of the increase in droughts on economic activities	SECTOR	TYPE
31. Consider using alternative species for trees and shrubs in parks and green areas, selecting varieties that are more drought tolerant				X	Natural environment - Terrestrial and coastal ecosystems	NBS
32. Facilitate the adaptation of the primary sector (agriculture and fisheries) to the new climate conditions (to combat the negative effects of climate change and take advantage of the opportunities arising from it)				X	Activity - Agriculture, forestry, livestock and fisheries	Knowledge generation and decision-making support
33. Explore new markets and new economic opportunities arising from climate change				X	Others - Other sectors not covered and cross-cutting actions	Knowledge generation and decision-making support
34. Dedicate areas at higher risk of flooding to less sensitive uses such as parks and sports areas		x	x		Urban environment and infrastructure - Territorial planning and urban planning	Preventive
35. Avoid locating critical facilities (hospitals, fire and police stations, waste treatment plants, etc.) in areas at risk, especially from flooding and fire, by regulating land uses in the land classification process	x	x	x		Urban environment and infrastructure - Territorial planning and urban planning	Preventive
36. Avoid creating underground car parks in areas at risk of flooding		x	x		Urban environment and infrastructure - Territorial planning and urban planning	Preventive

Data sheet descriptors

DESCRIPTOR	DEFINITION
COMMON PART	
Code	Identifying number of the measure. The numbering corresponds to: (Line), (Programme) and (Measure Number).
Title	Synthetic and self-explanatory text relating to the measure.
Strategic line	Strategic line to which the measure relates: –
Programme	Programme in which the measure is integrated (more detailed than the strategic line).
Description	Definition and basic characterisation of the measure. It provides the minimum elements necessary for its subsequent implementation and assessment.
Primary Decision-Maker/ Secondary Decision-Maker	Agent or entities involved in executing or implementing the measure. The primary agent is distinguished from secondary agents that will have to support the measure. They may be of a very diverse nature, and may not necessarily involve the council.
Start year/ End year	Time frame for implementing action: planned start year/planned end year.
Priority	Sets priority levels (high, medium, low) based on different variables depending on whether the action is mitigation or adaptation. In the case of mitigation, its effectiveness in terms of the absolute value of energy savings and reduction in GHG emissions , its efficiency in terms of reduction in GHG emissions per unit cost, and its economic viability in terms of a positive rate of return will be taken into account; in the case of adaptation, other variables will be taken into consideration, such as the pre-defined levels of action (I, II and III) in terms of current and future risk , and its effectiveness in terms of improved adaptive capacity .
Cost	Estimated economic cost or investment to execute or implement the action. Expressed in euros.
Funding	Entity or body that may fund the measure.
Continuous	Defines whether the action is of a continuous nature and will therefore never be completed (mainly education, awareness raising, etc.).
SDG	SDG to which the action primarily contributes.
Origin of the action	Origin of the action (according to categories defined in the PACES): <ul style="list-style-type: none"> • Local authority. • Regional coordinator of the Covenant. • Others (National, Regional, etc.).
Comments	Comments to clarify and/or justify content incorporated into other fields in the data sheet, in particular on the scope of the measure and the estimated costs applied. Considerations on energy savings and emission reductions can be found in the relevant appendices.

DESCRIPTOR	DEFINICIÓN
SPECIFIC PART - MITIGATION	
Sector	Scope of analysis to which the measure belongs: Housing, Services, Councils, Municipalities (includes Housing and Services).
Area of action*	Area of action of the measure as per the categories specified in the Covenant of Mayors for Climate and Energy.
Policy instrument*	Type of instrument used by the action (taxes, subsidies, taxation, criteria, regulations, procurement, awareness-raising, etc.) as per the specific categories set out in the framework of the Covenant of Mayors for Climate and Energy.
Energy savings	Amount of energy that can be saved by implementing the measure.
Avoided emissions	Reduction in greenhouse gas emissions. Expressed in tonnes of CO ₂ equivalent/year.
Simple rate of return	Period in which the economic cost of executing or implementing the action is recovered through the associated energy and economic savings. Expressed in years.
Renewable energy production	Expected annual energy production. Expressed in kWh/year.
Cost/tCO₂	Cost of each unit of greenhouse gas emissions. Expressed in euros/tonne of CO ₂ equivalent.
Economic savings	Economic savings resulting from implementing the measure. Expressed in €/year.
Contributes to adaptation (yes or no)	Capacity of specific mitigation actions to simultaneously contribute to adaptation.

(*): To be incorporated only in the event that the local climate and energy plan is intended to be aligned with PACES in the framework of the Covenant of Mayors for Climate and Energy to which the council has signed up.

DESCRIPTOR	DEFINITION
SPECIFIC PART - ADAPTATION	
Sector	Scope of the action (as per the categories defined in the e-ADAPTA tool): <ul style="list-style-type: none"> • NATURAL ENVIRONMENT-Water resources • NATURAL ENVIRONMENT-Terrestrial and coastal ecosystems • NATURAL ENVIRONMENT-Land • URBAN ENVIRONMENT AND INFRASTRUCTURES-Critical infrastructures • URBAN ENVIRONMENT AND INFRASTRUCTURES- Linear infrastructures • URBAN ENVIRONMENT AND INFRASTRUCTURES-Territorial planning and urban planning • URBAN ENVIRONMENT AND INFRASTRUCTURES- Urban environment • URBAN ENVIRONMENT AND INFRASTRUCTURES-Buildings • ACTIVITY-Agriculture, forestry, livestock and fisheries • ACTIVITY-Industry • HEALTH AND CIVIL PROTECTION-Health • HEALTH AND CIVIL PROTECTION-Civil protection and emergencies • OTHERS

DESCRIPTOR	DEFINITION
Type	<p>Nature of the action (as per the categories defined in the e-ADAPTA tool):</p> <ul style="list-style-type: none"> • STRUCTURAL-Construction/Engineering • STRUCTURAL-Technology • STRUCTURAL-Nature-based solutions • STRUCTURAL-Services • SOCIAL-Education • SOCIAL-Information • SOCIAL-Active involvement • INSTITUTIONAL-Funding, subsidies and tax incentives • INSTITUTIONAL-Legislation and regulation • INSTITUTIONAL-Plans and policies • INSTITUTIONAL-Preventive management • INSTITUTIONAL-Warning system • INSTITUTIONAL-Studies and diagnoses • INSTITUTIONAL-Others
Economic savings	Economic savings resulting from adaptation action (this field is optional due to the difficulty involved in calculating the savings).
Contributes to mitigation (yes or no)	Capacity of specific adaptation actions to simultaneously contribute to mitigation.
Impact chain affected	<p>Climate risk index for a given sector:</p> <ul style="list-style-type: none"> • Heat waves on human health • River flooding on the urban environment • Floods due to rising sea levels on the urban environment • Increase in droughts on economic activities
Target population groups	<p>Main action groups at which the action is targeted (as per the categories defined in the PACES):</p> <ul style="list-style-type: none"> • Women • Children • Youth • Elderly people • Marginalised groups • People with disabilities • People with chronic illnesses • Low-income households • Unemployed people • People living in substandard housing • Migrants and displaced people • Others • Everyone

Calculating scenarios

The scope and intensity of measures included in the local climate and energy plan should be sufficient to achieve the targets of a 40% reduction in GHG emissions by 2030 compared to the baseline year.

The following steps will be required to do this:

1. Set the baseline year and calculate the associated GHG emissions

Each region or municipality may choose to set its own baseline year. However, it is recommended that baselines be between 2005 and 2010 where possible, or alternatively, the first year after 2010 for which information is available. The adoption of a baseline year in this period will make it possible to highlight the contribution of measures implemented over the last decade and make it more feasible to achieve the reduction targets. It will also provide a longer time series that will make it easier to identify trends over a sufficiently long period of time.

2. Calculate the emissions target to be achieved by 2030

The target volume of emissions for 2030 will be the result of multiplying 0.6 times the volume of emissions in the baseline year, which represents the commitment to reduce GHG emissions by 40%.

3. Formulate the Baseline Scenario

The baseline scenario for the municipality's estimated GHG emissions should be defined in the event that the local climate and energy plan is not implemented. The following should be taken into consideration to this end:

- Socio-economic variables (overall and sectoral GDP, population, household size, etc.).
- Evolution of energy intensity and efficiency by sector.
- Evolution of the energy and electricity mix.

- Evolution of the demand and efficiency parameters of the various non-energy areas considered in the PLCE (mobility, waste and water).

4. Calculate the reduction in the volume of GHG emissions to be contributed from the measures contained in the local climate and energy plan

The additional reduction in the volume of GHG emissions to be achieved under the plan will be the difference between the emissions for 2030 in the baseline scenario (point 3) and the target volume of emissions to be achieved for the same year (point 2).

Figure 10 shows the calculation of the GHG emissions to be reduced under the local climate and energy plan (PLCE) based on the level of emissions in the baseline scenario ($E_{\text{baseline}} 2030$) and the target emissions calculated from the base year ($E_{\text{OBJ}} 2030$).

The same process should be applied to determine the reduction in energy consumption for local government to which the PLCE will contribute and to meet the 35% reduction targets compared to the baseline year. The same should be done for the renewable generation target for municipal facilities compared to the consumption of these facilities by 2030.

In the event that the energy and climate targets to be achieved by 2030 are modified in the future, the calculation will be the same as the one presented, but modifying the calculation of the target volume of emissions or energy consumption to be achieved by 2030.

Based on the calculated volume of reduction in consumption, emissions and increase in renewables to be contributed by the plan, the plan should include as many measures and their intensity as necessary to achieve this.

Municipalities that choose to join the Covenant will need to incorporate complementary measures into their plans:

Emissions baseline scenario and Local Climate and Energy Plan (PLCE) scenario

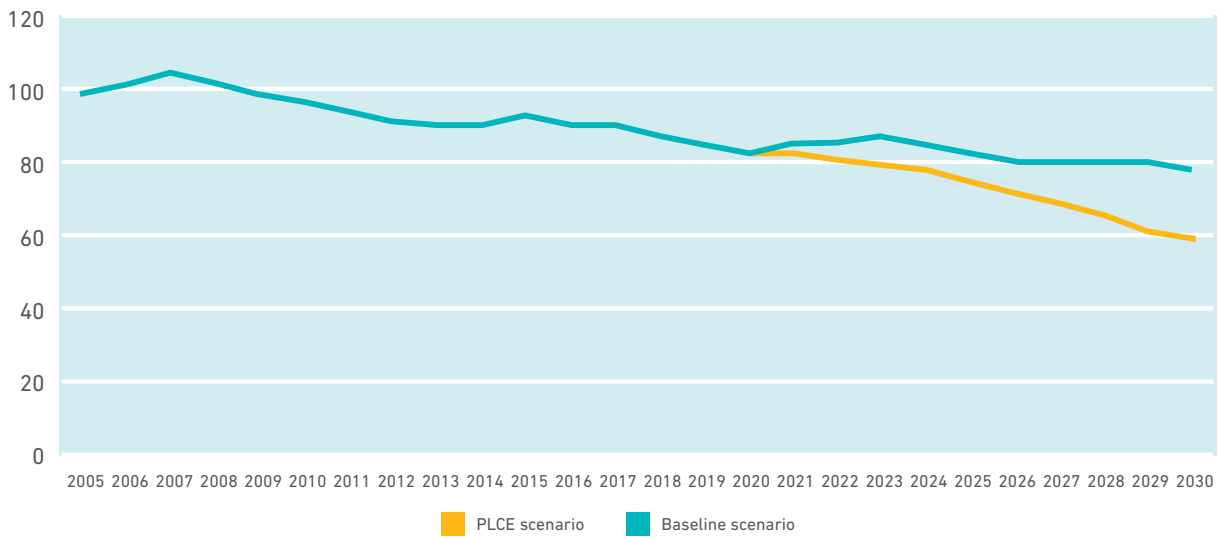


Figure 10. Example of a definition of GHG emissions to be reduced by means of a local climate and energy plan for a municipality with a baseline in 2005 and reduction targets for 2030.

- Main actions already undertaken by the council that may have contributed to reducing emissions between the baseline year and the time of implementing the PACES.
- Main actions carried out or that may be carried out by supra-municipal administrations and the private sector that may have an impact on the reduction of GHG emissions in the municipality.

The total reduction in GHG emissions achieved under the plan should be equivalent to at least 40% of the emissions in the baseline year adopted with the incorporation of these additional measures.

5.4

Glossary

- **Adaptation:** the process of adjusting to the current or expected climate and its effects. In human systems, adaptation seeks to moderate harm or exploit beneficial opportunities arising from changes. In natural systems, human action can facilitate adaptation to the expected climate and its effects.
- **Threat/Hazard:** the potential occurrence of a natural or human-induced physical event or trend, or a physical impact, that may cause loss of life, injury or other negative health effects, and damage and loss to property, infrastructures, livelihoods, service provision, ecosystems and environmental resources (IPCC, 2014a).
- **Impact chain:** cause-effect relationships between a specific climate threat (current or future) and a specific sector, area or recipient. For example, the threat “Increase in temperatures and heat waves” on the “Health” sector, or the threat “Increase in droughts” on the “Agriculture” sector can be considered impact chains (Feliu, E., García, G., Gutierrez, L., Abajo, B., Mendizabal, M., Tapia, C. and Alonso, A., 2015)
- **Adaptive capacity:** the capacity (combination of available strengths, attributes and resources) of systems, institutions, humans and other organisms to prepare for and take action to adapt to potential damage, take advantage of opportunities and respond to consequences (IPCC, 2014a).
- **Greenhouse effect:** infrared radiation effect of all the materials that absorb infrared in the atmosphere. Greenhouse gases, clouds, and (to a lesser extent) aerosols absorb terrestrial radiation emitted by the Earth’s surface and elsewhere in the atmosphere. These substances emit infrared radiation in all directions, but, all else being equal, the net amount emitted into space is normally less than would have been emitted in the absence of these absorbers due to the decrease in temperature with altitude in the troposphere and the consequent weakening of the emission. An increase in the concentration of greenhouse gases increases the magnitude of this effect; the consequence is an increase in the temperature of the earth’s surface and troposphere.
- **Scenario:** plausible description of how the future may evolve based on a set of coherent and internally consistent assumptions based on key driving forces (e.g. speed of technological change, prices) and their relationships. Scenarios are not predictions or forecasts, but they are useful in providing insight into the consequences of advances and actions.
- **Exposure:** the presence of people, livelihoods, species or ecosystems, environmental functions, services and resources, infrastructure, or economic, social or cultural assets in places and environments that could be affected (IPCC, 2014a).
- **Extreme weather event:** an event that is rare at a particular place and time of the year. Definitions of rare vary, but an extreme weather event is normally as rare as or rarer than the 10th or 90th percentile of a probability density function estimated from observations. By definition, the characteristics of what is called extreme weather may vary from place to place in an absolute sense. When a pattern of extreme weather persists for some time, such as a season, it may be classed as an extreme climate event, especially if it yields an average or total that is itself extreme (e.g., drought or heavy rainfall over a season).
- **Greenhouse Gases:** these are natural and anthropogenic gaseous components of the atmosphere that absorb and emit radiation at specific wavelengths within the spectrum of terrestrial radiation emitted by the Earth’s surface, the atmosphere itself, and clouds. This property causes the greenhouse effect.
- **IPCC:** Intergovernmental Panel on Climate Change (IPCC). This group was set up in 1988 to provide comprehensive assess-

ments of the state of scientific, technical and socio-economic knowledge on climate change, its causes, potential impacts and response strategies. Since the start of its work in 1988, the IPCC has prepared five assessment reports and in 2021 is in its sixth assessment cycle.

- **Mitigation:** human action to reduce emission sources and improve sinks of greenhouse gases.
- **Climate neutrality:** a concept referring to a state in which human activities have no net effect on the climate system. To reach such a state, it would be necessary to achieve a balance between residual emissions with removal of (carbon dioxide) emissions and regional and local biogeophysical effects of human activities that affect the surface albedo or the local climate, for example (IPCC, 2018: Special report on global warming of 1.5°C).
- **Climate projection:** a simulated response of the climate system to various scenarios of emissions or concentrations of greenhouse gases and aerosols, often based on simulations using climate models. Climate projections differ from climate predictions in that they depend on the emissions/concentrations/radiative forcing scenario used, based on assumptions relating to socio-economic and technological developments, for example, which may or may not materialise (IPCC, 2013).
- **RCP (*Representative Concentration Pathways*):** the IPCC's fifth report defined four new emission scenarios known as Representative Concentration Pathways (RCPs). These are characterised by their total radiative forcing for 2100, which ranges between 2.6 and 8.5 W/m². The four RCPs are made up of a scenario in which mitigation efforts lead to a very low level of forcing (RCP 2.6), 2 stabilisation scenarios (RCP 4.5 and RCP 6.0) and a scenario with a very high level of GHG emissions (RCP 8.5). In contrast to the scenarios discussed in the IPCC's fourth report (SRES), the new RCPs may take the effects of international policies or agreements for emission reductions into account.
- **Resilience:** the capacity of a socio-ecological system to cope with a hazardous event or disturbance, respond or reorganise itself in a way that retains its essential function, identity and structure, while also retaining the capacity to adapt, learn and transform (Arctic Council, 2013).
- **Risk:** the potential for consequences when an element of value is at stake and both the occurrence and degree of an outcome are uncertain. Risk results from the interaction of vulnerability (of the system affected), its exposure over time (to the hazard/threat), and the hazard/threat (climate-related) and the likelihood of it occurring (IPCC, 2018a).
- **Sensitivity:** the degree of adverse or beneficial effects of climate variability or change on a system or species. The effect may be direct (e.g. a change in crop yield in response to a change in average temperature, or the range or variability of temperature) or indirect (e.g. damage caused by an increase in the frequency of coastal flooding due to rising sea levels) (IPCC, 2018b).
- **Sink:** any process, activity or mechanism that removes a greenhouse gas, aerosol or precursor of either of these from the atmosphere (IPCC, 2014a).
- **Vulnerability:** the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to respond and adapt (IPCC, 2014a).



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